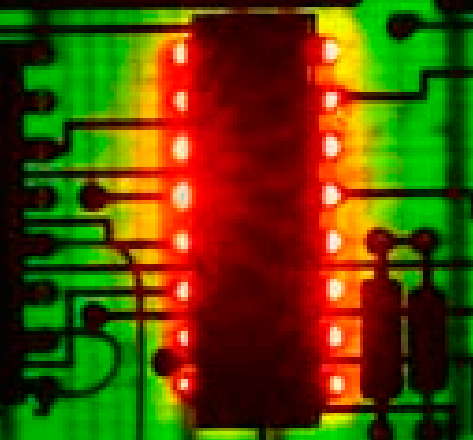
ESR

ELECTRONIC COMPONENTS



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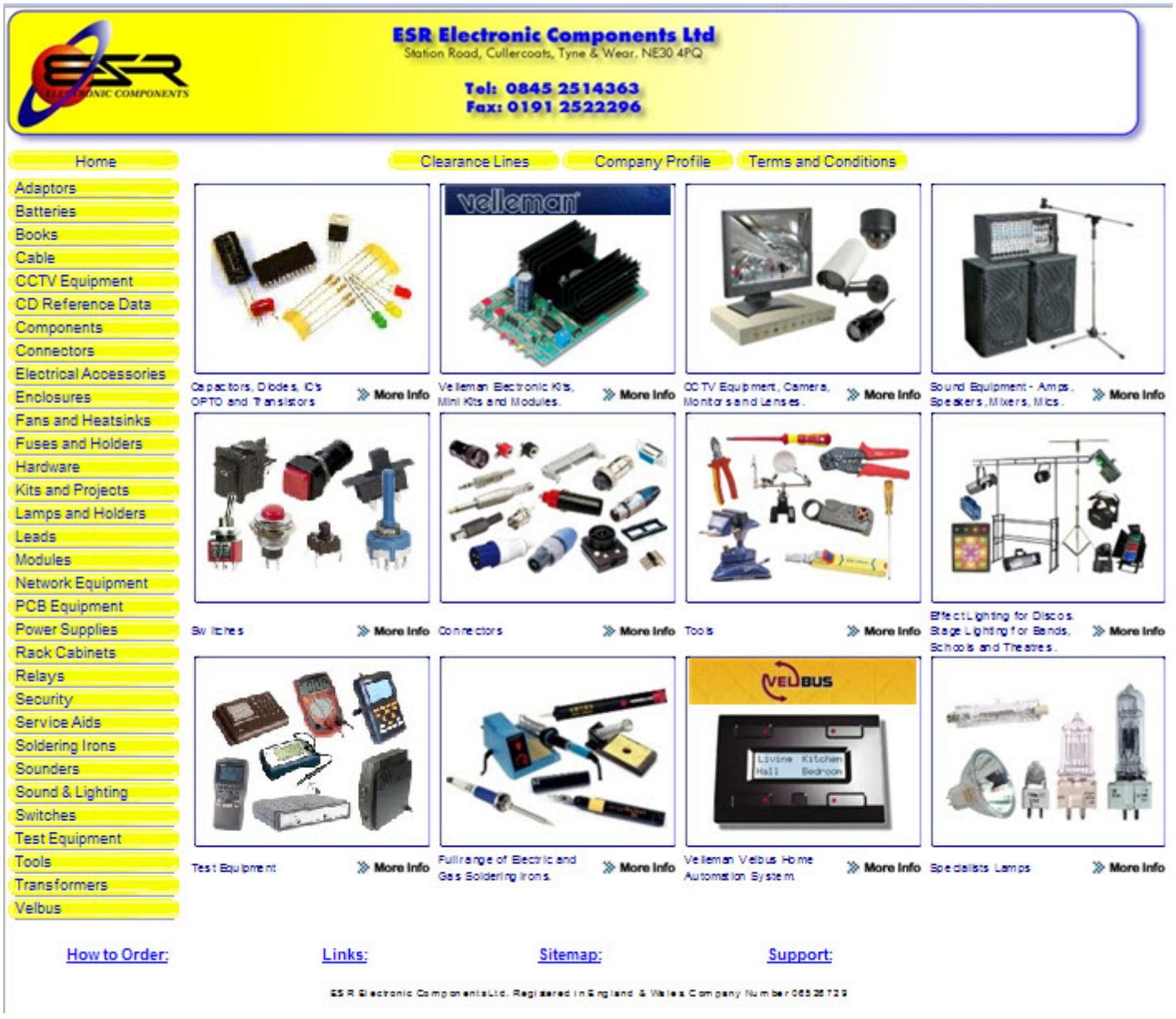


CERAMIC

Miniature Disc

A large range of miniature disc ceramic capacitors offering a choice of dielectric stability & permittivity.

Temperature Compensated Range - Low K Dielectric NPO & N150. Low loss, close tolerance, high stability for use where a controlled change in capacitance with temperature is required.

Coupling & By-pass Range - Medium & High K Dielectric Y5P & Y5V. High permittivity capacitors for coupling and by-pass applications or frequency discriminating circuits where low losses and high stability are not of major importance.

Technical Specification

Capacitance Range	1.0pF to 0.1µF
Working Voltage	100V dc (0.047µF 50v, 0.1µF 50v)
Capacitance Tolerance	1.0 - 4.7pF 0.25pF 5.6 - 8.2pF 0.5pF 10 - 82pF ±5% 100 - 4700pF ±10% 0.01 - 0.1µF -20+80%
Operating Temperature Range	-25°C to +85°C
Insulation Resistance	≥10,000MΩ (≥7,500MΩ C≥0.022µF)
Dielectric Strength	250V (75V for 0.1µF)
Body Colour	Brown
Dielectric Tip Indicator	NPO - Black, N150 - Orange

Order Code		1+	25+	50+	100+	500+
Low K Dielectric NPO						
872-001	1.0pf 100V 5.0mmØ	0.05	0.0360	0.0240	0.0120	0.0096
872-003	1.5pf 100V 5.0mmØ	0.05	0.0336	0.0224	0.0112	0.0090
872-004	1.8pf 100V 5.0mmØ	0.05	0.0360	0.0240	0.0120	0.0096
872-005	2.2pf 100V 5.0mmØ	0.05	0.0360	0.0240	0.0120	0.0096
872-006	2.7pf 100V 5.0mmØ	0.05	0.0366	0.0244	0.0122	0.0098
872-007	3.3pf 100V 5.0mmØ	0.05	0.0366	0.0244	0.0122	0.0098
872-008	3.9pf 100V 5.0mmØ	0.05	0.0458	0.0366	0.0293	0.0256
872-009	4.7pf 100V 5.0mmØ	0.05	0.0360	0.0240	0.0120	0.0096
872-010	5.6pf 100V 5.0mmØ	0.05	0.0360	0.0240	0.0120	0.0096
872-011	6.8pf 100V 5.0mmØ	0.05	0.0360	0.0240	0.0120	0.0096
872-012	8.2pf 100V 5.0mmØ	0.05	0.0360	0.0240	0.0120	0.0096
872-013	10pf 100V 5.0mmØ	0.07	0.0504	0.0336	0.0168	0.0134
872-014	12pf 100V 5.0mmØ	0.05	0.0360	0.0240	0.0120	0.0096
872-015	15pf 100V 5.0mmØ	0.05	0.0360	0.0240	0.0120	0.0096
872-016	18pf 100V 5.0mmØ	0.05	0.0360	0.0240	0.0120	0.0096
872-017	22pf 100V 5.0mmØ	0.05	0.0336	0.0224	0.0112	0.0090
872-018	27pf 100V 5.0mmØ	0.05	0.0360	0.0240	0.0120	0.0096
872-019	33pf 100V 5.0mmØ	0.05	0.0396	0.0264	0.0132	0.0106
872-020	39pf 100V 5.0mmØ	0.05	0.0360	0.0240	0.0120	0.0096
872-021	47pf 100V 5.0mmØ	0.05	0.0366	0.0244	0.0122	0.0098
872-022	56pf 100V 6.0mmØ	0.07	0.0492	0.0328	0.0164	0.0131
872-023	68pf 100V 6.0mmØ	0.07	0.0534	0.0356	0.0178	0.0142
Low K Dielectric N150						
872-024	82pf 100V 8.0mmØ	0.07	0.0534	0.0356	0.0178	0.0142
Medium K Dielectric Y5P						
872-025	100pf 100V 5.0mmØ	0.04	0.0336	0.0224	0.0112	0.0090
872-026	120pf 100V 5.0mmØ	0.05	0.0360	0.0240	0.0120	0.0096
872-027	150pf 100V 5.0mmØ	0.04	0.0300	0.0200	0.0100	0.0080
872-028	180pf 100V 5.0mmØ	0.05	0.0336	0.0224	0.0112	0.0090
872-029	220pf 100V 5.0mmØ	0.05	0.0336	0.0224	0.0112	0.0090
872-030	270pf 100V 5.0mmØ	0.04	0.0300	0.0200	0.0100	0.0080
872-031	330pf 100V 5.0mmØ	0.05	0.0366	0.0244	0.0122	0.0098
872-032	390pf 100V 5.0mmØ	0.05	0.0336	0.0224	0.0112	0.0090
872-033	470pf 100V 5.0mmØ	0.05	0.0366	0.0244	0.0122	0.0098
872-034	560pf 100V 5.0mmØ	0.05	0.0360	0.0240	0.0120	0.0096
872-035	680pf 100V 5.0mmØ	0.04	0.0300	0.0200	0.0100	0.0080
872-036	820pf 100V 5.0mmØ	0.05	0.0360	0.0240	0.0120	0.0096
872-037	1000pf 100V 5.0mmØ	0.06	0.0504	0.0392	0.0280	0.0168
872-038	1200pf 100V 5.0mmØ	0.05	0.0360	0.0240	0.0120	0.0096
872-039	1500pf 100V 5.0mmØ	0.05	0.0336	0.0224	0.0112	0.0090
872-041	2200pf 100V 6.0mmØ	0.05	0.0366	0.0244	0.0122	0.0098
872-042	2700pf 100V 6.0mmØ	0.06	0.0420	0.0280	0.0140	0.0112
872-043	3300pf 100V 7.0mmØ	0.08	0.0594	0.0396	0.0198	0.0158
872-044	3900pf 100V 7.0mmØ	0.09	0.0672	0.0448	0.0224	0.0179
872-045	4700pf 100V 8.0mmØ	0.08	0.0564	0.0376	0.0188	0.0150
High K Dielectric Z5V						
872-049	0.01µf 100V 6.0mmØ	0.05	0.0360	0.0240	0.0120	0.0096
872-053	0.022µf 100V 8.5mmØ	0.06	0.0480	0.0320	0.0160	0.0128
871-057	0.047µf 50V 6.0mmØ	0.05	0.0416	0.0208	0.0166	0.0146
871-061	0.1µf 50V 6.0mmØ	0.05	0.0408	0.0272	0.0198	0.0174

High Voltage Ceramic Class Y3

Mains interference suppression capacitors, Y3 class radial lead. Suitable for across line (X2) applications. Flame retardant epoxy resin coated.

Technical Specification

Capacitance Range	470pF to 3n3F
Capacitance Tolerance	±10% (Y5P), ±20% (Y5V)
Temperature Coefficient	±10% (Y5P), +30 to -80% (Y5V)
Insulation Resistance	≥10,000MΩ
Voltage Rating	400Vac
Test Voltage	2600Vac
Operating Temperature Range	-25 to +85°C

Lead Pitch 7.5mm (<2200pF)
10mm (>3300pF)

Order Code			1+	25+	50+	100+	500+
868-471	470pF Y5P	10mmØ	0.12	0.0983	0.0786	0.0629	0.0550
868-102	1000pF Y5V	10mmØ	0.09	0.0773	0.0578	0.0462	0.0405
868-222	2200pF Y5V	12mmØ	0.09	0.0785	0.0628	0.0502	0.0440
868-332	3300pF Y5V	15mmØ	0.12	0.1033	0.0826	0.0661	0.0578

Dipped Multilayer

A wide range of epoxy coated, multilayer ceramic capacitors, available in a choice of dielectrics.

NPO (COG): A Low K temperature compensation type. Extremely stable over wide variations of temperature, voltage, frequency and time. Very low dissipation factor. For use in precision timing, active & passive filtering, frequency setting and tuning circuits.

X7R: A Medium K semi-stable type offering greater volumetric efficiency. Suitable for by-pass, coupling and filtering in audio & video equipment, computers, telecommunications etc. i.e.. where moderate capacitance variations are permissible and dissipation factor is not critical.

Y5V/Z5U: High K general purpose types for by-pass and decoupling applications where temperature stability is of no major importance. Offering the highest volumetric efficiency.

Technical Specification

Capacitance Range	10pF to 1.0µF
Working Voltage	100V dc
Capacitance Tolerance	NPO ±5% X7R ±10% Y5U ±20% Z5V -20% +80%
Operating Temperature Range	NPO, X7R -55°C to +125°C Y5V, Z5U -25°C to +85°C
Temperature Coefficient	NPO ±30ppm/°C X7R ±15% over -55°C to +125°C Y5V +22%, -82% over -25°C to +85°C Z5U +22%, -56% over +10°C to +85°C
Insulation Resistance	NPO, X7R ≥100,000MΩ or 1000MΩ/µF Y5V, Z5U ≥10,000MΩ or 100MΩ/µF whichever is less
Dissipation Factor	NPO 0.1% max. at 1MHz, 1.2Vrms X7R 2.5% max. at 1kHz, 0.2Vrms Y5V, Z5U 4% max. at 1kHz, 0.1Vrms
Body Colour	Yellow

Order Code		1+	25+	50+	100+	500+
882-013	10pF Low K NPO	0.07	0.0543	0.0362	0.0290	0.0253
882-017	22pF Low K NPO	0.06	0.0474	0.0316	0.0284	0.0253
882-019	33pF Low K NPO	0.08	0.0606	0.0404	0.0364	0.0323
882-020	47pF Low K NPO	0.10	0.0840	0.0672	0.0538	0.0470
882-025	100pF Low K NPO	0.08	0.0627	0.0418	0.0334	0.0293
882-029	220pF Med K X7R	0.06	0.0480	0.0320	0.0256	0.0224
882-031	330pF Med K X7R	0.08	0.0700	0.0560	0.0448	0.0392
882-033	470pF Med K X7R	0.08	0.0700	0.0560	0.0448	0.0392
882-037	1000pF Med K X7R	0.07	0.0543	0.0362	0.0290	0.0253
882-041	2200pF Med K X7R	0.08	0.0675	0.0540	0.0432	0.0378
882-045	4700pF Med K X7R	0.06	0.0478	0.0382	0.0306	0.0267
882-049	0.01µF Med K X7R	0.06	0.0460	0.0368	0.0294	0.0258
882-053	0.022µF High K Y5V	0.06	0.0468	0.0374	0.0299	0.0262
882-055	0.033µF High K Y5V	0.06	0.0505	0.0404	0.0323	0.0283
882-057	0.047µF High K Y5V	0.07	0.0575	0.0460	0.0368	0.0322
882-061	0.10µF High K Y5V	0.05	0.0373	0.0298	0.0238	0.0209
882-065	0.22µF High K Y5V	0.11	0.0878	0.0702	0.0562	0.0491
882-067	0.33µF High K Z5U	0.21	0.1750	0.1400	0.1120	0.0980
882-069	0.47µF High K Z5U	0.23	0.1910	0.1528	0.1222	0.1070
882-073	1.0µF High K Z5U	0.37	0.2960	0.2664	0.2368	0.2072
As above series but 5mm Pitch						
883-049	0.01µF Med K X7R 5mm	0.08	0.0560	0.0448	0.0358	0.0314
883-061	0.10µF High K Y5V 5mm	0.08	0.0591	0.0394	0.0315	0.0276

CERAMIC

Axial Multilayer

A wide range of Axial Lead, epoxy coated, multilayer ceramic capacitors, available in a choice of dielectrics. See Dipped Multilayer ceramics for dielectric descriptions.

Technical Specification

Capacitance Range	10pF to 1.0µF
Working Voltage	100V dc
Capacitance Tolerance	NPO ±5% X7R & Z5U ±10&
Operating Temperature Range	NPO, X7R -55°C to +125°C Z5U -25°C to +85°C
Temperature Coefficient	NPO ±30ppm/°C X7R ±15% over -55°C to +125°C Z5U +22%, -56% over +10°C to +85°C
Insulation Resistance (whichever is less)	NPO, X7R ≥100,000MΩ or 1000MΩ/µF Z5U ≥10,000MΩ or 100MΩ/µF
Dissipation Factor	NPO 0.15% max. at 1MHz, 1Vrms X7R 2.5% max. at 1KHz, 1Vrms Z5U 5% max. at 1KHz, 0.5Vrms
Body Colour	Yellow

Dims	L x Dia.
10pF-0.047µF	3.5 x 2.5mm
0.1-1.0µF	5.0 x 3.0mm

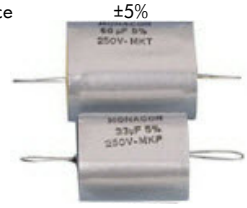
Order Code		1+	25+	50+	100+	500+
884-013	10pF Low K NPO	0.11	0.0722	0.0650	0.0578	0.0505
884-017	22pF Low K NPO	0.09	0.0510	0.0459	0.0408	0.0357
884-020	47pF Low K NPO	0.07	0.0400	0.0360	0.0320	0.0280
884-025	100pF Low K NPO	0.09	0.0524	0.0472	0.0419	0.0367
884-029	220pF Low K NPO	0.07	0.0565	0.0452	0.0407	0.0362
884-033	470pF Low K NPO	0.09	0.0500	0.0450	0.0400	0.0350
884-037	1000pF Med K X7R	0.07	0.0400	0.0360	0.0320	0.0280
884-041	2200pF Med K X7R	0.07	0.0400	0.0360	0.0320	0.0280
884-045	4700pF Med K X7R	0.07	0.0410	0.0369	0.0328	0.0287
884-049	0.01µF Med K X7R	0.08	0.0452	0.0407	0.0362	0.0316
884-053	0.022µF Med K X7R	0.09	0.0520	0.0468	0.0416	0.0364
884-057	0.047µF Med K X7R	0.14	0.0772	0.0695	0.0618	0.0540
884-061	0.10µF Med K X7R	0.14	0.0864	0.0576	0.0461	0.0403
884-069	0.47µF High K Z5U	0.22	0.1240	0.1116	0.0992	0.0868
884-073	1.0µF High K Z5U	0.32	0.2160	0.1944	0.1728	0.1512

PLASTIC FILM

Axial lead MKT plastic film "Audio Grade" capacitors suitable for use in high end loudspeaker crossover networks.

Technical Specification

Capacitance Range	0.22µF to 68µF
Working Voltage	250V
Capacitance Tolerance	±5%



Order Code			Pitch
850-224	0.22µF	250V	30mm
850-334	0.33µF	250V	30mm
850-474	0.47µF	250V	30mm
850-684	0.68µF	250V	30mm
850-105	1.0µF	250V	30mm
850-155	1.5µF	250V	30mm
850-225	2.2µF	250V	30mm
850-335	3.3µF	250V	30mm
850-475	4.7µF	250V	30mm
850-685	6.8µF	250V	37.5mm
850-106	10µF	250V	37.5mm
850-156	15µF	250V	37.5mm
850-226	22µF	250V	42.5mm
850-336	33µF	250V	42.5mm
850-476	47µF	250V	52.5mm
850-686	68µF	250V	52.5mm

Order Code	1+	10+
850-224	0.85	0.7462
850-334	0.84	0.7336
850-474	0.88	0.7699
850-684	0.88	0.7700
850-105	0.98	0.8540
850-155	0.93	0.8120
850-225	1.02	0.8940
850-335	1.29	1.1259
850-475	1.56	1.3608
850-685	2.03	1.7685
850-106	2.51	2.1870
850-156	3.44	3.3176
850-226	5.03	4.6670
850-336	7.31	6.7860
850-476	9.53	8.8465
850-686	12.88	11.925

POLYESTER FILM (MYLAR)

Low cost polyester film capacitors coated with epoxy resin to ensure excellent capacitance stability and protection against humidity. Solvent resistant. For general purpose use.

Technical Specification

Capacitance Range	6.8F & 15nF
Working Voltage	100Vdc (35Vac)
Capacitance Tolerance	±5%
Operating Temperature Range	-40°C to +85°C
Insulation Resistance	≥30,000MΩ
Dissipation Factor	≤1% at 1kHz
Body Colour	Green

Value	Pitch
6.8nF	4.0mm
15nF	4.5mm

Order Code		W x H x D	1+	25+	50+	100+	500+
892-047	6800pF	6.5 x 11.5 x 4.0mm	0.06	0.0360	0.0240	0.0192	0.0168
892-051	15nF	7.5 x 12 x 4.5mm	0.07	0.0405	0.0270	0.0216	0.0189

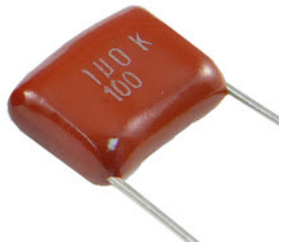
POLYESTER

Dipped

A range of dipped capacitors, industry compatible and suitable for general applications. Metallised polyester (PETP) film dielectric. Covered by a protective epoxy resin coating. Flame retardant, moisture repellent and solvent resistant. Leads are cropped and pre-formed to standard pitch spacing.

Technical Specification

Capacitance Range	10nF to 2.2µF
Working Voltage	100Vdc (63Vac) 250Vdc (160Vac) 400Vdc (220Vac)
Capacitance Tolerance	±10%
Operating Temperature Range	-40°C to +85°C
Insulation Resistance or	≥7500MΩ (V>100Vdc) ≥3750MΩ (V=100Vdc)
Time Constant	≥2500 Sec. (V>100Vdc, C>330nF) ≥1250 Sec. (V=100Vdc, C>330nF)
Dissipation Factor	1% at 1kHz
Body Colour	Orange



Order Code	Value	Voltage	Dimensions (mm) W	H	D	Pitch (mm)
846-065	220nF	100V	13.0	13.0	5.5	10.0
846-069	470nF	100V	18.0	14.5	6.0	15.0
846-073	1.0µF	100V	18.0	17.0	7.5	15.0
846-077	2.2µF	100V	26.0	20.0	8.0	22.5
847-057	47nF	250V	13.0	12.0	4.5	10.0
847-059	68nF	250V	13.0	12.5	5.0	10.0
847-061	100nF	250V	13.0	13.0	5.0	10.0
847-065	220nF	250V	18.0	15.0	6.0	15.0
847-067	330nF	250V	18.0	16.0	7.0	15.0
847-069	470nF	250V	26.0	17.5	5.5	22.5
847-071	680nF	250V	26.0	18.5	6.5	22.5
847-073	1.0µF	250V	26.0	19.5	7.5	22.5
847-077	2.2µF	250V	30.0	22.5	10.5	27.5
848-049	10nF	400V	13.0	12.0	4.5	10.0
848-053	22nF	400V	13.0	12.0	4.5	10.0
848-055	33nF	400V	13.0	12.5	5.0	10.0
848-057	47nF	400V	18.0	14.0	5.0	15.0
848-059	68nF	400V	18.0	14.0	5.0	15.0
848-061	100nF	400V	18.0	15.0	6.0	15.0
848-065	220nF	400V	26.0	18.0	6.0	22.5
848-069	470nF	400V	26.0	20.5	8.0	22.5
848-071	680nF	400V	30.0	20.5	8.5	27.5

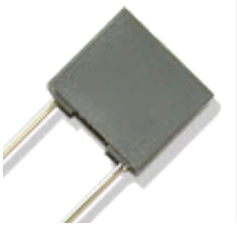
Order Code		1+	25+	50+	100+	500+
846-065	220nF 100V	0.26	0.2155	0.1724	0.1379	0.1207
846-069	470nF 100V	0.19	0.1610	0.1288	0.1030	0.0902
846-073	1.0µF 100V	0.28	0.2350	0.1880	0.1504	0.1316
846-077	2.2µF 100V	0.57	0.4775	0.3820	0.3056	0.2674
847-057	47nF 250V	0.11	0.0923	0.0738	0.0590	0.0517
847-059	68nF 250V	0.12	0.0963	0.0770	0.0616	0.0539
847-061	100nF 250V	0.11	0.0935	0.0748	0.0598	0.0524
847-065	220nF 250V	0.23	0.1880	0.1504	0.1203	0.1053
847-067	330nF 250V	0.15	0.1290	0.1032	0.0826	0.0722
847-069	470nF 250V	0.18	0.1475	0.1180	0.0944	0.0826
847-071	680nF 250V	0.22	0.1798	0.1438	0.1150	0.1007
847-073	1.0µF 250V	0.26	0.2150	0.1720	0.1376	0.1204
847-077	2.2µF 250V	0.55	0.4603	0.3682	0.2946	0.2577
848-049	10nF 400V	0.15	0.1228	0.0982	0.0786	0.0687
848-053	22nF 400V	0.11	0.0935	0.0748	0.0598	0.0524
848-055	33nF 400V	0.11	0.0928	0.0742	0.0594	0.0519
848-057	47nF 400V	0.13	0.1080	0.0864	0.0691	0.0605
848-059	68nF 400V	0.13	0.1075	0.0860	0.0688	0.0602
848-061	100nF 400V	0.14	0.1125	0.0900	0.0720	0.0630
848-065	220nF 400V	0.19	0.1600	0.1280	0.1024	0.0896
848-069	470nF 400V	0.27	0.2278	0.1822	0.1458	0.1275
848-071	680nF 400V	0.33	0.2728	0.2182	0.1746	0.1527

Boxed

A broad range of metallised polyester capacitors, epoxy resin encapsulated in flame retardant plastic cases with integral standoff feet. A wide voltage and capacitance range is offered.

Technical Specification

Capacitance Range	1.0nF to 2.2µF
Working Voltage	63Vdc (40Vac) 100Vdc (63Vac) 250Vdc (160Vac) 400Vdc (200Vac)
Capacitance Tolerance	±10%
Operating Temperature Range	-55°C to +85°C
Insulation Resistance	≥10,000MΩ Vdc≤100V ≥30,000MΩ Vdc≥250V
Dissipation Factor	≤1% at 1kHz
Body Colour	Cream/Yellow/Grey/Red



Order Code	Value	Voltage	Dimensions (mm) W	H	D	Pitch (mm)
861-061	100nF	63V	7.2	6.5	2.5	5.0
861-063	150nF	63V	7.2	6.5	2.5	5.0
861-065	220nF	63V	7.2	6.5	2.5	5.0
861-067	330nF	63V	7.2	7.5	3.5	5.0
861-069	470nF	63V	7.2	7.5	3.5	5.0
861-071	680nF	63V	7.2	10.0	5.0	5.0
861-073	1.0µF	63V	7.5	8.0	5.0	5.0
861-077	2.2µF	63V	18.0	12.0	6.0	15.0
862-037	1.0nF	100V	7.5	6.5	2.5	5.0
862-039	1.5nF	100V	7.2	6.5	2.5	5.0
862-041	2.2nF	100V	7.2	6.5	2.5	5.0
862-043	3.3nF	100V	7.2	6.5	2.5	5.0
862-045	4.7nF	100V	7.2	6.5	2.5	5.0
862-047	6.8nF	100V	7.2	6.5	2.5	5.0
862-049	10nF	100V	7.2	6.5	2.5	5.0
862-051	15nF	100V	7.2	6.5	2.5	5.0
862-055	33nF	100V	7.2	6.5	2.5	5.0
862-057	47nF	100V	7.2	6.5	2.5	5.0
862-059	68nF	100V	7.2	6.5	3.0	5.0
862-061	100nF	100V	10.5	8.5	3.5	7.5
862-069	470nF	100V	18.0	11.0	5.0	15.0
862-073	1.0µF	100V	18.0	11.0	5.0	15.0
863-061	100nF	250V	10.5	9.0	4.0	7.5
863-063	150nF	250V	13.0	9.0	4.0	10.0
863-065	220nF	250V	13.0	11.0	5.0	10.0
863-069	470nF	250V	26.5	15.0	6.0	22.5
863-073	1.0µF	250V	26.5	15.0	6.0	22.5
863-073	2.2µF	250V	31.5	21.0	11.0	27.5
864-049	10nF	400V	10.0	7.0	2.5	7.5
864-053	22nF	400V	13.0	9.0	4.0	10.0
864-057	47nF	400V	18.0	11.0	5.0	15.0
864-061	100nF	400V	18.0	12.5	6.0	15.0
864-065	220nF	400V	26.5	15.0	6.0	22.5
864-073	1.0µF	400V	32.0	17.0	9.0	27.5

Order Code		1+	25+	50+	100+	500+
861-061	100nF 63V	0.05	0.0393	0.0262	0.0210	0.0183
861-063	150nF 63V	0.09	0.0639	0.0426	0.0341	0.0298
861-065	220nF 63V	0.14	0.1193	0.0954	0.0763	0.0668
861-067	330nF 63V	0.17	0.1260	0.0840	0.0672	0.0588
861-069	470nF 63V	0.23	0.1804	0.1624	0.1443	0.1262
861-071	680nF 63V	0.39	0.3275	0.2620	0.2096	0.1834
861-073	1.0µF 63V	0.25	0.1887	0.1258	0.1006	0.0881
861-077	2.2µF 63V	0.64	0.5320	0.4280	0.3424	0.2996
862-037	1.0nF 100V	0.09	0.0679	0.0466	0.0373	0.0326
862-039	1.5nF 100V	0.05	0.0381	0.0254	0.0203	0.0178
862-041	2.2nF 100V	0.08	0.0582	0.0388	0.0310	0.0272
862-043	3.3nF 100V	0.06	0.0441	0.0294	0.0235	0.0206
862-045	4.7nF 100V	0.07	0.0552	0.0368	0.0294	0.0258
862-047	6.8nF 100V	0.06	0.0441	0.0294	0.0235	0.0399
862-049	10nF 100V	0.05	0.0378	0.0252	0.0202	0.0176
862-051	15nF 100V	0.07	0.0534	0.0356	0.0285	0.0249
862-055	33nF 100V	0.05	0.0381	0.0254	0.0203	0.0178
862-057	47nF 100V	0.05	0.0402	0.0268	0.0214	0.0188
862-059	68nF 100V	0.06	0.0429	0.0286	0.0229	0.0200
862-061	100nF 100V	0.19	0.1395	0.0930	0.0744	0.0651
862-069	470nF 100V	0.27	0.2225	0.1780	0.1424	0.1246
862-073	1.0µF 100V	0.41	0.3403	0.2722	0.2178	0.1905
863-061	100nF 250V	0.20	0.1470	0.0980	0.0784	0.0686
863-063	150nF 250V	0.20	0.1491	0.0994	0.0795	0.0696
863-065	220nF 250V	0.19	0.1610	0.1288	0.1030	0.0902
863-069	470nF 250V	0.35	0.2883	0.2306	0.1845	0.1614
863-073	1.0µF 250V	0.46	0.3800	0.3040	0.2432	0.2128
863-077	2.2µF 250V	0.93	0.8370	0.7440	0.6510	0.5813
864-049	10nF 400V	0.16	0.1170	0.0780	0.0624	0.0546
864-053	22nF 400V	0.16	0.1293	0.1034	0.0827	0.0724
864-057	47nF 400V	0.30	0.2400	0.2160	0.1920	0.1680
864-061	100nF 400V	0.23	0.1808	0.1627	0.1446	0.1266
864-065	220nF 400V	0.27	0.2160	0.1944	0.1728	0.1512
864-073	1.0µF 400V	0.80	0.6364	0.5728	0.5091	0.4455

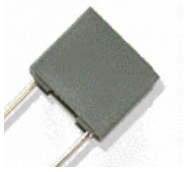
POLYESTER

Class X2 Mains Suppression

Metallised polyester capacitors designed for mains interference suppression and are suitable for connection across the mains supply, Class X2. Epoxy resin encapsulated in flame retardant plastic cases. Specifications meets with extensive European and world-wide approvals.

Technical Specification

Capacitance Range	10nF to 1.0µF
Capacitance Tolerance	±20%
Insulation Resistance or	≥30,000MΩ (C≤330nF)
Time Constant	≥10,000 Sec. (C>330nF)
Working Voltage	275Vac
Test Voltage	1800Vdc
Operating Temperature Range	-40°C to +100°C
Body Colour	Grey



Dims:	18 x 11 x 5mm (10 to 47nF) 18 x 12 x 6mm (100nF) 26.5 x 16 x 7mm (220nF) 26.5 x 18.5 x 10mm (470nF) 32 x 22 x 13mm (1.0µF)
Lead Pitch	15mm (10 to 100nF) 22.5mm (220 & 470nF) 27.5mm (1.0µF)

Order Code			1+	25+	50+	100+	500+
867-049	10nF	Class X2	0.20	0.1467	0.0998	0.0798	0.0699
867-053	22nF	Class X2	0.16	0.1293	0.1034	0.0827	0.0724
867-055	33nF	Class X2	0.18	0.1329	0.0886	0.0709	0.0620
867-057	47nF	Class X2	0.17	0.1269	0.0846	0.0677	0.0592
867-061	100nF	Class X2	0.17	0.1248	0.0832	0.0666	0.0582
867-065	220nF	Class X2	0.30	0.2589	0.1726	0.1381	0.1208
867-069	470nF	Class X2	0.51	0.4368	0.2912	0.2330	0.2038
867-073	1.0µF	Class X2	0.75	0.6426	0.4284	0.3427	0.2999

POLYSTYRENE

Axial lead polystyrene capacitors which offer good capacitance stability, high insulation resistance and a low dissipation factor. Suitable for use in tuned or timing circuits, filter networks etc.

Technical Specification

Capacitance Range	470 to 4700pF
Working Voltage at 40°C	160Vdc (65Vac)
Temperature Coefficient	-250ppm/°C
Operating Temperature Range	-25°C to +70°C
Insulation Resistance	≥100,000MΩ
Self Inductance	10nH max.
Dissipation Factor	0.1% at 1kHz
Body Colour	Silver

Range	L	Dia
470 - 1000pF	11.5	4.7
4700pF	11.5	5.8

Order Code			1+	25+	50+	100+	500+
840-033	470pF	160V	0.12	0.1000	0.0800	0.0640	0.0560
840-037	1000pF	160V	0.12	0.1000	0.0800	0.0640	0.0560
840-045	4700pF	160V	0.12	0.1000	0.0800	0.0640	0.0560

TANTALUM

Solid Bead

Miniature resin dipped solid bead tantalum capacitors suitable for applications requiring high performance and reliability.

Technical Specification

Capacitance Range	0.1 to 330µF	
Capacitance Tolerance	±20%	
Operating Temperature Range	-55°C to +85°C	
Dissipation Factor	≤4%	up to 1.5µF
	≤6%	2.2 to 6.8µF
	≤8%	10 to 47µF
	≤10%	100µF & above
Leakage Current	≤0.008CV or 0.5µA if greater	
Body Colour	Gold	

Pitch 2.5mm except...
832-107 which is 5mm

Value	L x Dia	Order Code	1+	25+	50+	100+	500+
6.3V Working							
6.8µF	7.0 x 4.5	830-083	0.11	0.0935	0.0748	0.0598	0.0524
10µF	7.0 x 4.5	830-106	0.18	0.1400	0.1260	0.1120	0.0980
47µF	10 x 6.0	830-476	0.23	0.1828	0.1645	0.1462	0.1280
10V Working							
4.7µF	7.0 x 4.5	831-475	0.10	0.0760	0.0684	0.0608	0.0532
10µF	8.5 x 5.0	831-106	0.15	0.1160	0.1044	0.0928	0.0812
47µF	10 x 6.5	831-476	0.48	0.3800	0.3420	0.3040	0.2660
16V Working							
2.2µF	7.0 x 4.5	832-225	0.10	0.0760	0.0684	0.0608	0.0532
4.7µF	7.5 x 4.5	832-475	0.14	0.1100	0.0990	0.0880	0.0770
6.8µF	8.5 x 5.0	832-083	0.25	0.2032	0.1829	0.1626	0.1422
10µF	9.0 x 5.5	832-106	0.24	0.2160	0.1920	0.1680	0.1500
15µF	9.0 x 5.5	832-086	0.25	0.2090	0.1672	0.1338	0.1170
22µF	10 x 6.0	832-226	0.38	0.3000	0.2700	0.2400	0.2100
33µF	10 x 6.0	832-336	0.27	0.2120	0.1908	0.1696	0.1484
47µF	12 x 8.0	832-476	0.44	0.3540	0.3186	0.2832	0.2478
25V Working							
2.2µF	7.0 x 4.5	833-225	0.13	0.1170	0.1040	0.0910	0.0813
3.3µF	7.5 x 4.5	833-335	0.21	0.1700	0.1530	0.1360	0.1190
4.7µF	8.5 x 5.0	833-475	0.24	0.1900	0.1710	0.1520	0.1330
6.8µF	9.0 x 5.0	833-685	0.17	0.1380	0.1242	0.1104	0.0966
10µF	9.0 x 5.5	833-106	0.21	0.1680	0.1512	0.1344	0.1176
22µF	10.5 x 7.0	833-226	0.58	0.4620	0.4158	0.3696	0.3234
33µF	12 x 8.0	833-336	0.70	0.5560	0.5004	0.4448	0.3892
35V Working							
0.1µF	7.0 x 4.5	834-104	0.09	0.0810	0.0720	0.0630	0.0563
0.22µF	7.0 x 4.5	834-224	0.15	0.1200	0.1080	0.0960	0.0840
0.33µF	7.0 x 4.5	834-334	0.15	0.1200	0.1080	0.0960	0.0840
0.47µF	7.0 x 4.5	834-474	0.12	0.1000	0.0800	0.0720	0.0640
0.68µF	7.0 x 4.5	834-071	0.12	0.0968	0.0774	0.0619	0.0542
1.0µF	7.0 x 4.5	834-105	0.10	0.0800	0.0720	0.0640	0.0560
2.2µF	7.0 x 4.5	834-225	0.12	0.0940	0.0846	0.0752	0.0658
3.3µF	8.5 x 5.0	834-079	0.20	0.1600	0.1440	0.1280	0.1120
4.7µF	8.5 x 5.5	834-475	0.21	0.1680	0.1512	0.1344	0.1170
10µF	10 x 6.0	834-106	0.50	0.4000	0.3600	0.3200	0.2800
50V Working							
1.5µF	0.9 x 5.0	835-075	0.21	0.1384	0.1246	0.1107	0.0969
3.3µF	10 x 6.0	835-079	0.27	0.2182	0.1964	0.1746	0.1527

RADIAL ELECTROLYTIC

Sub-miniature 85°C

Radial lead, sub-miniature aluminium electrolytic capacitors. With a low profile, only 7mm high, they are ideal for applications where space is limited.

Value µF	Voltage Vdc	Surge	Ripple mA	Dim.(mm) L	Dia	Pitch (mm)
22	10	13	35	7.0	5.0	2.0
47	10	13	60	7.0	6.3	2.5
100	10	13	105	7.0	6.3	2.5
10	16	20	25	7.0	4.0	1.5
22	16	20	40	7.0	5.0	2.0
47	16	20	70	7.0	6.3	2.5
100	16	20	120	7.0	6.3	2.5
10	25	32	25	7.0	5.0	1.5
22	25	32	40	7.0	6.3	2.0
33	25	32	70	7.0	6.3	2.5
4.7	35	44	20	7.0	4.0	1.5
10	35	44	30	7.0	5.0	2.0
22	35	44	55	7.0	6.3	2.5
0.1	63	79	5	7.0	4.0	1.5
0.22	63	79	8	7.0	4.0	1.5
0.33	63	79	10	7.0	4.0	1.5
0.47	63	79	10	7.0	4.0	1.5
1.0	63	79	15	7.0	4.0	1.5
2.2	63	79	20	7.0	4.0	1.5

Technical Specification

Capacitance Range	100nF to 100µF
Capacitance Tolerance	±20% at 120Hz, 25°C
Operating Temperature Range	-40°C to +85°C
Dissipation Factor	Vdc 10 16 25 35 63 Tanδ 0.20 0.16 0.14 0.12 0.08
Leakage Current	≤0.01CV or 3µA if greater
Body Colour	Black

Value µF	Order Code	1+	25+	50+	100+	500+
22	784-088	0.08	0.0570	0.0380	0.0304	0.0266
47	784-092	0.10	0.0741	0.0494	0.0395	0.0346
100	784-096	0.09	0.0690	0.0460	0.0368	0.0322
10	785-085	0.05	0.0360	0.0240	0.0192	0.0168
22	785-088	0.07	0.0531	0.0354	0.0283	0.0248
47	785-092	0.08	0.0570	0.0380	0.0304	0.0266
100	785-096	0.08	0.0636	0.0424	0.0339	0.0297
10	786-085	0.07	0.0540	0.0360	0.0288	0.0252
22	786-088	0.05	0.0408	0.0272	0.0218	0.0190
33	786-090	0.10	0.0720	0.0480	0.0384	0.0336
4.7	787-081	0.04	0.0315	0.0210	0.0168	0.0147
10	787-085	0.06	0.0471	0.0314	0.0251	0.0220
22	787-088	0.08	0.0630	0.0420	0.0336	0.0294
0.1	788-061	0.07	0.0540	0.0360	0.0288	0.0252
0.22	788-065	0.07	0.0534	0.0356	0.0285	0.0249
0.33	788-067	0.07	0.0510	0.0340	0.0272	0.0238
0.47	788-069	0.04	0.0315	0.0210	0.0168	0.0147
1.0	788-073	0.06	0.0423	0.0282	0.0226	0.0197
2.2	788-077	0.07	0.0540	0.0360	0.0288	0.0252

Standard 85°C

Radial lead aluminium electrolytic capacitors. Manufactured to high levels of quality and reliability, endurance is greater than 2000 Hours at 85°C.

Value µF	Voltage Vdc	Surge	Ripple mA	Dim.(mm) L	Dia	Pitch (mm)
10	16	20	60	11.0	5.0	2.0
22	16	20	55	11.0	5.0	2.0
33	16	20	70	11.0	5.0	2.0
47	16	20	80	11.0	5.0	2.0
100	16	20	140	11.0	6.3	2.5
220	16	20	240	11.5	8.0	3.5
330	16	20	300	11.5	8.0	3.5
470	16	20	420	12.5	10.0	5.0
1000	16	20	740	25.0	16.0	7.5
2200	16	20	1200	25.0	12.5	5.0
4700	16	20	2100	31.5	16.0	7.5
10	25	32	50	11.0	5.0	2.0
22	25	32	60	11.0	5.0	2.0
47	25	32	90	11.0	5.0	2.0
100	25	32	150	11.0	6.3	2.5
220	25	32	260	11.5	8.0	3.5
470	25	32	500	16.0	10.0	5.0
1000	25	32	910	20.0	12.5	5.0
2200	25	32	1500	25.0	16.0	7.5
3300	25	32	1900	31.5	16.0	7.5
4700	25	32	2450	35.5	18.0	7.5
4.7	40	50	30	11.0	5.0	2.0
10	40	50	45	11.0	5.0	2.0
22	40	50	60	11.0	5.0	2.0
33	40	50	90	11.0	5.0	2.0
47	40	50	100	11.0	6.3	2.5
100	40	50	200	11.5	8.0	3.5
220	40	50	360	12.5	10.0	5.0
330	40	50	500	16.0	10.0	5.0
470	40	50	620	20.0	10.0	5.0
1000	40	50	1040	25.0	12.5	5.0
2200	40	50	1900	31.5	16.0	7.5
0.1	63	79	5	11.0	5.0	2.0
0.47	63	79	10	11.0	5.0	2.0
1.0	63	79	15	11.0	5.0	2.0
2.2	63	79	20	11.0	5.0	2.0
4.7	63	79	35	11.0	5.0	2.0
10	63	79	50	11.0	5.0	2.0
22	63	79	85	11.0	6.3	2.5
47	63	79	150	11.5	8.0	3.5
100	63	79	260	12.5	10.0	5.0
220	63	79	460	20.0	10.0	5.0
470	63	79	850	25.0	12.5	5.0
1000	63	79	1550	31.5	16.0	7.5
1.0	100	125	15	11.0	5.0	2.0
4.7	100	125	35	11.0	5.0	2.0
10	100	125	60	11.0	6.3	2.5
22	100	125	110	11.5	8.0	3.5
47	100	125	210	16.0	10.0	5.0
100	100	125	380	20.0	12.5	5.0

Technical Specification

Capacitance Range	470nF to 4700µF
Capacitance Tolerance	±20% at 120Hz, 25°C
Operating Temperature Range	-40°C to +85°C
Dissipation Factor	Vdc 16 25 40 63 100 Tanδ 0.16 0.14 0.10 0.09 0.08
Leakage Current	≤0.01CV or 3µA if greater
Body Colour	Black

Value µF	Order Code	1+	25+	50+	100+	500+
10	805-085	0.05	0.0339	0.0226	0.0181	0.0158
22	805-088	0.04	0.0316	0.0198	0.0158	0.0142
33	805-090	0.04	0.0306	0.0204	0.0163	0.0143
47	805-092	0.06	0.0363	0.0290	0.0232	0.0203
100	805-096	0.06	0.0385	0.0308	0.0246	0.0216
220	805-100	0.08	0.0538	0.0430	0.0344	0.0301
330	805-102	0.08	0.0588	0.0470	0.0376	0.0329
470	805-104	0.13	0.0840	0.0756	0.0672	0.0588
1000	805-108	0.14	0.1168	0.0934	0.0747	0.0654
2200	805-112	0.31	0.2464	0.2218	0.1975	0.1725
4700	805-116	0.64	0.5118	0.4606	0.4094	0.3583
10	807-085	0.04	0.0316	0.0237	0.0158	0.0142
22	807-088	0.05	0.0390	0.0260	0.0208	0.0182
47	807-092	0.05	0.0354	0.0236	0.0189	0.0165
100	807-096	0.06	0.0462	0.0308	0.0246	0.0216
220	807-100	0.08	0.0628	0.0502	0.0402	0.0351
470	807-104	0.13	0.1115	0.0892	0.0714	0.0624
1000	807-108	0.18	0.1490	0.1192	0.0954	0.0834
2200	807-112	0.58	0.3868	0.3481	0.3094	0.2708
3300	807-114	1.02	0.8120	0.7308	0.6496	0.5684
4700	807-116	0.92	0.7655	0.6124	0.4899	0.4287
4.7	811-081	0.05	0.0381	0.0254	0.0203	0.0178
10	811-085	0.05	0.0318	0.0254	0.0203	0.0178
22	811-088	0.06	0.0420	0.0280	0.0224	0.0196
33	811-090	0.06	0.0420	0.0280	0.0224	0.0196
47	811-092	0.07	0.0455	0.0364	0.0291	0.0255
100	811-096	0.10	0.0715	0.0572	0.0458	0.0400
220	811-100	0.15	0.1050	0.0840	0.0672	0.0588
330	811-102	0.18	0.1530	0.1224	0.0979	0.0857
470	811-104	0.21	0.1763	0.1410	0.1128	0.0987
1000	811-108	0.30	0.2488	0.1990	0.1791	0.1592
2200	811-112	0.69	0.6241	0.5547	0.4854	0.4334
0.1	813-061	0.05	0.0318	0.0254	0.0203	0.0178
0.47	813-069	0.04	0.0228	0.0182	0.0146	0.0127
1.0	813-073	0.05	0.0290	0.0261	0.0232	0.0203
2.2	813-077	0.05	0.0283	0.0226	0.0181	0.0158
4.7	813-081	0.06	0.0363	0.0290	0.0232	0.0203
10	813-085	0.05	0.0378	0.0252	0.0202	0.0176
22	813-088	0.07	0.0552	0.0368	0.0294	0.0258
47	813-092	0.11	0.0700	0.0560	0.0448	0.0392
100	813-096	0.13	0.1152	0.0892	0.0714	0.0624
220	813-100	0.34	0.2453	0.1962	0.1570	0.1373
470	813-104	0.33	0.2988	0.2656	0.2324	0.2075
1000	813-108	0.80	0.6400	0.5760	0.5120	0.4480
1.0	815-073	0.05	0.0333	0.0266	0.0213	0.0186
4.7	815-081	0.06	0.0420	0.0280	0.0224	0.0196
10	815-085	0.09	0.0650	0.0520	0.0416	0.0364
22	815-088	0.12	0.0850	0.0680	0.0544	0.0476
47	815-092	0.19	0.1575	0.1260	0.1008	0.0882
100	815-096	0.19	0.1610	0.1288	0.1030	0.0902

Low Leakage Radial

Radial lead, low leakage aluminium electrolytic capacitors. Suitable for timing and low signal coupling applications.

Value µF	Voltage Vdc	Surge	Ripple mA	Dim.(mm) L	Dia	Pitch (mm)
100	10	13	160	11.0	6.3	2.5
220	10	13	310	11.5	8.0	3.5
10	16	20	43	11.0	5.0	2.0
22	16	20	74	11.0	5.0	2.0
33	16	20	90	11.0	5.0	2.0
47	25	32	172	11.0	6.3	2.5
10	35	44	57	11.0	5.0	2.0
22	35	44	99	11.0	6.3	2.5
0.1	50	63	5	11.0	5.0	2.0
0.33	50	63	9	11.0	5.0	2.0
0.47	50	63	14	11.0	5.0	2.0
1.0	50	63	20	11.0	5.0	2.0
2.2	50	63	26	11.0	5.0	2.0
10	50	63	70	11.0	5.0	2.0

Technical Specification

Capacitance Range	100nF to 220µF
Capacitance Tolerance	±20% at 120Hz, 25°C
Operating Temperature Range	-40°C to +85°C
Dissipation Factor	Vdc 10 16 25 35 50
	Tanδ 0.17 0.13 0.10 0.10 0.08
Leakage Current	≤0.002CV or 0.3µA if greater
Body Colour	Orange

Value µF	Order Code	1+	25+	50+	100+	500+
100	790-096	0.08	0.0575	0.0460	0.0368	0.0322
220	790-100	0.11	0.0800	0.0640	0.0512	0.0448
10	791-085	0.06	0.0450	0.0360	0.0288	0.0252
22	791-088	0.06	0.0450	0.0300	0.0240	0.0210
33	791-090	0.06	0.0450	0.0300	0.0240	0.0210
47	792-092	0.08	0.0598	0.0478	0.0382	0.0335
10	793-085	0.07	0.0525	0.0420	0.0336	0.0294
22	793-088	0.08	0.0570	0.0380	0.0304	0.0266
0.1	794-061	0.06	0.0450	0.0360	0.0288	0.0252
0.33	794-067	0.06	0.0450	0.0300	0.0240	0.0210
0.47	794-069	0.05	0.0375	0.0300	0.0240	0.0210
1.0	794-073	0.07	0.0525	0.0420	0.0336	0.0294
2.2	794-077	0.06	0.0450	0.0360	0.0288	0.0252
10	794-085	0.06	0.0450	0.0300	0.0240	0.0210

105°C Radial

Radial lead aluminium electrolytic capacitors designed to work at higher ambient temperatures. Suitable for applications requiring a greater upper temperature safety margin and thereby an improved reliability. Endurance is greater than 2000 Hours at 105°C.

Value µF	Voltage Vdc	Surge	Ripple mA	Dim.(mm) L	Dia	Pitch (mm)
47	16	20	130	11.0	5.0	2.0
100	16	20	220	11.0	6.3	2.5
220	16	20	290	11.5	8.0	3.5
330	16	20	315	12.5	10.0	5.0
470	16	20	500	16.0	10.0	5.0
1000	16	20	825	20.0	12.5	5.0
2200	16	20	1300	25.0	12.5	5.0
100	25	32	220	11.5	8.0	3.5
220	25	32	315	12.5	10.0	5.0
330	25	32	500	16.0	10.0	5.0
470	25	32	615	20.0	10.0	5.0
1000	25	32	1050	20.0	12.5	5.0
2200	25	32	1740	25.0	16.0	7.5
10	35	44	105	11.0	5.0	2.0
22	35	44	120	11.0	5.0	2.0
33	35	44	130	11.0	6.3	2.5
47	35	44	220	11.0	6.3	2.5
100	35	44	315	11.5	8.0	3.5
220	35	44	500	16.0	10.0	5.0
330	35	44	615	20.0	10.0	5.0
470	35	44	825	20.0	12.5	5.0
1000	35	44	1300	25.0	16.0	7.5
2200	35	44	2110	31.5	16.0	7.5
0.47	63	79	23	11.0	5.0	2.0
1.0	63	79	35	11.0	5.0	2.0
2.2	63	79	53	11.0	5.0	2.0
4.7	63	79	74	11.0	5.0	2.0
10	63	79	95	11.0	6.3	2.5
22	63	79	130	11.5	8.0	3.5
47	63	79	305	11.5	8.0	3.5
100	63	79	395	12.5	10.0	5.0
220	63	79	505	20.0	10.0	5.0
470	63	79	850	25.0	12.5	5.0

Technical Specification

Capacitance Range	470nF to 1000µF
Capacitance Tolerance	±20% at 120Hz, 25°C
Operating Temperature Range	-40°C to +105°C
Dissipation Factor	Vdc 16 25 35 63
	Tanδ 0.16 0.14 0.12 0.08
Leakage Current	≤0.01CV +2µA after 2 min.
Body Colour	Light Green

Value µF	Order Code	1+	25+	50+	100+	500+
47	796-092	0.06	0.0486	0.0324	0.0259	0.0227
100	796-096	0.08	0.0636	0.0424	0.0339	0.0297
220	796-100	0.15	0.1473	0.0982	0.0786	0.0687
330	796-102	0.21	0.1602	0.1068	0.0854	0.0748
470	796-104	0.18	0.1350	0.0900	0.0720	0.0630
1000	796-108	0.20	0.1524	0.1016	0.0813	0.0711
2200	796-112	0.44	0.3675	0.2940	0.2352	0.2058
100	797-096	0.12	0.0927	0.0618	0.0494	0.0433
220	797-100	0.14	0.1183	0.0946	0.0757	0.0662
330	797-102	0.18	0.1475	0.1180	0.0944	0.0826
470	797-104	0.21	0.1475	0.1180	0.0944	0.0826
1000	797-108	0.33	0.2626	0.2363	0.2101	0.1838
2200	797-112	0.50	0.4507	0.4006	0.3506	0.3130
10	798-085	0.08	0.0570	0.0380	0.0304	0.0266
22	798-088	0.08	0.0570	0.0380	0.0304	0.0266
33	798-090	0.09	0.0648	0.0432	0.0346	0.0302
47	798-092	0.10	0.0750	0.0500	0.0400	0.0350
100	798-096	0.21	0.1569	0.1046	0.0837	0.0732
220	798-100	0.21	0.1500	0.1200	0.0960	0.0840
330	798-102	0.23	0.1925	0.1540	0.1232	0.1078
470	798-104	0.23	0.1920	0.1536	0.1229	0.1075
1000	798-108	0.50	0.4000	0.3600	0.3200	0.2800
2200	798-112	0.87	0.6980	0.6282	0.5584	0.4886
0.47	799-069	0.08	0.0570	0.0380	0.0304	0.0266
1.0	799-073	0.06	0.0486	0.0324	0.0259	0.0227
2.2	799-077	0.06	0.0423	0.0282	0.0226	0.0197
4.7	799-081	0.07	0.0510	0.0340	0.0272	0.0238
10	799-085	0.07	0.0510	0.0340	0.0272	0.0238
22	799-088	0.11	0.0834	0.0556	0.0445	0.0389
47	799-092	0.14	0.1080	0.0720	0.0576	0.0504
100	799-096	0.16	0.1358	0.1086	0.0869	0.0760
220	799-100	0.32	0.2640	0.2112	0.1690	0.1478
470	799-104	0.48	0.3862	0.3476	0.3090	0.2703

NON POLARISED RADIAL ELECTROLYTIC

Radial lead, non polarised aluminium electrolytic capacitors. Suitable for applications where a reverse polarity may be applied, i.e. Loudspeaker crossover networks.

Value µF	Voltage Vdc	Surge	Ripple mA	Dim.(mm) L	Dia	Pitch (mm)
1.0	50	63	14	11.0	5.0	2.0
2.2	50	63	21	11.0	5.0	2.0
4.7	50	63	31	11.0	5.0	2.0
10	50	63	45	11.0	5.0	2.0
22	50	63	77	11.0	6.3	2.5
47	50	63	157	12.5	10.0	5.0
100	50	63	273	20.0	10.0	5.0

Technical Specification

Capacitance Range	1.0µF to 100µF
Working Voltage	50Vdc (Surge 63v)
Capacitance Tolerance	±20%
Operating Temperature Range	-40°C to +85°C
Leakage Current	≤0.03CV +3µA max (after 5 min)
Dissipation Factor (Tan δ)	0.12
Body Colour	Red

Value µF	Order Code	1+	25+	50+	100+	500+
1.0	773-073	0.08	0.0600	0.0450	0.0300	0.0240
2.2	773-077	0.10	0.0832	0.0624	0.0416	0.0333
4.7	773-081	0.09	0.0740	0.0555	0.0370	0.0296
10	773-085	0.11	0.0904	0.0678	0.0452	0.0362
22	773-088	0.15	0.1160	0.0870	0.0580	0.0464
47	773-092	0.26	0.2076	0.1557	0.1038	0.0830
100	773-096	0.47	0.3732	0.2799	0.1866	0.1493

AXIAL ELECTROLYTIC

Axial Lead aluminium electrolytic capacitors, manufactured to high levels of quality and reliability.

Value µF	Voltage Vdc	Surge	Ripple mA	Dim.(mm) L	Dia
10	16	20	40	12.5	5.0
22	16	20	64	12.5	5.0
47	16	20	92	12.5	5.0
100	16	20	160	12.5	6.3
220	16	20	280	16.0	8.0
470	16	20	450	20.0	8.0
1000	16	20	760	25.0	13.0
2200	16	20	1200	26.0	13.0
4700	16	20	1900	34.0	16.0
22	25	32	70	12.5	5.0
47	25	32	100	12.5	6.3
100	25	32	180	16.0	6.3
220	25	32	300	16.0	8.0
470	25	32	500	20.0	10.0
1000	25	32	950	21.0	13.0
2200	25	32	1450	29.0	16.0
4700	25	32	2160	39.0	18.0
10	40	50	38	12.5	5.0
22	40	50	67	12.5	6.3
47	40	50	113	16.0	8.0
100	40	50	189	20.0	8.0
220	40	50	335	20.0	10.0
470	40	50	590	26.0	13.0
1000	40	50	1095	34.0	16.0
2200	40	50	1624	44.0	18.0
1.0	63	79	16	12.5	5.0
2.2	63	79	21	12.5	5.0
4.7	63	79	38	12.5	5.0
10	63	79	62	12.5	5.0
22	63	79	100	12.5	6.3
47	63	79	180	16.0	8.0
100	63	79	280	16.0	10.0
220	63	79	470	25.0	10.0
470	63	79	900	26.0	13.0
1000	63	79	1500	39.0	16.0
2200	63	79	2060	41.0	22.0
10	100	125	75	16.0	6.3
22	100	125	120	16.0	8.0
47	100	125	230	20.0	10.0
100	100	125	420	21.0	13.0
220	100	125	700	29.0	16.0
10	250	300	57	16.0	10.0
22	250	300	101	25.0	10.0
47	250	300	184	25.0	13.0
10	350	400	62	20.0	10.0
22	350	400	109	20.0	13.0
1.0	450	500	19	16.0	8.0
2.2	450	500	30	20.0	10.0
4.7	450	500	50	25.0	10.0
10	450	500	80	20.0	13.0
22	450	500	130	30.0	13.0
47	450	500	230	40.0	18.0
100	450	500	470	40.0	22.0

Technical Specification

Capacitance Range	1.0µF to 4700µF
Capacitance Tolerance	±20% at 120Hz, 25°C
Operating Temperature Range	-40°C to +85°C
Leakage Current	≤0.01CV or 3µA if greater
Body Colour	Black

Value µF	Order Code	1+	25+	50+	100+	500+
10	804-085	0.17	0.1376	0.1236	0.1101	0.0963
22	804-088	0.16	0.1300	0.1170	0.1040	0.0910
47	804-092	0.17	0.1455	0.1164	0.0931	0.0815
100	804-096	0.20	0.1562	0.1406	0.1250	0.1093
220	804-100	0.22	0.1734	0.1561	0.1387	0.1214
470	804-104	0.24	0.2025	0.1620	0.1296	0.1134
1000	804-108	0.44	0.3690	0.2952	0.2362	0.2066
2200	804-112	0.53	0.4400	0.3520	0.2816	0.2464
4700	804-116	0.86	0.6878	0.6190	0.5502	0.4815
22	806-088	0.16	0.1280	0.1152	0.1024	0.0896
47	806-092	0.13	0.1118	0.0894	0.0805	0.0715
100	806-096	0.20	0.1678	0.1342	0.1208	0.1074
220	806-100	0.20	0.1643	0.1314	0.1051	0.0920
470	806-104	0.23	0.1890	0.1512	0.1361	0.1210
1000	806-108	0.50	0.4193	0.3354	0.2683	0.2348
2200	806-112	0.79	0.6318	0.5686	0.5054	0.4423
4700	806-116	1.12	0.8940	0.8046	0.7152	0.6258
10	810-085	0.12	0.1030	0.0824	0.0742	0.0659
22	810-088	0.15	0.1280	0.1024	0.0819	0.0717
47	810-092	0.16	0.1323	0.1058	0.0846	0.0741
100	810-096	0.20	0.1612	0.1451	0.1290	0.1128
220	810-100	0.21	0.1696	0.1526	0.1357	0.1187
470	810-104	0.34	0.2756	0.2480	0.2205	0.1929
1000	810-108	0.79	0.6332	0.5699	0.5066	0.4432
2200	810-112	1.18	0.9420	0.8478	0.7536	0.6594
1.0	812-073	0.14	0.1092	0.1004	0.0893	0.0781
2.2	812-077	0.15	0.1184	0.1066	0.0947	0.0829
4.7	812-081	0.20	0.1578	0.1420	0.1262	0.1105
10	812-085	0.13	0.1060	0.0848	0.0678	0.0594
22	812-088	0.19	0.1526	0.1373	0.1221	0.1068
47	812-092	0.25	0.2026	0.1823	0.1621	0.1418
100	812-096	0.37	0.2930	0.2637	0.2344	0.2051
220	812-100	0.39	0.3225	0.2580	0.2064	0.1806
470	812-104	0.45	0.3550	0.3195	0.2840	0.2485
1000	812-108	0.80	0.6362	0.5726	0.5090	0.4453
2200	812-112	1.55	1.3950	1.2400	1.0850	0.9688
10	814-085	0.17	0.1383	0.1106	0.0885	0.0774
22	814-088	0.21	0.1745	0.1396	0.1117	0.0977
47	814-092	0.32	0.2675	0.2140	0.1712	0.1498
100	814-096	0.43	0.3476	0.3128	0.2781	0.2433
220	814-100	0.60	0.4800	0.4320	0.3840	0.3360
10	818-085	0.40	0.3338	0.2670	0.2136	0.1869
22	818-088	0.53	0.4375	0.3500	0.2800	0.2450
47	818-092	0.54	0.4860	0.4320	0.3780	0.3375
10	820-085	0.44	0.3675	0.2940	0.2352	0.2058
22	820-088	0.76	0.5072	0.4565	0.4058	0.3550
1.0	822-073	0.27	0.2250	0.1800	0.1440	0.1260
2.2	822-077	0.42	0.3525	0.2820	0.2256	0.1974
4.7	822-081	0.54	0.4500	0.3600	0.2880	0.2520
10	822-085	0.65	0.5198	0.4678	0.4158	0.3639
22	822-088	1.11	0.8916	0.8024	0.7133	0.6241
47	822-476	1.65	1.4834	1.3186	1.1537	1.0301
100	822-107	2.64	2.3760	2.1120	1.8480	1.6500

NON POLARISED AXIAL ELECTROLYTIC

Bipolar Axial Lead aluminium electrolytic capacitors, very low loss factor, high current rating with long-time value stability. Suitable for audio frequency applications, i.e. Crossover networks.

Value µF	Voltage Vdc	Vac	Dim.(mm) L	Dia	Pitch
1.5	100	35	17.0	8.0	20.0
2.2	100	35	17.0	8.0	20.0
3.3	100	35	17.0	8.0	20.0
4.7	100	35	17.0	8.0	20.0
6.8	100	35	19.0	8.0	20.0
10	100	35	19.0	8.0	20.0
15	100	35	19.5	10.0	25.0
22	100	35	24.0	10.0	30.0
33	100	35	27.0	13.0	30.0
47	100	35	27.0	13.0	30.0
68	100	35	33.5	16.0	35.0
100	100	35	33.5	16.0	35.0
150	100	35	33.5	16.0	37.5
220	100	35	44.5	28.0	45.0

Technical Specification

Capacitance Range	1.5µF to 300µF
Capacitance Tolerance	±10%
Voltage Stability	100Vdc/35Vac 150W@8Ω, 300W@4Ω
Body Colour	Yellow

Value µF	Order Code	1+	10+	25+	50+	100+
1.5	776-115	0.39	0.3250	0.2600	0.2340	0.2080
2.2	776-225	0.39	0.3250	0.2600	0.2340	0.2080
3.3	776-335	0.36	0.2850	0.2565	0.2280	0.1995
4.7	776-475	0.38	0.3050	0.2745	0.2440	0.2135
6.8	776-685	0.41	0.3250	0.2925	0.2600	0.2275
10	776-106	0.42	0.3750	0.3375	0.3000	0.2625
15	776-156	0.50	0.4450	0.4005	0.3560	0.3115
22	776-226	0.64	0.5650	0.5085	0.4520	0.3955
33	776-336	0.76	0.7250	0.6525	0.5800	0.5075
47	776-476	0.89	0.7992	0.7104	0.6216	0.5531
68	776-686	1.35	1.2150	1.0800	0.9450	0.8438
100	776-107	1.88	1.6920	1.5040	1.3160	1.1750
150	776-157	2.47	2.2230	1.9760	1.7290	1.5438
220	776-227	3.95	3.6820	3.5505	3.4190	3.2875

SNAP-IN PCB ELECTROLYTIC

Compact, low profile snap-in electrolytic capacitors for PCB mounting. Standard snap-in terminals on a 10mm pitch, 2mm Diameter.

Technical Specification

Capacitance Range	100µF to 20000µF
Capacitance Tolerance	±20% at 120Hz, 25°C
Operating Temperature Range	-40°C to +85°C
Body Colour	Black

Value µF	Voltage Vdc	Surge	Ripple A	Dim.(mm) L	Dia	Order Code	1+	10+	25+	50+	100+
4700	16	20	2.2	25.0	22.0	826-116	0.96	0.8626	0.7667	0.6709	0.5990
10000	16	20	2.8	30.0	22.0	826-120	1.50	1.3464	1.1968	1.0472	0.9350
22000	16	20	4.4	40.0	25.0	826-124	1.94	1.7460	1.5520	1.3580	1.2125
3300	35	44	2.1	25.0	22.0	827-114	0.96	0.8653	0.7691	0.6730	0.6009
4700	35	44	2.4	25.0	25.0	827-116	1.27	1.0140	0.9126	0.8112	0.7098
6800	35	44	2.8	35.0	25.0	827-118	1.73	1.5527	1.3802	1.2076	1.0783
10000	35	44	3.5	45.0	25.0	827-120	2.40	2.1564	1.9168	1.6772	1.4975
2200	63	79	2.3	30.0	25.0	828-112	1.40	1.2631	1.1227	0.9824	0.8771
3300	63	79	2.6	40.0	25.0	828-114	2.16	1.9408	1.7251	1.5095	1.3478
4700	63	79	3.3	40.0	30.0	828-116	2.49	2.2138	1.9924	1.7710	1.5497
6800	63	79	4.9	50.0	30.0	828-118	2.50	2.2218	1.9996	1.7774	1.5553
10000	63	79	5.4	50.0	35.0	828-120	6.76	6.0080	5.4072	4.8064	4.2056
1000	100	125	2.1	30.0	22.0	829-108	1.88	1.6920	1.5040	1.3160	1.1750
4700	100	125	5.1	45.0	35.0	829-116	4.44	3.9960	3.5520	3.1080	2.7755
220	200	250	1.1	30.0	22.0	829-200	1.74	1.5480	1.3932	1.2384	1.0836
470	200	250	1.8	40.0	25.0	829-204	1.97	1.5786	1.4207	1.2629	1.1050
100	400	500	0.7	30.0	22.0	829-396	2.05	1.8266	1.6439	1.4613	1.2786
330	400	500	1.6	45.0	30.0	829-402	4.69	4.2170	3.7485	3.2799	2.9285
470	400	500	2.1	45.0	35.0	829-404	6.63	5.9683	5.3051	4.6420	4.1446

MINIATURE TRIMMER CAPACITORS

Polypropylene

PCB 3 pin (894-0009 2 pin) mounting, single turn trimmers, with a polypropylene dielectric. Available in nine colour coded values.

Technical Specification

Operating Temperature Range	-25°C to +70°C
Voltage Rating	150Vdc
Body Colour	Red , Yellow, Green or Violet

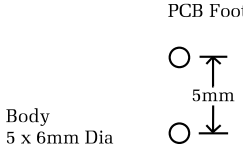
ORDER CODE		1+	25+	50+	100+	500+
894-009	2.0 - 10pF Yellow 5mm	0.49	0.4414	0.3923	0.3433	0.3065
894-010	2.0 - 10pF Yellow 8mm	0.35	0.3150	0.2800	0.2450	0.2188
894-015	2.0 - 22pF Green 8mm	0.80	0.7500	0.7000	0.6500	0.6250
894-016	4.0 - 20pF Green 8mm	0.93	0.8354	0.7426	0.6497	0.5801
894-017	3.3 - 33pF Green 8mm	0.83	0.7425	0.6600	0.5775	0.5156
894-018	5.5 - 40pF Grey 10mm	0.83	0.7425	0.6600	0.5775	0.5156
894-025	5.5 - 65pF Yellow 11mm	0.58	0.5220	0.4640	0.4060	0.3625
894-027	5.5 - 80pF Red 10mm	1.34	1.2067	1.0726	0.9386	0.8380
894-028	7.0 - 100pF Violet 10mm	1.34	1.2067	1.0726	0.9386	0.8380

Ceramic

Low profile PCB mounting, single turn ceramic trimmers with plastic cases. Available in five colour coded values.

Technical Specification

Operating Temperature Range	-25°C to +85°C	
Voltage Rating	100Vdc	(50Vdc 6-50pF)
Temperature Coefficient	±300ppm/°C	(±200 1.5-5pF)
Q min @ 1MHz	500	(300 1.5-5, 6-50pF)



ORDER CODE		1+	25+	50+	100+	500+
895-010	1.5 - 5.0pF Blue	0.30	0.2700	0.2400	0.2100	0.1875
895-020	3.0 - 11pF White	0.30	0.2700	0.2400	0.2100	0.1875
895-025	4.2 - 20pF Red	0.27	0.2430	0.2160	0.1890	0.1688
895-030	5.2 - 30pF Green	0.30	0.2700	0.2400	0.2100	0.1875
895-040	6.0 - 50pF Orange	0.56	0.5040	0.4480	0.3920	0.3500

MINIATURE TUNING CAPACITOR

An AM and FM miniature tuning capacitor suitable for small radio circuits. Comprising of AM sections of 126pF with trimmers and FM sections of 20pF with trimmers. Centre control shaft, 6mm Diameter with flat and M2.5 thread.

Technical Specification

Capacitance AM Section	126pF + 20pF Trimmers
Capacitance FM Section	20pF + 20pF Trimmers
Voltage Rating	100Vdc
Q	<500 (AM), <150 (FM)
Control Rotation	180°
Dimensions	20 x 20 x 18mm

ORDER CODE		1+	10+	25+	50+	100+
896-110	AM/FM Tuning Cap	0.88	0.7920	0.7480	0.6600	0.6160

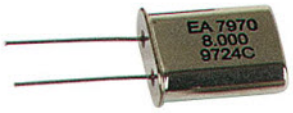
QUARTZ CRYSTALS

Standard Case

A wide range of popular frequencies typically used in microprocessor and general industrial applications. All are parallel resonant types. The 32.768kHz watch crystal is housed in a DT-38 can, all others in the popular HC-49/U case. Frequencies are fundamental.

Technical Specification

Frequency Range	32.768KHz to 20MHz
Tolerance	±30ppm @ 25°C
Operating Temperature Range	-10 to +60°C
Temperature Stability	±50ppm



Freq. MHz	Load Cap	Order Code	1+	10+	25+	50+	100+
32.768kHz	12.5pF	760-001	0.39	0.3300	0.2200	0.1760	0.1540
1.8432	30pF	760-018	1.08	0.8975	0.7180	0.5744	0.5026
2.0	30pF	760-020	1.46	1.1684	1.0516	0.9347	0.8179
2.4576	30pF	760-024	0.84	0.6985	0.5588	0.4470	0.3912
3.2768	12.5pF	760-032	0.32	0.2663	0.2130	0.1704	0.1491
3.579545	16pF	760-035	0.41	0.3430	0.2744	0.2195	0.1921
3.6864	30pF	760-036	0.41	0.3375	0.2700	0.2160	0.1890
4.0	30pF	760-040	0.45	0.3713	0.2960	0.2376	0.2079
4.194304	12.5pF	760-041	0.37	0.3073	0.2458	0.1966	0.1721
4.433619	20pF	760-044	0.41	0.3375	0.2700	0.2160	0.1890
4.9152	30pF	760-049	0.41	0.3430	0.2744	0.2195	0.1921
6.0	30pF	760-060	0.34	0.2868	0.2294	0.1835	0.1606
6.144	30pF	760-061	0.41	0.3375	0.2700	0.2160	0.1890
7.3728	30pF	760-073	0.41	0.3375	0.2700	0.2160	0.1890
8.0	30pF	760-080	0.41	0.3375	0.2700	0.2160	0.1890
8.867238	30pF	760-088	0.31	0.2289	0.1526	0.1221	0.1068
10.0	30pF	760-100	0.31	0.2623	0.2098	0.1678	0.1469
11.0	30pF	760-110	0.41	0.3375	0.2700	0.2160	0.1890
11.0592	30pF	760-111	0.41	0.3430	0.2744	0.2195	0.1921
12.0	30pF	760-120	0.41	0.3375	0.2700	0.2160	0.1890
14.7456	20pF	760-147	0.41	0.3375	0.2700	0.2160	0.1890
16.0	30pF	760-160	0.41	0.3375	0.2700	0.2160	0.1890
20.0	30pF	760-200	0.34	0.2868	0.2294	0.1835	0.1606

Low Profile

AT-cut quartz crystals housed in the superior resistance weld HC-49/4U metal case compatible with HU-18 & HC-49/U footprint but offering a height of only 4mm. All type are parallel resonant, frequencies are fundamental.

Technical Specification

Frequency Range	3.579545MHz to 20MHz
Tolerance	±30ppm @ 25°C
Operating Temperature Range	-10 to +60°C
Temperature Stability	±50ppm

Freq. MHz	Load Cap	Order Code	1+	10+	25+	50+	100+
3.579545	16pF	759-035	0.59	0.4875	0.3900	0.3120	0.2730
3.6864	30pF	759-036	0.53	0.4445	0.3556	0.2845	0.2489
4.0	30pF	759-040	0.59	0.4875	0.3900	0.3120	0.2730
4.9152	30pF	759-049	0.53	0.4445	0.3556	0.2845	0.2489
6.0	30pF	759-060	0.42	0.3495	0.2796	0.2516	0.2237
7.3728	30pF	759-073	0.53	0.4445	0.3556	0.2845	0.2489
8.0	30pF	759-080	0.59	0.4875	0.3900	0.3120	0.2730
11.0592	30pF	759-111	0.56	0.4700	0.3760	0.3008	0.2632
12.0	30pF	759-120	0.54	0.4525	0.3620	0.2896	0.2534
16.0	30pF	759-160	0.51	0.4288	0.3430	0.2744	0.2401
18.432	30pF	759-184	0.39	0.3245	0.2596	0.2077	0.1817
20.0	30pF	759-200	0.59	0.4875	0.3900	0.3120	0.2730

CRYSTAL OSCILLATOR MODULES

DIL Format crystal oscillator modules. Housed in compact hermetically sealed 8 or 14 pin packages. TTL compatible outputs which can drive 10 TTL loads, will also drive CMOS loads when a 2k2 pull up resistor is used on the output.

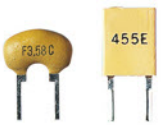
Frequency Range	2.4576 to 66.667MHz
Temperature Stability	±100ppm
Supply Current	30mA < 24MHz 40mA ≥ 24MHz
Output Drive Level	1 to 10 TTL Gates
Output Levels	0=+0.4V Max. 1=+2.4V Min.

Freq. MHz	DIL	Order Code	1+	10+	25+	50+	100+
2.4576	14 Pin	761-215	2.40	2.1600	1.9200	1.6800	1.5000
3.2768	14 Pin	761-220	2.20	1.9800	1.7600	1.5400	1.3750
10.0	14 Pin	761-240	2.20	1.9800	1.7600	1.5400	1.3750
20.0	14 Pin	761-245	2.20	1.9800	1.7600	1.5400	1.3750
24.0	14 Pin	761-250	2.20	1.9800	1.7600	1.5400	1.3750
40.0	14 Pin	761-260	2.20	1.9800	1.7600	1.5400	1.3750
50.0	8 Pin	761-165	1.90	1.7100	1.5200	1.3300	0.8125
64.0	14 Pin	761-270	2.20	1.9800	1.7600	1.5400	1.3750
66.667	8 Pin	761-175	2.40	2.1600	1.9200	1.6800	1.5000

CERAMIC RESONATORS

2 Pin

Miniature ceramic resonators housed in a boxed or dipped package. Suitable for oscillator circuits and may also be used as clock generators for MPU applications as they are optimised for MOS applications. Frequency Tolerance ±0.5%



Freq. MHz	Case	Order Code	1+	25+	50+	100+	500+
455kHz	Boxed	762-110	0.33	0.2750	0.2200	0.1760	0.1540
500kHz	Boxed	762-125	0.30	0.2500	0.2000	0.1600	0.1400
1.0	Boxed	762-130	0.39	0.3288	0.2630	0.2104	0.1841
2.0	Dipped	762-210	0.36	0.3000	0.2400	0.1920	0.1680
3.27	Dipped	762-215	0.48	0.4000	0.3200	0.2560	0.2240
3.58	Dipped	762-220	0.32	0.2690	0.2152	0.1722	0.1506
3.69	Dipped	762-225	0.33	0.2750	0.2200	0.1760	0.1540
4.0	Dipped	762-230	0.25	0.2053	0.1642	0.1478	0.1314
4.19	Dipped	762-235	0.48	0.4000	0.3200	0.2560	0.2240
6.0	Dipped	762-245	0.33	0.2750	0.2200	0.1760	0.1540
8.0	Dipped	762-255	0.33	0.2750	0.2200	0.1760	0.1540
10.0	Dipped	762-265	0.33	0.2750	0.2200	0.1760	0.1540
12.0	Dipped	762-285	0.60	0.4000	0.3600	0.3200	0.2800

3 Pin, Integral Capacitors

Miniature 3 pin ceramic resonators housed in a dipped package with built-in load capacitors. Suitable for oscillator circuits and may also be used as clock generators for MPU applications as they are optimised for MOS applications. Frequency Tolerance ±0.5%

Freq. MHz	Cap.	Order Code	1+	25+	50+	100+	500+
3.58	30pF	763-220	0.34	0.2246	0.2021	0.1791	0.1572
4.0	30pF	763-230	0.16	0.1298	0.1038	0.0934	0.0830
4.19	30pF	763-235	0.31	0.2042	0.1838	0.1634	0.1429
6.0	30pF	763-245	0.30	0.1998	0.1798	0.1598	0.1399
8.0	30pF	763-255	0.29	0.1900	0.1710	0.1520	0.1330
10.0	30pF	763-265	0.18	0.1505	0.1204	0.1084	0.0963
12.0	30pf	763-285	0.30	0.1998	0.1798	0.1598	0.1399
16.0	30pf	763-295	0.25	0.1680	0.1512	0.1344	0.1176

SUBMINIATURE LED'S
1.8mm Diffused Package

Diffused sub-miniature light emitting diodes of 1.8mm diameter, suited to through panel applications. Anode (+ve) identified by long lead.

Technical Specifications

Colour	I_F Max.	V_F Typ.	V_F Max.	V_R Max.	Int @ I_F mcd	View Angle	Wave Length
Red	25mA	2.0V	2.5V	5.0V	3.2@10mA	70°	700nm
Green	25mA	2.2V	2.5V	5.0V	20@10mA	70°	565nm
Yellow	30mA	2.1V	2.5V	5.0V	20@10mA	70°	590nm
Orange	30mA	2.0V	2.5V	5.0V	32@10mA	70°	625nm

ORDER CODE			1+	25+	50+	100+	500+
710-110	RED	1.8mm LED	0.13	0.1050	0.0840	0.0672	0.0588
711-110	GREEN	1.8mm LED	0.14	0.1120	0.1008	0.0896	0.0784
712-110	YELLOW	1.8mm LED	0.11	0.0925	0.0740	0.0592	0.0518
713-110	ORANGE	1.8mm LED	0.15	0.1220	0.1098	0.0976	0.0854

SUBMINIATURE LED'S
2.0mm Diffused Package

Diffused sub-miniature light emitting diodes of 2.0mm diameter, suited to through panel applications where a wide viewing angle is required. Anode (+ve) identified by long lead.

Technical Specifications

Colour	I_F Max.	V_F Typ.	V_F Max.	V_R Max.	Int @ I_F mcd	View Angle	Wave Length
Red	25mA	2.0V	2.5V	5.0V	2.0@10mA	70°	700nm
Green	25mA	2.2V	2.5V	5.0V	12.5@10mA	70°	565nm
Yellow	30mA	2.1V	2.5V	5.0V	12.5@10mA	70°	590nm

ORDER CODE			1+	25+	50+	100+	500+
710-210	RED	2.0mm LED	0.08	0.0600	0.0540	0.0480	0.0420
711-210	GREEN	2.0mm LED	0.11	0.0900	0.0810	0.0720	0.0630
712-210	YELLOW	2.0mm LED	0.12	0.0960	0.0864	0.0768	0.0672

MINIATURE LED'S
3.0mm Diffused Package

Standard diffused miniature light emitting diodes of 3.0mm diameter. Anode (+ve) identified by long lead.

Technical Specifications

Colour	I_F Max.	V_F Typ.	V_F Max.	V_R Max.	Int @ I_F mcd	View Angle	Wave Length
Red	15mA	1.7V	2.8V	5.0V	8.0@20mA	60°	660nm
HE Red	30mA	2.0V	2.5V	5.0V	50@10mA	60°	625nm
Green	25mA	2.2V	2.5V	5.0V	32@10mA	60°	595nm
Yellow	30mA	2.1V	2.5V	5.0V	32@10mA	60°	590nm
Orange	30mA	2.0V	2.5V	5.0V	50@10mA	60°	625nm

ORDER CODE			1+	25+	50+	100+	500+
710-310	RED	3.0mm LED	0.06	0.0531	0.0354	0.0319	0.0283
710-330	HE RED	3.0mm LED	0.08	0.0500	0.0450	0.0400	0.0350
711-310	GREEN	3.0mm LED	0.09	0.0580	0.0522	0.0464	0.0406
712-310	YELLOW	3.0mm LED	0.08	0.0520	0.0468	0.0416	0.0364
713-310	ORANGE	3.0mm LED	0.10	0.0640	0.0576	0.0512	0.0448

3mm White & Blue LED's

Miniature high efficiency light emitting diodes of 3.0mm diameter giving a white or blue light. The blue LED's have a wavelength of 430nm & are available in either clear or diffused bodies. The white LED has a dominant wavelength of 460nm.

Technical Specifications

Colour	I_F Max.	V_F Typ.	V_F Max.	V_R Max.	Int @ I_F mcd	View Angle
White	30mA		4.3V	5.0V	600@20mA	70°
White	30mA	3.6V	4.0V	5.0V	900@20mA	120°
Blue Diffused	30mA	4.5V	5.5V	5.0V	40@20mA	60°
Blue Clear	30mA	4.5V	5.5V	5.0V	60@20mA	20°
Blue Clear	30mA	3.7V	5.5V	5.0V	1000@20mA	30°

ORDER CODE			1+	10+	25+	50+	100+
709-340	WHITE	3.0mm 600mcd	0.64	0.5760	0.5440	0.5120	0.4800
709-350	WHITE	3.0mm 900mcd	1.76	1.5840	1.4960	1.4080	1.3200
714-350	BLUE	3.0mm Diff.	0.68	0.6120	0.5440	0.4760	0.4250
714-352	BLUE	3.0mm Clear	0.68	0.6120	0.5440	0.4760	0.4250
714-362	BLUE	3.0mm 1cd	0.30	0.2700	0.2400	0.21000	0.1875

3mm Water Clear Package

Miniature high efficiency light emitting diodes of 3.0mmØ in a water clear package. This range is intensity and colour matched.

Technical Specifications

Colour	I_F Max.	V_F Typ.	V_F Max.	V_R Max.	Int @ I_F mcd	View Angle	Wave Length
Red	25mA	2.0V	2.5V	5.0V	125@10mA	50°	625nm
Green	25mA	2.2V	2.5V	5.0V	80@10mA	50°	565nm
Yellow	30mA	2.1V	2.5V	5.0V	50@10mA	50°	590nm

ORDER CODE			1+	25+	50+	100+	500+
710-340	RED	3.0mm Clear	0.08	0.0600	0.0540	0.0480	0.0420
711-340	GREEN	3.0mm Clear	0.07	0.0580	0.0522	0.0464	0.0406
712-340	YELLOW	3.0mm Clear	0.08	0.0600	0.0540	0.0480	0.0420

3mm Extra Bright

Miniature light emitting diodes of 3.0mmØ with very high luminous intensity, employing a GaAlAs dice. Available in diffused or clear packages. Wave Length 660nm.

Technical Specifications

Colour	I_F Max.	V_F Typ.	V_F Max.	V_R Max.	Int @ I_F mcd	View Angle
Red Diffused100	30mA	1.85V	2.5V	5.0V	100@20mA	60°
Red Diffused200	30mA	1.85V	2.5V	5.0V	200@20mA	60°
Red Clear 500	30mA	1.85V	2.5V	5.0V	500@20mA	50°
Red Clear 700	30mA	1.85V	2.5V	5.0V	700@20mA	50°

ORDER CODE			1+	25+	50+	100+	500+
710-350	RED 100	3.0mm Diff.	0.11	0.0840	0.0760	0.0672	0.0588
710-352	RED 200	3.0mm Diff.	0.11	0.0860	0.0774	0.0688	0.0602
710-360	RED 500	3.0mm Clear	0.11	0.0840	0.0760	0.0672	0.0588
710-362	RED 700	3.0mm Clear	0.09	0.0740	0.0666	0.0592	0.0518

3mm Low Current Diffused Package

Miniature high efficiency low current light emitting diodes of 3.0mmØ. Luminous intensity remains consistent down to 2Ma.

Technical Specifications

Colour	I_F Max.	V_F Typ.	V_F Max.	V_R Max.	Int @ I_F mcd	View Angle	Wave Length
Red	30mA	1.7V	2.0V	5.0V	5@2mA	60°	625nm
Green	25mA	1.9V	2.2V	5.0V	3.2@2mA	60°	565nm
Yellow	30mA	1.8V	2.1V	5.0V	3.2@2mA	60°	590nm

ORDER CODE			1+	25+	50+	100+	500+
710-370	RED	Low Current	0.09	0.0740	0.0666	0.0592	0.0518
711-370	GREEN	Low Current	0.09	0.0720	0.0648	0.0576	0.0504
712-370	YELLOW	Low Current	0.11	0.0880	0.0792	0.0704	0.0616

MINIATURE LED'S

3mm Bi-Colour, Tri-Colour Diffused Package

Miniature light emitting diodes of 3.0mm diameter in a milky white package. Bi-Colour, 2 lead, Red or Green by reversing connections. Tri-Colour, 3 lead, Red, Green or Yellow(both on) common cathode.

Technical Specifications

Type	IF Max.	VF Typ.	VF Max.	VR Max.	Int @ IF mcd	View Angle
Bi-colour	30mA	2.0(2.2)V	2.5V	5.0V	40(20)20mA	60°
Tri-colour (for Green LED)	30mA	2.0(2.2)V	2.5V	5.0V	50@20mA	60°

ORDER CODE		1+	25+	50+	100+	500+
715-130	Bi-Colour 3.0mm LED	0.14	0.1120	0.1008	0.0876	0.0784
715-230	Tri-Colour 3.0mm LED	0.21	0.1700	0.1530	0.1360	0.1190

STANDARD LED'S

5.0mm Diffused Package

Standard diffused light emitting diodes of 5.0mm diameter. Anode (+ve) identified by long lead.

Technical Specifications

Colour	I_F Max.	V_F Typ.	V_F Max.	V_R Max.	Int @ I_F mcd	View Angle	Wave Length
Red	15mA		2.8V		10@20mA	60°	700nm
Red 100	30mA		2.6V		100@20mA	60°	643nm
Green	30mA		2.8V		30@20mA	60°	570nm
Yellow	15mA		2.8V		50@20mA	60°	570nm
Orange	30mA	2.0V	2.5V	5.0V	80@10mA	60°	625nm

ORDER CODE			1+	25+	50+	100+	500+
710-510	RED	5.0mm LED	0.06	0.0510	0.0340	0.0306	0.0272
710-530	RED 100	5.0mm LED	0.08	0.0600	0.0400	0.0360	0.0320
711-510	GREEN	5.0mm LED	0.07	0.0540	0.0360	0.0324	0.0288
712-510	YELLOW	5.0mm LED	0.07	0.0540	0.0360	0.0324	0.0288
713-510	ORANGE	5.0mm LED	0.09	0.0600	0.0540	0.0480	0.0420

5mm White High Intensity

Miniature high efficiency light emitting diodes of 5.0mm diameter giving a white light. The white LED has a dominant wavelength of 460nm. Anode (+ve) identified by long lead.

Technical Specifications

Colour	I_F Max.	V_F Max.	V_R Max.	Int @ I_F mcd	View Angle
White 300	30mA	4.0V	5.0V	300@20mA	16°
White 1100	30mA	4.0V	5.0V	1100@30mA	50°
White 3000		4.2V	5.0V	3000@20mA	15
White 3200		4.0V	5.0V	3200@20mA	20°

ORDER CODE			1+	10+	25+	50+	100+
709-550	WHITE	5.0mm 300mcd	0.69	0.6192	0.5848	0.5504	0.5160
709-552	WHITE	5.0mm 1.1cd	1.60	1.4400	1.2800	1.1200	1.0000
709-554	WHITE	5.0mm 3.0cd	0.56	0.5040	0.4480	0.3920	0.3500
709-556	WHITE	5.0mm 3.2cd	0.94	0.8460	0.7520	0.6580	0.5875

5mm Blue High Intensity

Miniature high efficiency light emitting diodes of 5.0mm diameter giving a blue light, available in either clear or diffused bodies. Anode (+ve) identified by long lead.

Technical Specifications

Colour	I_F Max.	V_F Max.	V_R Max.	Int @ I_F mcd	View Angle	Wave Length
Blue Diffused	30mA	5.5V	5.0V	60@20mA	50°	430nm
Blue Clear	30mA	5.5V	5.0V	100@20mA	16°	430nm
Blue Light	30mA	5.5V	5.0V	100@20mA	16°	430nm
Blue Diffused	30mA	4.0V	5.0V	450@20mA	20°	468nm
Blue Clear	30mA	4.0V	5.0V	1000@20mA	16°	465nm
Blue Clear	30mA	4.1V		1400@20mA	30°	465nm
Blue Clear	30mA	4.0V		2200@20mA	15°	470nm

ORDER CODE			1+	10+	25+	50+	100+
714-550	BLUE	5.0mm 60mcd	0.68	0.6120	0.5440	0.4760	0.4250
714-552	BLUE	5.0mm Clear	0.78	0.7020	0.6240	0.5460	0.4875
714-554	BLUE	5.0mm Light	0.78	0.7020	0.6240	0.5460	0.4875
714-560	BLUE	5.0mm 450mcd	1.12	1.0080	0.8960	0.7840	0.7000
714-562	BLUE	5.0mm 1.0cd	0.96	0.8640	0.7680	0.6720	0.6000
714-566	BLUE	5.0mm 1.4cd	1.02	0.9180	0.8160	0.7140	0.6375
714-568	BLUE	5.0mm 2.2cd	0.90	0.8100	0.7200	0.6300	0.5625

5mm Water Clear Package

High efficiency light emitting diodes of 5.0mm diameter in a water clear package. Anode (+ve) identified by long lead. This range is intensity and colour matched.

Technical Specifications

Colour	IF Max.	VF Typ.	VF Max.	VR Max.	Int @ IF mcd	View Angle	Wave Length
Red	30mA	2.0V	2.5V	5.0V	200@10mA	30°	625nm
Green	30mA	2.2V	2.5V	5.0V	150@10mA	30°	565nm
Yellow	30mA	2.1V	2.5V	5.0V	80@10mA	30°	590nm

ORDER CODE			1+	25+	50+	100+	500+
710-540	RED	5.0mm LED	0.10	0.0800	0.0720	0.0640	0.0560
711-540	GREEN	5.0mm LED	0.09	0.0720	0.0648	0.0576	0.0504
712-540	YELLOW	5.0mm LED	0.10	0.0800	0.0720	0.0640	0.0560

5mm Extra Bright Water Clear Package

A range of light emitting diodes of 5.0mm diameter with very high luminous intensity, employing a GaAlAs dice. Anode (+ve) identified by long lead. Viewing angle 30°

Technical Specifications

Colour	IF Max.	VF Typ.	VF Max.	VR Max.	Int @ IF mcd	Wave Length
Red 1000	30mA	1.85V	2.5V	5.0V	1000@20mA	660nm
Red 1600	30mA	1.85V	2.5V	5.0V	1600@20mA	660nm
Red 2000	30mA	1.85V	2.5V	5.0V	2000@20mA	660nm
Red 3500	30mA	1.85V	2.5V	5.0V	3500@20mA	660nm
Green 300	25mA	2.2V	2.5V	5.0V	300@20mA	565nm
Yellow 1200	30mA	2.2V	2.5V	5.0V	1200@20mA	589nm

ORDER CODE			1+	25+	50+	100+	500+
710-550	RED 1000	5.0mm LED	0.11	0.0840	0.0756	0.0672	0.0588
710-552	RED 1600	5.0mm LED	0.10	0.0780	0.0702	0.0624	0.0546
710-554	RED 2000	5.0mm LED	0.25	0.2000	0.1800	0.1600	0.1400
710-556	RED 3500	5.0mm LED	0.20	0.1800	0.1620	0.1440	0.1260
711-550	GREEN 300	5.0mm LED	0.08	0.0625	0.0500	0.0450	0.0400
712-556	YELLOW 1200	5.0mm	0.15	0.1160	0.1044	0.0928	0.0812

5mm Low Current Diffused Package

High efficiency low current light emitting diodes of 5.0mm diameter. Luminous intensity remains consistent down to 2mA.

Technical Specifications

Colour	IF Max.	VF Typ.	VF Max.	VR Max.	Int @ IF mcd	View Angle	Wave Length
Red	30mA	1.7V	2.0V	5.0V	5@2mA	60°	625nm
Green	25mA	1.9V	2.2V	5.0V	3.2@2mA	60°	565nm
Yellow	30mA	1.8V	2.1V	5.0V	3.2@2mA	60°	590nm

ORDER CODE			1+	25+	50+	100+	500+
710-570	RED	5.0mm LED	0.09	0.0740	0.0666	0.0592	0.0518
711-570	GREEN	5.0mm LED	0.08	0.0660	0.0594	0.0528	0.0462
712-570	YELLOW	5.0mm LED	0.09	0.0740	0.0666	0.0592	0.0518

5mm 12V Diffused Package

Light emitting diodes of 5.0mm diameter with inbuilt limiting resistor enabling direct connection to a 12V supply.

Technical Specifications

Colour	IF Max.	VF Typ.	VR Max.	PTOT Max.	Int @ IF mcd	View Angle	Wave Length
Red	150mA	15V	5.0V	310mW	32@10mA	60°	630nm
Green	150mA	15V	5.0V	310mW	80@10mA	60°	565nm
Yellow	150mA	15V	5.0V	310mW	32@10mA	60°	590nm

ORDER CODE			1+	25+	50+	100+	500+
710-585	RED	5.0mm LED	0.21	0.1640	0.1476	0.1312	0.1148
711-585	GREEN	5.0mm LED	0.20	0.1600	0.1440	0.1280	0.1120
712-585	YELLOW	5.0mm LED	0.20	0.1600	0.1440	0.1280	0.1120

STANDARD LED'S

5mm Bi-Colour, Tri-Colour Diffused Package

Light emitting diodes of 5.0mm diameter in a milky white package. Bi-Colour, 2 lead, Red or Green by reversing connections. Tri-Colour, 3 lead, Red, Green or Yellow(both on) common cathode.

Technical Specifications

Type	IF Max.	VF Typ.	VF Max.	VR Max.	Int @ IF mcd	View Angle
Bi-colour	30mA	2.0(2.2)V	2.5V	5.0V	40(20)@20mA	60°
Tri-colour (For Green LED)	30mA	2.0(2.2)V	2.5V	5.0V	90(70)@20mA	60°

ORDER CODE			1+	25+	50+	100+	500+
715-150	Bi-Colour	5.0mm LED	0.13	0.1000	0.0900	0.0800	0.0700
715-250	Tri-Colour	5.0mm LED	0.13	0.1060	0.0954	0.0848	0.0742

5mm Flashing Diffused Package

Light emitting diodes of 5.0mm diameter with an inbuilt circuit to flash continuously at 3Hz. Supply voltage 9 to 12Vdc.

Technical Specifications

Colour	IF Max.	VF Typ.	VF Max.	VR Max.	Int @ VF mcd	View Angle	Wave Length
Red	56mA	9-12V	13.5V	0.5V	8@9V	60°	700nm
HE Red	56mA	9-12V	13.5V	0.5V	80@9V	60°	625nm
Green	56mA	9-12V	13.5V	0.5V	32@9V	60°	565nm
Yellow	56mA	9-12V	13.5V	0.5V	32@9V	60°	590nm

ORDER CODE			1+	25+	50+	100+	500+
715-550	RED	5.0mm LED	0.37	0.2960	0.2664	0.2368	0.2072
715-551	HE RED	5.0mm LED	0.44	0.3700	0.2960	0.2664	0.2368
715-552	GREEN	5.0mm LED	0.37	0.2960	0.2664	0.2368	0.2072
715-554	YELLOW	5.0mm LED	0.30	0.2400	0.2160	0.1920	0.1680

FLAT TOP LED'S

Round Diffused Package

Light emitting diodes of 5.0mm diameter with a flat top.

Technical Specifications

Colour	IF Max.	VF Typ.	VF Max.	VR Max.	Int @ IF mcd	View Angle	Wave Length
Red	25mA	2.0V	2.5V	5.0V	3.2@10mA	100°	700nm
Green	25mA	2.2V	2.5V	5.0V	8.0@10mA	100°	565nm
Yellow	30mA	2.1V	2.5V	5.0V	8.0@10mA	100°	590nm
Orange	30mA	2.0V	2.5V	5.0V	12.5@10mA	100°	625nm

ORDER CODE			1+	25+	50+	100+	500+
710-590	RED	Round Flat Top 0.09		0.0740	0.0666	0.0592	0.0518
711-590	GREEN	Round Flat Top 0.11		0.0880	0.0792	0.0704	0.0616
712-590	YELLOW	Round Flat Top 0.13		0.1040	0.0936	0.0832	0.0728
713-590	ORANGE	Round Flat Top 0.13		0.1040	0.0936	0.0832	0.0728

Square Diffused Package

Light emitting diodes 5.0mm Square with a flat top.

Technical Specifications

Colour	IF Max.	VF Typ.	VF Max.	VR Max.	Int @ IF mcd	View Angle	Wave Length
Red	25mA	2.0V	2.5V	5.0V	2.0@10mA	110°	700nm
Green	25mA	2.2V	2.5V	5.0V	8.0@10mA	110°	565nm
Yellow	30mA	2.1V	2.5V	5.0V	8.0@10mA	110°	590nm
Orange	30mA	2.0V	2.5V	5.0V	12.5@10mA	110°	625nm

ORDER CODE			1+	25+	50+	100+	500+
710-591	RED	Square LED	0.07	0.0560	0.0504	0.0448	0.0392
711-591	GREEN	Square LED	0.07	0.0560	0.0504	0.0448	0.0392
712-591	YELLOW	Square LED	0.08	0.0660	0.0594	0.0528	0.0462
713-591	ORANGE	Square LED	0.08	0.0660	0.0594	0.0528	0.0462

Rectangular Diffused Package

Light emitting diodes 5.0 x 2.5mm Rectangular with a flat top.

Technical Specifications

Colour	IF Max.	VF Typ.	VF Max.	VR Max.	Int @ IF mcd	View Angle	Wave Length
Red	30mA	2.0V	2.5V	5.0V	1.3@10mA	110°	625nm
Green	25mA	2.2V	2.5V	5.0V	8.0@10mA	110°	565nm
Yellow	30mA	2.1V	2.5V	5.0V	8.0@10mA	110°	590nm
Orange	30mA	2.0V	2.5V	5.0V	12.5@10mA	110°	625nm

ORDER CODE			1+	25+	50+	100+	500+
710-592	RED	Rect. LED	0.08	0.0660	0.0594	0.0528	0.0462
711-592	GREEN	Rect. LED	0.08	0.0660	0.0594	0.0528	0.0462
712-592	YELLOW	Rect. LED	0.08	0.0660	0.0594	0.0528	0.0462
713-592	ORANGE	Rect. LED	0.09	0.0720	0.0648	0.0576	0.0504

Triangular Diffused Package

Light emitting diodes 4.8 x 4.8 x 3.5mm Triangular with a flat top.

Technical Specifications

Colour	IF Max.	VF Typ.	VF Max.	VR Max.	Int @ IF mcd	View Angle	Wave Length
Red	20mA	2.0V	2.5V	5.0V	1.6@10mA	100°	660nm
Green	30mA	2.2V	2.5V	5.0V	1.2@10mA	100°	565nm
Yellow	30mA	2.1V	2.5V	5.0V	1.8@10mA	100°	590nm

ORDER CODE			1+	25+	50+	100+	500+
710-593	RED	Triangle LED	0.11	0.0880	0.0792	0.0704	0.0616
711-593	GREEN	Triangle LED	0.12	0.0960	0.0864	0.0768	0.0672
712-593	YELLOW	Triangle LED	0.14	0.1080	0.0972	0.0864	0.0756

LARGE 8MM LED'S

8mm Diffused Package

High intensity light emitting diodes of 8mm diameter in a diffused package. 2 lead devices. Anode (+ve) identified by long lead.

Technical Specifications

Colour	IF Max.	VF Typ.	VF Max.	VR Max.	Int @ IF mcd	View Angle	Wave Length
Red	30mA	2.0V	2.8V	5.0V	150@20mA	50°	625nm
Green	25mA	2.2V	2.8V	5.0V	70@20mA	50°	565nm
Yellow	30mA	2.1V	2.8V	5.0V	70@20mA	50°	590nm

ORDER CODE			1+	25+	50+	100+	500+
710-730	RED	8mm LED	0.13	0.1000	0.0900	0.0800	0.0700
711-730	GREEN	8mm LED	0.13	0.1000	0.0900	0.0800	0.0700
712-730	YELLOW	8mm LED	0.13	0.1000	0.0900	0.0800	0.0700

8mm Extra Bright

A range of light emitting diodes of 8mm dia. with very high luminous intensity in diffused or clear packages. Wave length 660nm.

Technical Specifications

Colour	IF Max.	VF Typ.	VF Max.	VR Max.	Int @ IF mcd	View Angle
Red Diffused350	30mA	1.85V	2.5V	5.0V	350@20mA	60°
Red Diffused450	30mA	1.85V	2.5V	5.0V	450@20mA	60°
Red Clear 1600	30mA	1.85V	2.5V	5.0V	1600@20mA	40°
Red Clear 2000	30mA	1.85V	2.5V	5.0V	2000@20mA	40°

ORDER CODE			1+	25+	50+	100+	500+
710-750	RED 350	8mm LED	0.15	0.1220	0.1098	0.0976	0.0854
710-752	RED 450	8mm LED	0.16	0.1300	0.1170	0.1040	0.0910
710-760	RED 1600	8mm LED	0.15	0.1220	0.1098	0.0976	0.0854
710-762	RED 2000	8mm LED	0.33	0.2970	0.2640	0.2310	0.2063

LARGE 10MM LED'S

10mm Diffused Package

High intensity light emitting diodes of 10mm diameter in a diffused package. 2 lead devices. Anode (+ve) identified by long lead.

Technical Specifications

Colour	IF Max.	VF Typ.	VF Max.	VR Max.	Int @ IF mcd	View Angle	Wave Length
Red	30mA	2.0V	2.5V	5.0V	150@20mA	50°	625nm
Green	25mA	2.2V	2.5V	5.0V	70@20mA	50°	565nm
Yellow	30mA	2.1V	2.5V	5.0V	70@20mA	50°	590nm
Orange	30mA	2.0V	2.5V	5.0V	150@20mA	50°	625nm

ORDER CODE			1+	25+	50+	100+	500+
710-830	RED	10mm LED	0.10	0.0800	0.0720	0.0640	0.0560
711-830	GREEN	10mm LED	0.10	0.0800	0.0720	0.0640	0.0560
712-830	YELLOW	10mm LED	0.10	0.0800	0.0720	0.0640	0.0560
713-830	ORANGE	10mm LED	0.10	0.0800	0.0720	0.0640	0.0560

10mm Extra Bright

A range of light emitting diodes of 10mm dia. with very high luminous intensity in diffused or clear packages. Wave length 660nm.

Technical Specifications

Colour	IF Max.	VF Typ.	VF Max.	VR Max.	Int @ IF mcd	View Angle
Red Diffused350	30mA	1.85V	2.5V	5.0V	350@20mA	60°
Red Diffused550	30mA	1.85V	2.5V	5.0V	550@20mA	60°
Red Clear 1600	30mA	1.85V	2.5V	5.0V	1600@20mA	20°
Red Clear 2000	30mA	1.85V	2.5V	5.0V	2000@20mA	20°
Red Clear 3000	30mA	1.85V	2.5V	5.0V	3000@20mA	20°

ORDER CODE			1+	25+	50+	100+	500+
710-850	RED 350	10mm LED	0.15	0.1220	0.1098	0.0976	0.0854
710-852	RED 550	10mm LED	0.17	0.1380	0.1242	0.1104	0.0966
710-860	RED 1600	10mm LED	0.13	0.1060	0.0954	0.0848	0.0742
710-862	RED 2000	10mm LED	0.32	0.2844	0.2528	0.2212	0.1975
710-864	RED 3000	10mm LED	0.33	0.2970	0.2640	0.2310	0.2063

HIGH POWER 1W LED'S

SMT LED Mounted on Hexangonal Heatsink

Super high-flux output and high luminance, very long operating life

Technical Specifications

Colour	IF Max.	VF Typ.	Power Dissipation	Luminous flux	View Angle	Wave Length
White	350mA	3.2V		55lm	90°	
P.White	350mA	3.2V	1.6W	60lm	90°	
Red	350mA	3.2V	0.9W	36lm	90°	625nm
Green	350mA	3.2V	1.6W	70lm	90°	520nm
Yellow	350mA	3.2V	0.9W	10lm	90°	625nm
Blue	350mA	3.2V	1.6W	10lm	90°	570nm

ORDER CODE			1+	10+	25+
709-910	WHITE	1W LED	2.00	1.80	1.60
709-912	PURE WHITE	1W LED	3.51	3.35	3.25
710-910	RED	1W LED	2.84	2.73	2.63
711-910	GREEN	1W LED	4.13	3.98	3.83
712-910	YELLOW	1W LED	2.50	2.41	2.31
714-910	BLUE	1W LED	3.27	3.75	3.03

HIGH POWER 3W LED'S

SMT LED Mounted on Hexangonal Heatsink

Super high-flux output and high luminance, very long operating life. RGB (Red/Green/Blue) also available.

Technical Specifications

Colour	IF Max.	VF Typ.	Power Dissipation	Luminous flux	View Angle	Wave Length
White	0.7A	4.0V		100lm		
P.White	1A	3.5V	4.8W	170lm	110°	
Red	1A	2.2V	4.8W	36lm	90°	625nm
Green	1A	3.5V	4.8W	170lm	140°	520nm
Yellow	1A	2.2V	4.8W	36lm	90°	590nm
Blue	1A	3.5V	4.8W	36lm	110°	465nm
RGB	150mA	2.2V(R), 3.3V(G+B)		36/60/12lm	140°	

ORDER CODE			1+	10+	25+
709-930	WHITE	3W LED	3.44	3.22	3.19
709-932	PURE WHITE	3W LED	5.66	5.45	5.24
710-930	RED	3W LED	4.25	4.10	3.94
711-930	GREEN	3W LED	9.57	9.22	8.86
712-930	YELLOW	3W LED	4.43	4.26	4.10
714-930	BLUE	3W LED	5.72	5.51	5.30
715-933	RGB	3W LED	7.87	7.58	7.29

LED PANEL CLIPS

Standard Single Part

Low cost black plastic panel clip suitable for most makes of 3mm and 5mm LED's.

ORDER CODE		1+	50+	100+	500+	1000+
719-310	3mm One part LED clip	0.05	0.0350	0.0315	0.0280	0.0245
719-510	5mm One part LED clip	0.06	0.0370	0.0333	0.0296	0.0259

Single Part Bezel Panel Clips

Black plastic single part LED clips giving an attractive finish. Matching Protruding range for 5, 8 and 10mm LED's. Recessed type also available for 5mm LED's.

ORDER CODE		1+	50+	100+	500+	1000+
719-515	5mm Recessed Bezel	0.13	0.1078	0.0970	0.0862	0.0755
719-520	5mm Protruding Bezel	0.13	0.1078	0.0970	0.0862	0.0755
		1+	25+	50+	100+	500+
719-710	8mm Protruding Bezel	0.16	0.1440	0.1280	0.1120	0.1000
719-810	10mm Protruding Bezel	0.21	0.1890	0.1680	0.1470	0.1313

Chrome Bezel LED Holders

Chrome plated brass recessed LED panel holders suitable for use with most makes of 3mm and 5mm LED's. A push fit retaining mount holds the LED into the bezel and the holder is secured to the panel by a nut and washer supplied.

ORDER CODE		1+	25+	50+	100+	500+
719-330	3mm Chrome Bezel	0.47	0.4266	0.3792	0.3318	0.2963
719-530	5mm Chrome Bezel	0.43	0.3800	0.3420	0.3040	0.2660

LED LENS / PANEL CLIP

A combined lens and LED panel clip for use 5mm LED. Available coloured or as a clear lens. Available as a protruding lens or a low profile lens. Protruding type for panels 1.6 to 3.2mm thick. The low profile type for panels 0.8 to 6.35mm thick, a retaining ring is available for use with the low profile lens when a panels less than 4.8mm thick.

ORDER CODE			1+	25+	50+	100+	500+
719-550	RED	Low Profile	0.19	0.1710	0.1520	0.1330	0.1188
719-551	GREEN	Low Profile	0.19	0.1710	0.1520	0.1330	0.1188
719-552	YELLOW	Low Profile	0.19	0.1710	0.1520	0.1330	0.1188
719-553	ORANGE	Low Profile	0.19	0.1710	0.1520	0.1330	0.1188
719-555	CLEAR	Low Profile	0.19	0.1710	0.1520	0.1330	0.1188
719-556	Low Profile Ring		0.07	0.0601	0.0534	0.0468	0.0418
719-560	RED	Protruding	0.19	0.1728	0.1536	0.1344	0.1200
719-561	GREEN	Protruding	0.19	0.1728	0.1536	0.1344	0.1200
719-562	YELLOW	Protruding	0.19	0.1728	0.1536	0.1344	0.1200
719-563	ORANGE	Protruding	0.22	0.1980	0.1760	0.1640	0.1375
719-565	CLEAR	Protruding	0.19	0.1728	0.1536	0.1344	0.1200

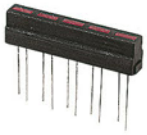
LED ARRAYS

5 Segment Horizontal Bar

A 5 segment LED bar which can be stackable end to end. The LED's are laid out horizontally lengthways forming a single line. Ten pin Single In Line package. Anode (+ve) identified by long lead.

Technical Specifications

Colour	I_F Max.	V_F Typ.	V_F Max.	V_R Max.	Int @ I_F mcd	View Angle	Wave Length
Red	25mA	2.0V	2.5V	5.0V	1@10mA	110°	660nm
Green	25mA	2.2V	2.5V	5.0V	3@10mA	110°	565nm
Yellow	30mA	2.1V	2.5V	5.0V	3@10mA	110°	590nm



ORDER CODE			1+	10+	25+	50+	100+
716-550	RED	5 Seg. Array	0.58	0.5200	0.4640	0.4060	0.3625
716-650	GREEN	5 Seg. Array	0.60	0.5400	0.4800	0.4200	0.3750
716-750	YELLOW	5 Seg. Array	0.62	0.5580	0.4960	0.4340	0.3875

10 Segment Vertical Bargraph

A 10 segment LED bar which can be stackable end to end. The LED's are laid out vertically side by side. 20 Pin Dual In Line package. Individually packaged LED's eliminating light leakage between adjacent cells. Anodes (+ve) along one side (pins 1-10).

Technical Specifications

Colour	I_F Max.	V_F Typ.	V_F Max.	V_R Max.	Int @ I_F mcd	View Angle	Wave Length
Red	30mA	2.0V	2.5V	5.0V	5.6@10mA	50°	625nm
Green	25mA	2.2V	2.5V	5.0V	5.6@10mA	50°	565nm
Yellow	30mA	2.1V	2.5V	5.0V	5.6@10mA	50°	590nm

ORDER CODE			1+	10+	25+	50+	100+
716-500	RED	10 Seg. Array	0.98	0.7800	0.7020	0.6240	0.5460
716-600	GREEN	10 Seg. Array	0.98	0.7800	0.7020	0.6240	0.5460
716-700	YELLOW	10 Seg. Array	0.98	0.7800	0.7020	0.6240	0.5460

7 SEGMENT DISPLAYS

0.3" 7.5mm DIL Displays

7 segment displays with a character height of 7.5mm which can be directly mounted on a PCB or into DIL sockets. White diffused segments, grey display surface, RH decimal point.

Technical Specifications

Colour	I_F Max.	V_F Typ.	V_F Max.	V_R Max.	Int @ I_F mcd	View Angle	Wave Length
Red	25mA	2.0V	2.5V	5.0V	1.4@10mA	50°	700nm

ORDER CODE			1+	10+	25+	50+	100+
716-001	RED	0.3" C.Anode	0.65	0.52	0.4680	0.4160	0.3640
716-002	RED	0.3" C.Cath.	0.65	0.52	0.4680	0.4160	0.3640

0.56" 14.2mm Displays

7 segment displays with a character height of 14.2mm which can be directly mounted on a PCB or across 0.6" pitch DIL sockets. White diffused segments, grey display surface, RH decimal point.

Technical Specifications

Colour	I_F Max.	V_F Typ.	V_F Max.	V_R Max.	Int @ I_F mcd	View Angle	Wave Length
Red	25mA	2.0V	2.5V	5.0V	1.4@10mA	50°	700nm

ORDER CODE			1+	10+	25+	50+	100+
716-021	RED	0.56" C.Anode	0.45	0.3660	0.3240	0.2880	0.2520
716-022	RED	0.56" C.Cath.	0.60	0.4800	0.4320	0.3840	0.3360

0.56" 14.2mm Dual Displays

Dual 7 segment displays with a character height of 14.2mm which can be directly mounted on a PCB or across 0.6" pitch DIL sockets. White diffused segments, grey display surface, RH decimal points.

Technical Specifications

Colour	I_F Max.	V_F Typ.	V_F Max.	V_R Max.	Int @ I_F mcd	View Angle	Wave Length
Red	20mA	2.0V	2.5V	5.0V	5.6@10mA	50°	625nm

ORDER CODE			1+	10+	25+	50+	100+
716-027	RED	.56" C.A. Dual	1.05	0.8400	0.7560	0.6720	0.5880
716-028	RED	.56" C.C. Dual	1.05	0.8400	0.7560	0.6720	0.5880

1.0" 25.0mm Displays

7 segment displays with a character height of 25mm. Two LED's per segment. White diffused segments, grey display surface, RH decimal points.

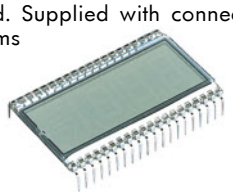
Technical Specifications

Colour	I_F Max.	V_F Typ.	V_F Max.	V_R Max.	Int @ I_F mcd	View Angle	Wave Length
Red	25mA	4.0V	5.0V	10.0V	2.2@10mA	50°	700nm

ORDER CODE			1+	10+	25+	50+	100+
716-041	RED	1.0" C.Anode	1.43	1.1400	1.0260	0.9120	0.7980
716-042	RED	1.0" C.Cath.	1.43	1.1400	1.0260	0.9120	0.7980

LIQUID CRYSTAL DISPLAYS (LCD)

Standard seven segment format with a decimal point between digits and a colon between alternative digits. The transflective display gives black segments on a silvered background which can be back lit if required. Supplied with connectors on 0.1" pitch. Supply voltage 3-12Vrms



ORDER CODE			1+	5+	10+	25+	50+
717-035	3½ Digit LCD		4.40	3.96	3.52	3.08	2.75
717-040	4 Digit LCD		4.00	3.75	3.50	3.25	3.13

INFRARED DEVICES

3mm Standard

A pair of Infrared devices housed in a 3mm LED package. An emitter diode and photo transistor which can be used together and easily interfaced with logic devices. Anode (+ve) identified by long lead.

Technical Specification

Emitter Diode	
VF Max.	1.6V @ 20mA
Rise Time	600ns
Radiant Power	3.6mW Typical
Peak Wavelength	940nm
Photo Transistor	
VCEO Max.	30V
VCE Max.	5V
Power Dissipation Max.	100mW @ 25°C
Light Current	7mA @ 20mW/cm²
Dark Current	100nA @ VCE=10V
Rise Time	8µs
Fall Time	6µs

ORDER CODE		1+	25+	50+	100+	500+
720-310	3mm IR Emitter Diode	0.15	0.1160	0.1044	0.0928	0.0812
721-310	3mm IR Photo Transistor	0.15	0.1160	0.1044	0.0928	0.0812

3mm Matched Pairs

A pair of spectrally matched GaAs Infrared emitters and filtered narrow acceptance angle (24°) photo transistors housed in a 3mm LED package. Anode (+ve) identified by long lead.

Technical Specification

Emitter Diode	**SFH409**
VF Max.	1.3V @ 100mA
VR Max.	5V
Surge Current	3A
Radiant Power	15mW @ 100mA
Power Dissipation	165mW
Peak Wavelength	950nm
Photo Transistor	**SFH309F**
VCEO Max.	35V
VCE Max.	5V
Power Dissipation Max.	165mW
Photo Current	3.2mA
Dark Current	200nA
Rise/Fall Time	70µs
Peak Wavelength	900nm

ORDER CODE		1+	25+	50+	100+	500+
720-330	3mm IR Emitter Diode	0.42	0.3780	0.3360	0.2940	0.2625
721-330	3mm IR Photo Transistor	0.42	0.3780	0.3360	0.2940	0.2625

5mm Standard

A pair of high power Infrared devices. The emitter is housed in a 5mm clear LED package and the PIN photo diode is housed in a square black epoxy moulding. Anode (+ve) identified by long lead.

Technical Specification

Emitter Diode	
VF Max.	1.7V
IF Max.	100mA
Radiant Power	20mW Typical
Power Dissipation	120mW
Peak Wavelength	880nm
Photo Diode	**BPW41/TIL100**
Breakdown (IR=100µA)	32V (Min.)
Dark Current (VR=10V)	2nA (Typ.)
Light Current (VR=5V)	45µA (Typ.)

ORDER CODE		1+	25+	50+	100+	500+
720-510	5mm IR Emitter Diode	0.14	0.1200	0.1000	0.8000	0.0640
721-592	5mm IR PIN Photo Diode	0.58	0.5220	0.4640	0.4060	0.3625

5mm Matched Pairs

A range of spectrally matched GaAs & GaAlAs Infrared emitters and receivers. A choice of narrow or medium beam infrared emitters and a Photo transistor or PIN Photo Diode receiver. All devices housed in a 5mm LED package. Anode (+ve) identified by long lead.

Technical Specification

Emitter Diode	**720-530**	**720-532**
VF Max. (IF=100mA)	1.5V	1.3V
VR Max.	5V	5V
Surge Current (t=10µs)	3A	3A
Min Radiant Power (IF=100mA)	80mW	25mW
Power Dissipation	165mW	200mW
Peak Wavelength	950nm	880nm
Beam Angle	40°	34°
PIN Photo Diode	**721-512(SFH203)**	
VR Max.	50V	
Power Dissipation	100mW	
Dark Current	5nA	
Rise/Fall Time	5ns	
Peak Wavelength	850nm	
Acceptance Angle	40°	

ORDER CODE		1+	25+	50+	100+	500+
720-530	5mm M Beam Emitter	0.34	0.3060	0.2720	0.2380	0.2125
720-532	5mm N Beam Emitter	0.56	0.5040	0.4480	0.3920	0.3500
721-512	5mm PIN Photo Diode	0.76	0.6840	0.6080	0.5320	0.4750

TRANSISTOR OUTPUT OPTO COUPLERS

Industrial Standard

A range of popular opto couplers widely used throughout industry. Gallium Arsenide infrared emitting diode and an NPN silicon photo transistor housed in a standard 6 Pin DIL package.

Technical Specification

Part No	Isolation	CTR	I_F Max.	V_{CEO}
4N25	2500V	20%	80mA	30V
4N26	1500V	20%	80mA	30V

Order Code		1+	25+	50+	100+	500+
722-110	4N25 Opto Coupler	0.25	0.2000	0.1800	0.1600	0.1400
722-115	4N26 Opto Coupler	0.30	0.2400	0.2160	0.1920	0.1680

High Isolation CNY17 Series

The CNY17 series feature a high isolation voltage and consist of an Gallium Arsenide infrared emitting diode and a NPN silicon photo transistor mounted in a standard 6 Pin DIL package.

Technical Specification

Part No	Isolation	CTR	I_F Max.	V_F	V_R	Rise/Fall
CNY17-1	7500V	40-80%	90mA	1.3V	6V	6µs/5.5µs
CNY17-2	7500V	63-125%	90mA	1.3V	6V	6µs/5.5µs
CNY17-3	5000V	100-200%	90mA	1.2V	6V	2.8µs/3µs

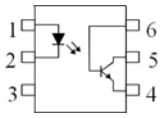
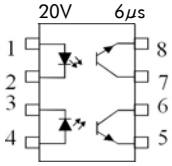
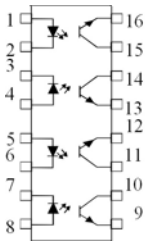
Order Code		1+	25+	50+	100+	500+
722-130	CNY17-1 Opto Coupler	0.38	0.3420	0.3040	0.2660	0.2375
722-135	CNY17-2 Opto Coupler	0.32	0.2120	0.1908	0.1696	0.1484
722-140	CNY17-3 Opto Coupler	0.48	0.4320	0.3840	0.3360	0.3000

Single, Dual & Quad Couplers

A range of single, dual and quad opto couplers, each channel has matched characteristics. Consisting of a Gallium Arsenide infrared emitting diode and NPN silicon photo transistor.

Technical Specifications

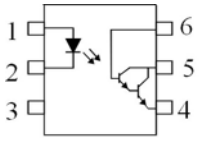
Isolation	CTR I_F=10mA	V_{CEO}	Rise / Fall Time T_R	T_F
1500V	12.5%	20V	6µs	25µs

Order Code		1+	25+	50+	100+	500+
722-150	IS-74 Opto Coupler	0.40	0.3600	0.3200	0.2800	0.2500
722-155	ISD-74 Opto Coupler	1.02	0.9180	0.8160	0.7140	0.6375
722-160	ISQ-74 Opto Coupler	1.41	1.2672	1.1968	1.0560	1.8304

DARLINGTON OUTPUT OPTO COUPLERS

An industrial standard opto coupler comprising of a darlington photo transistor output and a Gallium Arsenide infrared emitting diode. Housed in a standard 6 Pin DIL package.



Technical Specification

Part No	Isolation	CTR	I_F Max.	V_{CEO}
4N32	2500V	500%	60mA	30V

Order Code		1+	25+	50+	100+	500+
722-210	4N32 Opto Coupler	0.36	0.3240	0.2880	0.2520	0.2250

HIGH PERFORMANCE OPTO COUPLERS

High Speed

Popular opto couplers, featuring a separate connection for the photo diode bias resulting in a faster operation over that of conventional opto couplers. Housed in a standard 8 Pin DIL package.

Technical Specification

Part	Isolation	CTR	Data Rate	Propagation	Delay
6N135	3000V	7%	1Mbit/s	1.5µs	1.5µs
6N136	3000V	19%	1Mbit/s	0.8µs	0.8µs

Order Code		1+	25+	50+	100+	500+
722-310	6N135 Opto Coupler	0.96	0.8640	0.7680	0.6720	0.6000
722-315	6N136 Opto Coupler	0.85	0.6800	0.6120	0.5440	0.4760

High Speed High Gain

Industrial standard opto couplers featuring very high gain, 500V/µs common mode transient immunity and extremely high current transfer ratio. Separate connections for photo diode and output stage giving TTL compatible saturation voltages and high speed operation.

Technical Specification

Part	Isolation	CTR	Data Rate	Propagation I_F=10.5mA	Delay R_L=4k7
6N138	2500V	1600%	300kbit/s	10µs	35µs
6N139	2500V	2000%	300kbit/s	10µs	35µs

Order Code		1+	25+	50+	100+	500+
722-330	6N138 Opto Coupler	0.84	0.7560	0.6720	0.5880	0.5250
722-335	6N139 Opto Coupler	0.90	0.7200	0.6480	0.5760	0.5040

Ultra High Speed

A GaAsP emitting diode and an integrated detector which features a high gain amplifier that drives a schotty clamped open collector output transistor. Housed in a standard 8 Pin DIL case.

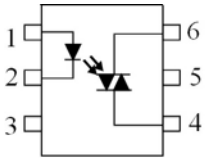
Technical Specification

Part	Isolation	CTR	Data Rate R_L=350Ω	Propagation C_L=15pF	Delay Time I_F=7.5mA
6N137	3000V	700%	10Mbit/s	75ns	75ns

Order Code		1+	25+	50+	100+	500+
722-340	6N137 Opto Coupler	0.85	0.6760	0.6084	0.5408	0.4732

OPTO COUPLED TRIAC

A Gallium Arsenide infrared emitting diode and light activated triac suitable for switching 240Vac (400V Max.) supplies at 100mA. Input Trigger current - 15mA Typ. 30mA Max. Housed in a standard 6 Pin DIL package.



Technical Specifications

Part	Isolation	I_F Max.	V_R Max.	V_F Max.
MOC3020	7500V	30mA	3V	1.5V @ I_F=10mA

Order Code		1+	25+	50+	100+	500+
722-410	MOC3020 Opto coupler	0.39	0.3148	0.2833	0.2518	0.2204

Zero Crossing Triac

A Gallium Arsenide infrared emitting diode coupled to a monolithic silicon detector which operates as a zero crossing bilateral triac. Housed in a standard 6 Pin DIL package.

Technical Specification

Input

I_F	V_R	V_F (I_F=30mA)
50mA	6V	1.5V

Output

V_{DRM}	I_T RMS	I_{TSM} Peak	ZC Inhibit	Leakage Current
400V	100mA	1.2A	40V Max.	300µA Max.(Inhibited)

Coupled Characteristics

LED Trigger I_{FT}	Holding Current I_H	Isolation Voltage
15mA Max.	200µA	2500V Peak

Order Code		1+	25+	50+	100+	500+
722-415	MOC3041 Opto coupler	0.63	0.5042	0.4538	0.4034	0.3529

OPTO SWITCHES

Slotted

A slotted opto coupler with mounting flanges for counting / sensing applications. The aperture is 3 x 6mm with a sensitive zone of 1mm². Housed in a black polycarbonate body with integral mounting flanges. Darlington Transistor output.

Technical Specification

I_C Max	I_F Max	T_{ON}	T_{OFF}	V_{CE} Max
40mA	50mA	90µs	80µs	35V

Order Code		1+	10+	25+	50+	100+
724-110	Slotted Opto Switch	0.55	0.4400	0.3960	0.3520	0.3080

LIGHT DEPENDENT RESISTOR

Light dependent resistor. Cadmium sulphide cells with characteristics such that as light intensity increases the resistance reduces. Available as a miniature open style or a sealed window type.

Technical Specification

Dark Res.	@10Fc	@100Fc	V Max	Power Dissipation	
1MΩ	-	400Ω	320Vdc	250mW	723-010
20MΩ	50-160kΩ	-	150Vdc	100mW	723-015


Order Code		1+	10+	25+	50+	100+
723-010	ORP12 LDR - sealed	1.10	0.9900	0.8800	0.7700	0.6875
Order Code		**1+**	**25+**	**50+**	**100+**	**500+**
723-015	Mini Light LDR - open	0.60	0.4776	0.4298	0.3821	0.3343

0.125W 5% CARBON FILM

Sub miniature high stability fixed value carbon film resistors for industrial and consumer applications. The sub miniature size (3.2 x 1.7mmØ) enables high PCB packing densities to be achieved. Light brown body with four band colour code.

Technical Specification

Resistance Range	10Ω to 1M0 E12 Series
Resistance Tolerance	±5%
Power Dissipation	0.125W @ 70°C
Temperature Coefficient	-100 to -700ppm/°C
Working Voltage	200V
Overload Voltage	400V max.
Insulation Resistance	1000M

Value	Order Code	Value	Order Code	Value	Order Code	Value	Order Code	Value	Order Code	Value	Order Code
10R	900-010	100R	900-110	1k0	900-210	10k	900-310	100k	900-410	1M0	900-510
		120R	900-112	1k2	900-212	12k	900-312	120k	900-412		
15R	900-015	150R	900-115	1k5	900-215	15k	900-315	150k	900-415		
		180R	900-118	1k8	900-218	18k	900-318	180k	900-418		
22R	900-022	220R	900-122	2k2	900-222	22k	900-322	220k	900-422		
27R	900-027			2k7	900-227	27k	900-327	270k	900-427		
33R	900-033	330R	900-133	3k3	900-233	33k	900-333	330k	900-433		
		390R	900-139	3k9	900-239	39k	900-339	390k	900-439		
47R	900-047	470R	900-147	4k7	900-247	47k	900-347	470k	900-447		
		560R	900-156	5k6	900-256	56k	900-356				
68R	900-068	680R	900-168	6k8	900-268	68k	900-368	680k	900-468		
						82k	900-382	820k	900-482		

Pricing Information
All values of these resistors are priced at the same price.
Mixed Quantity Pricing Applies to per 100 & per 1000 pricing.
i.e. Purchase a total of 1000 resistors or more with a minimum of 100 of each value, and pay the 10+ price per 100.
or Purchase a total of 10,000 resistors or more with a minimum of 1000 of each value, and pay the 10+ price per 1000.

Order Code		1+	10+
Per Individual Resistor		Each	Each
As above	0.125W 5% Carbon Film	0.02	0.02
Per 100 of one value		per 100	per 100
As above	0.125W 5% Carbon Film	0.80	0.65
Per 1000 of one value		per 1000	per 1000
As above	0.125W 5% Carbon Film	5.40	3.78

0.25W 5% CARBON FILM

Miniature high stability fixed value carbon film resistors. This range forms the industry standard and is suitable for general, industrial and consumer applications. A "Zero" ohm resistor is also included in the range as an alternative to wire links and it can also be used in automated cropping and bending machines. Light brown body, with four band colour code.

Technical Specification

Resistance Range	0Ω to 10M E12 Series
Resistance Tolerance	±5%
Power Dissipation	0.25W @ 70°C
Temperature Coefficient	±700ppm/°C
Working Voltage	300V
Overload Voltage	500V max.
Operating Temperature Range	-25 to + 70°C

Value	Order Code	Value	Order Code	Value	Order Code	Value	Order Code	Value	Order Code	Value	Order Code	Value	Order Code
0R0	906-700	10R	906-010	100R	906-110	1k0	906-210	10k	906-310	100k	906-410	1M0	906-510
1R0	906-910	12R	906-012	120R	906-112	1k2	906-212	12k	906-312	120k	906-412	1M2	906-512
1R2	906-912	15R	906-015	150R	906-115	1k5	906-215	15k	906-315	150k	906-415	1M5	906-515
1R5	906-915	18R	906-018	180R	906-118	1k8	906-218	18k	906-318	180k	906-418	1M8	906-518
		22R	906-022	220R	906-122	2k2	906-222	22k	906-322	220k	906-422	2M2	906-522
2R7	906-927	27R	906-027	270R	906-127	2k7	906-227	27k	906-327	270k	906-427	2M7	906-527
3R3	906-933	33R	906-033	330R	906-133	3k3	906-233	33k	906-333	330k	906-433	3M3	906-533
3R9	906-939	39R	906-039	390R	906-139	3k9	906-239	39k	906-339	390k	906-439	3M9	906-539
4R7	906-947	47R	906-047	470R	906-147	4k7	906-247	47k	906-347	470k	906-447	4M7	906-547
5R6	906-956	56R	906-056	560R	906-156	5k6	906-256	56k	906-356	560k	906-456	5M6	906-556
6R8	906-968	68R	906-068	680R	906-168	6k8	906-268	68k	906-368	680k	906-468	6M8	906-568
8R2	906-982	82R	906-082	820R	906-182	8k2	906-282	82k	906-382	820k	906-482	8M2	906-582
												10M	906-610

Pricing Information
All values of these resistors are priced at the same price.
Mixed Quantity Pricing Applies to per 100 & per 1000 pricing.
i.e. Purchase a total of 1000 resistors or more with a minimum of 100 of each value, and pay the 10+ price per 100.
or Purchase a total of 10,000 resistors or more with a minimum of 1000 of each value, and pay the 10+ price per 1000.

Order Code		1+	10+
Per Individual Resistor		Each	Each
As above	0.25W 5% Carbon Film	0.02	0.02
Per 100 of one value		per 100	per 100
As above	0.25W 5% Carbon Film	0.60	0.43
Per 1000 of one value		per 1000	per 1000
As above	0.25W 5% Carbon Film	3.80	2.66

RESISTOR DATA

4 Band Colour Coded
The 1st & 2nd (not 3rd) Significant figures, the multiplier and the tolerance are used to establish the value of the resistor.
e.g. Red, Violet, Red, Gold = 2700Ω 5% = 2.7k (2k7)

5 Band Colour Coded
The 1st, 2nd & 3rd Significant figures, the multiplier and the tolerance are used to establish the value of the resistor.
e.g. White, Brown, Black, Gold, Brown = 91Ω 1%

Total Resistance Combinations
Series Rt = R1 + R2 + R3... etc
Parallel 1/Rt = 1/R1 + 1/R2 + 1/R3... Etc

Preferred Values
E12 10 12 15 18 22 27 33 39 47 56 68 82
E24 10 11 12 13 15 16 18 20 22 24 27 30 33 36 39 43 47 51 56 62 68 75 82 91

Just seeing shades of grey ? Check out our catalogue online at www.esr.co.uk

Resistor Colour code for 4 & 5 Band Resistors

Colour	1st	2nd	3rd	Multiplier	Tolerance
Silver				÷100	10%
Gold				÷10	5%
Black	0	0	0	x1	
Brown	1	1	1	x10	1%
Red	2	2	2	x100	2%
Orange	3	3	3	X1,000	
Yellow	4	4	4	X10,000	
Green	5	5	5	X100,000	
Blue	6	6	6	X1,000,000	
Violet	7	7	7	X10,000,000	
Grey	8	8	8		
White	9	9	9		

0.5W 5% CARBON FILM

Miniature high stability fixed value carbon film resistors. This range is suitable for general, industrial and consumer applications. Light brown body with four band colour code.

Technical Specification

Resistance Range	1Ω0 to 10M E12 Series
Resistance Tolerance	±5%
Power Dissipation	0.5W @ 70°C
Temperature Coefficient	±400ppm/°C
Working Voltage	350V
Overload Voltage	700V max.
Operating Temperature Range	-25 to + 70°C

Value	Order Code	Value	Order Code	Value	Order Code	Value	Order Code	Value	Order Code	Value	Order Code	Value	Order Code
1R0	910-910	10R	910-010	100R	910-110	1k0	910-210	10k	910-310	100k	910-410	1M0	910-510
		12R	910-012	120R	910-112	1k2	910-212	12k	910-312	120k	910-412	1M2	910-512
		15R	910-015	150R	910-115	1k5	910-215	15k	910-315	150k	910-415	1M5	910-515
		18R	910-018	180R	910-118	1k8	910-218	18k	910-318	180k	910-418	1M8	910-518
2R2	910-922	22R	910-022	220R	910-122	2k2	910-222	22k	910-322	220k	910-422	2M2	910-522
		27R	910-027	270R	910-127	2k7	910-227	27k	910-327	270k	910-427	2M7	910-527
		33R	910-033	330R	910-133	3k3	910-233	33k	910-333	330k	910-433	3M3	910-533
3R9	910-939	39R	910-039	390R	910-139	3k9	910-239	39k	910-339	390k	910-439	3M9	910-539
4R7	910-947	47R	910-047	470R	910-147	4k7	910-247	47k	910-347	470k	910-447	4M7	910-547
5R6	910-956	56R	910-056	560R	910-156	5k6	910-256	56k	910-356	560k	910-456	5M6	910-556
6R8	910-968	68R	910-068	680R	910-168	6k8	910-268	68k	910-368	680k	910-468		
8R2	910-982	82R	910-082	820R	910-182	8k2	910-282	82k	910-382				
												10M	910-610

Pricing Information
All values of these resistors are priced at the same price.
Mixed Quantity Pricing Applies to per 100 & per 1000 pricing.
i.e. Purchase a total of 1000 resistors or more with a minimum of 100 of each value, and pay the 10+ price per 100.
or Purchase a total of 10,000 resistors or more with a minimum of 1000 of each value, and pay the 10+ price per 1000.

Order Code		1+	10+
Per Individual Resistor		Each	Each
As above	0.5W 5% Carbon Film	0.02	0.02
Per 100 of one value		per 100	per 100
As above	0.5W 5% Carbon Film	0.95	0.56
Per 1000 of one value		per 1000	per 1000
As above	0.5W 5% Carbon Film	5.12	4.44

1W 5% CARBON FILM

High power fixed value carbon film resistors suitable for consumer and industrial applications. Light brown body, four band colour code.

Technical Specification

Resistance Range	1Ω0 to 8M2 E12 Series
Resistance Tolerance	±5%
Power Dissipation	1W @ 70°C (Zero @ 155°C)
Temperature Coefficient	0 to -1000ppm/°C
Working Voltage	500V
Overload Voltage	1000V max.
Operating Temperature Range	-55 to + 155°C

Value	Order Code	Value	Order Code	Value	Order Code	Value	Order Code	Value	Order Code	Value	Order Code	Value	Order Code
1R0	912-910	33R	912-033	270R	912-127	1k2	912-212	6k8	912-268	47k	912-347	270k	912-427
5R6	912-956	47R	912-047	330R	912-133	1k5	912-215	10k	912-310	56k	912-356	470k	912-447
10R	912-010	68R	912-068	390R	912-139	1k8	912-218	15k	912-315	68k	912-368	820k	912-482
22R	912-022	100R	912-110	470R	912-147	2k2	912-222	18k	912-318	82k	912-382	1M8	912-518
27R	912-027	150R	912-115	560R	912-156	2k7	912-227	22k	912-322	100k	912-410	2M2	912-522
		180R	912-118	680R	912-168	3k3	912-233	27k	912-327	120k	912-412	3M9	912-539
		220R	912-122	820R	912-182	3k9	912-239	33k	912-333	150k	912-415	5M6	912-556
				1k0	912-210	4k7	912-247	39k	912-339	220k	912-422	8M2	912-582

Pricing Information
All values of these resistors are priced at the same price.
Mixed Quantity Pricing Applies to per 100 pricing.
i.e. Purchase a total of 1000 resistors or more with a minimum of 100 of each value, and pay the 10+ price per 100.

Order Code		1+	10+
Per Individual Resistor		Each	Each
As above	1W 5% Carbon Film	0.06	0.04
Per 100 of one value		per 100	per 100
As above	1W 5% Carbon Film	3.90	3.12

2W 5% CARBON FILM

High power fixed value carbon film resistors suitable for consumer and industrial applications. Light brown body, four band colour code.

Technical Specification

Resistance Range	10Ω to 10M E12 Series
Resistance Tolerance	±5%
Power Dissipation	2W @ 70°C (Zero @ 155°C)
Temperature Coefficient	0 to -1000ppm/°C
Working Voltage	500V
Overload Voltage	1000V max.
Operating Temperature Range	-55 to + 155°C

Value	Order Code	Value	Order Code	Value	Order Code	Value	Order Code	Value	Order Code	Value	Order Code	Value	Order Code
10R	914-010	68R	914-068	470R	914-147	2k7	914-227	18k	914-318	56k	914-356	2M7	914-527
22R	914-022	100R	914-110	820R	914-182	10k	914-310	22k	914-322	100k	914-410	3M3	914-533
33R	914-033	150R	914-115	1k0	914-210	12k	914-312	27k	914-327	1M5	914-515	6M8	914-568
47R	914-047	220R	914-122	2k2	914-222	15k	914-315	33k	914-333	1M8	914-518	8M2	914-582
												10M	914-610

Pricing Information
All values of these resistors are priced at the same price.
Mixed Quantity Pricing Applies to per 100 pricing.
i.e. Purchase a total of 1000 resistors or more with a minimum of 100 of each value, and pay the 10+ price per 100.

Order Code		1+	10+
Per Individual Resistor		Each	Each
As above	2W 5% Carbon Film	0.12	0.08
Per 100 of one value		per 100	per 100
As above	2W 5% Carbon Film	5.99	4.80

0.25W 1% METAL FILM

Miniature high stability fixed value metal film resistors suited to industrial applications or where a low noise, 1% resistor is required. Light blue body with five band colour code.

Technical Specification

Resistance Range	10Ω to 1M0 E24 Series
Resistance Tolerance	±1%
Power Dissipation	0.25W @ 70°C
Temperature Coefficient	±50ppm/°C
Working Voltage	300V
Overload Voltage	600V max.
Operating Temperature Range	-25 to + 70°C

Value	Order Code	Value	Order Code	Value	Order Code	Value	Order Code	Value	Order Code
10R	907-010	100R	907-110	1k0	907-210	10k	907-310	100k	907-410
		110R	907-111	1k1	907-211	11k	907-311	110k	907-411
12R	907-012	120R	907-112	1k2	907-212	12k	907-312	120k	907-412
13R	907-013	130R	907-113	1k3	907-213	13k	907-313	130k	907-413
15R	907-015	150R	907-115	1k5	907-215	15k	907-315	150k	907-415
		160R	907-116	1k6	907-216	16k	907-316	160k	907-416
18R	907-018	180R	907-118	1k8	907-218	18k	907-318	180k	907-418
20R	907-020	200R	907-120	2k0	907-220	20k	907-320	200k	907-420
22R	907-022	220R	907-122	2k2	907-222	22k	907-322	220k	907-422
24R	907-024	240R	907-124	2k4	907-224	24k	907-324	240k	907-424
27R	907-027	270R	907-127	2k7	907-227	27k	907-327	270k	907-427
30R	907-030	300R	907-130	3k0	907-230	30k	907-330	300k	907-430
33R	907-033	330R	907-133	3k3	907-233	33k	907-333	330k	907-433
36R	907-036	360R	907-136	3k6	907-236	36k	907-336	360k	907-436
39R	907-039	390R	907-139	3k9	907-239	39k	907-339	390k	907-439
		430R	907-143	4k3	907-243	43k	907-343	430k	907-443
47R	907-047	470R	907-147	4k7	907-247	47k	907-347	470k	907-447
51R	907-051	510R	907-151	5k1	907-251	51k	907-351	510k	907-451
56R	907-056	560R	907-156	5k6	907-256	56k	907-356	560k	907-456
62R	907-062	620R	907-162	6k2	907-262	62k	907-362	620k	907-462
68R	907-068	680R	907-168	6k8	907-268	68k	907-368	680k	907-468
75R	907-075	750R	907-175	7k5	907-275	75k	907-375	750k	907-475
82R	907-082	820R	907-182	8k2	907-282	82k	907-382	820k	907-482
91R	907-091	910R	907-191	9k1	907-291	91k	907-391	910k	907-491
								1M0	907-510

Pricing Information
All values of these resistors are priced at the same price.
Mixed Quantity Pricing Applies to per 100 & per 1000 pricing.
i.e. Purchase a total of 1000 resistors or more with a minimum of 100 of each value, and pay the 10+ price per 100.
or Purchase a total of 10,000 resistors or more with a minimum of 1000 of each value, and pay the 10+ price per 1000.

Order Code		1+	10+
Per Individual Resistor		Each	Each
As above	0.25W 1% Metal Film	0.04	0.04
Per 100 of one value		per 100	per 100
As above	0.25W 1% Metal Film	1.72	1.29
Per 1000 of one value		per 1000	per 1000
As above	0.25W 1% Metal Film	8.60	6.00

2.5W 5% SILICON

Flame retardant silicon coated high power wirewound resistors.

Technical Specification

Resistance Range	0Ω1 to 270Ω E12 Series
Resistance Tolerance	±5%
Power Dissipation	2.5W @ 70°C 3W @40°C (Zero @ 275°C)
Temperature Coefficient	±300ppm/°C (R≥22Ω) ±400ppm/°C (R<22Ω)
Operating Temperature Range	-40 to + 200°C

Value	Code	Value	Code	Value	Code	Value	Code
0R1	916-810	2R2	916-922	15R	916-015	82R	916-082
0R15	916-815	3R3	916-933	18R	916-018	100R	916-110
0R22	916-822	3R9	916-939	22R	916-022	120R	916-112
0R33	916-833	4R7	916-947	27R	916-027	150R	916-115
0R47	916-847	5R6	916-956	33R	916-033	180R	916-118
1R0	916-910	8R2	916-982	39R	916-039	220R	916-122
1R5	916-915	10R	916-010	47R	916-047	270R	916-127
1R8	916-918	12R	916-012	56R	916-056		

Order Code		1+	25+	50+	100+	500+
As above	2.5W Wirewound	0.18	0.1530	0.1224	0.0979	0.0857

5, 10 & 20W 5% CERAMIC

A wide range of high power wirewound resistors in ceramic flame proof bodies.

Technical Specification

Resistance Range	5W	0.10Ω to 47kΩ
	10W	0.10Ω to 22kΩ
	20W	1Ω0 to 100Ω
Resistance Tolerance	±5%	
Dimensions	5W	23 x 10 x 10mm
	10W	48 x 10 x 10mm
	20W	60 x 14 x 14mm

5W Ceramic

Value	Code	Value	Code	Value	Code
0R10	924-810	10R	924-010	1k0	924-210
0R12	924-812	12R	924-012	1k2	924-212
0R15	924-815	15R	924-015	1k5	924-215
0R18	924-818	18R	924-018	1k8	924-218
0R22	924-822	22R	924-022	2k2	924-222
0R27	924-827	27R	924-027	2k7	924-227
0R33	924-833	33R	924-033	3k3	924-233
0R39	924-839	39R	924-039	3k9	924-239
0R47	924-847	47R	924-047	4k7	924-247
0R56	924-856	56R	924-056	5k6	924-256
0R68	924-868	68R	924-068	6k8	924-268
0R82	924-868	82R	924-082	8k2	924-282

Value	Code	Value	Code	Value	Code
1R0	924-910	100R	924-110	10k	924-310
1R2	924-912	120R	924-112	12k	924-312
1R5	924-915	150R	924-115	15k	924-315
1R8	924-918	180R	924-118	18k	924-318
2R2	924-922	220R	924-122	22k	924-322
2R7	924-927	270R	924-127		
		330R	924-133	33k	924-333
3R9	924-939	390R	924-139		
4R7	924-947	470R	924-147	47k	924-347
5R6	924-956	560R	924-156		
6R8	924-968	680R	924-168		
8R2	924-982	820R	924-182		

Order Code		1+	10+	25+	50+	100+
As above	5W 5% Ceramic	0.30	0.2500	0.2000	0.1800	0.1600

CERAMIC - Continued

10W Ceramic

Value	Code	Value	Code	Value	Code
0R10	926-810	10R	926-010	1k0	926-210
0R12	926-812	12R	926-012	1k2	926-212
0R15	926-815	15R	926-015	1k5	926-215
0R18	926-818	18R	926-018	1k8	926-218
0R22	926-822	22R	926-022	2k2	926-222
0R27	926-827	27R	926-027	2k7	926-227
0R33	926-833	33R	926-033	3k3	926-233
0R39	926-839	39R	926-039	3k9	926-239
0R47	926-847	47R	926-047	4k7	926-247
0R56	926-856	56R	926-056	5k6	926-256
0R68	926-868	68R	926-068	6k8	926-268
0R82	926-882	82R	926-082	8k2	926-282

Value	Code	Value	Code	Value	Code
1R0	926-910	100R	926-110	10k	926-310
1R2	926-912	120R	926-112	12k	926-312
1R5	926-915	150R	926-115	15k	926-315
1R8	926-918	180R	926-118	18k	926-318
2R2	926-922	220R	926-122	22k	926-322
2R7	926-927	270R	926-127		
3R3	926-933	330R	926-133		
3R9	926-939	390R	926-139		
4R7	926-947	470R	926-147		
5R6	926-956	560R	926-156		
6R8	926-968	680R	926-168		
8R2	926-982	820R	926-182		

Order Code		1+	10+	25+	50+	100+
As above	10W 5% Ceramic	0.40	0.3200	0.2880	0.2560	0.2240

20W Ceramic

Value	Code	Value	Code	Value	Code
1R0	927-910	3R9	927-939	15R	927-015
1R2	927-912	4R7	927-947	18R	927-018
1R5	927-915	5R6	927-956	22R	927-022
1R8	927-918	6R8	927-968	27R	927-027
2R2	927-922	8R2	927-982	33R	927-033
2R7	927-927	10R	927-010	39R	927-039
3R3	927-933	12R	927-012	47R	927-047
				68R	927-068

Order Code		1+	10+	25+	50+	100+
As above	20W 5% Ceramic	1.12	1.0080	0.8960	0.7840	0.7000

25 & 50W 5% ALUMINIUM

Wirewound resistors housed in an aluminium case which ensures high dissipation at a relatively low surface temperature. Full rating can only be dissipated when mounted on a heatsink.

Technical Specification

Resistance Range	25W 0Ω1 to 82k 50W 0Ω05 to 82k
Resistance Tolerance	±5%
Dimensions	25W 29 x 28 x 15mm 50W 51 x 30 x 17mm

25W Aluminium

Value	Code	Value	Code	Value	Code
0R10	942-810	10R	942-010	1k0	942-210
0R12	942-812	12R	942-012	1k2	942-212
0R15	942-815	15R	942-015	1k5	942-215
0R18	942-818	18R	942-018	1k8	942-218
0R22	942-822	22R	942-022	2k2	942-222
0R27	942-827	27R	942-027	2k7	942-227
0R33	942-833	33R	942-033	3k3	942-233
0R39	942-839	39R	942-039	3k9	942-239
0R47	942-847	47R	942-047	4k7	942-247
0R56	942-856	56R	942-056	5k6	942-256
0R68	942-868	68R	942-068	6k8	942-268
0R82	942-882	82R	942-082	8k2	942-282

Value	Code	Value	Code	Value	Code
1R0	942-910	100R	942-110	10k	942-310
1R2	942-912	120R	942-112	12k	942-312
1R5	942-915	150R	942-115	15k	942-315
1R8	942-918	180R	942-118	18k	942-318
2R2	942-922	220R	942-122	22k	942-322
2R7	942-927	270R	942-127	27k	942-327
3R3	942-933	330R	942-133	33k	942-333
3R9	942-939	390R	942-139	39k	942-339
4R7	942-947	470R	942-147	47k	942-347
5R6	942-956	560R	942-156	56k	942-356
6R8	942-968	680R	942-168	68k	942-368
8R2	942-982	820R	942-182	82k	942-382

Order Code		1+	10+	25+	50+
942-910	0R1 25W 5% Aluminium Resistor	1.36	1.2240	1.0880	0.9520
942-822	2R2 25W 5% Aluminium Resistor	1.36	1.2240	1.0880	0.9520
942-847	4R7 25W 5% Aluminium Resistor	1.36	1.2240	1.0880	0.9520
942-922	2R2 25W 5% Aluminium Resistor	1.36	1.2240	1.0880	0.9520
942-947	4R7 25W 5% Aluminium Resistor	1.36	1.2240	1.0880	0.9520
942-010	10R 25W 5% Aluminium Resistor	1.36	1.2240	1.0880	0.9520
942-022	22R 25W 5% Aluminium Resistor	1.36	1.2240	1.0880	0.9520
942-033	33R 25W 5% Aluminium Resistor	1.36	1.2240	1.0880	0.9520
942-047	47R 25W 5% Aluminium Resistor	1.36	1.2240	1.0880	0.9520
942-068	68R 25W 5% Aluminium Resistor	1.36	1.2240	1.0880	0.9520
942-110	100R 25W 5% Aluminium Resistor	1.36	1.2240	1.0880	0.9520
942-122	220R 25W 5% Aluminium Resistor	1.36	1.2240	1.0880	0.9520
942-147	470R 25W 5% Aluminium Resistor	1.36	1.2240	1.0880	0.9520
942-210	1k0 25W 5% Aluminium Resistor	1.36	1.2240	1.0880	0.9520
942-247	4k7 25W 5% Aluminium Resistor	1.36	1.2240	1.0880	0.9520
All other values, 25W 5% Aluminium Resistor		2.00	1.8000	1.7000	1.5000

50W Aluminium

Value	Code	Value	Code	Value	Code
0R05	943-750				
0R10	943-810	10R	943-010	1k0	943-210
0R12	943-812	12R	943-012	1k2	943-212
0R15	943-815	15R	943-015	1k5	943-215
0R18	943-818	18R	943-018	1k8	943-218
0R22	943-822	22R	943-022	2k2	943-222
0R27	943-827	27R	943-027	2k7	943-227
0R33	943-833	33R	943-033	3k3	943-233
0R39	943-839	39R	943-039	3k9	943-239
0R47	943-847	47R	943-047	4k7	943-247
0R56	943-856	56R	943-056	5k6	943-256
0R68	943-868	68R	943-068	6k8	943-268
0R82	943-882	82R	943-082	8k2	943-282

Value	Code	Value	Code	Value	Code
1R0	943-910	100R	943-110	10k	943-310
1R2	943-912	120R	943-112	12k	943-312
1R5	943-915	150R	943-115	15k	943-315
1R8	943-918	180R	943-118	18k	943-318
2R2	943-922	220R	943-122	22k	943-322
2R7	943-927	270R	943-127	27k	943-327
3R3	943-933	330R	943-133	33k	943-333
3R9	943-939	390R	943-139	39k	943-339
4R7	943-947	470R	943-147	47k	943-347
5R6	943-956	560R	943-156	56k	943-356
6R8	943-968	680R	943-168	68k	943-368
8R2	943-982	820R	943-182	82k	943-382

Order Code		1+	10+	25+	50+
943-750	0R05 50W 5% Aluminium Resistor	1.58	1.4220	1.3430	1.1850
943-810	1R0 50W 5% Aluminium Resistor	1.58	1.4220	1.3430	1.1850
943-847	0R47 50W 5% Aluminium Resistor	1.58	1.4220	1.3430	1.1850
943-868	0R68 50W 5% Aluminium Resistor	1.58	1.4220	1.3430	1.1850
943-910	1R0 50W 5% Aluminium Resistor	1.58	1.4220	1.3430	1.1850
943-922	2R2 50W 5% Aluminium Resistor	1.58	1.4220	1.3430	1.1850
943-933	3R3 50W 5% Aluminium Resistor	1.58	1.4220	1.3430	1.1850
943-947	4R7 50W 5% Aluminium Resistor	1.58	1.4220	1.3430	1.1850
943-968	6R8 50W 5% Aluminium Resistor	1.58	1.4220	1.3430	1.1850
943-010	10R 50W 5% Aluminium Resistor	1.58	1.4220	1.3430	1.1850
943-015	15R 50W 5% Aluminium Resistor	1.58	1.4220	1.3430	1.1850
943-022	22R 50W 5% Aluminium Resistor	1.58	1.4220	1.3430	1.1850
943-033	33R 50W 5% Aluminium Resistor	1.58	1.4220	1.3430	1.1850
943-047	47R 50W 5% Aluminium Resistor	1.58	1.4220	1.3430	1.1850
943-068	68R 50W 5% Aluminium Resistor	1.58	1.4220	1.3430	1.1850
943-110	100R 50W 5% Aluminium Resistor	1.58	1.4220	1.3430	1.1850
943-122	220R 50W 5% Aluminium Resistor	1.58	1.4220	1.3430	1.1850
943-147	470R 50W 5% Aluminium Resistor	1.58	1.4220	1.3430	1.1850
943-210	1k0 50W 5% Aluminium Resistor	1.58	1.4220	1.3430	1.1850
All other values, 50W 5% Aluminium Resistor		2.48	2.2316	2.1076	1.8596

THERMISTORS

Miniature NTC (Negative Temperature Coefficient) disc thermistors for general purpose applications including temperature measurement and compensation.

Technical Specification

Res @ 25°C	Res @ 100°C	Max. Current @ 25°C	B Constant	Time Constant	Max. Power
300R	30R	125mA	3000°K	15s	500mW
1k0	70R	80mA	3700°K	17s	500mW
5k0	300R	45mA	4100°K	15s	500mW
20k	1k0	25mA	4200°K	18s	500mW
100k	4k0	15mA	4400°K	16s	500mW

Order Code			1+	10+	25+	50+	100+
928-130	300R	NTC Thermistor	0.36	0.2700	0.1800	0.1440	0.1260
928-210	1k0	NTC Thermistor	0.36	0.2700	0.1800	0.1440	0.1260
928-250	5k0	NTC Thermistor	0.36	0.2700	0.1800	0.1440	0.1260
928-320	20k	NTC Thermistor	0.36	0.2700	0.1800	0.1440	0.1260
928-410	100k	NTC Thermistor	0.36	0.2700	0.1800	0.1440	0.1260

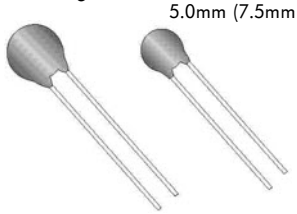
NTC INRUSH THERMISTORS

Negative temperature coefficient thermistors designed to limit the initial current flow to a circuit. Typically used in power supplies, lighting, motor and other applications requiring a Soft Start supply.

Technical Specification

Steady State Current	Resistance Cold	Resistance Hot	Thermal Dissipation	Thermal Time	Dims
1A	120Ω	2.29Ω	14mW/°C	35s	10mmØ
2A	8Ω	0.2Ω	11mW/°C	35s	8mmØ
2A	20Ω	0.604Ω	16mW/°C	45s	10mmØ
3A	10Ω	0.29Ω	13mW/°C	50s	10mmØ
5A	2.5Ω	0.1Ω	13mW/°C	35s	10mmØ
5A	5Ω	0.12Ω	13mW/°C	68s	13mmØ

Operating Temperature Range -40 to +170°C
Lead Pitch 5.0mm (7.5mm 13mmØ)



Order Code			1+	10+	25+	50+	100+
929-110	1A 120Ω NTC Limiter		1.06	0.9500	0.8480	0.7420	0.6625
929-120	2A 8Ω NTC Limiter		1.05	0.8400	0.7560	0.6720	0.5880
929-122	2A 20Ω NTC Limiter		1.05	0.8400	0.7560	0.6720	0.5880
929-130	3A 10Ω NTC Limiter		1.05	0.8400	0.7560	0.6720	0.5880
929-150	5A 2.5Ω NTC Limiter		1.05	0.8400	0.7560	0.6720	0.5880
929-152	5A 5Ω NTC Limiter		1.60	1.2800	1.1520	1.0240	0.8960

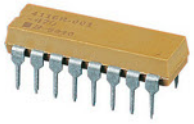
RESISTOR NETWORKS

DIL - Dual In Line

Thick film resistor networks housed in a DIL, low profile, ceramic package. Cermet elements on a high quality alumina substrate. Each package contains eight isolated resistors.

Technical Specification

Resistance Range	47Ω to 100k
Resistance Tolerance	2%
Power Dissipation	2W @ 70°C (commoned)
Temperature Coefficient	±100ppm/°C (R≥100Ω) ±250ppm/°C (R<100Ω)
Working Voltage	100V
Insulation Resistance	>10,000M
Operating Temperature Range	-55 to +125°C



Value	Order Code	Value	Order Code	Value	Order Code
47R	936-047	1k0	936-210	10k	936-310
100R	936-110	2k2	936-222	22k	936-322
220R	936-122				
330R	936-133	4k7	936-247	47k	936-347
470R	936-147			100k	936-410

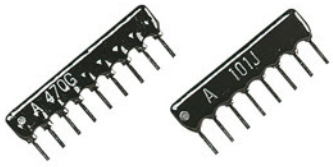
Order Code		1+	25+	50+	100+	500+
As above	8 Isolated DIL network	0.35	0.3150	0.2800	0.2450	0.2188

SIL - Single in Line

Thick film resistor networks housed in a SIL, low profile epoxy coated package. High quality metal glaze elements on a ceramic substrate. A choice of isolated or commoned styles. Offering a space saving and greater reliability than standard resistors.

Technical Specification

Resistance Range	47Ω to 100k
Resistance Tolerance	±2%
Power Dissipation	0.125W @ 70°C (commoned) 0.2W @70°C (isolated)
Temperature Coefficient	±100ppm/°C
Working Voltage	100V
Insulation Resistance	>10,000M
Operating Temperature Range	-55 to +125°C



4 Isolated Value	4 Isolated Order Code	7 Commoned Value	7 Commoned Order Code	8 Commoned Value	8 Commoned Order Code
47R	930-047	47R	932-047	47R	933-047
100R	930-110	100R	932-110	100R	933-110
220R	930-122	220R	932-122	220R	933-122
330R	930-133	330R	932-133	330R	933-133
470R	930-147	470R	932-147	470R	933-147
1k0	930-210	1k0	932-210	1k0	933-210
2k2	930-222	2k2	932-222	2k2	933-222
3k3	930-233	3k3	932-233	3k3	933-233
4k7	930-247	4k7	932-247	4k7	933-247
10k	930-310	10k	932-310	10k	933-310
22k	930-322	22k	932-322	22k	933-322
33k	930-333	33k	932-333	33k	933-333
47k	930-347	47k	932-347	47k	933-347
100k	930-410	100k	932-410	100k	933-410

Order Code		1+	25+	50+	100+	500+
As above	4 Isolated Network	0.10	0.0910	0.0650	0.0520	0.0468
As above	7 Commoned Network	0.11	0.0900	0.0750	0.0600	0.0480
As above	8 Commoned Network	0.12	0.1020	0.0850	0.0680	0.0544

SINGLE TURN CARBON PRESETS

Sub-miniature enclosed

Fully enclosed single turn carbon track preset potentiometers. Sub-miniature Horizontal style only 6mm square and with a height of 5mm above the PCB.

Technical Specification

Resistance Range	100Ω to 1M0
Resistance Tolerance	±25%
Power Dissipation	0.1W @ 70°C
Working Voltage	50Vdc
Rotation Angle	260° ±20%
Operating Temperature Range	-30 to +70°C

Value	Order Code	Value	Order Code
200R	992-120	20k	992-320
500R	992-150	50k	992-350
1k0	992-210	100k	992-410
2k0	992-220	200k	992-420
5k0	992-250	500k	992-450
10k	992-310	1M0	992-510

Order Code		1+	25+	50+	100+	500+
As above	Subminiature Enclosed	0.14	0.1200	0.1080	0.0960	0.0840

Miniature Enclosed

Fully enclosed miniature single turn carbon preset potentiometers. Available in Horizontal & Vertical styles, adjustable from both sides.

Technical Specification

Resistance Range	100Ω to 1M0
Resistance Tolerance	±20%
Power Dissipation	0.15W @ 40°C
Working Voltage	200Vdc
Rotation Angle	295° ±20%
End Resistance	2Ω
Operating Temperature Range	-25 to +70°C

Horizontal Mounting Preset		Vertical Mounting Preset	
Value	Order Code	Value	Order Code
100R	998-110	100R	999-110
220R	998-122	220R	999-122
470R	998-147	470R	999-147
1k0	998-210	1k0	999-210
2k2	998-222	2k2	999-222
4k7	998-247	4k7	999-247
10k	998-310	10k	999-310
22k	998-322	22k	999-322
47k	998-347	47k	999-347
100k	998-410	100k	999-410
220k	998-422	220k	999-422
470k	998-447	470k	999-447
1M0	998-510	1M0	999-510

Order Code		1+	25+	50+	100+	500+
As above	Miniature Enclosed	0.12	0.0960	0.0864	0.0768	0.0672

Miniature Open

Horizontal Open skeleton single turn preset potentiometers. Linear carbon track.

Technical Specification

Resistance Range	100Ω to 1M0
Resistance Tolerance	±30%
Power Dissipation	0.1W @ 40°C
Working Voltage	200Vdc
Rotation Angle	220° ±10%
End Resistance	2%
Operating Temperature Range	-20 to +70°C

Value	Order Code	Value	Order Code
100R	996-110	10k	996-310
220R	996-122	22k	996-322
470R	996-147	100k	996-410
1k0	996-210	220k	996-422
2k2	996-222	470k	996-447
4k7	996-247	1M0	996-510

Order Code		1+	25+	50+	100+	500+
As above	Open Horizontal Preset	0.09	0.0680	0.0612	0.0544	0.0476

Spindle / Thumbwheel Presets

Fully enclosed carbon film single turn preset. Adjustment made by either a thumbwheel or spindle, supplied separately. The spindle is available in four sizes and can accept a control knob designed for 6.35mm shafts.

Technical Specification

Resistance Range	100Ω to 10M
Resistance Tolerance	±20%
Power Dissipation	0.25W @ 40°C
Operating Temperature Range	-25 to +70°C

Horizontal Mounting Preset		Vertical Mounting Preset	
Value	Order Code	Value	Order Code
100R	994-110	100R	995-110
220R	994-122	220R	995-122
470R	994-147	470R	995-147
1k0	994-210	1k0	995-210
2k2	994-222	2k2	995-222
4k7	994-247	4k7	995-247
10k	994-310	10k	995-310
22k	994-322	22k	995-322
47k	994-347	47k	995-347
100k	994-410	100k	995-410
220k	994-422	220k	995-422
470k	994-447	470k	995-447
1M0	994-510	1M0	995-510
2M2	994-522	2M2	995-522
4M7	994-547	4M7	995-547
		10M	995-610

Order Code		1+	25+	50+	100+	500+
As above	Horizontal Preset	0.29	0.2300	0.2070	0.1840	0.1610
As above	Vertical Preset	0.29	0.2300	0.2070	0.1840	0.1610
987-010	16mm Dia. Thumbwheel	0.11	0.0860	0.0774	0.0688	0.0602
987-015	9.5mm Plastic Spindle	0.11	0.0860	0.0774	0.0688	0.0602
987-020	15mm Plastic Spindle*	0.10	0.0800	0.0720	0.0640	0.0560
987-030	19mm Plastic Spindle	0.10	0.0800	0.0720	0.0640	0.0560
987-040	39mm Plastic Spindle	0.15	0.1190	0.1071	0.0952	0.0833

MULTITURN CERMET PRESETS

1/4" Square - Top Adjust

Miniature multiturn cermet presets housed in a sealed moulded case. Precious metal multi-finger contact for reliable and stable performance. Top adjustment screw.

Technical Specification

Resistance Range	100Ω to 100k
Resistance Tolerance	±10%
Power Dissipation	0.25W @ 85°C
Working Voltage	200Vdc
Electrical Travel	15 Turns
End Resistance	2Ω Max.
Operating Temperature Range	-55 to +125°C

Value	Order Code	Value	Order Code
100R	971-110	5k0	971-250
200R	971-120	10k	971-310
500R	971-150	20k	971-320
1k0	971-210	50k	971-350
2k0	971-220	100k	971-410

Order Code		1+	25+	50+	100+	500+
As above	1/4" Multiturn - Top Adj.	1.11	0.8900	0.8010	0.7120	0.6230

3/8" Square - Top or Side Adjust

Multiturn cermet presets housed in a sealed moulded case. Precious metal multi-finger contact for reliable and stable performance. Top or side adjustment screw.

Technical Specification

Resistance Range	100Ω to 1M0
Resistance Tolerance	±10%
Power Dissipation	0.5W @ 85°C
Working Voltage	200Vdc
Electrical Travel	20 Turns
End Resistance	2Ω Max.
Operating Temperature Range	-55 to +125°C

Top Adjust (973-XXX)

Top Adjust

Value	Order Code
100R	973-110
200R	973-120
500R	973-150
1k0	973-210
2k0	973-220
5k0	973-250
10k	973-310
20k	973-320
50k	973-350
100k	973-410
200k	973-420
500k	973-450
1M0	973-510

Side Adjust (972-XXX)

Side Adjust

Value	Order Code
200R	972-120
500R	972-150
1k0	972-210
2k0	972-220
5k0	972-250
10k	972-310
20k	972-320
50k	972-350
100k	972-410
1M0	972-510

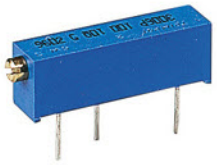
Order Code		1+	25+	50+	100+	500+
973-XXX	3/8" Multiturn - Top Adj	0.89	0.7100	0.6200	0.4950	0.4728
972-XXX	3.8" Multiturn - Side Adj	0.98	0.7800	0.7020	0.6240	0.5460

3/4" Rectangular - End Adjust

Multiturn cermet presets housed in a sealed moulded case. Precious metal multi-finger contact for reliable and stable performance. End adjustment screw.

Technical Specification

Resistance Range	50Ω to 1M0
Resistance Tolerance	±10%
Power Dissipation	0.75W @ 85°C
Working Voltage	200Vdc
Electrical Travel	20 Turns
End Resistance	2Ω Max.
Operating Temperature Range	-55 to +125°C



Order Code			1+	25+	50+	100+	500+
974-050	50Ω	3/4" Multiturn	0.59	0.4878	0.3902	0.3122	0.2731
974-110	100Ω	3/4" Multiturn	0.62	0.5145	0.4116	0.3293	0.2881
974-120	200Ω	3/4" Multiturn	0.55	0.4575	0.3660	0.2928	0.2562
974-150	500Ω	3/4" Multiturn	0.57	0.4560	0.4104	0.3648	0.3192
974-210	1k0	3/4" Multiturn	0.55	0.4543	0.3634	0.2907	0.2544
974-220	2k0	3/4" Multiturn	0.55	0.4543	0.3634	0.2907	0.2544
974-250	5k0	3/4" Multiturn	0.60	0.4804	0.4324	0.3843	0.3363
974-310	10k	3/4" Multiturn	0.67	0.5350	0.4815	0.4280	0.3745
974-320	20k	3/4" Multiturn	0.55	0.4575	0.3660	0.2928	0.2562
974-350	50k	3/4" Multiturn	0.60	0.4983	0.3986	0.3189	0.2790
974-410	100k	3/4" Multiturn	0.70	0.5628	0.5065	0.4502	0.3940
974-420	200k	3/4" Multiturn	0.62	0.4926	0.4433	0.3941	0.3448
974-450	500k	3/4" Multiturn	0.59	0.4878	0.3902	0.3122	0.2731
974-510	1M0	3/4" Multiturn	0.55	0.4575	0.3660	0.2928	0.2562

24MM CARBON

Low cost carbon track single gang potentiometers. Solder tag connections, 6mm plastic shaft.

Value	Order Code	Value	Order Code	Value	Order Code
470R Lin	951-147	100k Lin	951-410	4k7 Log	950-247
1k0 Lin	951-210	220k Lin	951-422	10k Log	950-310
4k7 Lin	951-247	470k Lin	951-447	47k Log	950-347
10k Lin	951-310	1M0 Lin	951-510	100k Log	950-410
22k Lin	951-322	2M2 Lin	951-522	1M0 Log	950-510
47k Lin	951-347			2M2 Log	950-522

ORDER CODE		1+	10+	25+	50+	100+
As above	24mm Standard Pots	0.56	0.45	0.4050	0.3600	0.3150

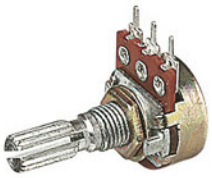
16MM PCB CARBON

16mm Diameter single & dual gang carbon track potentiometers suitable for PCB or panel mounting. Supplied with an aluminium serrated shaft, 6mmØ, 18 teeth.

Technical Specification

Resistance Range	470Ω to 1M0 Single 10k to 500k Dual
Resistance Tolerance	±20%
Power Dissipation	0.2W Lin, 0.1W Log
Working Voltage	200V Lin, 150V Log
Electrical Travel	300° ±5°
Operating Temperature Range	-25 to +70°C

Single Gang



ORDER CODE		1+	10+	25+	50+	100+
947-110	100R Linear PCB Pot	1.07	0.9990	0.9324	0.8658	0.8325
947-147	470R Linear PCB Pot	0.40	0.3750	0.3500	0.3250	0.3125
947-210	1k0 Linear PCB Pot	0.40	0.3750	0.3500	0.3250	0.3125
947-247	4k7 Linear PCB Pot	0.40	0.3750	0.3500	0.3250	0.3125
947-310	10k Linear PCB Pot	0.40	0.3750	0.3500	0.3250	0.3125
947-320	20k Linear PCB Pot	1.07	0.9990	0.9324	0.8658	0.8325
947-347	47k Linear PCB Pot	0.40	0.3750	0.3500	0.3250	0.3125
947-410	100k Linear PCB Pot	0.40	0.3750	0.3500	0.3250	0.3125
947-420	200k Linear PCB Pot	1.07	0.9990	0.9324	0.8658	0.8325
947-447	470k Linear PCB Pot	0.40	0.3750	0.3500	0.3250	0.3125
947-510	1M0 Linear PCB Pot	0.40	0.3750	0.3500	0.3250	0.3125
946-210	1k0 Log PCB Pot	1.07	0.9990	0.9324	0.8658	0.8325
946-247	4k7 Log PCB Pot	0.40	0.3750	0.3500	0.3250	0.3125
946-310	10k Log PCB Pot	1.07	0.9990	0.9324	0.8658	0.8325
946-320	20k Log PCB Pot	1.07	0.9990	0.9324	0.8658	0.8320
946-350	50k Log PCB Pot	1.07	0.9990	0.9324	0.8658	0.8325
946-410	100k Log PCB Pot	1.07	0.9990	0.9324	0.8658	0.8325
946-420	200k Log PCB Pot	1.07	0.9990	0.9324	0.8658	0.8325
946-450	500k Log PCB Pot	1.07	0.9990	0.9324	0.8658	0.8325
946-510	1M0 Log PCB Pot	0.40	0.3750	0.3500	0.3250	0.3125

Dual Gang

Value	Order Code	Value	Order Code
10k Lin	949-310	10k Log	948-310
50k Lin	949-350	50k Log	948-350
100k Lin	949-410	100k Log	948-410
500k Lin	949-450	500k Log	948-450

ORDER CODE		1+	10+	25+	50+	100+
As above	Linear PCB Dual Pots	1.69	1.6031	1.5188	1.4344	1.4063
As above	Log PCB Dual Pots	1.69	1.6031	1.5188	1.4344	1.4063

POSITIVE POSITION PCB CARBON

A range of high quality pots featuring positive position "Click" rotation. Available with a Centre click or 41 click positions, single & dual gang carbon track for PCB or panel mounting.

Technical Specification

Resistance Range	10k to 100k
Insulation Resistance	<100M/500V
Tracking Error	±3dB, 0/-40dB
Power Dissipation	0.2W
Test Voltage	500V~/1 min
Electrical Travel	300° ±5°

Single Gang - Centre Click

ORDER CODE		1+	10+	25+	50+	100+
944-310	10k Lin Centre click	1.19	1.1354	1.0757	1.0159	0.9338
944-320	20k Lin Centre click	1.19	1.1354	1.0757	1.0159	0.9338
944-350	50k Lin Centre click	1.19	1.1354	1.0757	1.0159	0.9338
944-410	100k Lin Centre click	1.19	1.1354	1.0757	1.0159	0.9338

Dual Gang - Centre Click

ORDER CODE		1+	10+	25+	50+	100+
944-312	10k Dual Lin Cnt click	2.13	2.0246	1.9181	1.8115	1.6650
944-352	50k Dual Lin Cnt click	2.13	2.0246	1.9181	1.8115	1.6650
944-412	100k Dual Lin cnt click	2.13	2.0246	1.9181	1.8115	1.6650

Single Gang - 41 Click

ORDER CODE		1+	10+	25+	50+	100+
945-310	10k Lin 41 Click Pot	1.80	1.7100	1.6200	1.5300	1.4063
945-350	50k Lin 41 Click Pot	1.80	1.7100	1.6200	1.5300	1.4063
945-410	100k Lin 41 Click Pot	1.80	1.7100	1.6200	1.5300	1.4063
945-311	10k Log 41 Click Pot	1.80	1.7100	1.6200	1.5300	1.4063
945-351	50k Log 41 Click Pot	1.80	1.7100	1.6200	1.5300	1.4063

Dual Gang - 41 Click

ORDER CODE		1+	10+	25+	50+	100+
945-312	10k Lin 41 Click Pot	2.66	2.5308	2.3976	2.2644	2.0813
945-352	50k Lin 41 Click Pot	2.66	2.5308	2.3976	2.2644	2.0813
945-412	100k Lin 41 Click Pot	2.66	2.5308	2.3976	2.2644	2.0813
945-313	10k Log 41 Click Pot	2.66	2.5308	2.3976	2.2644	2.0813
945-353	50k Log 41 Click Pot	2.66	2.5308	2.3976	2.2644	2.0813
945-413	100K Log 41 Click Pot	2.66	2.5308	2.3976	2.2644	2.0813

HIGH QUALITY
Dual Gang

High quality dual conductive plastic track potentiometers. PCB pin connection, plastic spindle.

Value	Order Code	Value	Order Code
1k0 Lin	955-210	10k Log	954-310
10k Lin	955-310	47k Log	954-347
22k Lin	955-322	100k Log	954-410
47k Lin	955-347		
100k Lin	955-410		

ORDER CODE		1+	10+	25+	50+
As above	Dual Gang Pots - Lin	1.95	1.7550	1.6575	1.4625
As above	Dual Gang Pots - Log	1.80	1.6200	1.5300	1.3500

HIGH QUALITY
Switched Single Gang

High quality conductive plastic track potentiometers incorporating a SPST switch. PCB connection, plastic spindle.

Dims. (WxHxD)	Pin Pitch 5mm
17 x 19.2 x 17mm	Spindle 6Ø x 49mm
Panel Cutout 10.2mmØ	Switch 4A 250Vac

Value	Order Code	Value	Order Code	Value	Order Code
1k0 Lin	953-210	100k Lin	953-410	4k7 Log	952-247
4k7 Lin	953-247	220k Lin	953-422	10k Log	952-310
10k Lin	953-310	470k Lin	953-447	47k Log	952-347
22k Lin	953-322	1M0 Lin	953-510		
47k Lin	953-347	2M2 Lin	953-522		

ORDER CODE		1+	10+	25+	50+	100+
As above	16mm Switched Pots	1.92	1.7280	1.6320	1.4400	1.3125

Also available.....

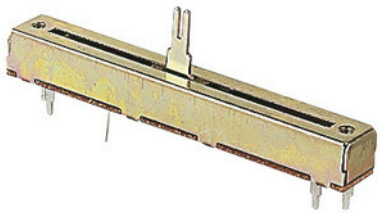
We now stock replacement crossfaders for disco mixers. These are supplied complete with control knob, PCB, mounting screws and most come with a metal plate. Contact our sales dept for a data sheet.

SLIDER POTENTIOMETERS

High quality slider potentiometers with a travel of 60mm. Very smooth single track pot suitable for audio equipment or similar applications. PCB Mounting but may be panel mounting via integral M3 nuts on 80mm centres.

Technical Specification

Resistance Range	10k to 500K
Power Dissipation	0.5W Lin 0.25W Log
Working Voltage	500Vdc Lin 250Vdc Log
Slider Travel	60mm
End Resistance	1% nominal
Operating Temperature Range	-25 to +70°C



ORDER CODE		1+	10+	25+	50+	100+
960-310	10k Slider Pot - Lin	0.92	0.8200	0.7380	0.6560	0.5740
960-410	100k Slider Pot- Lin	0.92	0.8200	0.7380	0.6560	0.5740
960-450	500K Slider Pot - Lin	0.92	0.8200	0.7380	0.6560	0.5740
961-310	10k Slider Pot - Log	0.92	0.8200	0.7380	0.6560	0.5740

SIGNAL DIODES

A range of small signal diodes for general purpose applications. Axial lead germanium, silicon epitaxial and silicon schottky types.

Technical Specification

Device	Type	V_{RRM}	I_F Max	Package	Applications
1N914	Si Epitaxial	100V	75mA	DO-35	Fast logic
1N4148	Si Epitaxial	100V	150mA	DO-35	Fast logic
1N4149	Si Epitaxial	100V	75mA	DO-35	High speed fast logic
BAT41	SI Schottky	100V	100mA	DO-35	General purpose
BAT42	SI Schottky	30V	200mA	DO-35	General purpose
BAT46	SI Schottky	100V	150mA	DO-35	General purpose
BAT85	SI Schottky	30V	200mA	DO-35	High speed
BAV21	Si Epitaxial	250V	250mA	DO-35	Switching
BAW62	Si Epitaxial	75V	100mA	DO-35	High speed
BAX16	Si Epitaxial	150V	200mA	DO-35	General purpose
OA200	Si Epitaxial	50V	160mA	DO-7	General purpose

Order Code		1+	50+	100+	500+	1000+
1N914	Si Epitaxial	0.05	0.0347	0.0154	0.0123	0.0108
1N4148	Si Epitaxial	0.03	0.0210	0.0084	0.0076	0.0067
1N4149	Si Epitaxial	0.07	0.0540	0.0486	0.0432	0.0378
BAT41	SI Schottky	0.12	0.0864	0.0720	0.0760	0.0461
BAT42	SI Schottky	0.07	0.0546	0.0364	0.0328	0.0291
BAT46	SI Schottky	0.12	0.0980	0.0784	0.0588	0.0392
BAT85	SI Schottky	0.09	0.0639	0.0426	0.0383	0.0341
BAV21	Si Epitaxial	0.07	0.0420	0.0252	0.0168	0.0134
BAW62	Si Epitaxial	0.08	0.0600	0.0360	0.0240	0.0192
BAX16	Si Epitaxial	0.05	0.0358	0.0322	0.0286	0.0251
OA200	Si Epitaxial	0.56	0.5040	0.4480	0.3920	0.3640

ZENER DIODES

Axial lead, glass encapsulated zener diodes available in 500mW or 1.3W power ratings and a wide voltage range. 5% Tolerance.

500mW BZX55 Series DO-35 Package

Order Code		Order Code	
725-024	2V4 500mW	725-150	15V 500mW
725-027	2V7 500mW	725-160	16V 500mW
725-030	3V0 500mW	725-180	18V 500mW
725-033	3V3 500mW	725-200	20V 500mW
725-036	3V6 500mW	725-220	22V 500mW
725-039	3V9 500mW	725-240	24V 500mW
725-043	4V3 500mW	725-270	27V 500mW
725-047	4V7 500mW	725-300	30V 500mW
725-051	5V1 500mW	725-330	33V 500mW
725-056	5V6 500mW	725-360	36V 500mW
725-062	6V2 500mW	725-390	39V 500mW
725-068	6V8 500mW	725-430	43V 500mW
725-075	7V5 500mW	725-470	47V 500mW
725-082	8V2 500mW	725-510	51V 500mW
725-091	9V1 500mW	725-560	56V 500mW
725-100	10V 500mW	725-620	62V 500mW
725-110	11V 500mW	725-680	68V 500mW
725-120	12V 500mW	725-750	75V 500mW
725-130	13V 500mW		

Order Code		1+	50+	100+	500+	1000+
See Above	500mW Zener Diodes	0.06	0.0297	0.0198	0.0158	0.0139

1.3W BZX85 Series DO-41 Package

Order Code		Order Code	
726-027	2V7 1.3W	726-150	15V 1.3W
726-030	3V0 1.3W	726-160	16V 1.3W
726-033	3V3 1.3W	726-180	18V 1.3W
726-036	3V6 1.3W	726-200	20V 1.3W
726-039	3V9 1.3W	726-220	22V 1.3W
726-043	4V3 1.3W	726-240	24V 1.3W
726-047	4V7 1.3W	726-270	27V 1.3W
726-051	5V1 1.3W	726-300	30V 1.3W
726-056	5V6 1.3W	726-330	33V 1.3W
726-062	6V2 1.3W	726-360	36V 1.3W
726-068	6V8 1.3W	726-390	39V 1.3W
726-075	7V5 1.3W	726-430	43V 1.3W
726-082	8V2 1.3W	726-470	47V 1.3W
726-091	9V1 1.3W	726-510	51V 1.3W
726-100	10V 1.3W	726-560	56V 1.3W
726-110	11V 1.3W	726-620	62V 1.3W
726-120	12V 1.3W	726-680	68V 1.3W
726-130	13V 1.3W	726-750	75V 1.3W

Order Code		1+	50+	100+	500+	1000+
See Above	1.3W Zener Diodes	0.10	0.0600	0.0400	0.0320	0.0280

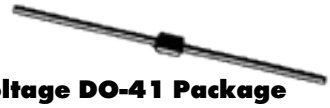
SPEAKER L PAD

We also carry in stock a range of potentiometers suitable for speaker attenuation, as the load impedance to the amplifier is always maintained. Available in single & dual gang at different power ratings.

For more details see our web site
www.theelectronicsshop.co.uk

RECTIFIER DIODES

A comprehensive range of axial lead silicon rectifier diodes. Available in a range of Current and Voltage ratings. UL94V-0 plastic encapsulated.



1A High Voltage DO-41 Package

Order Code			1+	50+	100+	500+	1000+
BY127	1250V	1A	0.18	0.1620	0.1440	0.1260	0.1170
BY133	1300V	1A	0.10	0.0741	0.0494	0.0395	0.0346

1A Fast Recovery DO-41 Package

Order Code			1+	50+	100+	500+	1000+
BA157	400V	1A	0.07	0.0536	0.0402	0.0268	0.0214
BA159	1000V	1A	0.13	0.0960	0.0640	0.0512	0.0448

1A Standard 1N4000 Series DO-41 Package

Order Code			1+	50+	100+	500+	1000+
1N4001	50V	1A	0.04	0.0270	0.0135	0.0090	0.0081
1N4002	100V	1A	0.05	0.0360	0.0180	0.0120	0.0096
1N4003	200V	1A	0.03	0.0240	0.0120	0.0080	0.0064
1N4004	400V	1A	0.05	0.0366	0.0183	0.0122	0.0098
1N4005	600V	1A	0.05	0.0396	0.0198	0.0132	0.0106
1N4006	800V	1A	0.05	0.0396	0.0198	0.0132	0.0106
1N4007	1000V	1A	0.03	0.0240	0.0120	0.0080	0.0064

1A Ultrafast UF4000 Series DO-41 Package

Order Code			1+	50+	100+	500+	1000+
UF4001	50V	1A	0.08	0.0660	0.0550	0.0440	0.0352
UF4002	100V	1A	0.08	0.0718	0.0615	0.0513	0.0410
UF4003	200V	1A	0.09	0.0805	0.0690	0.0575	0.0460
UF4004	400V	1A	0.08	0.0718	0.0615	0.0513	0.0410
UF4005	600V	1A	0.10	0.0840	0.0720	0.0600	0.0480
UF4006	800V	1A	0.10	0.0840	0.0720	0.0600	0.0480
UF4007	1000V	1A	0.14	0.1185	0.0948	0.0853	0.0758

3A Standard 1N5400 Series DO-27 Package

Order Code			1+	50+	100+	500+	1000+
1N5400	50V	3A	0.08	0.0650	0.0520	0.0416	0.0364
1N5401	100V	3A	0.08	0.0471	0.0314	0.0251	0.0220
1N5402	200V	3A	0.08	0.0495	0.0330	0.0264	0.0231
1N5404	400V	3A	0.09	0.0540	0.0360	0.0288	0.0252
1N5406	600V	3A	0.09	0.0687	0.0458	0.0366	0.0321
1N5407	800V	3A	0.09	0.0699	0.0466	0.0373	0.0326
1N5408	1000V	3A	0.10	0.0615	0.0410	0.0328	0.0287

3A Ultrafast UF5400 Series DO-27 Package

Currently under review - phone, fax or e-mail for details

6A Standard R-6 Package

Order Code			1+	50+	100+	500+	1000+
6A05	50V	6A	0.27	0.1780	0.1602	0.1424	0.1246
6A1	100V	6A	0.30	0.1980	0.1782	0.1584	0.1386
6A2	200V	6A	0.27	0.1820	0.1638	0.1456	0.1274
6A4	400V	6A	0.28	0.1860	0.1674	0.1488	0.1302
6A6	600V	6A	0.32	0.2100	0.1890	0.1680	0.1470
6A8	800V	6A	0.30	0.1980	0.1782	0.1584	0.1386
6A10	1000V	6A	0.35	0.2360	0.2124	0.1888	0.1652

BRIDGE RECTIFIERS

A wide range of silicon bridge rectifiers available in a choice of current and voltage ratings.

1A PCB Mounting - DIL Package

UL94V-0 Plastic encapsulated. Standard 4 pin dual in-line package. Equivalent to DB1, DF..M, DM, DI, VM, 1DM, 1B & PBDF10 series.

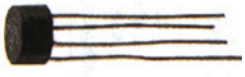
Dims: 6.4 x 9.2mm
Height: 3.3mm
Pins: 5.1 x 7.6mm Pitch

Order Code			1+	25+	50+	100+	500+
700-100	50V	1A	0.32	0.2700	0.2160	0.1728	0.1512
700-101	100V	1A	0.36	0.2860	0.2574	0.2288	0.2002
700-102	200V	1A	0.39	0.3100	0.2790	0.2480	0.2170
700-104	400V	1A	0.39	0.3100	0.2790	0.2480	0.2170
700-106	600V	1A	0.40	0.3325	0.2660	0.2394	0.2128
700-108	800V	1A	0.43	0.3550	0.2840	0.2556	0.2272

1.5A PCB Mounting - Round Package

UL94V-0 Plastic encapsulated. Low profile 4 pin round package. Dims. 5.5 x 8mmØ Equivalent to W0..M, RD15, B..C.., 1KAB.., VE.., PF.. & PB15..M series.

Dims: 9.1mmØmm
Height: 5.5mm
Pins: 5.1mm Square Pitch

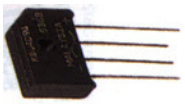


Order Code			1+	25+	50+	100+	500+
700-150	50V	1.5A	0.19	0.1440	0.0960	0.0864	0.0768
700-151	100V	1.5A	0.11	0.0880	0.0792	0.0704	0.0616
700-152	200V	1.5A	0.19	0.1540	0.1386	0.1232	0.1078
700-154	400V	1.5A	0.20	0.1685	0.1348	0.1213	0.1078
700-156	600V	1.5A	0.24	0.1900	0.1710	0.1520	0.1330
700-158	800V	1.5A	0.26	0.2080	0.1872	0.1664	0.1456
700-159	1000V	1.5A	0.18	0.1380	0.0920	0.0828	0.0736

2A PCB Mounting - In-line Package

UL94V-0 Plastic encapsulated. Compact 4 pin In-line package. Equivalent to KBP, FBP, 2KBB..R, 2KBP..M, KBP2, BR8..D, RS2.., 2FBP. & PBP20. series.

Dims: 5.0 x 17.5mm
Height: 14.5mm
Pins: 3.8mm Pitch



Order Code			1+	25+	50+	100+	500+
700-251	100V	2A	0.34	0.2680	0.2412	0.2144	0.1876
700-252	200V	2A	0.34	0.2740	0.2466	0.2196	0.1918
700-254	400V	2A	0.35	0.2800	0.2520	0.2240	0.1960
700-258	800V	2A	0.36	0.2860	0.2574	0.2288	0.2002
700-259	1000V	2A	0.45	0.3620	0.3258	0.2896	0.2534

3A PCB/Panel Mounting - Square Package

UL94V-0 Plastic encapsulated. Miniature 4 pin square package with centre fixing hole. Equivalent to KBPC1.., BR3., KBPC3, SO...., PBPC30., & GBPC1.. series.

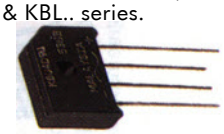
Dims: 15.5mm Square
Height: 6.8mm
Pins: 10.8mm Square Pitch

Order Code			1+	25+	50+	100+	500+
700-302	200V	3A	0.34	0.3024	0.2688	0.2352	0.2100
700-304	400V	3A	0.40	0.3582	0.3184	0.2786	0.2488
700-306	600V	3A	0.33	0.3674	0.2672	0.2338	0.2088
700-308	800V	3A	0.42	0.3744	0.3328	0.2912	0.2600
700-309	1000V	3A	0.33	0.2948	0.2621	0.2293	0.2048

4A PCB Mounting - In-line Package

UL94V-0 Plastic encapsulated. Miniature 4 pin In-line package with fixing hole. Equivalent to KBU4., GBU5., FBU4.., BPU4..., RS4..., PE4... MDA4... & KBL.. series.

Dims: 7.1 x 23.0mm
Height: 19.0mm
Pins: 5.1mm Pitch

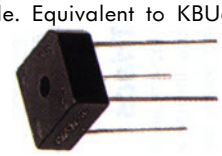


Order Code			1+	25+	50+	100+	500+
700-451	100V	4A	0.78	0.6984	0.6208	0.5432	0.4850
700-452	200V	4A	0.81	0.7188	0.6469	0.5750	0.5032
700-454	400V	4A	0.86	0.7704	0.6848	0.5992	0.5350
700-456	600V	4A	0.90	0.8064	0.7168	0.6272	0.5600
700-458	800V	4A	1.15	1.0364	0.9213	0.8016	0.7198
700-459	1000V	4A	1.21	1.0847	0.9642	0.8436	0.7533

6A PCB/Panel Mounting - Square Package

UL94V-0 Plastic encapsulated. Miniature 4 pin square package with centre fixing hole. Equivalent to KBU6.., GBU6., RS6.., & PBU60. series.

Dims: 15.5mm Square
Height: 6.8mm
Pins: 10.8mm Square Pitch

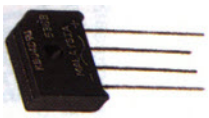


Order Code			1+	25+	50+	100+	500+
700-601	100V	6A	0.49	0.4428	0.3936	0.3444	0.3075
700-602	200V	6A	0.64	0.5080	0.4572	0.4064	0.3556
700-604	400V	6A	0.53	0.4806	0.4272	0.3738	0.3338
700-606	600V	6A	0.67	0.6048	0.5376	0.4704	0.4200
700-608	800V	6A	0.37	0.2996	0.2696	0.2397	0.2097

8A PCB Mounting - In-line Package

UL94V-0 Plastic encapsulated. Miniature 4 pin in-line package with fixing hole. Equivalent to KBU8.., GBU8., RS8.., & PBU80. series.

Dims: 7.1 x 23.0mm Square
Height: 19.0mm
Pins: 5.1mm Pitch

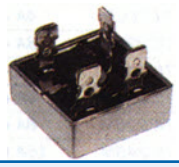


Order Code			1+	25+	50+	100+	500+
700-851	100V	8A	0.98	0.8802	0.7824	0.6846	0.6113
700-852	200V	8A	1.00	0.9000	0.8000	0.7000	0.6250
700-854	400V	8A	1.20	1.0800	0.9600	0.8400	0.7500
700-856	600V	8A	1.33	1.1180	1.0620	0.9440	0.8260
700-858	800V	8A	1.56	1.4044	1.2483	1.0923	0.9753
700-859	1000V	8A	1.05	0.8386	0.8302	0.6709	0.5870

25A Chassis Mounting - Square Package

Metal clad bodies fitted with ¼" fast-on tags. 4 terminal square package with centre fixing hole. Equivalent to KBPC25.., MDA25..., 26MB, SDA1029..., SCBA..., & GBPC25.. series.

Dims: 28.5mm Square
Height: 11.5mm
Pins: 6.3 x 0.8mm Fast-on

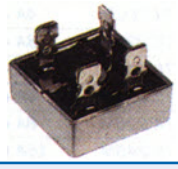


Order Code			1+	10+	25+	50+	100+
701-251	100V	25A	1.47	1.3266	1.1792	1.0318	0.9213
701-252	200V	25A	1.54	1.3860	1.2320	1.0780	0.9625
701-254	400V	25A	1.98	1.7820	1.5840	1.3860	1.2375
701-256	600V	25A	1.82	1.6380	1.4560	1.2740	1.1375
701-258	800V	25A	1.86	1.6740	1.4880	1.3020	1.1625
701-259	1000V	25A	1.88	1.6920	1.5040	1.3160	1.1750

35A Chassis Mounting - Square Package

Metal clad bodies fitted with ¼" fast-on tags. 4 terminal square package with centre fixing hole. Equivalent to KBPC35.., MD35..., 36MB, SDA909..., VK..., & GBPC35.. series.

Dims: 28.5mm Square
Height: 11.5mm
Pins: 6.3 x 0.8mm Fast-on



Order Code			1+	10+	25+	50+	100+
701-351	100V	35A	1.57	1.4130	1.2560	1.0990	0.9813
701-352	200V	35A	1.80	1.6200	1.4400	1.2600	1.1250
701-356	600V	35A	1.90	1.7100	1.5200	1.3300	1.1875
701-359	1000V	35A	2.32	2.0880	1.8560	1.6240	1.4875

DIAC

Silicon bi-directional trigger diode suitable for use in triac firing applications. DO-14 package. Equivalent to BR100, DB3, ST2 & ST4.

Order Code		1+	25+	50+	100+	500+
693-005	32V 150mW Diac	0.08	0.0624	0.0468	0.0312	0.0250

THYRISTORS

A wide range of Miniature & Standard thyristors. Available in a choice of current and voltage ratings.

Technical Specification

Order Code	Device	I_T	V_{DRM}	V_{GT}	I_{GT}	Pi-out	
692-110	2N5060	0.8A	30V	0.8V	200µA	7N	Miniature
692-120	2N5061	0.8A	60V	0.8V	200µA	7N	Miniature
692-111	P0102AA	0.8A	100V	0.8V	200µA	7N	Miniature
692-314	TIC106D	4.0A	400V	0.8V	200µA	17E	Standard
692-514	TIC116D	8.0A	400V	1.5V	20mA	17E	Standard
692-714	TIC126D	12A	400V	1.5V	20mA	17E	Standard
692-715	BT151-500R	12A	500V	1.5V	15mA	17E	Standard

Order Code	1+	25+	50+	100+	500+
692-110	0.19	0.1520	0.1368	0.1216	0.1064
692-120	0.19	0.1544	0.1390	0.1235	0.1081
692-111	0.32	0.2160	0.1944	0.1728	0.1512
692-314	0.60	0.5342	0.4784	0.4186	0.3738
692-514	0.66	0.5904	0.5248	0.4592	0.4100
692-714	1.06	0.7976	0.7090	0.5672	0.4963
692-715	0.65	0.5375	0.4300	0.3440	0.3010

TRIACS

A wide range of Miniature, Standard and Isolated Tab triacs. Available in a choice of current and voltage ratings. The isolated versions have the metal tab electrically isolated to 2500VRMS and therefore do not require insulating hardware. The snubber-less devices have an inbuilt suppression circuit and so do not require a snubber network to be added.

Technical Specification

Order Code	Device	I_T	V_{DRM}	V_{GT}	I_{GT}	Pin-out	
693-314	TIC206D	4.0A	400V	2.0V	5mA	17J	Standard
693-315	BT136-500	4.0A	500V	1.5V	35mA	17J	Standard
693-316	BT136-600	4.0A	600V	1.5V	35mA	17J	Standard
693-326	TIC206M	4.0A	600V	2.0V	5mA	17J	Standard
693-514	TIC226D	8.0A	400V	2.0V	50mA	17J	Standard
693-516	BT137-600	8.0A	600V	1.5V	35mA	17J	Standard
693-526	TIC226M	8.0A	600V	2.0V	50mA	17J	Standard
693-536	BTA08-600C	8.0A	600V	1.75V	25mA	17L	Isolated Tab
693-556	BTA08-600B	8.0A	600V	1.75V	50mA	17L	Isolated Tab
693-566	BTA08-600BW	8.0A	600V	1.65V	50mA	17L	Snubber-less & Iso
693-596	BTA08-600SW	8.0A	600V	1.75V	10mA	17L	Logic, Snub & Iso
693-586	BTA08-600TW	8.0A	600V	1.5V	5mA	17L	Logic, Snub & iso
693-714	TIC236D	12A	400V	2.0V	50mA	17J	Standard
693-766	BTA12A-600BW	12A	600V	1.5V	50mA	17L	Snubber-less & Iso
693-814	TIC246D	16A	400V	2.0V	50mA	17J	Standard
693-815	BT139-500	16A	500V	1.5V	35mA	17J	Standard
693-816	BT139-600	16A	600V	1.5V	35mA	17J	Standard
693-826	TIC246M	16A	600V	2.0V	50mA	17J	Standard
693-856	BTA16-600B	16A	600V	1.5V	50mA	17L	Isolated Tab
693-866	BTA16-600CW	16A	600V	1.5V	35mA	17L	Snubber-less & Iso
693-956	BTA26-600B	26A	600V	1.5V	50mA	18L	Isolated Tab

Order Code	1+	25+	50+	100+	500+
693-314	0.84	0.6758	0.6082	0.5406	0.4731
693-315	0.58	0.4600	0.4140	0.3680	0.3220
693-316	0.50	0.4000	0.3600	0.3200	0.2800
693-326	0.75	0.6000	0.5400	0.4800	0.4200
693-514	0.80	0.7200	0.6400	0.5600	0.5000
693-516	0.58	0.4600	0.4140	0.3680	0.3220
693-526	1.00	0.9000	0.8000	0.7000	0.6250
693-536	0.96	0.7674	0.6907	0.6169	0.5372
693-556	0.84	0.7030	0.5624	0.4499	0.3937
693-566	0.76	0.6300	0.5040	0.4032	0.3528
693-596	0.93	0.7735	0.6188	0.4950	0.4332
693-586	0.93	0.7414	0.6673	0.5931	0.5190
693-714	1.12	1.0080	0.8960	0.7840	0.7000
693-766	0.92	0.7668	0.6134	0.4907	0.4294
693-814	1.00	0.8000	0.7200	0.6400	0.5600
693-815	1.00	0.9000	0.8000	0.7000	0.6250
693-816	1.20	0.9600	0.8640	0.7680	0.6720
693-826	1.00	0.8020	0.7218	0.6416	0.5614
693-856	1.28	1.0680	0.8544	0.6835	0.5981
693-866	1.45	1.1600	1.0440	0.9280	0.8120
693-956	2.78	2.2208	2.9987	1.7766	1.5546

VOLTAGE REGULATORS

Fixed Voltage

A range of fixed voltage regulators with internal overload, thermal and short circuit protection.

Technical Specification

Order Code	Voltage	Current	Input Range	Pinout	
78L05	+5.0V	100mA	+7 to +30V	7B	
LP2950CZ-5.0	+5.0V	160mA	-0.3 to +30V	7B	Micro-power 75µA 380mV
7805	+5.0V	1A	+7 to +25V	17B	
LM2940CT5	+5.0V	1A	+5.5 to +26V	17B	Low dropout voltage (0.5V)
78S05	+5.0V	2A	+8 to +35V	17B	High current version of 7805
LM323K	+5V	3A		23A	High current
78L06	+6.0V	100mA	+8 to +30V	7B	
7806	+6.0V	1A	+8 to +25V	17B	
78L08	+8.0V	100mA	+10.5 to +30V	7B	
7808	+8.0V	1A	+10.5 to +25V	17B	
78L12	+12V	100mA	+14.5 to +35V	7B	
7812	+12V	1A	+14.5 to +30V	17B	
78S12	+12V	2A	+15 to +35V	17B	High current version of 7812
78L15	+15V	100mA	+17.5 to +35V	7B	
7815	+15V	1A	+17.5 to +30V	17B	
78S15	+15V	2A	+18 to +35V	17B	High current version of 7815
78L24	+24V	100mA	+26 to +40V	7B	
79L05	-5.0V	100mA	-7 to -25V	7A	
7905	-5.0V	1A	-7 to -25V	17C	
79L12	-12V	100mA	-14.5 to -35V	7A	
7912	-12V	1A	-14.5 to -30V	17C	
79L15	-15V	100mA	-17.5 to -35V	7A	
7915	-15V	1A	-17.5 to -30V	17C	
79L24	-24V	100mA	-26 to 40V	7A	
7924	-24V	1A	-26 to +40V	17C	

Order Code	1+	25+	50+	100+	500+
78L05	0.20	0.1460	0.1168	0.1051	0.0934
LP2950CZ-5.0	0.72	0.6150	0.4100	0.3280	0.2870
7805	0.27	0.2233	0.1786	0.1607	0.1429
LM2940CT5	1.08	0.9720	0.8640	0.7560	0.6750
78S05	0.53	0.4200	0.3780	0.3360	0.2940
LM323K	2.40	2.1600	2.0400	1.8000	1.6800
78L06	0.32	0.2880	0.2560	0.2240	0.2000
7806	0.27	0.2233	0.1786	0.1607	0.1429
78L08	0.22	0.1575	0.1260	0.1134	0.1008
7808	0.21	0.1640	0.1476	0.1312	0.1148
78L12	0.16	0.1128	0.0902	0.0812	0.0722
7812	0.23	0.1920	0.1536	0.1382	0.1229
78S12	0.42	0.3515	0.2812	0.2531	0.2250
78L15	0.26	0.2100	0.1890	0.1680	0.1470
7815	0.23	0.1915	0.1532	0.1379	0.1226
78S15	0.55	0.4400	0.3960	0.3520	0.3080
78L24	0.39	0.3510	0.3120	0.2730	0.2438
79L05	0.23	0.1524	0.1372	0.1219	0.1067
7905	0.25	0.2100	0.1680	0.1344	0.1176
79L12	0.23	0.2070	0.1840	0.1610	0.1438
7912	0.24	0.1975	0.1580	0.1422	0.1264
79L15	0.28	0.2520	0.2240	0.1960	0.1750
7915	0.22	0.1853	0.1482	0.1334	0.1186
79L24	0.30	0.2700	0.2400	0.2100	0.1875
7924	0.38	0.3000	0.2700	0.2400	0.2100

Variable Voltage

A range of variable output voltage regulators many with current limiting, thermal overload protection and input overload protection.

Technical Specification

Order Code	Current	Voltage	Pin-out	
ADM666	40mA	+1.3 to 16V	(8DIL)	Micropower 6µA, plus +5V Fixed
LM317LZ	100mA	+1.2 to 37V	7O	
TL431CZ	100mA	+1.2 to 37V	7P	
LM723	150mA	+2 to 37V	(14DIL)	Overcurrent protection
LM317T	1.5A	+1.2 to 37V	17L	
LM317K	1.5A	+1.2 to 37V	23K	
LM337T	1.5A	-1.2 to 37V	17N	-ve version of LM317T
L200CV	2A	+2.85 to 36V	(TO-220/5)	Adjustable current limit
L296	4A	+5.1 to 40V	(15/Multiwatt)	Soft start / Switching
L4960	2.5A	+5.1 to 40V	(7/Heptawatt)	Power switching regulator
LM338T	5A	+1.2 to 37V	17L	
LM338K	5A	+1.2 to 37V	23K	

Order Code	1+	25+	50+	100+	500+
ADM666					
LM317LZ	0.29	0.2390	0.1912	0.1530	0.1338
TL431CZ	0.14	0.1130	0.0904	0.0814	0.0723
LM723	0.40	0.3190	0.2871	0.2552	0.2233
LM317T	0.44	0.3630	0.2904	0.2323	0.2003
LM317K	2.28	1.8200	1.6380	1.4560	1.2740
LM337T	0.64	0.5724	0.5152	0.4579	0.4007
L200CV	1.67	1.3374	1.2037	1.0699	0.9362
L296	4.42	3.9805	3.5382	3.0960	2.7643
L4960	2.81	2.5270	2.2462	1.9655	1.7549
LM338T	1.38	1.2420	1.1040	0.9660	0.8625
LM338K	5.31	4.7763	4.2456	3.7149	3.3169

TRANSISTORS

A comprehensive range of transistors covering a wide range of types, ratings and applications.

Germanium

Technical Specification

Device	Type	V_{CB} V_{MAX}	I_C mA_{MAX}	P_{TOT} mW_{MAX}	$h_{FE\ MIN}$ @ I_C mA_{MAX}	f_T MHz	Pin-out
AC187	NPN	25	1.0A	1W			2A
ACY17	PNP	70	500	260			2A
AD161	NPN	32	1.0A	4.0W	80@500	1.0	22A Comp to AD162
AD162	PNP	32	1.0A	6.0W	80@500	1.0	22A Comp to AD161

Order Code	1+	25+	50+	100+	500+
AC187	0.68	0.6120	0.5440	0.4760	0.4420
ACY17	4.84	4.3560	3.8720	3.3880	3.0250
AD161	0.73	0.5800	0.5220	0.4640	0.4060
AD162	0.95	0.7600	0.6840	0.6080	0.5320

Silicon

Device	Type	V_{CB} V_{MAX}	I_C mA_{MAX}	P_{TOT} mW_{MAX}	$h_{FE\ MIN}$ @ I_C mA_{MAX}	f_T MHz	Pin-out

Order Code	1+	25+	50+	100+	500+

Technical Specification

Device	Type	V_{CB} V_{MAX}	I_C mA_{MAX}	P_{TOT} mW_{MAX}	$h_{FE\ MIN}$ @ I_C mA_{MAX}	f_T MHz	Pin-out
BC107	NPN	50	100	300	125@2	300	2A
BC107B	NPN	50	100	300	330@2	300	2A
BC108	NPN	30	100	300	125@2	300	2A
BC108B	NPN	30	100	300	330@2	300	2A
BC108C	NPN	30	100	300	600@2	300	2A
BC109	NPN	30	100	300	180@2	150	2A Low noise
BC109C	NPN	30	100	300	420@2	150	2A Low noise
BC114	NPN	30	50	200	200@1	100	8A
BC115	NPN	40	200	300	80@10	80	8A
BC118	NPN	45	100	200	50@5	200	8A
BC132	NPN	30	50	400	60@10	40	8A
BC134	NPN	45	200	200	150@10	400	8A
BC135	NPN	45	200	200	50@10	200	8A
BC142	NPN	80	1.0A	800	20@200	50	2A
BC159	PNP	25	100	300	120@2	130	11A Low noise
BC170B	NPN	20	100	300	80@1	100	7A
BC177	PNP	45	100	300	70@2	120	2A
BC178	PNP	20	100	300	240@2	200	2A
BC179	PNP	20	200	300	500@2	150	2A
BC182B	NPN	60	200	300	500@2	150	7A
BC182L	NPN	60	200	300	500@2	150	7C
BC183L	NPN	45	200	300	900@2	150	7C
BC184	NPN	45	200	300	900@2	150	7A Low noise audio
BC184L	NPN	45	200	300	900@2	150	7C Low noise audio
BC206B	PNP	50	100	200	240@2	200	8A
BC208	NPN	25	100	200	75/900@2	300	8A
BC209A	NPN	25	100	200	125@2	300	8A Low noise audio
BC212L	PNP	60	200	300	100@2	200	7C
BC213L	PNP	45	200	300	350@2	200	7C
BC214	PNP	45	200	300	140@2	200	7A
BC214L	PNP	45	200	300	140@2	200	7C
BC225	PNP	40	100	200	90@10	70	8A
BC237B	NPN	50	100	350	120@2	200	7A
BC238B	NPN	30	100	350	120@2	240	7A
BC250A	PNP	20	100	300	35@1	180	7A
BC261B	PNP	50	100	300	240@2	130	2A
BC262B	PNP	30	100	300	240@2	130	2A
BC267B	NPN	50	500	375	240@2	200	2A
BC319C	NPN	30	150	350	400@2	280	7E Low noise audio
BC327	PNP	50	800	500	63@100	100	7A Comp: BC337
BC327-25	PNP	50	500	625	160@100	100	7A Comp: BC327-25
BC328	PNP	30	500	625	100@100	60	7A Comp: BC328
BC337-16	NPN	50	800	360	100@100	60	7A Comp: BC327-16
BC337-25	NPN	50	800	360	160@100	60	7A Comp: BC327-25
BC348B	NPN	40	100	300	200@2	125	7E
BC357	PNP	25	100	310	100@10	200	7E
BC393	PNP	180	100	400	50@2	60	2A
BC461	PNP	75	2A	1W	40@500	50	2A
BC463	NPN	35	1.5A	880	50/280@500	100	11A
BC477	PNP	80	150	360	125@2	150	2A
BC479	PNP	40	150	360	200@2	100	2A
BC516	PNP	40	400	625	350@2	200	7A Darlington audio
BC517	NPN	40	400	625	30k@2	120	7A Darlington audio
BC546B	NPN	80	100	500	200@2	300	7A Comp: BC556B
BC546C	NPN	80	100	500	420@2	300	7A Comp: BC556C
BC547A	NPN	50	100	500	110@2	300	7A Comp: BC557A
BC547B	NPN	50	100	500	200@2	300	7A Comp: BC557B
BC547C	NPN	50	100	500	420@2	300	7A Comp: BC557C
BC548A	NPN	30	100	500	110@2	300	7A Comp: BC558A
BC548B	NPN	30	100	500	200@2	300	7A Comp: BC558B
BC548C	NPN	30	100	500	420@2	300	7A Comp: BC558C
BC549B	NPN	30	100	500	200@2	300	7A Comp: BC559B
BC549C	NPN	30	100	500	420@2	300	7A Comp: BC559C
BC550C	NPN	50	100	500	420@2	300	7A Comp: BC560C
BC556A	PNP	80	100	500	125@2	300	7A Comp: BC546A
BC556B	PNP	80	100	500	220@2	300	7A Comp: BC546B
BC557A	PNP	50	100	500	125@2	300	7A Comp: BC547A
BC557B	PNP	50	100	500	220@2	300	7A Comp: BC547B
BC557C	PNP	50	100	500	420@2	300	7A Comp: BC547C
BC558A	PNP	30	100	500	125@2	300	7A Comp: BC548A
BC558B	PNP	30	100	500	220@2	300	7A Comp: BC548B
BC559A	PNP	30	100	500	125@2	300	7A Comp: BC549A
BC560A	PNP	50	100	500	125@2	300	7A Comp: BC550A
BC635	NPN	45	1A	1W	40@150	130	7C L-Frequency amp
BC636	PNP	45	1A	1W	40@150	130	7C L-Frequency amp
BC637	NPN	60	500	800	25@5	130	7C Comp: BC638
BC638	PNP	60	500	800	25@5	50	7C Comp: BC637
BC639	NPN	80	500	800	25@5	130	7C Comp: BC640
BC640	PNP	80	500	800	25@5	50	7C Comp: BC639
BCX38B	NPN	80	800	1W	2k@100		40E M-Power darl.
BCY72	PNP	25	200	350	50@10	200	2A
BD124P	NPN	70	2A	15W	35@500	60	22A
BD131	NPN	70	3A	11W	40@500	60	14H
BD132	PNP	45	3A	11W	40@500	60	14H

Order Code	1+	25+	50+	100+	500+
BC107	0.15	0.1314	0.1168	0.1022	0.0913
BC107B	0.14	0.1242	0.1104	0.0966	0.0863
BC108	0.18	0.1620	0.1440	0.1260	0.1125
BC108B	0.14	0.1260	0.1120	0.0980	0.0875
BC108C	0.18	0.1620	0.1440	0.1260	0.1125
BC109	0.24	0.2160	0.1920	0.1680	0.1500
BC109C	0.17	0.1375	0.1100	0.0990	0.0880
BC114	0.19	0.1550	0.1240	0.0992	0.0868
BC115	0.41	0.3672	0.3264	0.2856	0.2550
BC118	0.41	0.3672	0.3264	0.2856	0.2550
BC132	0.36	0.3222	0.2864	0.2506	0.2238
BC134	0.36	0.3222	0.2864	0.2506	0.2238
BC135	0.36	0.3222	0.2864	0.2506	0.2238
BC142	0.50	0.4500	0.4000	0.3500	0.3125
BC159	0.17	0.1548	0.1376	0.1204	0.1075
BC170B	0.16	0.1280	0.1152	0.1024	0.0896
BC177	0.25	0.2050	0.1640	0.1476	0.1312
BC178	0.18	0.1620	0.1440	0.1260	0.1125
BC179	0.27	0.2400	0.2160	0.1920	0.1680
BC182B	0.09	0.0696	0.0348	0.0311	0.0278
BC182L	0.11	0.0852	0.0426	0.0383	0.0341
BC183L	0.08	0.0600	0.0400	0.0320	0.0280
BC184	0.09	0.0660	0.0396	0.0264	0.0211
BC184L	0.13	0.0750	0.0500	0.0400	0.0350
BC206B	0.72	0.6498	0.5776	0.5054	0.4513
BC208	0.72	0.6498	0.5776	0.5054	0.4513
BC209A	0.72	0.6498	0.5776	0.5054	0.4513
BC212L	0.09	0.0675	0.0450	0.0360	0.0315
BC213L	0.12	0.1000	0.0800	0.0640	0.0560
BC214	0.11	0.0789	0.0526	0.0421	0.0368
BC214L	0.09	0.0801	0.0534	0.0427	0.0374
BC225	0.15	0.1260	0.1120	0.0980	0.0875
BC237B	0.11	0.0651	0.0434	0.0347	0.0304
BC238B	0.11	0.0660	0.0440	0.0352	0.0308
BC250A	0.15	0.1404	0.1248	0.1092	0.0975
BC261B	0.30	0.2700	0.2400	0.2100	0.1875
BC262B	0.24	0.2160	0.1920	0.1680	0.1500
BC267B	0.36	0.3120	0.2600	0.2080	0.1664
BC319C	0.13	0.0960	0.0640	0.0512	0.0448
BC327	0.08	0.0492	0.0328	0.0295	0.0262
BC327-25	0.08	0.0492	0.0328	0.0295	0.0262
BC328	0.09	0.0546	0.0364	0.0291	0.0255
BC337-16	0.10	0.0570	0.0380	0.0304	0.0266
BC337-25	0.08	0.0480	0.0320	0.0288	0.0256
BC348B	0.14	0.1260	0.1120	0.0980	0.0875
BC357	0.25	0.2300	0.2070	0.1840	0.1610
BC393	0.73	0.6570	0.5840	0.5110	0.4563
BC461	0.41	0.3690	0.3280	0.2870	0.2563
BC463	0.29	0.2592	0.2304	0.2016	0.1800
BC477	0.52	0.4680	0.4160	0.3640	0.3250
BC479	0.32	0.2880	0.2560	0.2240	0.2000
BC516	0.21	0.1750	0.1400	0.1120	0.0980
BC517	0.14	0.1050	0.0700	0.0630	0.0560
BC546B	0.06	0.0512	0.0384	0.0256	0.0205
BC546C	0.08	0.0632	0.0474	0.0316	0.0253
BC547A	0.09	0.0660	0.0396	0.0264	0.0211
BC547B	0.09	0.0660	0.0396	0.0264	0.0211
BC547C	0.10	0.0570	0.0429	0.0286	0.0229
BC548A	0.08	0.0625	0.0500	0.0400	0.0350
BC548B	0.09	0.0615	0.0369	0.0246	0.0197
BC548C	0.09	0.0630	0.0378	0.0252	0.0202
BC549B	0.11	0.0775	0.0465	0.0310	0.0248
BC549C	0.09	0.0670	0.0402	0.0268	0.0214
BC550C	0.11	0.0720	0.0450	0.0360	0.0288
BC556A	0.09	0.0675	0.0405	0.0270	0.0216
BC556B	0.10	0.0800	0.0480	0.0320	0.0256
BC557A	0.09	0.0615	0.0369	0.0246	0.0197
BC557B	0.09	0.0675	0.0405	0.0270	0.0216
BC557C	0.09	0.0625	0.0375	0.0250	0.0200
BC558A	0.08	0.0585	0.0351	0.0234	0.0187
BC558B	0.09	0.0660	0.0396	0.0264	0.0211
BC559A	0.08	0.0545	0.0327	0.0218	0.0174
BC560A	0.09	0.0660	0.0440	0.0352	0.0308
BC635					
BC636	0.10	0.0750	0.0500	0.0400	0.0350
BC637	0.19	0.1140	0.0760	0.0608	0.0532
BC638	0.21	0.1680	0.1512	0.1344	0.1176
BC639	0.09	0.0600	0.0540	0.0480	0.0420
BC640	0.12	0.0900	0.0600	0.0480	0.0420
BCX38B					
BCY72	0.20	0.1160	0.1044	0.0928	0.0812
BD124P	6.86	6.1776	5.8310	5.1450	4.8020
BD131	0.48	0.4320	0.3840	0.3360	0.3000
BD132	0.52	0.4680	0.4160	0.3640	0.3250

Device	Type	V_{CB} V_{MAX}	Ic mA$_{MAX}$	P_{TOT} mW$_{MAX}$	$h_{FE\ MIN}$ @ Ic mA$_{MAX}$	f_T MHz	Pin-out
BD135	NPN	45	1A	12W	40@150	50	14H
BD136	PNP	45	1A	12W	40@150	50	14H
BD137	NPN	60	1A	12W	40/160@150	50	14H
BD138	PNP	60	1A	12W	40/180@150	50	14H
BD139	NPN	80	1A	12W	40@150	50	14H
BD140	PNP	80	1A	12W	40@150	50	14H
BD150C	NPN	200	500	1W	20@80	80	2A
BD201	NPN	60	8A	55W	30@3A	3	17J
BD202	PNP	60	8A	55W	30@3A	3	17J
BD232	NPN	500	250	11W	25/150@50	10	14H
BD237	NPN	100	2A	25W	25@1A	3	14H
BD238	PNP	100	2A	25W	25@1A	3	14H
BD240C	PNP	115	2A	30W	15@1A	3	17J
BD245C	NPN	115	15A	80W	40@1A		18J
BC246C	PNP	115	15A	80W	40@1A		18J
BD283	NPN	32	4A	36W	85/350@500	3	14H
BD284	PNP	32	4A	36W	85/350@500	3	14H
BD400	NPN	170	1A	15W	40@500	500k	14H
BD437	NPN	45	4A	36W	40@2A	7	14H Comp: BD438
BD438	PNP	45	4A	36W	40@2A	7	14H Comp: BD437
BD442	PNP	80	4A	36W	15@2A	3	14H
BD534	PNP	45	4A	40W	40@500	3	17J
BD535	NPN	60	4A	40W	40@500	3	17J
BD646	PNP	60	10A	70W	750@4A	1	17J
BD648	PNP	80	10A	70W	750@4A	1	17J
BD679	NPN	100	6A	40W	2k2@500	1	14H Power darlington
BD680	PNP	100	6A	40W	2k2@500	1	14H Power darlington
BDW93C	NPN	100	12A	80W	75/20k@5A	20	17J Power darlington
BDW94C	PNP	100	12A	80W	75/20k@5A	20	17J Power darlington
BDX32	NPN	1700	4A	40W	2@3.5A		23A
BDX53C	NPN	100	8A	60W	750@3A	20	17J
BDX54C	PNP	100	8A	60W	750@3A	20	17J
BF180	NPN	30	20	150	13@2	335	5G
BF182	NPN	25	15	150	10@2	325	5G
BF257	NPN	160	100	500	25@30	55	2A
BF259	NPN	300	100	500	25@30	90	2A High voltage
BF337	NPN	300	100	800	20@30	80	2A
BF422	NPN	250	50	830	50@25	100	7C Comp: BF423
BF423	PNP	250	50	830	50@25	80	7C Comp: BF422
BF459	NPN	300	100	6W	26@30	40	14H
BF469	NPN	250	30	2W	50@25	60	14H
BFX29	PNP	60	600	600	50@10	100	2A
BFX85	NPN	100	1A	800	70@150	50	2A Audio high voltage
BFX88	PNP	40	600	600	40@10	100	2A
BFY50	NPN	80	1A	800	30@150	60	2A
BFY51	NPN	60	1A	800	40@150	50	2A
BFY52	NPN	40	1A	800	60@150	50	2A
BU326A	NPN	900	6A	60W	30@600	4	23A
BU407	NPN	330	7A	60W	10@5A	10	17J
BU500	NPN	1500	6A	75W	3@4.5A		23A
BU508A	NPN	1500	8A	125W			18J
BU508AF	NPN	1500	8A	34W			18C Isolated BU508A
BU508D	NPN	1500	8A	125W			18J
BU508DF	NPN	1500	8A	34W			18C BU508AF+diode
BU806	NPN	400	8A	60W	100@5A		17J
BUT11AF	NPN	1000	5A	100W	30@300		17C
BUX84	NPN	800	2A	40W	5@1A	5	17C
MJ2501	PNP	80	10A	150W	100@5A		23A H-Power darl.
MJ2955	PNP	100	15A	150W	5@10A	4	23A
MJ3001	NPN	80	10A	150W	1k@5A		23A
MJ11015	PNP	120	30A	200W	1k@20A		23A
MJ11016	NPN	120	30A	200W	1k@20A		23A
MJE340	NPN	300	500	20W	30@50	10	14H Comp: MJE350
MJE350	PNP	300	500	20W	30@50	10	14H Comp: MJE340
MPSA05	NPN	60	500	625	50@100	175	7E Comp: MPSA55
MPSA13	NPN	30	500	625	5k@10	125	7E Darlington switch
MPSA42	NPN	300	500	625	40@30	50	7E Comp: MPSA92
MPSA55	PNP	60	500	625	100@100	50	7E Comp: MPSA05
MPSA56	PNP	80	500	625	100@100	50	7E Comp: MPSA06
MPSA92	PNP	300	500	625	40@30	50	7E Comp: MPSA42
TIP29A	NPN	60	1A	30W	40@200	3	17J
TIP29C	NPN	100	1A	30W	40@200	3	17J
TIP30A	PNP	60	1A	30W	40@200	3	17J
TIP30C	PNP	100	1A	30W	40@200	3	17J
TIP31A	NPN	60	3A	40W	20@1A	3	17J Comp: TIP32A
TIP31C	NPN	100	3A	40W	20@1A	3	17J Comp: TIP32C
TIP32A	PNP	60	3A	40W	20@1A	3	17J Comp: TIP31A
TIP32C	PNP	100	3A	40W	20@1A	3	17J Comp: TIP31C
TIP41A	NPN	60	6A	65W	15@3A	3	17J Comp: TIP42A
TIP41C	NPN	100	6A	65W	15@3A	3	17J Comp: TIP42C
TIP42A	PNP	60	6A	65W	15@3A	3	17J Comp: TIP41A
TIP42C	PNP	100	6A	65W	15@3A	3	17J Comp: TIP41C
TIP50	NPN	400	1A	40W	30/150@150		17J
TIP110	NPN	60	2A	50W	1k@1A		17J
TIP120	NPN	60	5A	60W	1k@3A		17J Comp: TIP125
TIP121	NPN	80	5A	60W	1k@3A		17J Comp: TIP126
TIP122	NPN	100	5A	60W	1k@3A		17J Comp: TIP127
TIP125	PNP	60	5A	60W	1k@3A		17J Comp: TIP120
TIP126	PNP	80	5A	60W	1k@3A		17J Comp: TIP121
TIP127	PNP	100	5A	60W	1k@3A		17J Comp: TIP122
TIP132	NPN	100	12A	70W	1k@4A		17J
TIP137	PNP	100	12A	70W	1k@4A		17J
TIP141	NPN	80	10A	125W	1k@5A		18J Darlington audio
TIP142	NPN	100	10A	125W	1k@5A		18J Darlington audio
TIP147	PNP	100	10A	125W	1k@5A		18J Darlington audio
TIP2955	PNP	100	15A	90W	20@4A	3	18J Comp: TIP3055
TIP3055	NPN	100	15A	90W	20@4A	3	18J Comp: TIP2955
ZTX450	NPN	60	150	1W	100@150	150	40E Comp: ZTX550
ZTX451	NPN	80	1A	1W	150@150	150	40E Comp: ZTX551
ZTX453	NPN	120	150	2W	40@150	150	40E
ZTX550	PNP	60	150	1W	100@150	150	40E Comp: ZTX450
ZTX551	PNP	80	1A	1W	150@150	150	40E Comp: ZTX451
ZTX600	NPN	160	1A	1W	300@500	150	40E M-Power darl.
ZTX600B	NPN	160	1A	1W	10k@500	150	40E M-Power darl.
ZTX605	NPN	140	1A	1W	5k@500	150	40E M-Power darl.
ZTX651	NPN	80	2A	1W	100@500	150	40E Comp: ZTX751
ZTX653	NPN	120	2A	1W	100@500	150	40E Comp: ZTX753
ZTX689B	NPN	20	3A	1.5W	400@2A	150	40E H-Gain M-Power

Order Code	1+	25+	50+	100+	500+
BD135	0.22	0.1833	0.1466	0.1319	0.1173
BD136	0.21	0.1890	0.1680	0.1470	0.1313
BD137	0.23	0.2070	0.1840	0.1610	0.1438
BD138	0.19	0.1550	0.1395	0.1240	0.1085
BD139	0.19	0.1590	0.1272	0.1018	0.0890
BD140	0.14	0.1198	0.0958	0.0862	0.0766
BD150C	0.82	0.7362	0.6544	0.5726	0.5113
BD201	0.40	0.3618	0.3216	0.2814	0.2513
BD202	0.70	0.6300	0.5600	0.4900	0.4375
BD232	0.50	0.4536	0.4032	0.3528	0.3150
BD237	0.32	0.2880	0.2560	0.2240	0.2000
BD238	0.44	0.3960	0.3520	0.3080	0.2750
BD240C	0.37	0.3330	0.2960	0.2590	0.2313
BD245C	1.18	1.0620	0.9440	0.8260	0.7375
BD246C	1.10	0.9900	0.8800	0.7700	0.6875
BD283	0.61	0.5508	0.4896	0.4284	0.3825
BD284	0.61	0.5508	0.4896	0.4284	0.3825
BD400	0.79	0.7128	0.6336	0.5572	0.2475
BD437	0.17	0.1384	0.1038	0.0692	0.0623
BD438	0.22	0.1850	0.1444	0.1300	0.1155
BD442	0.37	0.3330	0.2960	0.2590	0.2313
BD534	0.47	0.4194	0.3728	0.3262	0.2913
BD535	0.50	0.4500	0.4000	0.3500	0.3125
BD646	0.52	0.4680	0.4160	0.3640	0.3250
BD648	0.52	0.4680	0.4160	0.3640	0.3250
BD679					
BD680					
BDW93C					
BDW94C					
BDX32	1.78	1.5984	1.4208	1.2432	1.1100
BDX53C	0.53	0.4378	0.3502	0.3152	0.2802
BDX54C	0.50	0.4536	0.4032	0.3528	0.3150
BF180	0.31	0.2790	0.2480	0.2170	0.1938
BF182	0.31	0.2790	0.2480	0.2170	0.1938
BF257	0.33	0.2950	0.2624	0.2296	0.2050
BF259	0.33	0.2952	0.2624	0.2296	0.2050
BF337	0.40	0.3600	0.3200	0.2800	0.2500
BF422	0.15	0.1225	0.0980	0.0882	0.0784
BF423	0.15	0.1225	0.0980	0.0882	0.0784
BF459	0.33	0.2952	0.2624	0.2296	0.2050
BF469	0.36	0.3276	0.2912	0.2548	0.2275
BFX29	0.29	0.2592	0.2304	0.2016	0.1800
BFX85	0.33	0.2600	0.2340	0.2080	0.1820
BFX88	0.27	0.2120	0.1908	0.1696	0.1484
BFY50	0.30	0.2700	0.2400	0.2100	0.1875
BFY51	0.22	0.2016	0.1792	0.1568	0.1400
BFY52	0.24	0.2200	0.1980	0.1760	0.1540
BU326A	1.38	1.2420	1.1040	0.9660	0.8625
BU407					
BU500	1.54	1.3860	1.2320	1.0780	0.9625
BU508A	1.40	1.2600	1.1200	0.9800	0.9100
BU508AF					
BU508D	0.98	0.8820	0.7840	0.6860	0.6125
BU508DF					
BU806	1.06	0.9504	0.8448	0.7392	0.6600
BUT11AF	1.14	1.0260	0.9120	0.7980	0.7125
BUX84	0.78	0.7020	0.6240	0.5460	0.4875
MJ2501	1.60	1.4400	1.2800	1.1200	1.0000
MJ2955	0.90	0.8100	0.7200	0.6300	0.5625
MJ3001	1.84	1.6560	1.4720	1.2880	1.1500
MJ11015	2.45	2.2032	2.0808	1.8360	1.7136
MJ11016	2.78	2.5020	2.2240	1.9460	1.7375
MJE340	0.32	0.2598	0.2338	0.2078	0.1819
MJE350	0.48	0.4320	0.3840	0.3360	0.3000
MPSA05	0.14	0.0900	0.0810	0.0720	0.0630
MPSA13	0.09	0.0770	0.0616	0.0493	0.0431
MPSA42	0.14	0.0858	0.0572	0.0458	0.0400
MPSA55	0.13	0.1000	0.0750	0.0500	0.0400
MPSA56	0.12	0.0950	0.0780	0.0585	0.0390
MPSA92	0.15	0.0900	0.0600	0.0480	0.0420
TIP29A	0.32	0.2520	0.2268	0.2016	0.1764
TIP29C	0.30	0.2736	0.2432	0.2128	0.1900
TIP30A	0.47	0.3794	0.3415	0.3035	0.2656
TIP30C	0.27	0.2278	0.1822	0.1640	0.1458
TIP31A	0.23	0.1822	0.1640	0.1458	0.1275
TIP31C	0.35	0.2800	0.2520	0.2240	0.1960
TIP32A	0.29	0.2344	0.2110	0.1875	0.1641
TIP32C	0.30	0.2500	0.2000	0.1800	0.1600
TIP41A	0.32	0.2566	0.2309	0.2053	0.1796
TIP41C	0.32	0.2560	0.2304	0.2048	0.1792
TIP42A	0.40	0.3226	0.2903	0.2581	0.2258
TIP42C	0.47	0.3925	0.3140	0.2512	0.2198
TIP50	0.28	0.2208	0.1987	0.1766	0.1546
TIP110	0.28	0.2276	0.2048	0.1821	0.1593
TIP120	0.30	0.2438	0.2194	0.1950	0.1707
TIP121	0.32	0.2592	0.2333	0.2074	0.1814
TIP122	0.37	0.3080	0.2464	0.2218	0.1971
TIP125	0.31	0.2500	0.2250	0.2000	0.1750
TIP126	0.31	0.2500	0.2250	0.2000	0.1750
TIP127	0.37	0.3080	0.2464	0.2218	0.1971
TIP132	0.50	0.4014	0.3613	0.3211	0.2810
TIP137	0.64	0.5126	0.4613	0.4101	0.3588
TIP141	0.93	0.7450	0.6705	0.5960	0.5215
TIP142	0.98	0.7816	0.7034	0.6253	0.5471
TIP147	1.07	0.8536	0.7682	0.6829	0.5975
TIP2955	0.46	0.3714	0.3343	0.2971	0.2600
TIP3055	0.58	0.4644	0.4180	0.3715	0.3251
ZTX450	0.19	0.1744	0.1550	0.1357	0.1211
ZTX451	0.19	0.1710	0.1520	0.1330	0.1188
ZTX453	0.26	0.2340	0.2080	0.1820	0.1625
ZTX550	0.22	0.1980	0.1760	0.1540	0.1375
ZTX551	0.33	0.2600	0.2340	0.2080	0.1820
ZTX600	0.33	0.2950	0.2622	0.2295	0.2049
ZTX600B	0.35	0.3150	0.2800	0.2450	0.2188
ZTX605	0.37	0.3276	0.2912	0.2548	0.2275
ZTX651	0.33	0.3006	0.2672	0.2338	0.2088
ZTX653	0.37	0.3330	0.2960	0.2590	0.2313
ZTX689B	0.40	0.3600	0.3200	0.2800	0.2500

Device	Type	V_{CB} V_{MAX}	I_C mA_{MAX}	P_{TOT} mW_{MAX}	$h_{FE\ MIN}$ @ I_C mA_{MAX}	f_T MHz	Pin-out
ZTX690B	NPN	45	2A	1.5W	400@1A	150	40E H-Gain M-Power
ZTX705	PNP	140	1A	1W	3k@1A	160	40E M-Power darl.
ZTX750	PNP	60	2A	1W	200@500	150	40E Comp: ZTX650
ZTX751	PNP	80	2A	1W	100@500	150	40E Comp: ZTX651
ZTX753	PNP	120	2A	1W	100@500	150	40E Comp: ZTX653
ZTX789A	PNP	25	2A	1W	250@1A	100	40E H-Gain M-Power
ZTX790A	PNP	50	2A	1W	250@500	100	40E H-Gain M-Power
ZTX851	NPN	150	5A	1.6W	200@2A	130	40E High current
ZTX853	NPN	200	4A	1.6W	200@1A	130	40E High current
ZTX951	PNP	100	4A	1.6W	200@1A	120	40E High current
ZTX1048A	NPN	50	4A	1W	450@1A	150	40E H-Gain M-Power
ZTX1051A	NPN	150	4A	1W	450@1A	155	40E H-Gain M-Power
ZTX1053A	NPN	150	3A	1W	450@1A	440	40E H-Gain M-Power
2N2222A	NPN	75	800	500	100@150	250	2A
2N2904A	PNP	60	600	800	40/120@150	200	2A
2N2905	PNP	60	600	600	100@120	200	2A
2N2905A	PNP	60	600	600	100@120	200	2A
2N2906A	PNP	60	600	400	40@10	200	2A
2N2907A	PNP	60	600	400	100@150	200	2A
2N3053	NPN	60	700	1W	50@150	100	2A
2N3054	NPN	90	4A	25W	20/70@4A	0.8	22A
2N3055	NPN	100	15A	115W	20/70@4A	0.8	23A Expitaxial
2N3055H	NPN	100	15A	115W	20/70@4A	0.8	23A Homotaxial
2N3439	NPN	350	1A	1W	40/160@40	140	2A
2N3440	NPN	250	1A	1W	40/160@40	15	2A
2N3702	PNP	40	200	360	60@50	100	7C
2N3703	PNP	50	200	360	30@50	100	7C
2N3704	NPN	50	800	360	300@50	100	7C
2N3705	NPN	50	800	625	150@50	100	7C
2N3772	NPN	100	20A	150W	15/60@10A	0.2	23A
2N3773	NPN	120	16A	150W	15/60@8A	0.2	23A
2N3903	NPN	60	200	625	200@1	250	7E Comp: 2N3905
2N3904	NPN	60	200	310	100@10	250	7E Comp: 2N3906
2N3905	PNP	40	200	625	50/150@10	200	7E Comp: 2N3903
2N3906	PNP	60	200	310	100@10	250	7E Comp 2N3904
2N4123	NPN	40	200	625	50@2	250	7E Comp: 2N4125
2N4126	PNP	25	200	625	120@2	250	7E Comp: 2N4124
2N4401	NPN	40	600	625	255@150	250	7E Comp: 2N4403
2N4402	PNP	40	600	625	30@1	150	7E Comp: 2N4400
2N4403	PNP	40	600	625	100@150	200	7E Comp: 2N4401
2N5296	NPN	60	4A	36W	30/120@1A	0.8	17J
2N5401	PNP	160	600	625	40@1	300	7E Comp: 2N5551
2N5550	NPN	160	600	625	60@10	300	7E Comp: 2N5400
2N5551	NPN	180	600	625	80/250@10	100	7E Comp: 2N5401
2N6491	PNP	90	15A	75W	20/150@5A	5	17J
2SB548	PNP	100	800	10W	40/320@200	80	14H

Order Code	1+	25+	50+	100+	500+
ZTX690B	0.37	0.3330	0.2960	0.2590	0.2313
ZTX705	0.39	0.3487	0.3099	0.2712	0.2421
ZTX750	0.25	0.2281	0.2027	0.1774	0.1584
ZTX751	0.34	0.3085	0.2742	0.2400	0.2143
ZTX753	0.40	0.3200	0.2880	0.2560	0.2240
ZTX789A	0.41	0.3690	0.3280	0.2870	0.2563
ZTX790A	0.41	0.3690	0.3280	0.2870	0.2563
ZTX851	0.50	0.4500	0.4000	0.3500	0.3125
ZTX853	0.50	0.4500	0.4000	0.3500	0.3125
ZTX951	0.54	0.4860	0.4320	0.3780	0.3375
ZTX1048A	0.48	0.4320	0.3840	0.3360	0.3000
ZTX1051A	0.46	0.4120	0.3708	0.3296	0.2884
ZTX1053A	0.45	0.4086	0.3632	0.3178	0.2838
2N2222A	0.23	0.2070	0.1840	0.1610	0.1438
2N2904A	0.35	0.2800	0.2520	0.2240	0.1960
2N2905					
2N2905A	0.30	0.2700	0.2400	0.2100	0.1875
2N2906A					
2N2907A	0.28	0.2200	0.1980	0.1760	0.1540
2N3053	0.34	0.3060	0.2720	0.2380	0.2125
2N3054	0.86	0.7668	0.6816	0.5964	0.5325
2N3055	0.82	0.7380	0.6560	0.5740	0.5125
2N3055H					
2N3439	0.62	0.5580	0.4960	0.4340	0.3875
2N3440	0.50	0.4464	0.3968	0.3472	0.3100
2N3702	0.09	0.0628	0.0502	0.0402	0.0351
2N3703	0.10	0.0800	0.0720	0.0640	0.0560
2N3704	0.11	0.0753	0.0602	0.0482	0.0421
2N3705	0.08	0.0602	0.0542	0.0482	0.0421
2N3772	1.72	1.5516	1.3792	1.2068	1.0775
2N3773	2.30	2.0700	1.8400	1.6100	1.4375
2N3903	0.11	0.0875	0.0700	0.0560	0.0490
2N3904	0.05	0.0405	0.0270	0.0216	0.0189
2N3905	0.10	0.0750	0.0500	0.0400	0.0350
2N3906	0.08	0.0600	0.0400	0.0320	0.0280
2N4123					
2N4126					
2N4401	0.08	0.0665	0.0570	0.0475	0.0380
2N4402					
2N4403	0.09	0.0756	0.0540	0.0432	0.0346
2N5296	0.57	0.5112	0.4544	0.3976	0.3550
2N5401	0.12	0.0100	0.0800	0.0640	0.0560
2N5550					
2N5551	0.07	0.0454	0.0409	0.0363	0.0318
2N6491	1.58	1.4220	1.2640	1.1060	0.9875
2SB548	0.30	0.2682	0.2384	0.2086	0.1863

UNIJUNCTION (UJT/PUT)

Unijunction (UJT) & Programmable Unijuction Transistors (PUT).

Device	Type	η	U_{EB}/U_{GA}(PUT)	I_{AV}	I_P	P_{TOT}	Pin-out
2N2646	UJT	0.56-0.75	30V	50mA	5µA	300mW	5E
2N6027	PUT	-	40V	150mA	5µA	300mW	7A

Order Code	1+	25+	50+	100+	500+
2N2646	1.02	0.9180	0.8160	0.7140	0.6375
2N6027					

FIELD EFFECT TRANSISTORS (FET)

Technical Specification

Device	Type	V_{DS}	V_{GS}	V_P	I_G	I_{DSS}	P_{TOT}	Pin-out
BF245B	N-Channel	30V	30V	0.5-8V	10mA	6-15mA	350mW	7F
2N3819	N-Channel	25V	25V	8V	10mA	2-20mA	360mW	7E

Order Code	1+	25+	50+	100+	500+
BF245B	0.40	0.3200	0.2880	0.2560	0.2240
2N3819	0.22	0.1650	0.1375	0.1100	0.0880

METAL-OXIDE SEMICONDUCTOR FIELD EFFECT TRANSISTORS (MOSFET)

Technical Specification

Device	Type	V_{DS} V	R_{DS} (ON)Ω	$I_{D(cont)}$ @25°C	I_{DM} (pulsed)	P_D @25°C	Pin-out	
BS107	N-Channel	200	28.0	250mA	500mA	350mW	7A	low Power
BS170	N-Channel	60	5.0	500mA	1.2A	830mW	7A	low Power
BUK456-800B	N-Channel	800	4.0	3.5A	14A	125W	17C	high power
BUZ71	N-Channel	50	0.1	18A	72A	85W	17C	med power
BUZ72A	N-Channel	100	0.25	11A	44A	40W	17C	high power
BUZ900	N-Channel	160	1.5	7.0A	-	125W	23E	audio FET
BUZ900P	N-Channel	160	1.5	8.0A	-	125W	18D	audio FET
BUZ905	P-Channel	160	1.5	7.0A	-	125W	23E	audio FET
BUZ905P	P-Channel	160	1.5	8.0A	-	125W	18D	audio FET
IRF520	N-Channel	100	0.2	9.2A	37A	45W	17C	high power
IRF530	N-Channel	100	0.11	14A	56A	55W	17C	high power
IRF540	N-Channel	100	0.052	28A	110A	107W	17C	high power
IRF630	N-Channel	200	0.4	10A	40A	100W	17C	high power
IRF640	N-Channel	200	0.18	18A	72A	139W	17C	high power
IRF730	N-Channel	400	1.0	5.5A	22A	73W	17C	high power
IRF740	N-Channel	400	0.55	10A	40A	134W	17C	high power
IRF830	N-Channel	500	1.5	4.5A	18A	73W	17C	high power
IRF840	N-Channel	500	0.85	8.0A	32A	134W	17C	high power
IRF9520	P-Channel	100	0.6	6.0A	24A	40W	17C	high power
IRF9630	P-Channel	200	0.8	6.5A	26A	75W	17C	high power
IRFZ14	N-Channel	60	0.7	10A	40A	30W	17C	med power
IRFZ24	N-Channel	60	0.07	17A	68A	44W	17C	med power
MTP3055E	N-Channel	60	0.15	14A	56A	70W	17C	med power
PHP45N03LT	N-Channel	30	0.024	45A	180A	86W	17C	5V logic level
STP14NF10	N-Channel	100	0.13	15A	60A	60W	17C	switching appl
STW80NE06-10	N-Channel	60	0.01	80A		180W	18C	med powewr
ZVN2106A	N-Channel	60	2.0	450mA	8.0A	700mW	40E	low Power
ZVN3306A	N-Channel	60	5.0	270mA	3.0A	625mW	40E	low Power
ZVN4206A	N-Channel	60	1.5	600mA	8.0A	700mW	40E	5V logic level
ZVN4210A	N-Channel	100	1.8	450mA	6.0A	700mW	40E	low Power
ZVN4306A	N-Channel	60	0.45	1.1A	15A	850mW	40E	5V logic level
ZVN4310A	N-Channel	100	0.65	900mA	12A	850mW	40E	5V logic level
ZVP2106A	P-Channel	60	5.0	280mA	4.0A	700mW	40E	low Power
ZVP2110A	P-Channel	100	8.0	230mA	3.0A	700mW	40E	low Power
ZVP3306A	P-Channel	60	14.0	160mA	1.6A	625mW	40E	low Power
2N7000	N-Channel	60	5.0	200mA	0.5A	400mW	7E	low Power

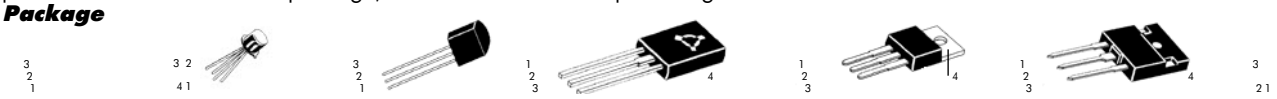
Order Code	1+	25+	50+	100+	500+
BS107	0.21	0.1890	0.1680	0.1470	0.1313
BS170	0.15	0.1000	0.0900	0.0800	0.0700
BUK456-800B					
BUZ71					
BUZ72A					
BUZ900	7.68	7.2000	6.7200	6.2400	6.0000
BUZ900P	5.60	5.2500	4.9000	4.5500	4.3750
BUZ905	7.68	7.2000	6.7200	6.2400	6.0000
BUZ905P	5.55	5.1800	4.8100	4.6250	
IRF520					
IRF530	0.53	0.4232	0.3809	0.3386	0.2962
IRF540	0.80	0.7200	0.6400	0.5600	0.5000
IRF630	0.42	0.3326	0.2993	0.2691	0.2328
IRF640	0.81	0.7200	0.6480	0.4320	0.3780
IRF730	0.66	0.5473	0.4378	0.3502	0.3065
IRF740	0.91	0.7593	0.6074	0.4859	0.4252
IRF830	0.68	0.6000	0.5400	0.4800	0.4200
IRF840	0.78	0.6254	0.5629	0.5003	0.4378
IRF9520					
IRF9630					
IRFZ14					
IRFZ24					
MTP3055E					
PHP45N03LT					
STP14NF10	0.49	0.4115	0.3292	0.2963	0.2634
STW80NE06-10	3.80	3.4173	3.0376	2.6579	2.3731
ZVN2106A	0.40	0.3600	0.3200	0.2800	0.2500
ZVN3306A	0.28	0.2240	0.2016	0.1792	0.1568
ZVN4206A	0.52	0.4680	0.4160	0.3640	0.3250
ZVN4210A	0.56	0.5040	0.4480	0.3920	0.3500
ZVN4306A	0.86	0.7740	0.6880	0.6020	0.5375
ZVN4310A	0.88	0.7920	0.7040	0.6160	0.5500
ZVP2106A	0.42	0.3780	0.3360	0.2940	0.2625
ZVP2110A	0.46	0.4140	0.3680	0.3220	0.2875
ZVP3306A	0.32	0.2580	0.2322	0.2064	0.1806
2N7000	0.19	0.1700	0.1530	0.1360	0.1190

PIN-OUTS

Semiconductors - Discrete

Pin connections for our range of Thyristors, Triacs, Voltage Regulators and Transistors on the previous pages. All connections are PIN view, i.e. Looking at the package with the pins towards you, any identifying shape or marking at the bottom or bottom left. The number from the pin-out column indicates the package, the letter indicated the pin configuration.

Package



2 TO-5
2 TO-18
5 TO-72
7 TO-92
40 E-Line
14 TO-126
17 TO-220
18 TO-3P
22 TO-66
23 TO-3

Pin Configuration

Transistors					FET & MOSFETs					Thyristors & Triacs					Voltage Regulators				
Pin	1	2	3	4	Pin	1	2	3	4	Pin	1	2	3	4	Pin	1	2	3	4
A	E	B	C		A	S	G	D	D	E	K	A	G	A	A	Out	In	Gnd	Gnd
C	B	C	E		C	G	D	S	D	J	A1	A2	G	A2	B	In	Gnd	Out	Gnd
D	B	E	C		D	G	S	D		L	A1	A2	G		C	Gnd	In	Out	In
E	C	B	E		E	D	G	S		N	A	G	K		E	In	Out	Gnd	
G	E	B	C	Case	F	D	S	G		P	A2	G	A1		K	Gnd	Adj	Out	
H	E	C	B	C	UJT & PUTs										L	Adj	Out	In	
J	B	C	E	C	A	B1		B2	E						N	Adj	In	Out	
					E	E	B1		B2						O	In	Out	Adj	
															P	K	A	Ref	

LINEAR
Analogue ICs

Base No.	Device	Function Description	Pins/Package	Order Code	1+	10+	25+	50+	100+
1	REF01CP	10V Precision Voltage Reference	8DIL	REF01CP	2.31	2.0808	1.8496	1.7680	1.7000
27	OP27GP	Low Noise Operational Amplifier	8DIL	OP27GP	2.33	2.0550	1.9180	1.7810	1.7125
34	M34-1	LED Flasher IC - 1Hz	T)92	M34-1	0.30	0.2400	0.2160	0.1920	0.1680
34	M34-2	LED Flasher IC - 2Hz	T)92	M34-2	0.30	0.2400	0.2160	0.1920	0.1680
35	LM35DZ	Temperature Sensor (0 to 100°C ±0.9%)	T092	LM35DZ	1.37	1.0960	0.9864	0.8768	0.7672
61	TL061CN	Single Low Power Op-Amp	8DIL	TL061CN	0.21	0.1513	0.1210	0.1089	0.0968
62	TL062CP	Dual Low Power Op-Amp	8DIL	TL062CP	0.21	0.1773	0.1478	0.1182	0.0946
64	TL064CN	Quad Low Power Op-Amp	14DIL	TL064CN	0.29	0.2502	0.2085	0.1668	0.1334
71	TL071CN	Single Low noise operational amp	8DIL	TL071CN	0.30	0.2604	0.2170	0.1736	0.1562
72	TL072CN	Dual Low noise operational amp	8DIL	TL072CN	0.40	0.3429	0.2858	0.2286	0.2057
74	TL074CN	Quad Low noise operational amp	14DIL	TL074CN	0.25	0.1911	0.1593	0.1274	0.1147
81	TL081CN	Single Low noise operational amp	8DIL	TL081CN	0.17	0.1440	0.1200	0.0960	0.0768
82	TL082CN	Dual Low noise operational amp	8DIL	TL082CN	0.32	0.2100	0.1890	0.1680	0.1470
84	TL084CN	Quad Low noise operational amp	8DIL	TL084CN	0.37	0.3147	0.2623	0.2098	0.1678
90	OP90GP	Single Low Voltage Micropower Op-Amp	8DIL	OP90GP	2.91	2.6208	2.4752	1.9890	1.9000
97	OP97FP	Low Power Operational Amplifier	8DIL	OP97FP	1.84	1.6560	1.5640	1.2880	1.1960
120	TBA120S	Linear IC	14DIL	TBA120S	1.04	0.9360	0.8320	0.7280	0.6500
165	L165V	High Power Operational Amplifier	T0220	L165V	2.36	2.1614	1.9453	1.7291	1.5130
177	OP177GP	Ultra Precision OPerational Amplifier	8DIL	OP177GP	2.18	1.9620	1.7440	1.5260	1.3625
202	MAX202CPE	5v RS-232 Transceiver	16 DIL	MAX202CPE	2.00	1.8000	1.6000	1.4000	1.2500
211	DG211CJ	Quad CMOS Switch	16 DIL	DG211CJ	1.25	1.0400	0.8320	0.6656	0.5824
232	MAX232CPE	(ST232CN) Dual RS232 Driver/Receiver	16 DIL	MAX232CPE	1.30	1.0800	0.8640	0.6912	0.6048
271	TLC271CP	Single Programmable Operational Amp.	8DIL	TLC271CP	0.63	0.5000	0.4500	0.4000	0.3500
272	L272M	Dual Power Operational Amplifier	8DIL	L272M	1.21	1.0897	0.9686	0.8476	0.7568
272	TS272CN	Dual Programmable Operational Amp.	8DIL	TS272CN	0.57	0.4763	0.3810	0.3048	0.2667
274	TS274CN	Quad High Speed Operational Amp.	14DIL	TS274CN	0.50	0.4471	0.3974	0.3478	0.3105
290	OP290GP	Single end Dual OP Amp	8DIL	OP290GP	4.28	3.7100	3.5775	2.5740	2.1875
293	L293E	Stepper Motor Controller	20DIL	L293E	4.20	3.7800	3.3600	2.9400	2.6250
297	L297	Stepper Motor Controller	20DIL	L297	5.12	4.6080	4.3520	3.8400	3.5840
297	OP297GP	Dual Precision Operational Amplifier	8DIL	OP297GP	4.64	4.0600	3.9150	2.7690	2.5875
298	L298N	Dual Full Bridge Motor Driver	15SIL	L298N	3.80	3.4200	3.0400	2.6600	2.3750
311	LM311N	High Speed voltage comparator	8DIL	LM311N	0.17	0.1449	0.0966	0.0869	0.0773
311	LP311N	Low Power Voltage Comparator	8DIL	LP311N	0.72	0.6480	0.5760	0.5040	0.4500
319	LM319N	Dual High Speed Comparator	14DIL	LM319N	0.90	0.8100	0.7200	0.6300	0.5850
324	LM324N	Quad Operational Amplifier	14DIL	LM324N	0.20	0.1778	0.1270	0.1016	0.0914
324	LP324N	µPower Quad Operational Amplifier	14DIL	LP324N	0.75	0.6000	0.5400	0.4800	0.4200
334	LM334Z	3 Terminal Adjustable Current Source	T092	LM334Z	0.97	0.8588	0.7729	0.6870	0.6012
335	LM335Z	Temperature Sensor (-10 to 100°C ±1%)	T092	LM335Z	1.12	0.8968	0.8071	0.7174	0.6278
339	LM339N	Quad Comparator	14DIL	LM339N	0.18	0.1500	0.1200	0.0960	0.0840
339	LP339N	µPower Quad Comparator	14DIL	LP339N	0.59	0.5310	0.4720	0.4130	0.3688
347	LF347N	(KF347N) Quad JFET Operational Amplifier	14DIL	LF347N	0.46	0.4158	0.3696	0.3234	0.3003
348	LM348N	Quad Low Power Comparator	14DIL	LM348N	0.36	0.2860	0.2574	0.2288	0.2002
351	LF351N	Single JFET Operational Amp	8DIL	LF351N	0.44	0.3482	0.3134	0.2786	0.2437
353	LF353N	Dual JFET Operational Amp	14DIL	LF353N	0.40	0.3600	0.3200	0.2800	0.2600
356	LF356N	Single JFET Operational Amplifier	8DIL	LF356N	0.52	0.4680	0.4160	0.3640	0.3250
358	LM358N	Dual Operational Amplifier	8DIL	LM358N	0.15	0.1004	0.0904	0.0803	0.0703
380	LM380N	2W Audio Amplifier	14DIL	LM380N	0.90	0.7180	0.6462	0.5744	0.5026
386	LM386N	325mW Audio Amplifier	8DIL	LM386N	0.61	0.5400	0.4860	0.4320	0.3780
392	LM392N	Dual Operational Amplifier	8DIL	LM392N	0.79	0.7110	0.6320	0.5530	0.5135
393	LM393N	Dual Comparator	8DIL	LM393N	0.21	0.1890	0.1680	0.1470	0.1365
411	DG411DJ	4 Channel Doulbe Pole Multiplexer	16DIL	DG411DJ	2.00	1.8000	1.7000	1.2350	1.0000
411	LF411CN	BiFET Low offset low drift Operational Amp	8DIL	LF411CN	0.98	0.7800	0.7020	0.6240	0.5460
484	MK484	Simple AM Radio IC	T092	MK484	0.66	0.5904	0.5248	0.4592	0.4100
485	MAX485CPA	Low POwer RS485/422 Transceiver	8DIL	MAX485CPA	1.53	1.4715	1.4170	1.3625	1.3080
548	AD548JN	Low Power Operational Amplifier	8DIL	AD548JN	2.48	2.2320	2.1080	1.5210	1.3500
Base No.	**Device**	**Function Description**	**Pins/Package**	**Order Code**	**1+**	**25+**	**50+**	**100+**	**500+**
555	NE555N	Single Timer IC	8DIL	NE555N	0.19	0.1653	0.1378	0.1102	0.0992
Base No.	**Device**	**Function Description**	**Pins/Package**	**Order Code**	**1+**	**10+**	**25+**	**50+**	**100+**
555	TS555CN	CMOS Single Timer	8DIL	TS555CN	0.26	0.2082	0.1874	0.1666	0.1457
556	NE556N	Dual Timer	14DIL	NE556N	0.33	0.2508	0.2090	0.1672	0.1505
595	AD595AQ	Thermocouple Amplifier	T092	AD595AQ	13.92	11.832	11.136	8.3200	7.4375
633	AD633JN	Analogue Multiplier	8DIL	AD633JN	5.81	5.6000	5.3950	5.1875	4.9800
635	MAX635ACPA	Preset/Adj o/p Inverting CMOS Regulator	8DIL	MAX635ACPA	4.50	4.1300	3.9825	3.2500	3.0250
654	AD654JN	Voltage to Frequency Converter	8DIL	AD654JN	5.51	5.3200	5.1300	4.9400	4.7500
660	LMC660CN	Quad CMOS Operational Amplifier	14DIL	LMC660CN	1.37	1.2996	1.2312	1.1628	0.9500
666	ADM666AN	+5V Fixed & 1.3-16V Adjustable µpower regulator	8DIL	ADM666AN	2.72	2.2820	2.2005	2.1190	2.0375
711	AD711JN	Single FET High Speed Operational Amp.	8DIL	AD711JN	1.97	1.9040	1.8360	1.7680	1.7000
736	AD736JN	RMS to DC Convertor	8DIL	AD736JN	5.80	5.6000	5.400	5.2000	5.0000
Base No.	**Device**	**Function Description**	**Pins/Package**	**Order Code**	**1+**	**25+**	**50+**	**100+**	**500+**
741	UA741CN	General Purpose Operational Amp	8DIL	UA741CN	0.18	0.1500	0.1250	0.1000	0.0900
Base No.	**Device**	**Function Description**	**Pins/Package**	**Order Code**	**1+**	**10+**	**25+**	**50+**	**100+**
797	AD797AN	Ultralow Distortion, Ultralow Noise Operartional Amp	8DIL	AD797AN	7.25	7.0000	6.7500	6.5000	6.2500
800	TBA800	5W Audio Amplifier	12DIL	TBA800	0.75	0.6000	0.5400	0.4800	0.4200
811	AD811AN	High Performance Video Amplifier	8DIL	AD811AN	6.00	5.4000	5.1000	4.8000	4.6875
820	AD820AN	Precision Low Power Operational Amp.	8DIL	AD820AN	3.41	2.9260	2.8215	1.9890	1.7875
820	TBA820M	1.2W AF Amplifier	8DIL	TBA820M	0.53	0.4244	0.3820	0.3395	0.2971
822	AD822AN	Precision Low Power Operational Amp.	8DIL	AD822AN	4.27	4.1300	3.9825	3.8350	3.6875
830	AD830AN	High Speed Video Differential Amplifier	8DIL	AD830AN	5.44	5.4375	5.0625	4.8750	4.6875
847	AD847JN	High Speed Low Power Operational Amp.	8DIL	AD847JN	5.95	4.9000	4.7250	3.3800	3.0625
1013	LT1013CN	Dual Low Power Precision Operational Amp.	8DIL	LT1013CN	4.64	5.1040	5.3360	3.2500	3.0250
1170	TDA1170S	Vertical Deflection System	12QIL	TDA1170S	4.80	3.2000	2.8800	2.5600	2.2400
1232	MAX1232CN	Low Power CMOS Micro Monitor	8DIL	MAX1232CN	2.80	2.5200	2.3800	1.9500	1.6875
1458	MC1458N	Dual General Purpose Operational Amp	8DIL	MC1458N	0.29	0.1910	0.1719	0.1536	0.1337
1488	MC1488	(GD751488) RS232 V24 Driver	14DIL	MC1488	0.40	0.2640	0.2376	0.2112	0.1848
1489	MC1489	(GD751489A) RS232 V24 Driver	14DIL	MC1489	0.35	0.2800	0.2512	0.2240	0.1960
1881	LM1881N	Video Line Selector	8DIL	LM1881N	2.90	2.6100	2.3200	2.0300	1.8125
2003	ULN2003A	Darlington Driver	16DIL	ULN2003A	0.38	0.3000	0.2700	0.2400	0.2100
2004	TDA2004	10W Stereo Audio Amplifier	11SIL	TDA2004	2.24	1.9928	1.7935	1.5942	1.3950
2004	ULN2004A	Darlington Driver	16DIL	ULN2004A	0.44	0.3960	0.3520	0.3080	0.2860
2030	TDA2030	14W Audio Amplifier	T0220	TDA2030AV	1.24	1.1160	0.9920	0.8680	0.7750
2050	TDA2050V	35W Audio Amplifer	T0220	TDA2050V	2.51	2.2310	2.7900	1.7848	1.5617
2141	SSM2141P	Differential Line Receiver	16DIL	SSM2141P	3.21	3.0552	2.7336	2.4120	2.4000
2653	TDA2653A	Vertical Deflection System	13SIL	TDA2653A	3.00	2.7000	2.4000	2.1000	1.9500
2803	ULN2803A	Darlington Driver	16DIL	ULN2803A	0.41	0.3435	0.2748	0.2473	0.1924
2804	ULN2804AP	8 NPN Darlington Transistor Array	18DIL	ULN2804AP	0.44	0.3680	0.2944	0.2650	0.2355
2822	TDA2822M	1W Stereo Audio Amplifier	8DIL	TDA2822M	0.79	0.7076	0.6290	0.5503	0.5110
2901	LM2901N	Comparator	14DIL	LM2901N	0.15	0.1228	0.1105	0.0982	0.0860
2917	LM2917N8	Frequency to Voltage Converter	8DIL	LM2917N8	1.98	1.7820	1.6830	1.5840	1.3860
3130	CA3130E	MOSFET Operational Amplifier	8DIL	CA3130E	1.21	1.0730	0.9648	0.8576	0.4844
3140	CA3140E	MOSFET Operational Amplifier	8DIL	CA3140E	0.63	0.5000	0.4500	0.4000	0.3500
3240	CA3240E	Dual MOSFET Operational Amplifier	8DIL	CA3240E	0.91	0.8461	0.7254	0.6348	0.5668
3524	SG3524N	Pulse width modulator	16DIL	SG3524N	0.82	0.7353	0.6536	0.5719	0.5106
3900	LM3900N	Quad Current Diffirential Amplifier	14DIL	LM3900N	0.72	0.6480	0.5760	0.5040	0.4680
3914	LM3914N	LED Bargraph Driver (linear)	18DIL	LM3914N	2.07	1.8200	1.4560	1.2740	1.1500
3915	LM3915N	LED Bargraph Driver (log)	18DIL	LM3915N	2.10	1.8900	1.6800	1.4700	1.3125
4136	RC4136N	Quad Ind. Compensation Amplifier	14DIL	RC4136N	1.04	0.9360	0.8840	0.7800	0.7280
4558	MC4558P	(BA4558) Dual Wideband Operational Amp.	8DIL	MC4558P	0.40	0.3200	0.2880	0.2560	0.2240

Analogue ICs - Cont.

Base No.	Device	Function Description	Pins/Package
5532	NE5532P	Dual Low Noise Operational Ampliifer	8DIL
5534	NE5534N	Low Noise Operational Ampliifer	8DIL
7106	ICL7106CPL	CMOS 3 Digit Driver/ A to D Converter	40DIL
7107	ICL7107CPL	3½ Digit LED Driver/ A to D Converter	40DIL
7555	ICM7555IPA	Single Low Power Timer	8DIL
7556	ICM7556	Dual Low Power Timer	14DIL
7611	ICL7611DCPA	CMOS Operational Amplifer	8DIL
7621	ICL7621DCPA	Dual CMOS Operational Amplifer	8DIL
7660	ICL7660SCPA	CMOS Voltage Converter	8DIL
7705	TL7705ACP	µProcessor Voltage Supervisor	8DIL
13700	LM13700	Dual Transconductance Amplifier (replaces LM13600)	16DIL

Order Code	1+	10+	25+	50+	100+
NE5532P	0.48	0.3878	0.3490	0.3102	0.2645
NE5534N	0.54	0.4334	0.3901	0.3467	0.3034
ICL7106CPL	2.21	1.9872	1.8768	1.7664	1.6560
ICL7107CPL	2.72	2.4480	2.3120	2.0400	1.9040
ICM7555IPA	0.41	0.3654	0.3248	0.2842	0.2639
ICM7556	1.04	0.9360	0.8320	0.7280	0.6760
ICL7611DCPA	1.00	0.8000	0.7200	0.6400	0.5600
ICL7621DCPA	0.84	0.7560	0.6720	0.5880	0.5460
ICL7660SCPA	0.80	0.7200	0.6400	0.5600	0.5000
TL7705ACP	0.82	0.7344	0.6936	0.5850	0.5125
LM13700	1.28	1.1152	1.0880	1.0240	0.8960

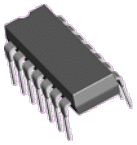
Digital ICs

Base No.	Device	Function Description	Pins/Package
800	DAC0800LCN	8-Bit D to A Converter	16DIL
7109	ICL7109CPL	12-Bit D to A Converter	40DIL

Order Code	1+	10+	25+	50+	100+
DAC0800LCN	1.36	1.2240	1.1560	1.0880	1.0625
ICL7109CPL	5.76	5.1840	4.6080	4.0320	3.6000


TO-92


TO-220


14DIL


8DIL

DIGITAL

74 Series - Standard TTL Devices

Supply Voltage 4.75-5.25Vdc | Power Dissapation (@100kHz) 10mW/gate | Propagation Delay 10nS(typ)
Max Clock Freq. 35Mhz | Min Output Current 16mA | Fan-outs (TTL Loads) 40

Device	Function Description	Pins/Package	Order Code	1+	25+	50+	100+	500+
7407	Hex Buffer / Driver	14DIL	7407	0.40	0.3600	0.3200	0.2800	0.2600

74LS Series - Low Power Schottky TTL Devices

Supply Voltage 4.75-5.25Vdc | Power Dissapation (@100kHz) 2mW/gate | Propagation Delay 10nS(typ)
Max Clock Freq. 40Mhz | Min Output Current 8mA | Fan-outs (TTL Loads) 20

Device	Function Description	Pins/Package	Order Code	1+	25+	50+	100+	500+
74LS00	Quad 2-Input NAND Gate	14DIL	74LS00	0.28	0.2240	0.2016	0.1792	0.1568
74LS01	Quad 2-Input NAND Gate	14DIL	74LS01	0.14	0.1224	0.1088	0.0952	0.0884
74LS02	Quad 2-Input NOR Gate	14DIL	74LS02	0.38	0.3000	0.2700	0.2400	0.2100
74LS03	Quad 2-Input NAND Gate	14DIL	74LS03	0.29	0.2610	0.2320	0.2030	0.1885
74LS04	Hex Inverter	14DIL	74LS04	0.30	0.2400	0.2160	0.1920	0.1680
74LS05	Hex Inverter	14DIL	74LS05	0.14	0.1224	0.1088	0.0952	0.0884
74LS08	Quad 2-Input AND Gate	14DIL	74LS08	0.19	0.1520	0.1368	0.1216	0.1064
74LS09	Quad 2-Input AND Gate	14DIL	74LS09	0.15	0.1200	0.1080	0.0960	0.0840
74LS10	Triple 3-Input NAND Gate	14DIL	74LS10	0.27	0.2120	0.1908	0.1696	0.1484
74LS107	Dual J-K Flip Flop with clear	14DIL	74LS107	0.30	0.1350	0.1200	0.1050	0.0975
74LS109	Dual J-K Flip Flop with clear	16DIL	74LS109	0.21	0.1890	0.1680	0.1470	0.1365
74LS11	Triple 3-Input AND Gate	14DIL	74LS11	0.17	0.1530	0.1360	0.1190	0.1105
74LS112	Dual J-K Flip Flop with clear	16DIL	74LS112	0.24	0.2160	0.1920	0.1680	0.1560
74LS113	Dual J-K Flip Flop with clear	14DIL	74LS113	0.23	0.1800	0.1620	0.1440	0.1260
74LS114	Dual J-K Flip Flop with clear	14DIL	74LS114	0.36	0.3240	0.2880	0.2520	0.2340
74LS12	Hex Schmitt Trigger Inverter	14DIL	74LS12	0.25	0.2000	0.1800	0.1600	0.1400
74LS122	Retriggerable Monostable	14DIL	74LS122	0.31	0.2772	0.2464	0.2156	0.2002
74LS123	Dual Retriggerable Monostable	16DIL	74LS123	0.31	0.2500	0.2250	0.2000	0.1750
74LS126	Quad Bus Buffer. Tri state	14DIL	74LS126	0.25	0.2286	0.2032	0.1778	0.1651
74LS132	Quad 2-Input NAND Schmitt Trigger	14DIL	74LS132	0.47	0.4200	0.3780	0.3360	0.2940
74LS133	13-Input NAND Gate	16DIL	74LS133	0.36	0.3240	0.2880	0.2520	0.2340
74LS136	Quad 2-Input EOR Gate	14DIL	74LS136	0.23	0.1800	0.1620	0.1440	0.1260
74LS138	3 to 8 Line Decoder / Demultiplexer	16DIL	74LS138	0.33	0.2200	0.1980	0.1760	0.1540
74LS14	Hex Schmitt Trigger Inverter	14DIL	74LS14	0.33	0.2600	0.2340	0.2080	0.1820
74LS145	BCD to Decimal Deocoder / Driver	16DIL	74LS145	0.56	0.5040	0.4480	0.3920	0.3640
74LS148	8 to 3 Line Priority Encoder	16DIL	74LS148	0.64	0.5760	0.5120	0.4480	0.4160
74LS15	Triple 3-Input AND Gate	14DIL	74LS15	0.24	0.1600	0.1440	0.1280	0.1120
74LS151	1 of 8 Data Selector / Multiplexer	16DIL	74LS151	0.29	0.2320	0.2088	0.1856	0.1624
74LS156	Dual 2 to 4 Line Decoder / Demultiplexer	16DIL	74LS156	0.36	0.3240	0.2880	0.2520	0.2340
74LS157	Quad 2 to 1 Line Data Selector / Multiplexer	16DIL	74LS157	0.23	0.2034	0.1808	0.1582	0.1469
74LS158	Quad 2 to 1 Line Data Selector / Multiplexer	16DIL	74LS158	0.21	0.1854	0.1648	0.1442	0.1339
74LS160	Synchronous Decade Counter	16DIL	74LS160	0.48	0.4320	0.3840	0.3360	0.3120
74LS161	Synchronous 4-Bit Binary Counter	16DIL	74LS161	0.32	0.2898	0.2576	0.2254	0.2093
74LS162	Synchronous Decade Counter	16DIL	74LS162	0.44	0.3960	0.3520	0.3080	0.2860
74LS163	Synchronous 4-Bit Binary Counter	16DIL	74LS163	0.44	0.3960	0.3520	0.3080	0.2860
74LS164	8-Bit Shift Register S-In S/P-Out	14DIL	74LS164	0.43	0.3400	0.3060	0.2720	0.2380
74LS165	8-Bit Shift Register S/P-In S-Out	16DIL	74LS165	0.48	0.4284	0.3808	0.3332	0.3094
74LS173	4-Bit D-Type Register	16DIL	74LS173	0.24	0.2196	0.1952	0.1708	0.1573
74LS175	4-Bit D-Type Register with clear	16DIL	74LS175	0.30	0.2400	0.2160	0.1920	0.1680
74LS191	Synchronous Up/Down 4-Bit Binary Counter	16DIL	74LS191	0.27	0.2250	0.1800	0.1440	0.1260
74LS193	Synchronous Up/Down 4-Bit Binary Counter	16DIL	74LS193	0.43	0.3400	0.3060	0.2720	0.2380
74LS195	4-Bit Parallel Access Shift Register	16DIL	74LS195	0.24	0.2160	0.1920	0.1680	0.1560
74LS20	Dual 4-Input NAND Gate	14DIL	74LS20	0.27	0.2430	0.2160	0.1890	0.1688
74LS21	Dual 4-Input AND Gate	14DIL	74LS21	0.20	0.1560	0.1404	0.1248	0.1092
74LS240	Octal Inverting Buffer / Line Driver, Tri state	20DIL	74LS240	0.32	0.2844	0.2528	0.2212	0.2054
74LS241	Octal Buffer / Line Driver, Tri state	20DIL	74LS241	0.32	0.2844	0.2528	0.2212	0.2054
74LS243	Quad Bus Transceiver, Tri state	14DIL	74LS243	0.30	0.2000	0.1800	0.1600	0.1400
74LS244	Octal Buffer / Line Driver, Tri state	20DIL	74LS244	0.41	0.3600	0.3240	0.2880	0.2520
74LS245	Octal Bus Transceiver, Tri state	20DIL	74LS245	0.45	0.3600	0.3240	0.2880	0.2520
74LS247	BCD to 7-Segment Decoder / Driver	16DIL	74LS247	0.60	0.4800	0.4320	0.3840	0.3360
74LS251	1 of 8 Data Selector / Multiplexer, Tri state	16DIL	74LS251	0.24	0.2196	0.1952	0.1708	0.1586
74LS257	Quad 2 of 1 Data Selector / Multiplexer, Tri state	16DIL	74LS257	0.24	0.2196	0.1952	0.1708	0.1586
74LS258	Quad 2 of 1 Data Selector / Multiplexer, Tri state	16DIL	74LS258	0.24	0.2196	0.1952	0.1708	0.1586
74LS26	Quad 2-Input NAND Gate	14DIL	74LS26	0.17	0.1360	0.1088	0.0952	0.0884
74LS266	Quad 2-Input EOR Gate	14DIL	74LS266	0.14	0.1224	0.1088	0.0952	0.0884
74LS27	Triple 3-Input NOR Gate	14DIL	74LS27	0.25	0.2000	0.1800	0.1600	0.1400
74LS273	8-Bit D-Type Register with clear	20DIL	74LS273	0.32	0.2844	0.2528	0.2212	0.2054
74LS279	Quad R-S Latch	16DIL	74LS279	0.24	0.2160	0.1920	0.1680	0.1560
74LS283	4-Bit Full Adder	16DIL	74LS283	0.47	0.3670	0.3384	0.3008	0.2632
74LS30	8-Input NAND Gate	14DIL	74LS30	0.20	0.1800	0.1600	0.1400	0.1300
74LS32	Quad 2-Input OR Gate	14DIL	74LS32	0.23	0.1800	0.1620	0.1440	0.1260
74LS365	Hex Bus Buffer with enable, Tri state	16DIL	74LS365	0.21	0.1872	0.1664	0.1456	0.1352
74LS367	Hex Bus Driver with enable, Tri state	16DIL	74LS367	0.21	0.1872	0.1664	0.1456	0.1352
74LS368	Hex Inverting Bus Buffer with enable, Tri state	16DIL	74LS368	0.21	0.1872	0.1664	0.1456	0.1352
74LS37	Quad 2-Input NAND Buffer	14DIL	74LS37	0.31	0.2500	0.2250	0.2000	0.1750
74LS373	Octal D-Type Latch with enable, Tri state	20DIL	74LS373	0.43	0.3800	0.3420	0.3040	0.2660
74LS374	Octal D-Type Flip Flop, Tri state	20DIL	74LS374	0.38	0.3000	0.2700	0.2400	0.2100
74LS378	Hex D-Type Flip Flop with clock enable	16DIL	74LS378	0.62	0.5580	0.4960	0.4340	0.4030
74LS38	Quad 2-Input NAND Buffer	14DIL	74LS38	0.18	0.1620	0.1440	0.1260	0.1170
74LS390	Dual Decade Counter	16DIL	74LS390	0.53	0.4200	0.3780	0.3360	0.2940
74LS393	Dual 4-Bit Binary Counter	14DIL	74LS393	0.33	0.2970	0.2640	0.2310	0.2145
74LS395	4-Bit Cascadable Register	16DIL	74LS395	0.26	0.2304	0.2048	0.1792	0.1664
74LS40	Dual 4-Input NAND Buffer	14DIL	74LS40	0.14	0.1224	0.1088	0.0952	0.0884
74LS51	Dual AND-OR-Invert Gate	14DIL	74LS51	0.24	0.2160	0.1920	0.1680	0.1560
74LS83	4-Bit Full Adder	16DIL	74LS83	0.38	0.3420	0.3040	0.2660	0.2470
74LS92	Divide by 12 Counter	14DIL	74LS92	0.45	0.4050	0.3600	0.3150	0.2925
74LS93	4-Bit Binary Counter	14DIL	74LS93	0.44	0.3500	0.3150	0.2800	0.2450

74HC Series - High Speed CMOS TTL Devices (CMOS Compatible inputs)

Supply Voltage	4.5-5.5Vdc	Power Dissapation (@100kHz)	negligible	Propagation Delay	10nS(typ)
Max Clock Freq.	40Mhz	Min Output Current	4mA	Fan-outs (TTL Loads)	10

Device	Function Description	Pins/Package	Order Code	1+	25+	50+	100+	500+
74HC00	Quad 2-Input NAND Gate	14DIL	74HC00	0.16	0.1295	0.1036	0.0829	0.0725
74HC02	Quad 2-Input NOR Gate (OC)	14DIL	74HC02	0.17	0.1385	0.1108	0.0886	0.0776
74HC03	Quad 2-Input NAND Gate (OC)	14DIL	74HC03	0.21	0.1908	0.1696	0.1484	0.1378
74HC04	Hex Inverter	14DIL	74HC04	0.17	0.1410	0.1128	0.0902	0.0790
74HC08	Quad 2-Input AND Gate	14DIL	74HC08	0.17	0.1393	0.1114	0.0891	0.0780
74HC10	Triple 3-Input NAND Gate	14DIL	74HC10	0.21	0.1400	0.1260	0.1120	0.0980
74HC107	Dual J-K Flip Flop with clear	14DIL	74HC107	0.40	0.3600	0.3200	0.2800	0.2600
74HC11	Triple 3-Input AND Gate	14DIL	74HC11	0.21	0.1400	0.1260	0.1120	0.0980
74HC123	Dual Retriggerable Monostable with clear	16DIL	74HC123	0.33	0.2970	0.2640	0.2310	0.2145
74HC125	Quad Bus Buffer, Tri state	14DIL	74HC125	0.26	0.2304	0.2048	0.1792	0.1664
74HC126	Quad Bus Buffer, Tri state	14DIL	74HC126	0.46	0.4140	0.3680	0.3220	0.2990
74HC132	Quad 2-Input NAND Schmitt Trigger	14DIL	74HC132	0.26	0.2200	0.1760	0.1408	0.1232
74HC133	13-Input NAND Gate	16DIL	74HC133	0.34	0.2740	0.2466	0.2192	0.1918
74HC137	3 to 8 Line Decoder / Demultiplexer	16DIL	74HC137	0.30	0.1976	0.1778	0.1581	0.1383
74HC138	3 to 8 Line Decoder / Demultiplexer	16DIL	74HC138	0.26	0.2168	0.1734	0.1561	0.1387
74HC139	Dual 3 to 8 Line Decoder / Demultiplexer	16DIL	74HC139	0.31	0.2808	0.2496	0.2184	0.2028
74HC14	Hex Schmitt Trigger Inverter	14DIL	74HC14	0.18	0.1174	0.1057	0.0939	0.0822
74HC151	1 of 8 Data Selector / Demultiplexer	16DIL	74HC151	0.33	0.2952	0.2624	0.2296	0.2132
74HC153	Dual 4 to 1Line Data Selector / Demultiplexer	16DIL	74HC153	0.30	0.1976	0.1581	0.1383	0.1284
74HC154	4 to 16 Line Decoder / Demultiplexer	24DIL	74HC154	0.94	0.7548	0.6793	0.6038	0.5284
74HC157	Quad 2 to 1 Line Data Selector / Demultiplexer	16DIL	74HC157	0.22	0.1860	0.1488	0.1339	0.1190
74HC158	Quad 2 to 1 Line Data Selector / Demultiplexer	16DIL	74HC158	0.23	0.2070	0.1840	0.1610	0.1495
74HC161	Synchronous 4-Bit Binary Counter	16DIL	74HC161	0.27	0.2134	0.1921	0.1707	0.1494
74HC162	Synchronous Decade Counter	16DIL	74HC162	0.46	0.4122	0.3664	0.3206	0.2977
74HC163	Synchronous 4-Bit Binary Counter	16DIL	74HC163	0.26	0.2338	0.2078	0.1819	0.1689
74HC164	8-Bit Shift Register, S In S/P Out	14DIL	74HC164	0.23	0.1885	0.1508	0.1056	0.0980
74HC165	8-Bit Shift Register, S/P In S Out	16DIL	74HC165	0.26	0.1944	0.1296	0.1166	0.1037
74HC173	4-Bit D Type Register, Tri state	16DIL	74HC173	0.38	0.3402	0.3024	0.2646	0.2457
74HC174	6-Bit D Type Register with clear	16DIL	74HC174	0.27	0.2394	0.2128	0.1862	0.1729
74HC175	4-Bit D Type Register with clear	16DIL	74HC175	0.35	0.3150	0.2800	0.2450	0.2275
74HC193	Synchronous Up/Down 4-Bit Binary Counter	16DIL	74HC193	0.39	0.3080	0.2772	0.2464	0.2156
74HC194	4-Bit Bidirectional SHift Register, S/P In/Out	16DIL	74HC194	0.33	0.2970	0.2640	0.2310	0.2145
74HC195	4-Bit Parallel Access Shift Register	16DIL	74HC195	0.32	0.2880	0.2560	0.2240	0.2080
74HC20	Dual 4-Input NAND Gate	14DIL	74HC20	0.28	0.2520	0.2240	0.1960	0.1820
74HC240	Octal Inverting Buffer / Line Driver, Tri state	20DIL	74HC240	0.32	0.2668	0.2134	0.1707	0.1494
74HC241	Octal Buffer / Line Driver, Tri state	20DIL	74HC241	0.36	0.3276	0.2912	0.2548	0.2366
74HC244	Octal Buffer / Line Driver, Tri state	20DIL	74HC244	0.40	0.3300	0.2640	0.2112	0.1848
74HC245	Octal Bus Transceiver, Tri state	20DIL	74HC245	0.34	0.2423	0.1938	0.1550	0.1357
74HC251	1 of 8 Data Selector / Multiplexer, Tri state	16DIL	74HC251	0.30	0.2700	0.2400	0.2100	0.1950
74HC253	Dual 1 of 4 Data Selector / Multiplexer, Tri state	16DIL	74HC253	0.25	0.2250	0.2000	0.1750	0.1625
74HC257	Quad 2 to 1 Line Data Selector / Multiplexer, Tri state	16DIL	74HC257	0.25	0.2250	0.2000	0.1750	0.1625
74HC259	8-Bit Addressable Latch	16DIL	74HC259	0.29	0.2211	0.1474	0.1327	0.1179
74HC27	Triple 3-Input NOR Gate	14DIL	74HC27	0.16	0.1440	0.1280	0.1120	0.1040
74HC273	8-Bit D Type Register with clear	20DIL	74HC273	0.32	0.2853	0.2536	0.2219	0.2061
74HC299	8-Bit Universal Shift Register, Tri state	20DIL	74HC299	0.61	0.4046	0.3641	0.3237	0.2832
74HC30	8-Input NAND Gate	14DIL	74HC30	0.22	0.1980	0.1760	0.1540	0.1430
74HC32	Quad 2-Input OR Gate	14DIL	74HC32	0.14	0.1180	0.0944	0.0755	0.0661
74HC365	Hex Buffer with enable, Tri state	16DIL	74HC365	0.28	0.2335	0.1868	0.1494	0.1308
74HC367	Hex Bus Driver with enable, Tri state	16DIL	74HC367	0.38	0.3150	0.2520	0.2268	0.2016
74HC368	Hex Inverting Bus Driver with enable, Tri state	16DIL	74HC368	0.29	0.2390	0.1912	0.1530	0.1338
74HC373	Octal D Type Latch with enable, Tri state	20DIL	74HC373	0.35	0.3150	0.2800	0.2450	0.2275
74HC374	Octal D Type Edge Triggered Flip Flop, Tri state	20DIL	74HC374	0.34	0.2423	0.1938	0.1550	0.1357
74HC390	Dual Decade Counter	16DIL	74HC390	0.37	0.3058	0.2446	0.2201	0.1957
74HC393	Dual 4-Bit Binary Counter	14DIL	74HC393	0.36	0.2988	0.2390	0.1912	0.1673
74HC4002	Dual 4-Input NOR Gate	14DIL	74HC4002	0.31	0.2790	0.2480	0.2170	0.2015
74HC4017	Decade Counter, 10 decoded outputs	16DIL	74HC4017	0.36	0.3035	0.2428	0.1942	0.1700
74HC4020	14-Stage Binary Counter (÷16384)	16DIL	74HC4020	0.36	0.3240	0.2880	0.2520	0.2340
74HC4040	12-Stage Binary Counter (÷4096)	16DIL	74HC4040	0.29	0.2435	0.1948	0.1558	0.1364
74HC4049	Hex Inverting Buffer & TTL Driver	16DIL	74HC4049	0.31	0.2790	0.2480	0.2170	0.2015
74HC4051	8-Channel Analogue Multiplexer	16DIL	74HC4051	0.50	0.3960	0.3564	0.3168	0.2772
74HC4052	Dual 4-Channel Analogue Multiplexer	16DIL	74HC4052	0.34	0.2453	0.1962	0.1766	0.1570
74HC4053	Triple 2-Channel Analogue Multiplexer	16DIL	74HC4053	0.22	0.1454	0.1309	0.1163	0.1018
74HC4060	14-Stage Binary Counter (÷16384) with osc.	16DIL	74HC4060	0.23	0.1930	0.1544	0.1235	0.1081
74HC4075	Triple 3-Input OR Gate	14DIL	74HC4075	0.27	0.2466	0.2192	0.1918	0.1781
74HC4078	8-Input NOR Gate	14DIL	74HC4078	0.32	0.2880	0.2560	0.2240	0.2080
74HC42	BCD to Decimal Decoder	16DIL	74HC42	0.36	0.3240	0.2880	0.2520	0.2340
74HC4511	7-Segment Latch / Decoder / Driver	16DIL	74HC4511	0.64	0.5760	0.5120	0.4480	0.4160
74HC4514	4-Bit Latch / 4 to 16 line Decoder, high	24DIL	74HC4514	0.84	0.7560	0.6720	0.5880	0.5460
74HC4538	Dual Retriggerable Monostable Multivibrator	16DIL	74HC4538	0.41	0.3690	0.3280	0.2870	0.2665
74HC4543	BCD to 7-Segment Latch / Decoder / Driver	16DIL	74HC4543	0.90	0.8100	0.7200	0.6300	0.5850
74HC563	Octal Inverting D Type Latch. Tri state	20DIL	74HC563	0.56	0.5040	0.4480	0.3920	0.3640
74HC573	Octal Type Latch. Tri state	20DIL	74HC573	0.29	0.2385	0.1908	0.1526	0.1336
74HC574	Octal D Type Latch. Tri state	20DIL	74HC574	0.30	0.2108	0.1686	0.1517	0.1349
74HC595	8-Stage Shift Register with latch	16DIL	74HC595	0.27	0.2255	0.1804	0.1443	0.1263
74HC597	8-Bit PIPO Shift Register with latch	16DIL	74HC597	0.22	0.1818	0.1454	0.1163	0.1018
74HC688	8-Bit Comparator with enable	20DIL	74HC688	0.46	0.3040	0.2736	0.2432	0.2128
74HC73	Dual J-K Flip Flop with clear	14DIL	74HC73	0.40	0.3600	0.3200	0.2800	0.2600
74HC75	4-Bit D-Type Latch with enable	16DIL	74HC75	0.31	0.2563	0.2050	0.1845	0.1640
74HC85	4-Bit Comparator	16DIL	74HC85	0.23	0.1938	0.1550	0.1395	0.1240
74HC86	Quad 2-Input EOR Gate	14DIL	74HC86	0.21	0.1755	0.1404	0.1123	0.0983

4000 Series - High Speed CMOS

Supply Voltage	3.0-18Vdc	Power Dissapation (@100kHz)	negligible	Propagation Delay	25nS(typ)
Max Clock Freq.	40Mhz	Min Output Current	3mA	Fan-outs (TTL Loads)	7

Device	Function Description	Pins/Package	Order Code	1+	25+	50+	100+	500+
4000B	Dual 3-Input NOR Gate plus inverter	14DIL	4000B	0.27	0.2319	0.1933	0.1546	0.1391
4001B	Quad 2-Input NOR Gate	14DIL	4001B	0.16	0.1313	0.1050	0.0945	0.0840
4002B	Dual 4-Input NOR Gate	14DIL	4002B	0.19	0.1286	0.1157	0.1029	0.0900
4006B	18-Bit Static Shift Register	14DIL	4006B	0.65	0.5188	0.4669	0.4150	0.3632
4009UB	Hex Inverting Buffer	16DIL	4009UB	0.23	0.1562	0.1406	0.1250	0.1093
40106B	Hex Schmitt Trigger, inverting	14DIL	40106B	0.19	0.1565	0.1252	0.1127	0.1002
40109B	Quad Non-inverting Level Converter, Tri State	16DIL	40109B	0.59	0.5292	0.4704	0.4116	0.3822
4010B	Hex Non-Inverting Buffer	16DIL	4010B	0.21	0.1400	0.1260	0.1120	0.0980
4011B	Quad 2-Input NAND Gate	14DIL	4011B	0.16	0.1373	0.1098	0.0878	0.0769
4012B	Dual 4-Input NAND Gate	14DIL	4012B	0.20	0.1320	0.1188	0.1056	0.0924
4013B	Dual D-Type Flip Flop	14DIL	4013B	0.24	0.2023	0.1618	0.1456	0.1294
4014B	8-Stage Shift Register P/S-in P/S-out	16DIL	4014B	0.30	0.2700	0.2400	0.2100	0.1950
4015B	Dual 4-Stage Shift Register, S-in P-out	16DIL	4015B	0.27	0.2168	0.1951	0.1734	0.1518
4016B	Quad Analogue Switch	14DIL	4016B	0.20	0.1690	0.1352	0.1082	0.0946
40174B	6-Bit D Type Register with reset	16DIL	40174B	0.46	0.4122	0.3664	0.3206	0.2977
40175B	4-Bit D Type Register, complement outputs	16DIL	40175B	0.41	0.3280	0.2952	0.2624	0.2296
4017B	Decade Counter, 10 decoded outputs	16DIL	4017B	0.21	0.1800	0.1500	0.1200	0.1080
4018B	Programmable Counter/Divider n=2..10	16DIL	4018B	0.29	0.1916	0.1724	0.1533	0.1341
4019B	4-Bit AND/OR Selector	16DIL	4019B	0.25	0.1650	0.1485	0.1320	0.1155
4020B	14-Stage Binary Counter (÷16384)	16DIL	4020B	0.31	0.2620	0.2096	0.1677	0.1467
4021B	8-Stage Shift Register, P/S-in S-out	16DIL	4021B	0.22	0.1855	0.1484	0.1336	0.1187
4022B	Octal Counter with 8 decoded outputs	16DIL	4022B	0.32	0.2862	0.2544	0.2226	0.2067
4023B	Triple 3-Input NAND Gate	14DIL	4023B	0.23	0.1500	0.1350	0.1200	0.1050
4024B	7-Stage Binary Counter (÷128)	14DIL	4024B	0.22	0.1850	0.1480	0.1184	0.1036
4025B	Triple 3-Input NOR Gate	14DIL	4025B	0.20	0.1326	0.1193	0.1061	0.0928
4026B	Decade Counter with 7 Segment outputs	16DIL	4026B	0.67	0.5588	0.4470	0.4023	0.3576
4027B	Dual J-K Flip Flop	16DIL	4027B	0.21	0.1768	0.1414	0.1131	0.0990
4028B	BCD to Decimal Decoder, 1 of 10	16DIL	4028B	0.21	0.1710	0.1368	0.1231	0.1094
4029B	Presettable Up/Down Counter, binary or decade	16DIL	4029B	0.38	0.3163	0.2530	0.2024	0.1771
4030B	Quad 2-Input EOR Gate	14DIL	4030B	0.15	0.1000	0.0900	0.0800	0.0700
4035B	4-Stgae Shift Register, P-in P-out	16DIL	4035B	0.31	0.2754	0.2448	0.2142	0.1989
4040B	12-Stage Binary Counter (÷4096)	16DIL	4040B	0.19	0.1620	0.1296	0.1037	0.0907
4042B	Quad Clocked D-Latch	16DIL	4042B	0.19	0.1668	0.1112	0.1001	0.0890
4043B	Quad R/S Flip Flop, NOR Logic, Tri State	16DIL	4043B	0.35	0.2800	0.2520	0.2240	0.1960
4046B	Phase Locked Loop	16DIL	4046B	0.42	0.3340	0.3006	0.2672	0.2338
4047B	Monostable / Astable Multivibrator	14DIL	4047B	0.25	0.2184	0.1820	0.1456	0.1310
4048B	8-Input Multifunction Gate	16DIL	4048B	0.34	0.2274	0.2047	0.1819	0.1592
4049B	Hex Inverting Buffer & TTL Driver	16DIL	4049B	0.29	0.2350	0.2115	0.1880	0.1645
4049UB	Hex Inverting Buffer & TTL Driver	16DIL	4049UB	0.17	0.1390	0.1112	0.1001	0.0980
4050B	Hex Non-Inverting Buffer & TTL Driver	16DIL	4050B	0.20	0.1625	0.1300	0.1170	0.1040
4051B	8-Channel Analogue Multiplexer	16DIL	4051B	0.23	0.1928	0.1542	0.1234	0.1079
4052B	Dual 4-Channel Analogue Multiplexer	16DIL	4052B	0.32	0.2880	0.2560	0.2240	0.2080
4053B	Triple 2-Channel Analogue Multiplexer	16DIL	4053B	0.22	0.1800	0.1440	0.1152	0.1008
4054B	4-Segment LCD Driver	16DIL	4054B	0.56	0.5040	0.4480	0.3920	0.3640
4055B	BCD to 7-Segment LCD Decoder/Driver	16DIL	4055B	0.34	0.3078	0.2736	0.2394	0.2223
4060B	14-Stage Binary Counter (÷16384) with osc.	16DIL	4060B	0.16	0.1343	0.1074	0.0967	0.0859
4063B	4-Bit Magnitude Comparator	16DIL	4063B	0.41	0.3262	0.2936	0.2610	0.2283
4066B	Quad Analogue Switch	14DIL	4066B	0.22	0.1825	0.1460	0.1168	0.1022
4068B	8-Input NAND Gate	14DIL	4068B	0.19	0.1668	0.1390	0.1112	0.1001
4069UB	Hex Inverter	14DIL	4069UB	0.18	0.1554	0.1036	0.0829	0.0725
4070B	Quad 2-Input EOR Gate	14DIL	4070B	0.15	0.1240	0.0992	0.0794	0.0694
4071B	Quad 2-Input OR Gate	14DIL	4071B	0.20	0.1668	0.1334	0.1201	0.1067
4072B	Dual 4-Input OR Gate	14DIL	4072B	0.18	0.1458	0.1312	0.1166	0.1021
4073B	Triple 3-Input AND Gate	14DIL	4073B	0.19	0.1500	0.1350	0.1200	0.1050
4075B	Triple 3-Input OR Gate	14DIL	4075B	0.15	0.1280	0.1024	0.0922	0.0666
4076B	Quad D-Type Register, Tri State	16DIL	4076B	0.31	0.2754	0.2448	0.2142	0.1989
4077B	Quad 2-Input Ex.NOR Gate	14DIL	4077B	0.28	0.2520	0.2240	0.1960	0.1820
4078B	8-Input NOR Gate	14DIL	4078B	0.30	0.2500	0.2000	0.1800	0.1600
4081B	Quad 2-Input AND Gate	14DIL	4081B	0.16	0.1325	0.1060	0.0848	0.0742
4082B	Dual 4-Input AND Gate	14DIL	4082B	0.22	0.1768	0.1591	0.1414	0.1238
4085B	Dual AND-OR-Invert Gate	14DIL	4085B	0.28	0.1892	0.1703	0.1514	0.1324
4086B	4 x 2 AND-OR-Invert Gate	14DIL	4086B	0.33	0.2600	0.2340	0.2080	0.1820
4093B	Quad 2-Input NAND Schmitt Trigger	14DIL	4093B	0.21	0.1765	0.1412	0.1130	0.0988
4094B	8-Stage Shift Register with Tri state buffer	16DIL	4094B	0.29	0.2312	0.2081	0.1850	0.1618
4098B	Dual Retriggerable Monostable	16DIL	4098B	0.40	0.3350	0.2680	0.2144	0.1876
4099B	Addressable 8-Bit Latch	16DIL	4099B	0.35	0.2885	0.2308	0.2077	0.1846
4502B	Hex Inverter / Driver, Tri state	16DIL	4502B	0.32	0.2580	0.2322	0.2064	0.1806
4503B	Hex Non-Inverter / Driver, Tri state	16DIL	4503B	0.40	0.3600	0.3200	0.2800	0.2600
4508B	Dual 4-Bit Latch, Tri state	24DIL	4508B	1.40	1.2600	1.1200	0.9800	0.9100
4510B	BCD Up/Down Decade Counter	16DIL	4510B	0.45	0.3788	0.3030	0.2727	0.2424
4511B	7-Segment LED Latch / Decoder / Driver	16DIL	4511B	0.36	0.3000	0.2400	0.2160	0.192
4512B	8-Channel Data Selector, Tri state	16DIL	4512B	0.27	0.2188	0.1969	0.1750	0.1532
4515B	4-Bit Latch / 4 to 16 line Decoder, low	24DIL	4515B	1.00	0.9000	0.8000	0.7000	0.6500
4516B	4-Bit Binary Up/Down Counter	16DIL	4516B	0.44	0.3645	0.2916	0.2333	0.2041
4518B	Dual Synchronous Decade Counter	16DIL	4518B	0.42	0.3600	0.2400	0.2160	0.1920
4520B	Dual Synchronous 4-Bit Binary Counter	16DIL	4520B	0.34	0.2825	0.2260	0.1808	0.1582
4521B	24-Stage Binary Counter	16DIL	4521B	0.62	0.5580	0.4960	0.4340	0.4030
4526B	Presettable 4-Bit Binary Down Counter	16DIL	4526B	0.47	0.3740	0.3366	0.2992	0.2618
4527B	Decimal Rate Multiplier	16DIL	4527B	0.40	0.3600	0.3200	0.2800	0.2600
4529B	Dual Analogue Multiplexer	16DIL	4529B	0.44	0.3960	0.3520	0.3080	0.2860
4532B	8-Bit Priority Encoder	16DIL	4532B	0.24	0.2035	0.1628	0.1302	0.1140
4536B	Programmable Timer	16DIL	4536B	1.00	0.9000	0.8000	0.7000	0.6500
4538B	Dual Retriggerable Monostable Multivibrator	16DIL	4538B	0.40	0.3350	0.2680	0.2144	0.1876
4541B	Programmable Timer	14DIL	4541B	0.33	0.2934	0.2608	0.2282	0.2119
4555B	Dual 1 of 4 Decoder / Demultiplexer, high	16DIL	4555B	0.32	0.2880	0.2560	0.2240	0.2080
4556B	Dual 1 of 4 Decoder / Demultiplexer, low	16DIL	4556B	0.40	0.3600	0.3200	0.2800	0.2600
4584B	Hes Schmitt Trigger, inverting	14DIL	4584B	0.27	0.2126	0.1913	0.1701	0.1488
4585B	4-Bit Magnitude Comparator	16DIL	4585B	0.48	0.4302	0.3824	0.3346	0.3107
4724B	8 Bit Addressable Latch	16DIL	4724B	0.94	0.8460	0.7520	0.6580	0.6300

MEMORY

Static RAM - SRAM

CMOS random access memory, typically used in temporary data storage.

Technical Specification

Device	Order Code	Size	Configuration		Package
GM76C88AL12	680-117	64k	8k x 8	120ns	28DIL

Order Code		1+	10+	25+	50+	100+
680-117	64k CMOS SRAM	3.60	3.2400	3.0600	2.2750	1.7750

EPROMS - UV Erasable

Electrically Programmable Read Only Memory, featuring a transparent window to permit erasure by Ultra Violet light.

Technical Specification

Device	Size	Configuration		V_S	V_P	Package
27C64	64k	8k x 8	150ns	5Vdc	12.75Vdc	28DIL
27256	256k	32k x 8	200ns	5Vdc	12Vdc	28DIL
27C256	256k	32k x 8	150ns	5Vdc	12.75Vdc	28DIL
27C1001	1M	128k x 8	120ns	5Vdc	12.75Vdc	32DIL
27C2001	2M	256k x 8	150ns	5Vdc	12.75Vdc	32DIL
27C4001	4M	512k x 8	100ns	5Vdc	12.75Vdc	32DIL

Order Code		1+	10+	25+	50+	100+
27C64A-15F1	64K CMOS EPROM	3.99	3.6155	3.2138	2.8120	2.5108
27256-200	256k NMOS EPROM	3.99	3.8500	3.7125	3.5750	3.2500
27C256B-15F1	256k CMOS EPROM	2.42	2.1812	1.9389	1.6965	15148
27C1001-12F1	1M CMOS EPROM	3.17	2.8505	2.5338	2.2170	1.9795
27C2001-15F!	2M CMOS EPROM	4.41	3.9717	3.5304	3.0891	2.7581
27C4001-10F1	4M CMOS EPROM	5.98	5.3820	4.7840	4.1860	3.7375

E²PROM - 8 Bit

Serial electrically erasable programmable read only memories. Supply voltage between 2.5 and 5.5Vdc, speed 400kHz (@5Vdc). Package 8 DIL.

Order Code		1+	10+	25+	50+	100+
24LC08BP	8k 1k x 8 E²PROM	0.73	0.58000	0.5220	0.4640	0.4060

E²PROM - 16 Bit

Order Code		1+	10+	25+	50+	100+
93C46N	1k 64 x 16 E²PROM	0.33	0.2750	0.2200	0.1760	0.1540

MICROCONTROLLERS

Atmel - 89C Series Microcontollers

An industry standard range of microcontrollers with Flash ROM.

Technical Specifications

Flash ROM	2k	Analogue comparator	Yes
RAM	128b	Max Osc. Speed	24MHz
I/O Pins	15	Vcc	2.7V
16-Bit Timers/Counters	2	I/O sink current/pin	20mA
Interupt sources	6	Total I/O sink current	80mA
UART(full duplex)	Yes	Package	20DIL

Order Code		1+	10+	25+	50+	100+
AT89C2051-24PC	µcontroller	6.38	5.5300	5.3325	4.2900	4.1250

Microchip - PIC12C Series

A general purpose microcontroller series featuring: In-Circuit Serial Programming, 400ns Instruction Execution, 33/35 Instruction Set, 8-Bit Timer/counter, Watchdog Timer, 6 I/O Pins, Internal/Crystal Resonator/Resistor-Capacitor Oscillator Support. OTP (One Time Programmable) EPROM (Windowed) type available.

Technical Specification

	508A-04P	509A-04P
PROM (bytes)	512	1024
RAM (bytes)	25	41
Max Osc. Speed	4MHz	4MHz
VCC	3-5.5V	3-5.5V
I/O Sink Current/pin	25mA	25mA
Package	8DIL	8DIL

Order Code		1+	10+	25+	50+	100+
PIC12C508A-04P	µcontroller	0.78	0.7056	0.6664	0.5880	0.5488
PIC12C509A-04P	µcontroller	0.83	0.7488	0.7072	0.6240	0.5824

Microchip - PIC16C5 Series

An advanced microcontroller series featuring: 200ns Instruction Execution, 33 Instruction Set, 8-Bit Timer/counter, Watchdog Timer, Internal/Crystal Resonator/Resistor-Capacitor Oscillator Support. OTP (One Time Programmable) or EPROM (Windowed)

Technical Specification

	PROM (bytes)	RAM (bytes)	I/O Pins	Max Osc. Speed	Package
PIC16C54C-04P	512 OTP	25	12	4Mhz	18DIL
PIC16C54BJW	512 EPROM	25	12	20Mhz	18DIL
PIC16C56A-04P	1024 OTP	25	12	4Mhz	18DIL

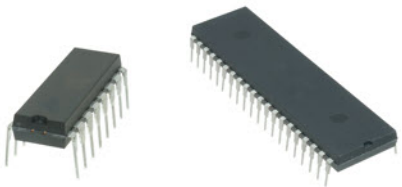
Order Code		1+	10+	25+	50+	100+
PIC16C54C-04P	µcontroller	1.49	1.3392	1.2648	1.1160	1.0416
PIC16C54BJW	µcontroller	7.60	6.8400	6.4600	5.7000	5.3200
PIC16C56A-04P	µcontroller	1.58	1.4220	1.2640	1.1060	0.9875

Microchip - PIC16F Series

Flash EEPROM microcontroller series.

Technical Specification

	Memory PROM	RAM	I/O Pins	Max Osc. Speed	Package
PIC16F84-04P	1024 Flash	68+64	13	4Mhz	18DIL
PIC16F84-10P	1024 Flash	68+64	13	10Mhz	18DIL
PIC16F627-04P	1024 Flash	224+128	15	4Mhz	18DIL
PIC16F627-20/IP	1024 Flash	224+128	15	20Mhz	18DIL
PIC16F628-20/IP	2048 Flash	224+128	15	20Mhz	18DIL
PIC16F876-04SP	8192 Flash	368+256	22	4Mhz	28DIL
PIC16F877-20P	9192 Flash	368+256	33	20Mhz	40DIL



Order Code		1+	10+	25+	50+	100+
PIC16F84-04P	µcontroller	3.14	2.8224	2.6656	2.3520	2.1952
PIC16F84-10P	µcontroller	4.16	3.9000	3.6400	3.3800	3.2500
PIC16F627-04P	µcontroller	1.95	1.8525	1.7550	1.6575	1.5600
PIC16F627-20/IP	µcontroller	2.10	1.9950	1.8900	1.7850	1.6800
PIC16F628-20/IP	µcontroller	2.58	2.4510	2.3220	2.1930	2.0640
PIC16F876-04SP	µcontroller	5.10	4.8450	4.5900	4.3350	4.0800
PIC16F877-20P	µcontroller	4.80	4.3200	4.0800	3.6000	3.3600

INDUCTORS

Sub-miniature

A range of sub-miniature RF inductors with axial leads. Ferrite drum cored with flame retardant epoxy bodies. Sub-miniature size (7.5 x 3.0mmØ) Light blue body with three (±20%) or four (±10%) band colour code. The 4th colour band indicating tolerance is not used on devices with a ±20% tolerance.

Technical Specification

Inductance Range	0.1 to 1000µH			
Dielectric withstand voltage	250Vrms			
Inductance Tolerance	≤0.68µH	±20%	>0.68µH	±10%
Q Factor	≤47µH	45 Min.	>47µH	50 Min.
Operating Temperature Range	-20 to +80°C			
Body Colour	Light Blue			

Order Code	Value	IDC max.	RDC	1+	25+	50+	100+	500+
770-810	0.1µH	1.4A	0.06Ω	0.14	0.1050	0.0750	0.0600	0.0480
770-822	0.22µH	1.15A	0.08Ω	0.15	0.1092	0.0728	0.0582	0.0510
770-847	0.47µH	1.0A	0.15Ω	0.15	0.1092	0.0728	0.0582	0.0510
770-910	1.0µH	815mA	0.25Ω	0.14	0.1050	0.0750	0.0600	0.0480
770-915	1.5µH	700mA	0.3Ω	0.14	0.1071	0.0765	0.0612	0.0490
770-922	2.2µH	630mA	0.4Ω	0.15	0.1092	0.0728	0.0582	0.0510
770-933	3.3µH	575mA	0.5Ω	0.14	0.1050	0.0750	0.0600	0.0480
770-947	4.7µH	530mA	0.6Ω	0.14	0.1050	0.0750	0.0600	0.0480
770-968	6.8µH	470mA	0.7Ω	0.15	0.1093	0.0874	0.0699	0.0612
770-010	10µH	370mA	0.85Ω	0.14	0.1050	0.0750	0.0600	0.0480
770-022	22µH	335mA	1.0Ω	0.12	0.0918	0.0612	0.0490	0.0428
770-047	47µH	255mA	2.1Ω	0.14	0.1050	0.0750	0.0600	0.0480
770-068	68µH	205mA	2.6Ω	0.14	0.1050	0.0750	0.0600	0.0480
770-110	100µH	165mA	4.2Ω	0.12	0.0918	0.0612	0.0490	0.0428
770-122	220µH	150mA	5.0Ω	0.15	0.1092	0.0728	0.0582	0.0510
770-147	470µH	90mA	13Ω	0.15	0.1092	0.0728	0.0582	0.0510
770-210	1000µH	60mA	26Ω	0.17	0.1311	0.0874	0.0699	0.0612

NTC INRUSH THERMISTORS

Negative temperature coefficient thermistors designed to limit the initial current flow to a circuit. Typically used in power supplies, lighting, motor and other applications requiring a Soft Start supply.

Technical Specification

Steady State Current	Resistance Cold	Resistance Hot	Thermal Dissipation	Thermal Time	Dims
1A	120Ω	2.29Ω	14mW/°C	35s	10mmØ
2A	8Ω	0.2Ω	11mW/°C	35s	8mmØ
2A	20Ω	0.604Ω	16mW/°C	45s	10mmØ
3A	10Ω	0.29Ω	13mW/°C	50s	10mmØ
5A	2.5Ω	0.1Ω	13mW/°C	35s	10mmØ
5A	5Ω	0.12Ω	13mW/°C	68s	13mmØ

Operating Temperature Range	-40 to +170°C
Lead Pitch	5.0mm (7.5mm 13mmØ)

Order Code		1+	10+	25+	50+	100+
929-110	1A 120Ω NTC Limiter	1.05	0.8400	0.7560	0.6720	0.5880
929-120	2A 8Ω NTC Limiter	1.05	0.8400	0.7560	0.6720	0.5850
929-122	2A 20Ω NTC Limiter	1.05	0.8400	0.7560	0.6720	0.5880
929-130	3A 10Ω NTC Limiter	1.05	0.8400	0.7560	0.6720	0.5880
929-150	5A 2.5Ω NTC Limiter	1.05	0.8400	0.7560	0.6720	0.5880
929-152	5A 5Ω NTC Limiter	1.60	1.2800	1.1520	1.0240	0.8960

METAL OXIDE VARISTORS

These devices are designed to protect equipment against transient voltage spikes. Connected directly across the supply rails, they offer a simple solution to transient suppression. A varistor remains high impedance during normal use, when a spike is encountered the impedance drops to a very low level, clamping the transient voltage to an acceptable level. The varistor absorbs the unwanted energy thereby protecting the equipment.

Technical Specification

Response Time	<50ns
Voltage Coefficient	-0.05%/°C
Insulation Resistance	≥1000MΩ @ 500V
Insulation Voltage	1000Vrms (varistor rating ≤330V) 1500Vrms (varistor rating >330V)
Operating Temperature Range	-40 to +85°C

Op. Voltage Vrms	Op. Voltage Vdc	Varistor Voltage Nom	Varistor Voltage Min/Max	Clamp Voltage V max.@ A		Surge Current 1 Surge	Surge Current 2 Surges	Power W	Energy J 10/1000µs	Dia. mmØ
11	14	18	16/20	36	2.5	250	125	0.02	0.9	7.0
14	18	22	20/24	43	2.5	250	125	0.02	1.1	7.0
17	22	27	24/30	53	2.5	250	125	0.02	1.4	7.0
20	26	33	30/36	65	2.5	250	125	0.02	1.7	7.0
30	38	47	42/52	93	2.5	250	125	0.02	2.5	7.0
50	65	82	74/90	135	10	1200	600	0.25	5.5	7.0
60	85	100	90/110	165	10	1200	600	0.25	6.5	7.0
75	100	120	108/132	200	10	1200	600	0.25	7.8	7.0
130	170	200	185/225	340	10	1200	600	0.25	13	7.0
130	170	200	185/225	340	50	4500	2500	0.6	57	14.0
150	200	240	216/264	395	10	1200	600	0.25	15	7.0
150	200	240	216/264	395	25	2500	1250	0.4	35	10.0
150	200	240	216/264	395	100	6500	4000	1	108	20.0
175	225	270	247/303	455	10	1200	600	0.25	18	7.0
250	320	390	351/429	650	10	1200	600	0.25	25	7.0
250	320	390	351/429	650	25	2500	1250	0.4	60	10.0
250	320	390	351/429	650	50	4500	2500	0.6	100	14.0
275	350	430	387/473	710	10	1200	600	0.25	28	7.0
275	350	430	387/473	710	25	2500	1250	0.4	65	10.0
275	350	430	387/473	710	50	4500	2500	0.6	115	14.0
275	350	430	387/473	710	100	6500	4000	1	190	20.0
300	385	470	423/517	775	10	1200	600	0.25	30	7.0

Order Code	1+	25+	50+	100+	500+
741-180	0.22	0.1835	0.1468	0.1174	0.1028
741-220	0.13	0.1124	0.0963	0.0642	0.0578
741-270	0.13	0.1124	0.0963	0.0642	0.0578
741-330	0.13	0.1124	0.0963	0.0642	0.0578
741-470	0.13	0.1124	0.0963	0.0642	0.0578
741-820	0.08	0.0735	0.0630	0.0420	0.0378
741-101	0.10	0.0840	0.0720	0.0480	0.0432
741-121	0.08	0.0735	0.0630	0.0420	0.0378
741-201	0.08	0.0735	0.0630	0.0420	0.0378
743-201	0.20	0.1729	0.1482	0.0988	0.0889
741-241	0.08	0.0714	0.0612	0.0408	0.0367
742-241	0.12	0.1082	0.0927	0.0618	0.0556
744-241	0.43	0.3805	0.3261	0.2174	0.1957
741-271	0.08	0.0714	0.0612	0.0408	0.0367
741-391	0.08	0.0679	0.0582	0.0388	0.0349
742-391	0.13	0.1124	0.0963	0.0642	0.0578
743-391	0.20	0.1729	0.1482	0.0988	0.0889
741-431	0.09	0.0756	0.0648	0.0432	0.0389
742-431	0.14	0.1190	0.1020	0.0680	0.0612
743-431	0.20	0.1584	0.1188	0.0792	0.0713
744-431	0.50	0.4344	0.3720	0.2480	0.2232
741-471	0.09	0.0816	0.0699	0.0466	0.0419

CAPACITORS

High Voltage Ceramic Class Y3

Mains interference suppression capacitors, Y3 class radial lead. Suitable for across line (X2) applications. Flame retardant epoxy resin coated.

Technical Specification

Capacitance Range	470pF to 4n7F
Capacitance Tolerance	±10% (Y5P), ±20% (Y5V)
Temperature Coefficient	±10% (Y5P), +30 to -80% (Y5V)
Insulation Resistance	≥10,000MΩ
Voltage Rating	400Vac
Test Voltage	2600Vac
Operating Temperature Range	-25 to +85°C

Lead Pitch 7.5mm (<2200pF)
10mm (>3300pF)

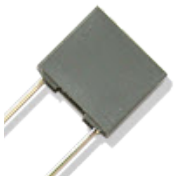
Order Code				1+	25+	50+	100+	500+
868-471	470pF	Y5P	10mmØ	0.12	0.0983	0.0786	0.0629	0.0550
868-102	1000pF	Y5V	10mmØ	0.09	0.0723	0.0578	0.0462	0.0405
868-222	2200pF	Y5V	12mmØ	0.09	0.0785	0.0628	0.0502	0.0440
868-332	3300pF	Y5V	15mmØ	0.12	0.1033	0.0826	0.0661	0.0578
868-472	4700pF	Y5V	16mmØ	0.11	0.0880	0.0704	0.0563	0.0493

Class X2 Polyester

Metallised polyester capacitors designed for mains interference suppression and are suitable for connection across the mains supply, Class X2. Epoxy resin encapsulated in flame retardant plastic cases. Specifications meets with extensive European and worldwide approvals.

Technical Specification

Capacitance Range	10nF to 1.0µF
Capacitance Tolerance	±20%
Insulation Resistance or	≥30,000MΩ (C≤330nF)
Time Constant	≥10,000 Sec. (C>330nF)
Working Voltage	275Vac
Test Voltage	1800Vdc
Operating Temperature Range	-40°C to +100°C
Body Colour	Grey



Dims: 18 x 11 x 5mm (10 to 47nF)
18 x 12 x 6mm (100nF)
26.5 x 16 x 7mm (220nF)
26.5 x 18.5 x 10mm (470nF)
32 x 22 x 13mm (1.0µF)
Lead Pitch 15mm (10 to 100nF)
22.5mm (220 & 470nF)
27.5mm (1.0µF)

Order Code			1+	25+	50+	100+	500+
867-049	10nF	Class X2	0.18	0.1329	0.0886	0.0709	0.0620
867-053	22nF	Class X2	0.16	0.1293	0.1034	0.0827	0.0724
867-055	33nF	Class X2	0.18	0.1329	0.0886	0.0709	0.0620
867-057	47nF	Class X2	0.18	0.1329	0.0886	0.0709	0.0620
867-061	100nF	Class X2	0.17	0.1248	0.0832	0.0666	0.0582
867-065	220nF	Class X2	0.30	0.2589	0.1726	0.1381	0.1208
867-069	470nF	Class X2	0.51	0.4368	0.2912	0.2330	0.2038
867-073	1.0µF	Class X2	0.80	0.6840	0.4560	0.3648	0.3192

Three Terminal Filter Capacitors

Compact, high performance disc EMI suppression filters. The three terminal construction enhances high frequency performance and offers lower inductance than two terminal capacitors. Available without and with integral ferrite beads (to minimise resonance with surrounding circuits).

Technical Specification

Capacitance Range	22pF to 22nF
Capacitance Tolerance	±20% (Y5S) ±30% (FZ 100V) -20/+80% (F, FZ 50V, Y5U)
Temperature Coefficient	±22% (Y5S) -55/+20% (Y5U) -85/+30% (FZ) -80/+30% (F)
Current Rating	6A
Operating Temperature Range	-25 to +85°C
Working Voltage	16V (with ferrite beads) 50V (without ferrite beads) 100V (with ferrite beads)

Dims: 7mmØ(no ferrite)
8 x 7mm (ferrite)
Lead Pitch 2.5mm

Order Code				1+	25+	50+	100+	500+
767-223	22nF	16V	F Filter	0.23	0.1995	0.1663	0.1330	0.1064
767-101	100pF	50V	Y5S Filter	0.18	0.1575	0.1313	0.1050	0.0840
767-102	1000pF	50V	Y5S Filter	0.18	0.1530	0.1275	0.1020	0.0816
767-103	10nF	50V	FZ Filter	0.18	0.1530	0.1275	0.1020	0.0816
768-220	22pF	100V	Y5S Filter	0.26	0.2223	0.1853	0.1482	0.1186
768-470	47pF	100V	Y5S Filter	0.29	0.2460	0.2050	0.1640	0.1312
768-101	100pF	100V	Y5S Filter	0.23	0.1995	0.1663	0.1330	0.1064
768-221	220pF	100V	Y5S Filter	0.19	0.1588	0.1270	0.1143	0.1016
768-471	470pF	100V	Y5S Filter	0.23	0.1995	0.1663	0.1330	0.1064
768-102	1000pF	100V	Y5S Filter	0.23	0.1995	0.1663	0.1330	0.1064
768-222	2200pF	100V	Y5U Filter	0.23	0.1995	0.1663	0.1330	0.1064
768-103	10nF	100V	FZ Filter	0.23	0.1995	0.1663	0.1330	0.1064

Delta Capacitor

Three paper capacitors in a delta configuration, housed in a moulded case with flying leads. Features one 0.1µF (Class X1) & two 4700pF (Class Y2) capacitors, rated at 250Vac. Designed for suppression of small motors etc.

Dims. 35 x 14mmØ
Lead Length 150mm

Order Code		1+	10+	25+	50+	100+
869-100	Delta Capacitor	1.19	0.9950	0.7960	0.6368	0.5572

TERMS Terms & Conditions of sale

All orders are accepted by ESR Electronic Components Ltd subject to the following conditions of sale.

ESR Electronic Components Ltd
Station Road, Cullercoats,
Tyne & Wear. NE30 4PQ
Tel: 0191 251 4363 Fax: 0191 252 2296 E-mail: sales@esr.co.uk

ORDERS

Your order can be placed by Post, Phone, Fax, E-mail or our via our Online Order Form. Your goods can then be collected from the shop or be delivered by either our own van or carrier to your specified address.
Where possible please use our order codes when ordering, indicating clearly the item's you require. Account customers should clearly quote their account number on all correspondences.

Don't forget to add the delivery charge and then Vat.

Worldwide Sales (Export) do not carry Vat.

EC Sales to Vat registered customers do not carry Vat - Customers should quote their Vat Registration Number when ordering.

DEliVERY

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VM121	15-Channel Infrared Transmitter Module	36.02
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VM125	Ultrasonic Radar Module	26.54
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VM130	2-Channel RF Remote Control Set Module	36.51
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VM136	Interval Timer Module	6.51
VM137	Thermostat Module 5° - 30°C Module	8.31
VM138	DMX Controlled Relay Module	21.74
VM139	IR Remote Checker Module	7.64
VM140	Extender USB Interface Board Module	83.15
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VM143/3W	3W High Power LED Driver Module	11.07
VM144	Telephone Ring Detector & Relay output	14.65
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