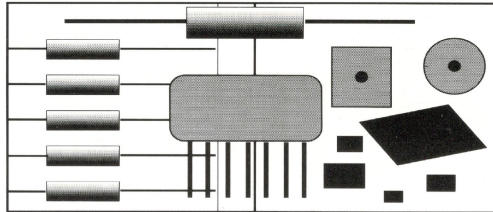
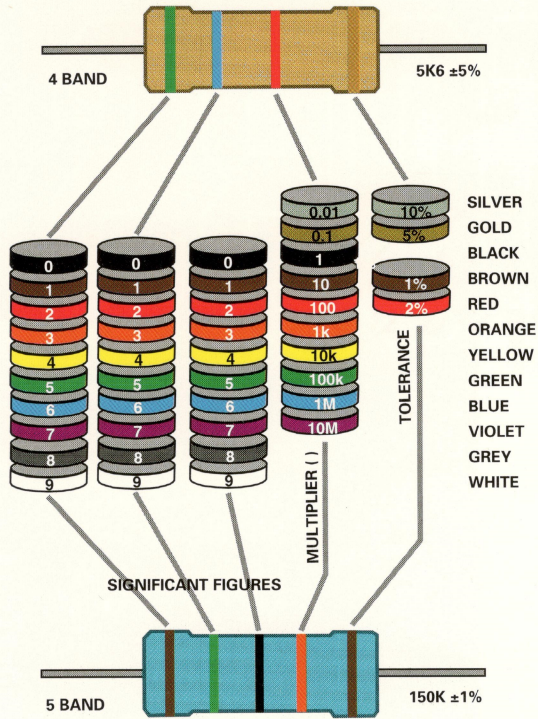


RESISTORS



Carbon Film Resistors Axial Leads	RFE	Watts	Size L x D (mm)		Resis Range Ω	Normal Tol $\pm\%$	
	CR12, CR25M	1/8, 1/4	3.7 x 1.6		0.5 ~ 22 meg	2 & 5	
	CR50M	1/2	6.5 x 2.5		0.5 ~ 22 meg	2 & 5	
	CR100S	1	9.0 x 3.7		0.5 ~ 22 meg	2 & 5	
	CR200	2	16.0 x 5.0		0.5 ~ 22 meg	2 & 5	
Metal Film Resistors, Industrial & MIL Style, $\pm 0.5\%$ & $\pm 1\%$ Tol., Axial Leads	RFE	MIL	W @ +125°C	W @ +70°C	Size L x D (mm)	Resis Range Ω	T.C. (PPM/°C)
	MR12	RN50	1/16	1/8	3.8 x 1.5	10 ~ 1 meg	50, 100
	MR25	RN55	1/8	1/4	6.5 x 2.5	1 ~ 10 meg	25, 50, 100
	MR50	RN60	1/3	1/2	9.5 x 3.5	10 ~ 2.4 meg	50, 100
	MR100S	RN65	3/4	1	11 x 4.5	5.11 ~ 2.4 meg	50, 100
MR200	RN70	1	2	16 x 5.0	5.11 ~ 5.11 meg	50, 100	
Zero Ohm & Jumper	ZR12/ZR25		1/8 & 1/4		3.8x1.5/6.5x2.5	Zero	
	ZRW				0.6 mm wire	Zero	
Metal Oxide Resistors, Flame Proof, Axial Leads	RFE	Watts	Size L x D (mm)		Resis Range Ω	Tol. $\pm\%$	T.C. (PPM/°C)
	MOR50	1/2	9 x 4		0.22 ~ 33k	2 & 5	200
	MOR100	1	11 x 4.5		0.22 ~ 1 meg	2 & 5	200
	MOR200S	2	11 x 4.5		0.22 ~ 1 meg	2 & 5	200
	MOR300S	3	16 x 5.0		0.22 ~ 1 meg	2 & 5	200
MOR500S	5	18 x 6.0		0.5 ~ 100k	2 & 5	200	
Wire Wound Power Resistors, Tubular	RFE	Watts	Size L x D (mm)	PC Pitch (mm)	Resis Range Ω	Comment	
	KNP	1 ~ 10	10 x 4 ~ 53 x 8		0.1 ~ 2000	Axial Leads	
	KNH	5-300	See specs		0.5 ~ 150k	Radial terminal solder eyelet	
KNY	2 ~ 10	16 x 5.5 ~ 53 x 8.5	8 ~ 43		0.1 ~ 2000	Radial Leads, PC Mount	
Wire Wound & Metal Oxide Box Power Resistors, Flame Proof, $\pm 5\%$ & 10% Tol.	RFE	Watts	Size L x W x H (mm)		Resis Ω WirWnd	Resis Ω MetOxd	Comment
	SQP	2 ~ 10	18 x 7 x 7 ~ 48 x 10 x 9		0.01 ~ 1200	1.0 ~ 33k	Axial Leads
	SQP	15	48 x 12.5 x 11.5		0.5 ~ 1500	NA	Axial Leads
	SQP	20 & 25	60 x 14 x 13.5		0.5 ~ 1500	NA	Axial Leads
	SQT	5 ~ 10	22 x 10 x 9 ~ 48 x 10 x 9		0.01 ~ 1200	1.0 ~ 100k	Axial Leads
	SQZ	5 ~ 25	27x10x10 ~ 62x12x12		0.1 ~ 1000	1.0 ~ 150k	Radial Leads
	SQM	2 ~ 10	7x11x20.5 ~ 9x13x51		0.01 ~ 600	1.0 ~ 100k	Radial (Pick & Place)
SQMZ	10	12 x 16 x 35		0.01 ~ 600	1.0 ~ 50k	Radial (Pick & Place)	
Wire Wound Metal Clad Power Resistors, Axial Leads, Aluminum Housing	RFE	Watts	Size L x W x H (mm)		Resis Ω Inductive	Resis Ω Non-Inductive	
	RHA	10	35 x 10 x 10.8		0.02 ~ 6000	0.03 ~ 2300	
	RHA	25	49 x 14 x 13.5		0.012 ~ 15k	0.02 ~ 5500	
	RHA	50	71 x 16 x 15.1		0.01 ~ 40k	0.02 ~ 12k	
	RHA	75	110 x 33 x 32		0.2 ~ 20k	0.07 ~ 10k	
RHA	100	140 x 44.5 x 46		0.4 ~ 50k	0.12 ~ 25k		
Metal Plate Shunt Resistors, Non-Inductive	RFE	Watts	Size L(T) x W x H (mm)		Resis Range Ω	Comment	
	MPV	2 ~ 5	4Tx12x11 ~ 4Tx25x11		0.005 ~ 1.0	Radial, Epoxy Coated	
	MPR	2 ~ 5	5Tx17x14 ~ 5Tx17x26		0.005 ~ 1.0	Radial, Cement Box	
MPA	2 ~ 10	19x7x7 ~ 47.5x10x10		0.005 ~ 1.0	Axial, Cement Box		
Fuse Resistors, Fuse Time = 20 Sec. @ 20 x Wattage	RFE	Watts	Size L x D (mm)		Resis Range Ω	Comment	
	FM	1/2 ~ 3	6.8x2.6 ~ 15x5.5		.22 ~ 100k	Metal Film, Axial Leads	
	FNK	1 ~ 5	9x4.5 ~ 19x6.5		0.1 ~ 250	Wire Wound, Tubular, Axial	
FSQ	2 ~ 10	18x7x7 ~ 49x9x10		0.1 ~ 500	Wire Wound, Cement Box		
High Megohm, Axial Leads	RFE	Watts	Size L x D (mm)		$\pm 2\%$ Resis Range Ω	$\pm 5\%$ Resis. Range Ω	
HMG	1/4 ~ 2		6.5x2.3 ~ 16x5		11meg ~ 22meg	11meg ~ 100meg	
SIP Network	RFE	Watts	Max Pins	Resis Range Ω	Tol. $\pm\%$	Comment	
	RA12	0.125	14	1 ~ 10 meg	1, 2, 5	Isolated, Buss, Divider, etc	
Surface Mount (Chip) Zero Ohm Jumper available in RM10 & RM12 sizes	RFE	Size	Watts	Resis Ω $\pm 1\%$	Resis Ω $\pm 2\%$	Resis Ω $\pm 5\%$	
	RM06	0603	1/16	10 ~ 1 meg	10 ~ 1 meg	10 ~ 1 meg	
	RM10	0805	1/8	10 ~ 1 meg	10 ~ 1 meg	1 ~ 10 meg	
	RM12	1206	1/4	10 ~ 1 meg	10 ~ 1 meg	1 ~ 10 meg	
	RM25	1210	1/4	100 ~ 1 meg	100 ~ 1 meg	4.7 ~ 3.3 meg	
RM50	2010	1/2	100 ~ 1 meg	100 ~ 1 meg	10 ~ 1 meg		

RESISTOR PRODUCT REFERENCE INFORMATION



DECADE TABLE OF VALUES FOR 1%, 2%, 5% TOLERANCE RESISTORS												
E-24	1.0	1.1	1.2	1.3	1.5	1.6	1.8	2.0	2.2	2.4	2.7	3.0
±2%, ±5%	3.3	3.6	3.9	4.3	4.7	5.1	5.6	6.2	6.8	7.5	8.2	9.1
E-96 ±1%	1.00	1.02	1.05	1.07	1.10	1.13	1.15	1.18	1.21	1.24	1.27	1.30
	1.33	1.37	1.40	1.43	1.47	1.50	1.54	1.58	1.62	1.65	1.69	1.74
	1.78	1.82	1.87	1.91	1.96	2.00	2.05	2.10	2.15	2.21	2.26	2.32
	2.37	2.43	2.49	2.55	2.61	2.67	2.74	2.80	2.87	2.94	3.01	3.09
	3.16	3.24	3.32	3.40	3.48	3.57	3.65	3.74	3.83	3.92	4.02	4.12
	4.22	4.32	4.42	4.53	4.64	4.75	4.87	4.99	5.11	5.23	5.36	5.49
	5.62	5.76	5.90	6.04	6.19	6.34	6.49	6.65	6.81	6.98	7.15	7.32
	7.50	7.68	7.87	8.06	8.25	8.45	8.66	8.87	9.09	9.31	9.53	9.76

Features and applications by type of construction

TYPE	APPLICATION	ADVANTAGE	DISADVANTAGE
Carbon Composition	Low to medium power, 1/2W thru 5W <i>Replace with Carbon Film or Metal Oxide</i>	<ul style="list-style-type: none"> Molded Low inductance 	<ul style="list-style-type: none"> Unstable in humidity Large size Expensive Obsolete
Carbon Film	1/8W thru 2 Watt 1 thru 10 meg <i>Good replacement for Carbon Composition</i>	<ul style="list-style-type: none"> Low cost Automated assembly 	<ul style="list-style-type: none"> Slightly inductive Temperature coefficient
Metal Film	1/8W thru 2 Watt 1 thru 10 meg	<ul style="list-style-type: none"> Temperature stability ± 25 ppm/°C thru 100 ppm Tight tolerance 	<ul style="list-style-type: none"> Slightly inductive
Fusible	1/2W thru 10W	<ul style="list-style-type: none"> Predictable fusing time 	<ul style="list-style-type: none"> Slower than thermal fuses
Metal Oxide	1/2W thru 10W <i>Good replacement for Carbon Composition</i>	<ul style="list-style-type: none"> Low inductance Flame proof Tubular small sizes can tape and reel 	<ul style="list-style-type: none"> Flame proof coating can be damaged with abuse.
Wire Wound	1W thru 300W 0.1 thru 150k	<ul style="list-style-type: none"> Flame proof Smaller size tubular can tape and reel 	<ul style="list-style-type: none"> Most larger sizes require hand insertion
Metal Plate	Shunt 2 W thru 10 W, 0.005 thru 1.0	<ul style="list-style-type: none"> Precision Low inductance 	<ul style="list-style-type: none"> Volumetric efficiency
High Meg	1/4 W thru 2 W	<ul style="list-style-type: none"> Low inductance 	<ul style="list-style-type: none"> Shelf life
SIP Networks	1/8 W - 14 pins 1 thru 10 meg	<ul style="list-style-type: none"> Volumetric efficiency 	<ul style="list-style-type: none"> Low power
SMD/Chip	1/16 W thru 1/4 W, 10 thru 1 meg	<ul style="list-style-type: none"> Volumetric efficiency 	<ul style="list-style-type: none"> Handling sensitivity
Semi-Fixed	Trimmer 0.1 W thru 0.5 W 100 thru 2 meg	<ul style="list-style-type: none"> Circuit design flexibility 	<ul style="list-style-type: none"> Low wattage Higher price than fixed resistor

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