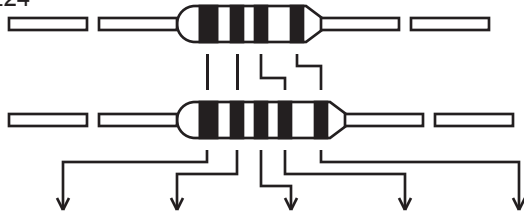


General Specification of Resistors

E6, E12, E24
E24, E96



Color	1st Band	2nd Band	3rd Band	Multiplier	Tolerance
Black	0	0	0	100	
Brown	1	1	1	101	F(±1%)
Red	2	2	2	102	G(±2%)
Orange	3	3	3	103	
Yellow	4	4	4	104	
Green	5	5	5	105	D(±0.5%)
Blue	6	6	6	106	C(±0.25%)
Violet	7	7	7	107	B(±0.1%)
Gray	8	8	8		
White	9	9	9	10-3	
Gold				10-1	J(±5%)
Silver				10-2	K(±10%)
Plain					M(±20%)

Symbol	T	E	C	K	J	L	D
T.C.R.	±10	±25	±50	±100	±150	±200	+200 -500

Symbol	A	B	C	D	F	G	J	K	M
Resistance Tolerance	±0.05	±0.1	±0.25	±.05	±1	±2	±5	±10	±20

Δ How to Apply Resistors Correctly

- The characteristics of resistor have relations to temperature moisture and voltage.
- The rating of resistor is specified on the basis of temperature.
- The power rating of resistor is all specified with a direct-current. (D.C.) continuous working voltage or sine-wave root-mean-square (RMS) continuous working voltage at commercial-line frequency.
- The tests regarding characteristics of resistor is principally specified on the basis of moisture.
- Maximum rated voltage and maximum overload voltage are limited for each style of resistor, (1) Generally, rated voltage $E=\sqrt{PR}$ where E=volt, P=watt, R=ohm. (2) Generally, overload voltage $ET=\sqrt{PR} \times 2.5$, application time=5secs.
- NOTE: Max Rated and Max Overload Voltage are specified in each specification, so if the voltage valued computed, is over than specified voltage value, the specified value should be applied to resistor.
- In the complicated or high density circuit, it is recommended that the wattage or OHMIC values or resistor should have a large redundancy from a view point of reliability.
- It is necessary that the handling or wiring of resistor to the circuit is careful and please do not apply any stress to the resistor by over heating.
- To rise the reliability of resistor, it is better to prefer resistor with uniform quality than taking resistor met with severe specification.
- To rise the stability of resistor, it is very important to take resistor met with circuit conditions and is also economical not to have unreasonable design from point of pricing resistor.
- Generally, failure of resistor takes a concentrated trend in the impulse circuit with complicated pulse wave form or LC circuit generated high voltage with transient phenomena, therefore, it is very important for designers to consider these conditions in the circuit design, if the resistor is applied in these circuits.

±2% E24	±5% E48	±1% E96	±0.5% E192	±2% E24	±5% E48	±1% E96	±0.5% E192
100	100	100	100	330			
		102	102		332	332	332
		105	105				336
			106		348	348	340
		107	107				344
			109			357	348
110	110	110	110	360			352
		113	113				357
		114	114		365	365	361
		115	115				365
		118	118			374	370
		120	120		383	383	374
120	121	121	121	390			379
		124	124			392	383
		126	126				388
		127	127		402	402	392
		130	130				397
130		133	133			412	402
			135		422	422	407
		137	137				412
		138	138		430	432	417
		140	140				422
		142	142				427
		143	143				432
		145	145				437
		147	147				442
		149	149		464	464	448
150	150	150	150	470			453
		152	152				459
		154	154				464
		158	158				470
160		160	160				475
		162	162				481
		165	165		510	511	487
		167	167				487
		169	169				493
		172	172				499
		174	174				505
		176	176				511
		178	178				517
180	178	178	178	560			523
		182	182				530
		184	184				536
		187	187				542
		189	189				549
		191	191				556
		193	193				562
		196	196				569
200	200	200	200				576
		203	203		619	619	583
		205	205				590
		208	208				597
		210	210				604
		213	213				612
		215	215				619
		218	218				626
220		221	221				634
		223	223				642
		226	226				649
		229	229				657
		232	232				665
		234	234				673
		237	237				681
		240	240				690
		243	243				698
		246	246				706
		249	249				715
		252	252				723
		255	255				732
		258	258				741
		261	261				750
		264	264				759
		267	267				768
270							777
							787
							796
							806
							816
							825
							835
							845
							856
							866
							876
							887
							898
							909
							920
							931
							942
							953
							965
							976
							988