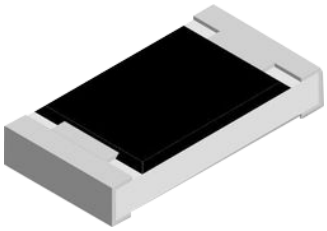
Thick Film Chip Resistors

multicomp PRO

RoHS Compliant



Features

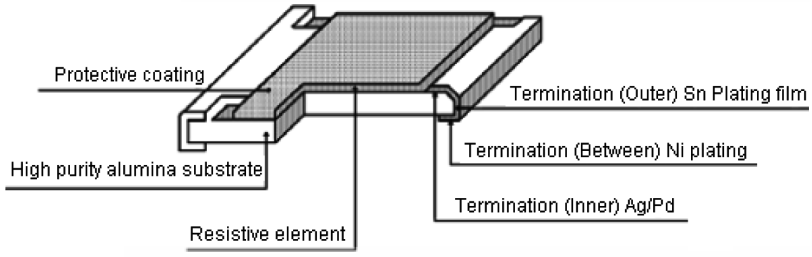
- Small size and lightweight
- Suitable for both flow and reflow soldering
- Reduction of assembly costs and matching with placement machines

Standard : 2, 5 and 10% - A series
: 1% - B series

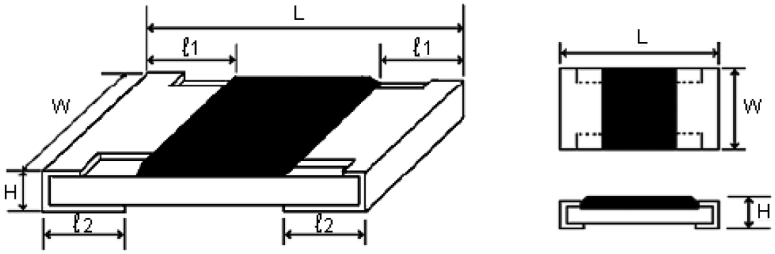
Specifications

Temperature Coefficient	: 1Ω to 10Ω ≤ ±400 PPM/°C 11Ω to 100Ω ≤ ±200 PPM/°C > 100Ω ≤ ±100PPM/°C (0201 > 100Ω ≤ ±200PPM/°C)
Short-time Overload	: ±5% : ± (2% + 0.1 Ω) Max. ±1% : ± (1% + 0.1 Ω) Max.
Min. Insulation Resistance	: 1,000MΩ
Dielectric Withstanding Voltage	: No evidence of flashover, mechanical damage, arcing or insulation breakdown
Terminal Bending	: ±(1% + 0.05Ω) Max.
Soldering Heat	: Resistance change rate is ±(1% + 0.05Ω) Max.
Min. Solderability	: 95% coverage
Temperature Cycling	: ±5% : ±(1% + 0.05Ω) Max. ±1% : ±(0.5% + 0.05Ω) Max.
Humidity (Steady State)	: ±5% : ±(3% + 0.1Ω) Max. ±1% : ±(0.5% + 0.1Ω) Max.
Load Life in Humidity	: ±5% : ±(3% + 0.1Ω) Max. ±1% : ±(1% + 0.1Ω) Max.
Load Life	: ±5% : ±(3% + 0.1Ω) Max. ±1% : ±(1% + 0.1Ω) Max.

Construction

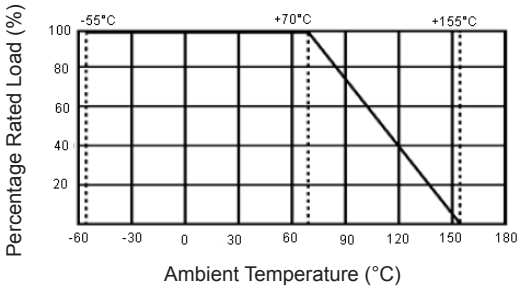


Power Rating and Dimension



Type	Power Rating at 70°C	Max. Working Voltage	Max. Overload Voltage	Operating Temperature (°C)	Toler-ance %	Resistance Range	Standard Series	Dimension (mm)				
								L	W	H	ℓ1	ℓ2
0402	1/16W	1A 50 V	2A 100 V	-55 to +155	Jumper	<50mΩ	B A A	1 ±0.1	0.5 ±0.05	0.35 ±0.05	0.2 ±0.1	0.25 ±0.1
					±1	10Ω - 1MΩ						
					±2	1Ω -1MΩ						
					±5	1Ω -1MΩ						
0603	1/10W-S 1/16 W	1A 50V	2A 100V	-55 to +155	Jumper	<50mΩ	B A A	1.6 ±0.1	$0.8^{+0.15}_{-0.1}$	0.45 ±0.1	0.3 ±0.2	0.3 ±0.2
					±1	10Ω - 1MΩ						
					±2	1Ω -1MΩ						
					±5	1Ω -1MΩ						
0805	1/8W-S 1/10 W	2A 150V	4A 300V	-55 to +155	Jumper	<50mΩ	B A A	2 ±0.15	$1.25^{+0.15}_{-0.1}$	0.55 ±0.1	0.4 ±0.2	0.4 ±0.2
					±1	10Ω - 1MΩ						
					±2	1Ω -1MΩ						
					±5	1Ω -1MΩ						
1206	1/4W-S 1/8 W	2A 200V	4A 400V	-55 to +155	Jumper	< 50mΩ	B A A	3.1 ±0.15	$1.55^{+0.15}_{-0.1}$	0.55 ±0.1	0.45 ±0.2	0.45 ±0.2
					±1	10Ω - 1MΩ						
					±2	1Ω -1MΩ						
					±5	1Ω -1MΩ						
1210	1/3W-S 1/4 W	2A 200V	4A 400V	-55 to +155	Jumper	<50mΩ	B A A	3.1 ±0.1	2.6 ±0.15	0.55 ±0.1	0.5 ±0.25	0.5 ±0.2
					±1	10Ω - 1MΩ						
					±2	1Ω -1MΩ						
					±5	1Ω -1MΩ						
2010	3/4W-S 1/2 W	2A 200V	4A 400V	-55 to +155	Jumper	<50mΩ	B A A	5 ±0.1	2.5 ±0.15	0.55 ±0.1	0.6 ±0.25	0.5 ±0.2
					±1	10Ω - 1MΩ						
					±2	1Ω -1MΩ						
					±5	1Ω -1MΩ						
2512	1W	2.5A 200V	5A 400V	-55 to +155	Jumper	<50mΩ	B A A	6.35 ±0.1	3.2 ±0.15	0.55 ±0.1	0.6 ±0.25	0.5 ±0.2
					±1	10Ω - 1MΩ						
					±2	1Ω -1MΩ						
					±5	1Ω -1MΩ						

Derating Curve



Multiplier Code (for 0603 1% marking)

Code	A	B	C	D	E	F	G	H	X	Y	Z
Multiplier	10^0	10^1	10^2	10^3	10^4	10^5	10^6	10^7	10^{-1}	10^{-2}	10^{-3}

Standard B Series Resistance Value Code (for 0603 1% marking)

Ω Value	Code	Ω Value	Code	Ω Value	Code	Ω Value	Code	Ω Value	Code
100	1	162	21	261	41	422	61	681	81
102	2	165	22	267	42	432	62	698	82
105	3	169	23	274	43	442	63	715	83
107	4	174	24	280	44	453	64	732	84
110	5	178	25	287	45	464	65	750	85
113	6	182	26	294	46	475	66	768	86
115	7	187	27	301	47	487	67	787	87
118	8	191	28	309	48	499	68	806	88
121	9	196	29	316	49	511	69	825	89
124	10	200	30	324	50	523	70	845	90
127	11	205	31	332	51	536	71	866	91
130	12	210	32	340	52	549	72	887	92
133	13	215	33	348	53	562	73	909	93
137	14	221	34	357	54	576	74	931	94
140	15	226	35	365	55	590	75	953	95
143	16	232	36	374	56	604	76	976	96
147	17	237	37	383	57	619	77	-	-
150	18	243	38	392	58	634	78	-	-
154	19	249	39	402	59	649	79	-	-
158	20	255	40	412	60	665	80	-	-

Marking on the Resistors Body:

- For 0402 size, no marking on the body due to the small size of the resistor.
- ±5% tolerance product. (Including resistance values less than 1Ω; both 1% and 5%) The marking is 3 digits, the first 2 digits are the significant figures of the resistance and the 3rd digit denotes number of zeros.

153 = 15,000Ω = 15 K Ω 120 = 12Ω

Below 10 Ω shown as this: 6R8 = 6.8Ω

0.1 Ω to 0.99 Ω shown as this: R33 = 0.33Ω

- ±1% tolerance marking of case size 0805 and bigger is 4 digits, the first 3 digits are the significant figures of the resistance and the 4th digit denotes number of zeros.

2372 = 23700 Ω = 23.7 KΩ; 1430 = 143 Ω Below 10 Ω shown as this: 3R24 = 3.24 Ω 0.1 Ω to 0.99 Ω shown as this: R33 = 0.33 Ω

- Standard B series values (±1% tolerance) of 0603 size. Due to the small size of the resistor's body, 3 digits marking will be used to indicate the accurate resistance value by using the Multiplier code & Standard B Series Resistance Value Code.

1.96 KΩ = 196 × 10 ^{1} Ω = 29B 12.4 Ω = 124 × 10 $^{-1}$ Ω = 10X

- Standard A series values which does not belong to B series values (in ±1% tolerance) of 0603 size The marking is the same as 5% tolerance but marked with underline.

122 = 1200 = 1.2 KΩ 680 = 68Ω

Part Number Explanation

MC1206	S4	F	0000	T	5	E
Resistor Type	Wattage	Tolerance	Resistance Value	Packing Type	Packing Quantity	Special Feature

Chip resistor types : 0402, 0603, 0805, 1206, 1210, 2010, 2512
Normal size : WG=1/16W, W2=1/2W, 1W=1W
Small size : SA=1/10W-S, S8=1/8W-S, S4=1/4W-S, S3=1/3W-S
Resistance Value : A-series :
1st digit is "0"
2nd & 3rd digits are significant figures of the resistance
4th indicate the number of zeros

: B-series :
1st to 3rd digits are significant figures of the resistance
4th digit indicate the number of zeros "J" to 0.1, "K" to 0.01, "L" to 0.001

Ex. 012J to 1Ω2, 226K to 2Ω26
Jumper : use "0" for 1 st to 4th digits
Tolerance : 0 = Jumper, F = ±1%
Packing Type : T = Tape / reel
Packing Quantity : 4 = 4,000 pieces, 5 = 5,000 pieces, C = 10,000 pieces
Special Feature : E = lead (Pb) free plating type