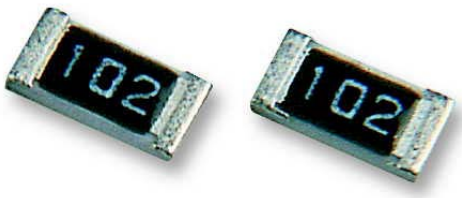
MC 1% Series

Thick Film Chip Resistors



Features:

- Small size and light weight.
- Suitable for both flow and re-flow soldering.
- Reduction of assembly costs and matching with placement machines.

Performance Specifications:

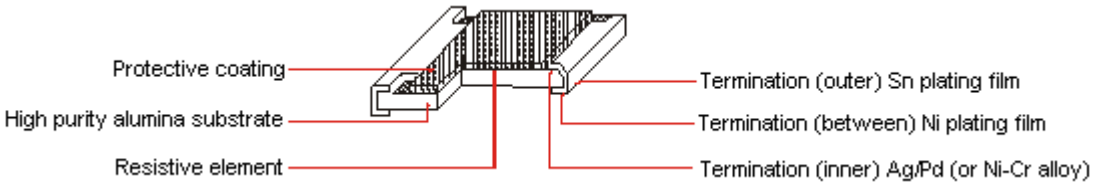
Temperature coefficient	: ±5%: 1Ω ~ 10Ω ≤ ±400PPM/°C; 11Ω ~ 10MΩ ≤ ±200PPM/°C
	±1%: 10Ω ~ 100Ω ≤ ±200PPM/°C; 101Ω ~ 1MΩ ≤ ±100PPM/°C.
Short-time overload	: ±5%: ±(2.0% +0.1Ω) Maximum
	±1%: ±(1.0% +0.1Ω) Maximum.
Insulation resistance	: ≥1000 MegaOhm.
Dielectric withstanding voltage	: No evidence of flashover, mechanical damage, arcing or insulation breakdown.
Terminal bending	: ±(1.0% +0.05Ω) Maximum .
Soldering heat	: Resistance change rate is ±(1.0% + 0.05Ω) Maximum.
Minimum solderability	: 95% coverage.
Temperature cycling	: ±5%: ±(1.0% +0.05Ω) Maximum
	±1%: ±(0.5% +0.05Ω) Maximum.
Humidity (Steady State)	: ±5%: ±(3.0% +0.1Ω) Maximum
	: ±1%: ±(0.5% +0.1Ω) Maximum.
Load life in humidity	: ±5%: ±(3.0% +0.1Ω) Maximum
	±1%: ±(1.0% +0.1Ω) Maximum.
Load life	: ±5%: ±(3.0% +0.1Ω) Maximum
	±1%: ±(1.0% +0.1Ω) Maximum.

* The values which are not of standard E-24 series (2% & 5%) and not of E-96 series (1%) could be offered on a case to case basis.

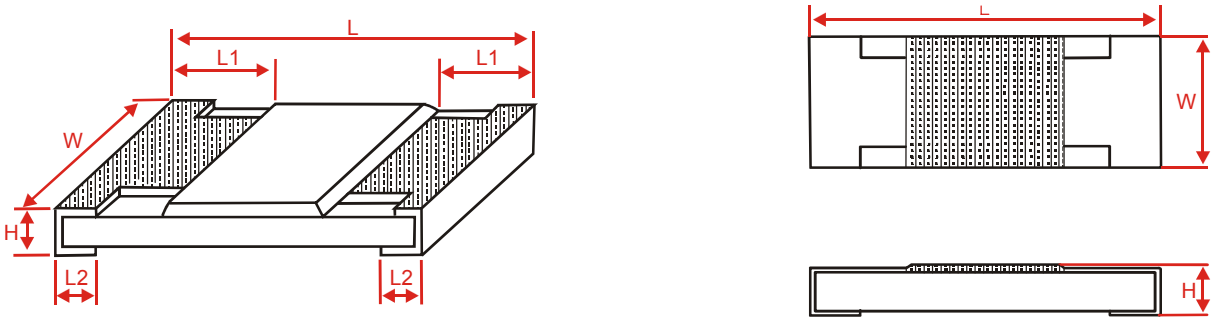
Specification Table

Series	Power Rating at 70°C (W)	Maximum Working Voltage (V)	Maximum Overload Voltage (V)	Operating Temperature (°C)	Tolerance (%)	Resistance Range	Standard Series
MC 0603	1/16	1A	2A	-55 - +155	Jumper	<50mΩ	E96
		50	100		±1	10Ω - 1MΩ	E24
					±2	1Ω - 10MΩ	E24
					±5	1Ω - 10MΩ	
MC 0805	1/10	2A	4A	-55 - +155	Jumper	<50mΩ	E96
		150	300		±1	10Ω - 1MΩ	E24
					±2	1Ω - 10MΩ	E24
					±5	1Ω - 10MΩ	
MC 1206	1/8	2A	4A	-55 - +155	Jumper	<50mΩ	E96
		200	400		±1	10Ω - 1MΩ	E24
					±2	1Ω - 10MΩ	E24
					±5	1Ω - 10MΩ	

Construction:



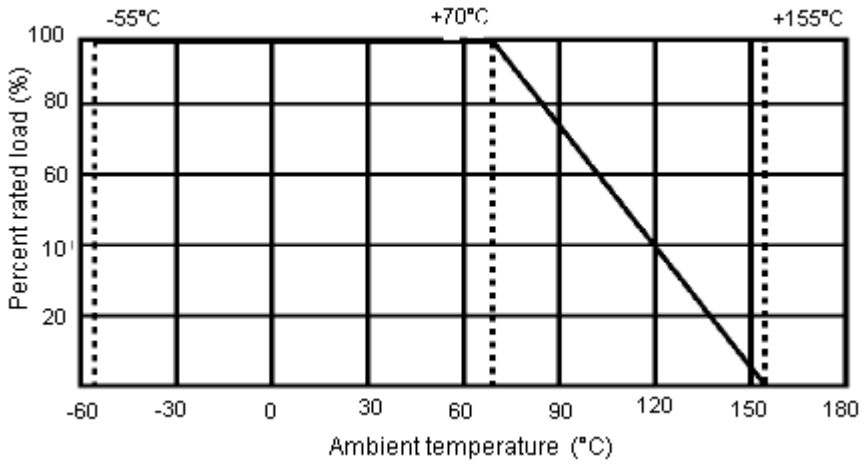
Power Rating and Dimension:



Series	Dimension				
	Length (L)	Width (W) +0.15 –0.10	Height (H) ±0.10	Length (L1) ±0.20	Length (L2) ±0.20
MC 0603	1.6 ±0.10	0.80	0.45	0.30	0.30
MC 0805	2.0 ±0.15	1.25	0.55	0.40	0.40
MC 1206	3.10 ±0.15	1.60		0.45	0.45

Dimensions : Millimetres

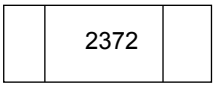
Derating Curve



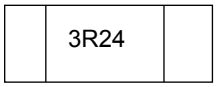
Marking on the Resistors Body

- 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 = 23700Ω = 23.7KΩ; 1430 = 143Ω



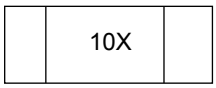
Below 10Ω shown as this: **3R24** = 3.24Ω



- Standard E-96 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.

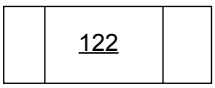
1.96K. = 196 x $10^{1}\Omega$ = **29B**

12.4. = 124 x $10^{-1}\Omega$ = **10X**

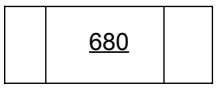


- Standard E-24 series values which does not belong to E-96 series values (in ±1% tolerance) of 0603 size. The marking is the same as 5% tolerance but marked with underline.

122 = 1200 = 1.2kΩ.



680 = 68Ω.



Resistance Preferred Value Range

E6	E12	E24	E96	E6	E12	E24	E96	E6	E12	E24	E96
10	10	10	10.0				21.5				46.4
			10.2	22	22	22	22.1	47	47	47	47.5
			10.5				22.6				48.7
			10.7				23.2				49.9
		11	11.0				23.7			51	51.1
			11.3			24	24.3				52.3
			11.5				24.9				53.6
			11.8				25.5				54.9
	12	12	12.1				26.1		56	56	56.2
			12.4				27.7				57.6
			12.7		27	27	27.4				59.0
		13	13.0				28.0				60.4
			13.3				28.7			62	61.9
			13.7				29.4				63.4
			14.0			30	30.1				64.9
			14.3				30.9				66.5
			14.7				31.6	68	68	68	68.1
15	15	15	15.0				32.4				69.8
			15.4	33	33	33	33.2				71.5
			15.8				34.0				73.2
		16	16.2				34.8			75	75.0
			16.5				35.7				76.8
			16.9			36	36.5				78.7
			17.4				37.4				80.6
			17.8				38.3		82	82	82.5
	18	18	18.2		39	39	39.2				84.5
			18.7				40.2				86.6
			19.1				41.2				88.7
			19.6				42.2			91	90.9
		20	20.0			43	43.2				93.1
			20.5				44.2				95.3
			21.0				45.3				97.6

Above values in accordance with IEC Publication 63 (1963) and BS2488

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 E-96 Series Resistance Value Code (for 0603 1% Marking)

Value	Code	Value	Code	Value	Code	Value	Code	Value	Code
100	01	162	21	261	41	422	61	681	81
102	02	165	22	267	42	432	62	698	82
105	03	169	23	274	43	442	63	715	83
107	04	174	24	280	44	453	64	732	84
110	05	178	25	287	45	464	65	750	85
113	06	182	26	294	46	475	66	768	86
115	07	187	27	301	47	487	67	787	87
118	08	191	28	309	48	499	68	806	88
121	09	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	-	-

Part Number Explanation

Wattage : 0.063, 0.1 and 0.125W.
Case Style : 0603, 0805 and 1206.
Tolerance : ±1%.
Ohmic Value **:** Where R = Ohms = Ω
K = Kiloohms = KΩ
M = Megaohms = MΩ
And replaces the decimal point.
eg: 1R5 = 1.5Ω
4K7 = 4.7KΩ
6M8 = 6.8MΩ.

Stocked Values

Tolerance	Wattage	Preferred Value Range	Range Value
1%	0.063W	E96	1R5 - 1M
1%	0.1W	E24	1R5 - 1M
1%	0.125W	E24	10R - 1M

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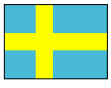

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