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SMD - Resistors

Product : Metal Film Precision Resistor - SMDM Series

Size: 0204/0207



SMD - Resistors

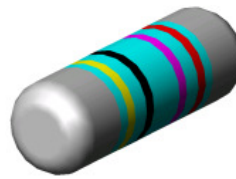
Metal Film Precision Resistor (SMDM Series)

► 1. Features

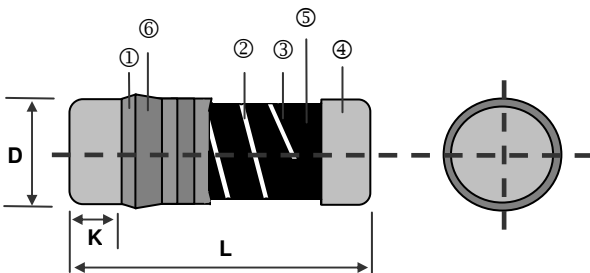
- Excellent overall stability
- Tight tolerance down to $\pm 0.1\%$
- Extremely low TCR down to ± 10 PPM/ $^{\circ}\text{C}$
- High power rating up to 1 Watts

► 2. Applications

- Automotive
- Telecommunication
- Medical Equipment



► 3. Construction



① Insulation Coating	④ Electrode Cap
② Trimming Line	⑤ Resistor Layer
③ Ceramic Rod	⑥ Marking

► 4. Dimensions

Unit: mm

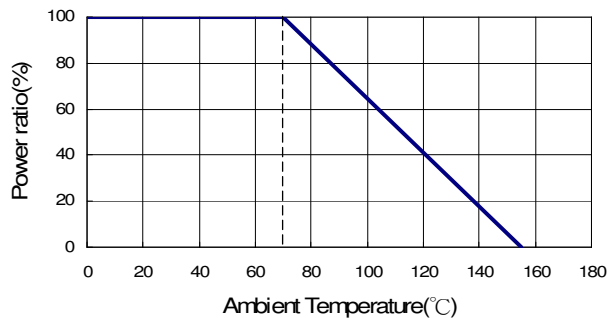
Type	L	ΦD	K min.	Weight (g) (1000pcs)	Packaging
					180mm (7'')
SMDM0204	3.50 ± 0.2	1.40 ± 0.15	0.5	18.7	3000EA
SMDM0207	5.90 ± 0.2	2.20 ± 0.20	0.5	80.9	2000EA

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5. Part Numbering

SMDM	0204	D	T	D	V	1000
Product Type	Dimensions (L×ΦD)	Resistance Tolerance	Packaging Code	TCR (PPM/°C)	Power Rating	Resistance
	0204: 3.5x1.4 0207: 5.9x2.2	B: ±0.1% C: ±0.25% D: ±0.5% F: ±1% J: ±1%	T: Taping Reel B: Bulk	B: ±10 N: ±15 C: ±25 D: ±50 E: ±100	T: 1W U: 1/2W V: 1/4W	0100: 10Ω 1000: 100Ω 2201: 2200Ω 1001: 1KΩ 1004: 1MΩ

6. Derating Curve



7.1 Standard Electrical Specifications

Item Type	Power Rating at 70°C	Operating Temp. Range	Max. Operating Voltage	Max. Overload Voltage	Resistance Range					TCR (PPM/°C)
					±0.1%	±0.25%	±0.5%	±1%	±5%	
0204	1/4W Jumper: 2A	-55 ~ +155°C	200V	400V	49Ω9-20KΩ					±10
					49Ω9-300KΩ					±15
					10Ω-1MΩ		10Ω-4M7			±25
					10Ω-1MΩ	1Ω-1MΩ		0Ω2-10MΩ		±50
					-					5.11MΩ-10MΩ-
0207	1/2W Jumper: 4A	-55 ~ +155°C	300V	500V	0Ω (<15mΩ)					-
					49Ω9-20KΩ					±10
					49Ω9-300KΩ					±15
					10Ω-1MΩ		10Ω-4M7			±25
					10Ω-1MΩ	1Ω-1MΩ		0Ω2-10MΩ		±50
-					0.1Ω-10MΩ	±100				
-					-	-				

7.2 High Power Rating Electrical Specifications

Item Type	Power Rating at 70°C	Operating Temp. Range	Max. Operating Voltage	Max. Overload Voltage	Resistance Range					TCR (PPM/°C)
					±0.1%	±0.25%	±0.5%	±1%	±5%	
0207	1W	-55 ~ +155°C	350V	700V	49Ω9-100KΩ					±15
					10Ω-1MΩ					±25
					10Ω-1MΩ	1Ω - 1MΩ		0Ω2 - 10MΩ		±50
					-					0.1Ω - 10MΩ

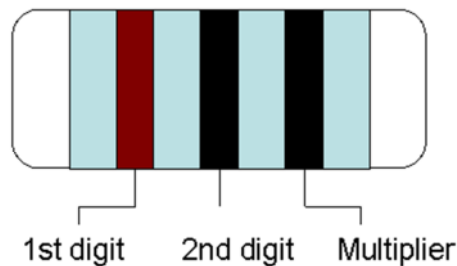
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► 8. Environmental Characteristics

Item	Requirement	Test Method
Temperature Coefficient of Resistance (T.C.R.)	As Spec	JIS-C-5201-1 5.2 +20/-15/+20/+100/+20°C
Short Time Overload	$\leq R \pm 0.5\%$	JIS-C-5201-1 5.5 RCWV*2.5 or Max. overload voltage for 5 seconds
Endurance	$\leq R \pm 2\%$	JIS-C-5201-1 7.10 70±2°C, Max. working voltage for 1000 hrs with 1.5 hrs "ON" and 0.5 hrs "OFF"
Damp Heat with Load	$\leq R \pm 2\%$	JIS-C-5201-1 7.9 40±2°C, 90~95% R.H. Max. working voltage for 1000 hrs with 1.5 hrs "ON" and 0.5 hrs "OFF"
Dry Heat	$\leq R \pm 2\%$	JIS-C-5201-1 7.2 at +155°C for 1000 hrs
Solderability	95%min. coverage	JIS-C-5201-1 6.5 245±5°C for 3 seconds
Resistance to Soldering Heat	$\leq R \pm 0.5\%$	JIS-C-5201-1 6.4 260±5°C for 10 seconds

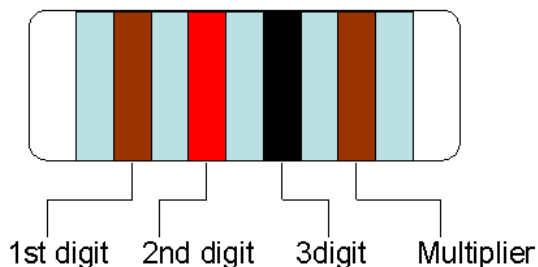
■ Storage Temperature: 25±3°C; Humidity < 80%RH

► 9. Marking & Resistance Tolerance



±5%	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	3.3	3.6	3.9	4.3	4.7	5.1	5.6	6.2	6.8	7.5	8.2	9.1
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±1%	E-96	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
±0.50% ±0.25% ±0.10%	E-192	10.0	10.1	10.2	10.4	10.5	10.6	10.7	10.9	11.0	11.1	11.3	11.4	11.5	11.7	11.8	12.0	12.1	12.3	12.4	12.6	12.7	12.9	13.0	13.2
		13.3	13.5	13.7	13.8	14.0	14.2	14.3	14.5	14.7	14.9	15.0	15.2	15.4	15.6	15.8	16.0	16.2	16.4	16.5	16.7	16.9	17.2	17.4	17.6
		17.8	18.0	18.2	18.4	18.7	18.9	19.1	19.3	19.6	19.8	20.0	20.3	20.5	20.8	21.0	21.3	21.5	21.8	22.1	22.3	22.6	22.9	23.2	23.4
		23.7	24.0	24.3	24.6	24.9	25.2	25.5	25.8	26.1	26.4	26.7	27.1	27.4	27.7	28.0	28.4	28.7	29.1	29.4	29.8	30.1	30.5	30.9	31.2
		31.6	32.0	32.4	32.8	33.2	33.6	34.0	34.4	34.8	35.2	35.7	36.1	36.5	37.0	37.4	37.9	38.3	38.8	39.2	39.7	40.2	40.7	41.2	41.7
		42.2	42.7	43.2	43.7	44.2	44.8	45.3	45.9	46.4	47.0	47.5	48.1	48.7	49.3	49.9	50.5	51.1	51.7	52.3	53.0	53.6	54.2	54.9	55.6
		56.2	56.9	57.6	58.3	59.0	59.7	60.4	61.2	61.9	62.6	63.4	64.2	64.9	65.7	66.5	67.3	68.1	69.0	69.8	70.6	71.5	72.3	73.2	74.1
		75.0	75.9	76.8	77.7	78.7	79.6	80.6	81.6	82.5	83.5	84.5	85.6	86.6	87.6	88.7	89.8	90.9	92.0	93.1	94.2	95.3	96.5	97.6	98.8

Code	Digit	Multiplier
Silver	-	10 ⁻²
Gold	-	10 ⁻¹
Black	0	10 ⁰
Brown	1	10 ¹
Red	2	10 ²
Orange	3	10 ³
Yellow	4	10 ⁴
Green	5	10 ⁵
Blue	6	10 ⁶
Violet	7	10 ⁷
Grey	8	10 ⁸
White	9	10 ⁹