

Carbon Film Fixed Resistors

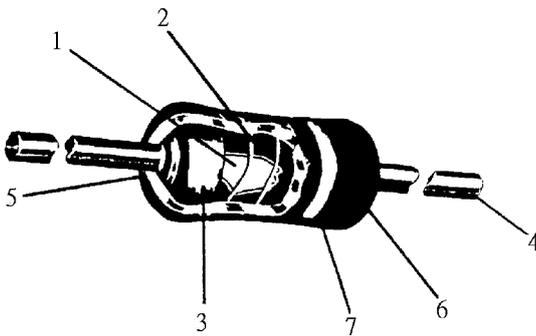
**RoHS
Compliant**



Specifications

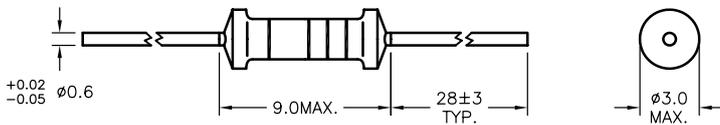
Rated Power	: 0.5W at 70°C
Max. Working Voltage	: 350V
Max. Overload Voltage	: 700V
Dielectric Withstanding Voltage	: 700V
Rated Ambient Temp.	: 70°C
Operating Temp. Range.	: -55°C to +155°C
Resistance Tolerance	: ±5%

Construction



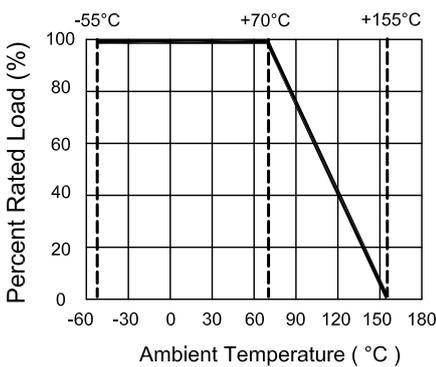
No.	Name	Material
1	Basic Body	Rod Type Ceramics
2	Resistance Film	Carbon Film
3	End Cap	Steel (Tin plated iron surface)
4	Lead Wire	Annealed copper wire (Electrosolder plated surface) Pb Free
5	Joint	By welding
6	Coating	Insulated epoxy resin (Colour : Beige)
7	Colour Code	Epoxy Resin

Dimension



Dimensions : Millimetres

Derating Curve



Characteristics

Characteristics	Limits	Test Methods (JIS C 5201-1)
DC resistance	Must be within the specified tolerance	The limit of error of measuring apparatus shall not exceed allowable range or 5% of resistance tolerance

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Characteristics	Limits		Test Methods (JIS C 5201-1)															
Temperature coefficient	Resistance Range	TCR (PPM/°C)	Natural resistance change per temperature degree centigrade. $\frac{R_2 - R_1}{R_1(t_2 - t_1)} \times 10^6 \text{ (PPM/°C)}$ R1: Resistance value at room temperature (t1) R2: Resistance value at room temperature plus 100°C (t2)															
	≤10Ω	0 to ±350																
	11Ω to 99K	0 to -450																
	100K to 1M	0 to -700																
	1.1M to 10M	0 to -1500																
Short time overload	Resistance change rate is ±(1 % + 0.05Ω) max. with no evidence of mechanical damage		Permanent resistance change after the application of a potential of 2.5 times RCWV for 5 seconds															
Insulation resistance	Insulation resistance is 10,000MΩ Minimum.		Resistors shall be clamped in the trough of a 90° metallic V-block and shall be tested at DC potential respectively specified in above list for 60+10/-0 seconds															
Dielectric withstanding voltage	No evidence of flashover mechanical damage, arcing or insulation break down		Resistors shall be clamped in the trough of a 90° metallic V-block and shall be tested at AC potential respectively specified in table '1'. for 60+10/-0 seconds															
Terminal strength	No evidence of mechanical damage		Direct load: Resistance to a 2.5kg direct load for 10 seconds in the direction of the longitudinal axis of the terminal leads. Twist test: Terminal leads shall be bent through 90° at a point of about 6mm from the body of the resistor and shall be rotated through 360° about the original axis of the bent terminal in alternating direction for a total of 3 rotations															
Resistance to soldering heat	Resistance change rate is ±(1% + 0.05Ω) maximum with no evidence of mechanical damage		Permanent resistance change when leads immersed to 3.2 to 4.8mm from the body in 350°C ±10°C solder for 3 ±0.5 seconds															
Solderability	95% coverage minimum		The area covered with a new, smooth clean, shiny and continuous surface free from concentrated pinholes. Test temperature of solder : 245°C ±3°C Dwell time in solder : 2 to 3 seconds															
Temperature cycling	Resistance change rate is ±(1% + 0.05Ω) max. with no evidence of mechanical damage		Resistance change after continuous 5 cycles for duty shown below: <table border="1" style="margin-left: 20px;"> <thead> <tr> <th>Step</th> <th>Temperature</th> <th>Time</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>-55°C ±3°C</td> <td>30 minutes</td> </tr> <tr> <td>2</td> <td>Room temperature</td> <td>10 to 15 minutes</td> </tr> <tr> <td>3</td> <td>+155°C ±2°C</td> <td>30 minutes</td> </tr> <tr> <td>4</td> <td>Room temperature</td> <td>10 to 15 minutes</td> </tr> </tbody> </table>	Step	Temperature	Time	1	-55°C ±3°C	30 minutes	2	Room temperature	10 to 15 minutes	3	+155°C ±2°C	30 minutes	4	Room temperature	10 to 15 minutes
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Resistance value		ΔR/R																
Normal Type	<100kΩ	±3%																
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Normal Type	<56kΩ	±2%																
	≥56kΩ	±3%																

Carbon Film Fixed Resistors



RCWV = Rated continuous working Voltage = $\sqrt{\text{Rated Power} \times \text{Resistance Value}}$

Part Number Table

Description	Resistance	Part Number	Description	Resistance	Part Number
Carbon Film Fixed Resistors	0.5Ω	MCCFR0S2J050KA20	Carbon Film Fixed Resistors	33Ω	MCCFR0S2J0330A20
	1Ω	MCCFR0S2J010JA20		36Ω	MCCFR0S2J0360A20
	1.2Ω	MCCFR0S2J012JA20		39Ω	MCCFR0S2J0390A20
	1.3Ω	MCCFR0S2J013JA20		43Ω	MCCFR0S2J0430A20
	1.5Ω	MCCFR0S2J015JA20		47Ω	MCCFR0S2J0470A20
	1.6Ω	MCCFR0S2J016JA20		51Ω	MCCFR0S2J0510A20
	1.8Ω	MCCFR0S2J018JA20		56Ω	MCCFR0S2J0560A20
	2Ω	MCCFR0S2J020JA20		62Ω	MCCFR0S2J0620A20
	2.2Ω	MCCFR0S2J022JA20		68Ω	MCCFR0S2J0680A20
	2.4Ω	MCCFR0S2J024JA20		75Ω	MCCFR0S2J0750A20
	2.7Ω	MCCFR0S2J027JA20		82Ω	MCCFR0S2J0820A20
	3Ω	MCCFR0S2J030JA20		91Ω	MCCFR0S2J0910A20
	3.3Ω	MCCFR0S2J033JA20		100Ω	MCCFR0S2J0101A20
	3.6Ω	MCCFR0S2J036JA20		110Ω	MCCFR0S2J0111A20
	3.9Ω	MCCFR0S2J039JA20		120Ω	MCCFR0S2J0121A20
	4.3Ω	MCCFR0S2J043JA20		130Ω	MCCFR0S2J0131A20
	4.7Ω	MCCFR0S2J047JA20		150Ω	MCCFR0S2J0151A20
	5.1Ω	MCCFR0S2J051JA20		160Ω	MCCFR0S2J0161A20
	5.6Ω	MCCFR0S2J056JA20		180Ω	MCCFR0S2J0181A20
	6.2Ω	MCCFR0S2J062JA20		200Ω	MCCFR0S2J0201A20
	6.8Ω	MCCFR0S2J068JA20		220Ω	MCCFR0S2J0221A20
	7.5Ω	MCCFR0S2J075JA20		240Ω	MCCFR0S2J0241A20
	8.2Ω	MCCFR0S2J082JA20		270Ω	MCCFR0S2J0271A20
	9.1Ω	MCCFR0S2J091JA20		300Ω	MCCFR0S2J0301A20
	10Ω	MCCFR0S2J0100A20		330Ω	MCCFR0S2J0331A20
	11Ω	MCCFR0S2J0110A20		360Ω	MCCFR0S2J0361A20
	12Ω	MCCFR0S2J0120A20		390Ω	MCCFR0S2J0391A20
	13Ω	MCCFR0S2J0130A20		430Ω	MCCFR0S2J0431A20
	15Ω	MCCFR0S2J0150A20		470Ω	MCCFR0S2J0471A20
	16Ω	MCCFR0S2J0160A20		510Ω	MCCFR0S2J0511A20
18Ω	MCCFR0S2J0180A20	560Ω	MCCFR0S2J0561A20		
20Ω	MCCFR0S2J0200A20	620Ω	MCCFR0S2J0621A20		
22Ω	MCCFR0S2J0220A20	680Ω	MCCFR0S2J0681A20		
24Ω	MCCFR0S2J0240A20	750Ω	MCCFR0S2J0751A20		
27Ω	MCCFR0S2J0270A20	820Ω	MCCFR0S2J0821A20		
30Ω	MCCFR0S2J0300A20	910Ω	MCCFR0S2J0911A20		

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Carbon Film Fixed Resistors



Description	Resistance	Part Number
Carbon Film Fixed Resistors	1kΩ	MCCFR0S2J0102A20
	1.1kΩ	MCCFR0S2J0112A20
	1.2kΩ	MCCFR0S2J0122A20
	1.3kΩ	MCCFR0S2J0132A20
	1.5kΩ	MCCFR0S2J0152A20
	1.6kΩ	MCCFR0S2J0162A20
	1.8kΩ	MCCFR0S2J0182A20
	2kΩ	MCCFR0S2J0202A20
	2.2kΩ	MCCFR0S2J0222A20
	2.4kΩ	MCCFR0S2J0242A20
	2.7kΩ	MCCFR0S2J0272A20
	3kΩ	MCCFR0S2J0302A20
	3.3kΩ	MCCFR0S2J0332A20
	3.6kΩ	MCCFR0S2J0362A20
	3.9kΩ	MCCFR0S2J0392A20
	4.3kΩ	MCCFR0S2J0432A20
	4.7kΩ	MCCFR0S2J0472A20
	5.1kΩ	MCCFR0S2J0512A20
	5.6kΩ	MCCFR0S2J0562A20
	6.2kΩ	MCCFR0S2J0622A20
	6.8kΩ	MCCFR0S2J0682A20
	7.5kΩ	MCCFR0S2J0752A20
	8.2kΩ	MCCFR0S2J0822A20
	9.1kΩ	MCCFR0S2J0912A20
	10kΩ	MCCFR0S2J0103A20
	11kΩ	MCCFR0S2J0113A20
	12kΩ	MCCFR0S2J0123A20
	13kΩ	MCCFR0S2J0133A20
	15kΩ	MCCFR0S2J0153A20
	16kΩ	MCCFR0S2J0163A20
	18kΩ	MCCFR0S2J0183A20
	20kΩ	MCCFR0S2J0203A20
	22kΩ	MCCFR0S2J0223A20
24kΩ	MCCFR0S2J0243A20	
27kΩ	MCCFR0S2J0273A20	
30kΩ	MCCFR0S2J0303A20	
33kΩ	MCCFR0S2J0333A20	
33kΩ	MCCFR0S2J0333T50	

Description	Resistance	Part Number
Carbon Film Fixed Resistors	36kΩ	MCCFR0S2J0363A20
	39kΩ	MCCFR0S2J0393A20
	43kΩ	MCCFR0S2J0433A20
	47kΩ	MCCFR0S2J0473A20
	51kΩ	MCCFR0S2J0513A20
	56kΩ	MCCFR0S2J0563A20
	62kΩ	MCCFR0S2J0623A20
	68kΩ	MCCFR0S2J0683A20
	75kΩ	MCCFR0S2J0753A20
	82kΩ	MCCFR0S2J0823A20
	91kΩ	MCCFR0S2J0913A20
	100kΩ	MCCFR0S2J0104A20
	110kΩ	MCCFR0S2J0114A20
	120kΩ	MCCFR0S2J0124A20
	130kΩ	MCCFR0S2J0134A20
	150kΩ	MCCFR0S2J0154A20
	160kΩ	MCCFR0S2J0164A20
	180kΩ	MCCFR0S2J0184A20
	200kΩ	MCCFR0S2J0204A20
	220kΩ	MCCFR0S2J0224A20
	240kΩ	MCCFR0S2J0244A20
	270kΩ	MCCFR0S2J0274A20
	300kΩ	MCCFR0S2J0304A20
	330kΩ	MCCFR0S2J0334A20
	360kΩ	MCCFR0S2J0364A20
	390kΩ	MCCFR0S2J0394A20
	430kΩ	MCCFR0S2J0434A20
	470kΩ	MCCFR0S2J0474A20
	510kΩ	MCCFR0S2J0514A20
	560kΩ	MCCFR0S2J0564A20
	620kΩ	MCCFR0S2J0624A20
	680kΩ	MCCFR0S2J0684A20
	680kΩ	MCCFR0S2J0684T50
750kΩ	MCCFR0S2J0754A20	
820kΩ	MCCFR0S2J0824A20	
910kΩ	MCCFR0S2J0914A20	
1MΩ	MCCFR0S2J0105A20	
1.1MΩ	MCCFR0S2J0115A20	



Carbon Film Fixed Resistors



Description	Resistance	Part Number
Carbon Film Fixed Resistors	1.2MΩ	MCCFR0S2J0125A20
	1.3MΩ	MCCFR0S2J0135A20
	1.5MΩ	MCCFR0S2J0155A20
	1.6MΩ	MCCFR0S2J0165A20
	1.8MΩ	MCCFR0S2J0185A20
	2MΩ	MCCFR0S2J0205A20
	2.2MΩ	MCCFR0S2J0225A20
	2.4MΩ	MCCFR0S2J0245A20
	2.7MΩ	MCCFR0S2J0275A20
	3MΩ	MCCFR0S2J0305A20
	3.3MΩ	MCCFR0S2J0335A20
	3.6MΩ	MCCFR0S2J0365A20

Description	Resistance	Part Number
Carbon Film Fixed Resistors	3.9MΩ	MCCFR0S2J0395A20
	4.3MΩ	MCCFR0S2J0435A20
	4.7MΩ	MCCFR0S2J0475A20
	5.1MΩ	MCCFR0S2J0515A20
	5.6MΩ	MCCFR0S2J0565A20
	6.2MΩ	MCCFR0S2J0625A20
	6.8MΩ	MCCFR0S2J0685A20
	7.5MΩ	MCCFR0S2J0755A20
	8.2MΩ	MCCFR0S2J0825A20
	9.1MΩ	MCCFR0S2J0915A20
	10MΩ	MCCFR0S2J0106A20

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