THUNDER PRECISION RESISTORS

HIGH STABLE PRECISION RESISTORS
COATED TYPE

RJJ50, RJJ55, RJJ60
RJJ65, RJJ70

FEATURES

· Advanced thin film technology
· **Low TCR:** lower than **±5ppm/℃.**
· Tolerance up to **±0.05%**
· Power dissipation rating up to **2W**
· Excellent overall stability: Class **0.025**
· Wide resistance range: **10Ω to 2MΩ**
· **very high ratio of performance to price**

APPLICATIONS

· Test and measuring instruments
· Sensors
· Industrial electronics
· Medical equipments.
· Military electronics

DESCRIPTION

RJJ series professional metal film high precision resistors are the perfect choice for most fields of modern professional electronics where high precision, low temperature coefficient and high stability is of major concern as well as very high ratio of performance to price. Almost all of the DMM manufacturers in China are using our RJJ series high precision resistors, include famous FLUKE's DMM of FLUKE17 and FLUKE19 made in China.

PRODUCTION

Production production is strictly controlled and and follows and extensive set of instructions established in production procedure for reproducibility. A homogeneous film of metal alloy is deposited on a high grade ceramic rods **(85%~96% AL_2O_3 content)** and conditioned to achieve the desired temperature coefficient and stability. A professional laser is used for high resistance or tighten tolerance resistors to not only achieve the target value but also a perfect electronic performance by smoothly cutting a helical groove in the resistance layer on the ceramic rods. The resistor elements are covered by a protective coating designed for electrical, mechanical and climatic protection.The leads are covered with a final pure tin plating for keeping perfect solderability and wonderful outlooking. Five or six color code rings designate the resistance value and tolerance and temperature coefficient in accordance and with IEC 60062. Digital marking is available under request.

TEST

The resistors are tested in accordance with **SJ/T51929** which is equivalent to **MIL-R-10509F** which refers to **MIL-STD-202** or **CECC 40401-803** which refers to **EN 140000 (IEC60115) or DIN44061.**

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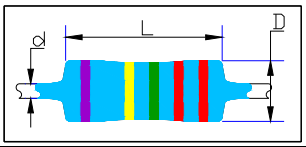
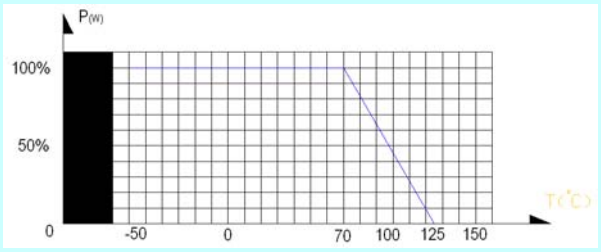
QUICK REFERENCE DATA

Type		RJJ50	RJJ55	RJJ60	RJJ65	RJJ70
Metric type		0204	0207	0411	0617	0719
MIL-R-10509F TYPE		RN50	RN55	RN60	RN65	RN70
KOA type		RNC50	RNC55	RNC60	RNC65	RNC70
Resistance range Resistance tolerance (%) Temperature coefficient (ppm/℃)	A5; B; C; D; F C7; C6; C5	20Ω to 499KΩ	20Ω to 1MΩ	20Ω to 1MΩ	20Ω to 1MΩ	20Ω to 499KΩ
	B; C; D; F C6; C5	20Ω to 1MΩ	10Ω to 1MΩ	10Ω to 1MΩ	10Ω to 1MΩ	20Ω to 1MΩ
	B; C; D; F C3	10Ω to 1.5MΩ	10Ω to 2MΩ	10Ω to 2MΩ	10Ω to 2MΩ	10Ω to 2MΩ
Climatic category(LCT/UCT/days)		55/125/56				
Rated dissipation, P_{70}		0.16W	0.25W	0.50W	1.0W	2.0W
Operating voltage U_{max}		200V	250V	300V	350V	400V
Short time over load voltage U_{max}		400V	500V	600V	700V	800V
Operating Temperature range		-55℃ to 125℃				
Insulation voltage		>500V				
Insulation resistance		>1GΩ				
Dimonsion	Max. (mm)	L=3.8, D=2.0	L=6, D=2.5	L=10, D=3.5	L=12, D=4.5	L=16, D=5.5
	±0.1(mm)	d=0.45	d=0.6	d=0.6	d=0.8	d=0.8

Outlines



Derating curve



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Test procedures and requirements

IEC 60115-1 CLAUSE	IEC 60068-2 TEST METHOD	TEST	PROCEDURE	REQUIREMENTS PERMISSIBLE CHANGE ΔR/R		
				RESISTANCE RANGE		
				RJJ1/6	RJJ1/4 to RJJ10	RJJ20
				100Ω to 100kΩ	100Ω to 470kΩ	100Ω to 100kΩ
4.5	—	resistance	(%)	±0.05; ±0.10; ±0.25; ±0.50; ±1.0		
4.8	—	temperature coefficient	at 25/ 85/ 25℃ or under request at 25/ -55/ 25℃ or at 25 / 125 /25℃	±5ppm/℃; ±10ppm/℃; ±15ppm/℃; ±25ppm/℃; ±50ppm/℃; ±100ppm/℃		
4.13	—	short time overload;	room temperature; U= $\sqrt{2.5 \times P_{70} \times R}$ ≤ $2U_{max;\ 5s}$	±0.05%+0.05Ω		
4.17.2	58 (Td)	solderability	solder bath method; 215℃; 3s	good tinning ≥95% covered; no visible damage		
4.18.2	58 (Td)	resistance to soldering heat	solder bath method; 260 ±5℃; 5 ± 1s	±0.05%+0.05Ω		
4.19	14 (Na)	rapid change of temperature	30 minutes at -55℃; 30 minutes at +155℃; 5 cycles	±0.05%+0.05Ω		
4.22	6(B4)	vibration	6h 10 to 2000Hz 1.5mm or 196 m/s	±0.05%+0.05Ω		
4.23		climatic sequence;				
4.23.2	2(Ba)	dry heat	UCT; 16 h			
4.23.3	30(Db)	damp heat,	55℃;24h; ≥90% RH			
		cyclic	1 cycle;			
4.23.4	1 (Aa)	cold	LCT; 2 h			
4.23.5	13 (M)	low air pressure	8.5 kPa 25±10℃ 2h;			
4.23.6	30(Db)	damp heat cyclic	55℃;24h; ≥90% RH ; 5 cycles LCT=-55℃; UCT=125℃	±0.10%+0.05Ω		
4.24	3(Ca)	damp heat, steady state	40±2℃;56 days 93 +2/-3% RH	±0.10%+0.05Ω		
4.25.1	— —	endurance; standard operation mode	U= $\sqrt{P_{70} \times R}$ ≤ $U_{max;}$ 1.5 h on; 0.5h off; 70℃; 1000 h	±0.10%+0.05Ω		
4.29	45 (XA)	component solvent resistance	isopropyl alcohol; +23℃; toothbrush method	marking legible; no visible damage		

Remark

Unliss otherwise specified, all values are tested at the following condition:
Temperature: 21℃ to 25℃; Relative humidity: 45% to 60%