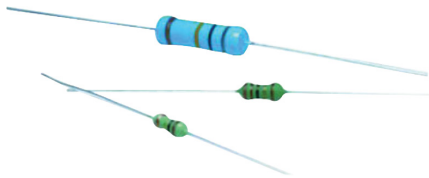


# Precision Metal Film Resistor **multicomp**PRO

**RoHS  
Compliant**

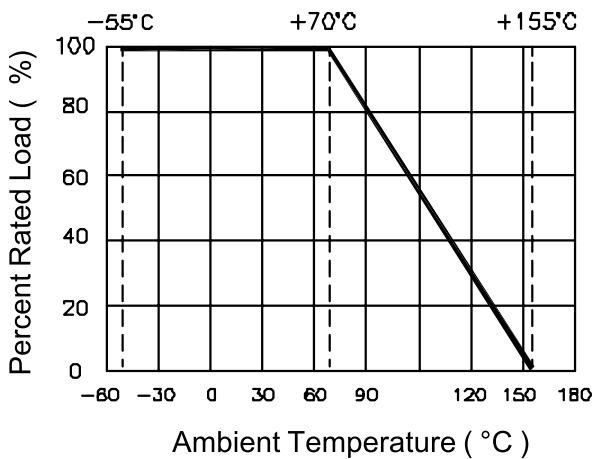


## Specifications

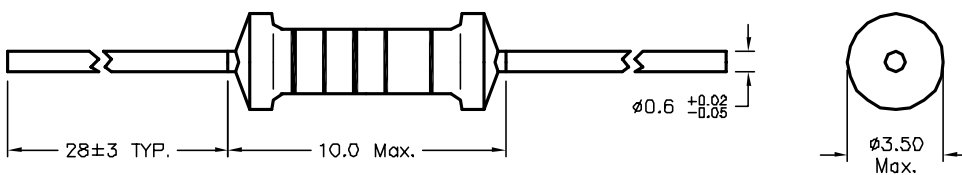
Rating Wattage @ 70°C	: 0.5W
Dielectric With standing Voltage	: 700V
Max. Working Voltage	: 350V
Max. Overload Voltage	: 700V
Tolerance	: 1%
T.C.R.	: ±50PPM/°C
Rated Ambient Temperature	: +70°C
Operating Temperature Range	: -55°C to 155°C

Layer Name	Material
Basic Body	Rod Type Ceramics
Resistance Film	Metal Flim
End Cap	Steel (Tin plated iron surface)
Lead Wire	Annealed Copper Wire (Electrosolder plated surface) Pb Free
Joint	By Welding
Coating	Insulated Resin (Colour: Sky Blue)
Colour Code	Epoxy Resin

## Derating Curve



## Diagram



Dimensions : Millimetres

Newark.com/multicomp-pro  
Farnell.com/multicomp-pro  
Element14.com/multicomp-pro

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# Precision Metal Film Resistor **multicomp** PRO

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 1% of resistance tolerance															
Temperature Coefficient	Within the temperature coefficient specified below: $\pm 50$ PPM/ $^{\circ}$ C Maximum	Natural resistance change per temp. degree centigrade $\frac{R_2 - R_1}{R_1(t_2 - t_1)} \times 10^6 \text{ (PPM}/^{\circ}\text{C)}$ R <sub>1</sub> : Resistance value at room temperature (t <sub>1</sub> ) R <sub>2</sub> : Resistance value at room temp. plus 100 $^{\circ}$ C (t <sub>2</sub> )															
Short Time Overload	Resistance change rate is $\pm(0.5\% + 0.05W)$ Max. with No evidence of mechanical damage.	Permanent resistance change after the application of a potential of 2.5 times RCWV for 5 seconds															
Dielectric withstanding Voltage	No evidence of flashover mechanical damage, arcing or insulation breakdown.	Resistors shall be clamped in the trough of a 90 $^{\circ}$ metallic V-block and shall be tested at AC potential respectively specified in sheet '1'															
Pulse Overload	Resistance change rate is $\pm(1\% + 0.05W)$ Max. with no evidence of mechanical damage.	Resistance change after 10,000 cycles (1 second "ON", 25 seconds "OFF") at 4 times RCWV															
Terminal Strength	No evidence of mechanical damage.	<b>Direct load:</b> Resistance to a 2.5 kgs direct load for 10 seconds in the direction of the longitudinal axis of the terminal leads. <b>Twist test:</b> Terminal leads shall be bent through 90 $^{\circ}$ at a point of about 6mm from the body of the resistor and shall be rotated through 360 $^{\circ}$ about the original axis of the bent terminal in alternating directions for a total of 3 rotations.															
Resistance to Soldering Heat	Resistance change rate is $\pm(1\% + 0.05W)$ Max. with no evidence of mechanical damage.	Permanent resistance change when leads immersed to 3.2 to 4.8mm from the body in 350 $^{\circ}$ C $\pm 10^{\circ}$ C solder for 3 $\pm 0.5$ seconds.															
Solderability	95% coverage Min.	The area covered with a new, smooth, clean, shiny and continuous surface free from concentrated pinholes. Test temperature of solder: 245 $^{\circ}$ C $\pm 3^{\circ}$ C Dwell time in solder: 2-3 seconds															
Resistance to Solvent	No deterioration of protective coating and markings.	Specimens shall be immersed in a bath of trichroethane completely for 3 mins with ultrasonic.															
Temperature Cycling	Resistance change rate is $\pm(1\% + 0.05W)$ Max. with no evidence of mechanical damage.	Resistance change after continuous five cycles for duty shown below <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Step</th> <th>Temperature</th> <th>Time (min)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>-55<math>^{\circ}</math>C <math>\pm 3^{\circ}</math>C</td> <td>30</td> </tr> <tr> <td>2</td> <td>Room Temp.</td> <td>10 ~ 15</td> </tr> <tr> <td>3</td> <td>+155<math>^{\circ}</math>C <math>\pm 2^{\circ}</math>C</td> <td>30</td> </tr> <tr> <td>4</td> <td>Room Temp.</td> <td>10 ~ 15</td> </tr> </tbody> </table>	Step	Temperature	Time (min)	1	-55 $^{\circ}$ C $\pm 3^{\circ}$ C	30	2	Room Temp.	10 ~ 15	3	+155 $^{\circ}$ C $\pm 2^{\circ}$ C	30	4	Room Temp.	10 ~ 15
Step	Temperature	Time (min)															
1	-55 $^{\circ}$ C $\pm 3^{\circ}$ C	30															
2	Room Temp.	10 ~ 15															
3	+155 $^{\circ}$ C $\pm 2^{\circ}$ C	30															
4	Room Temp.	10 ~ 15															
Load Life in Humidity	<table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td>Resistance Value</td> <td><math>\Delta R/R</math></td> </tr> <tr> <td>Normal type</td> <td><math>\pm 1.5\%</math></td> </tr> </table>	Resistance Value	$\Delta R/R$	Normal type	$\pm 1.5\%$	Resistance change after 1,000 hours (1.5 hours "ON, 0.5 hour "OFF" ) at * RCWV in humidity test chamber controlled at 40 $^{\circ}$ C $\pm 2^{\circ}$ C and 90 to 95% relative humidity.											
Resistance Value	$\Delta R/R$																
Normal type	$\pm 1.5\%$																

# Precision Metal Film Resistor **multicomp** PRO

Characteristics	Limits		Test Methods (JIS C 5201-1)
Load life	Resistance Value	$\Delta R/R$	Permanent resistance change after 1,000 hours operating at * RCWV with duty cycle of 1.5 hours "on", 0.5 hour "off" at 70°C $\pm$ 2°C ambient.
	Normal type	$\pm 1.5\%$	
*RCWV = Rated Continuous Working Voltage = $\sqrt{\text{Rated Power} \times \text{Resistance Value}}$			

## Part Number Table

Description	Part Number
Metal Film Resistor, 100 $\Omega$	MCMF0W2FF1000A10
Metal Film Resistor, 1k $\Omega$	MCMF0W2FF1001A10
Metal Film Resistor, 10k $\Omega$	MCMF0W2FF1002A10
Metal Film Resistor, 100k $\Omega$	MCMF0W2FF1003A10
Metal Film Resistor, 1M $\Omega$	MCMF0W2FF1004A10
Metal Film Resistor, 10 $\Omega$	MCMF0W2FF100JA10
Metal Film Resistor, 110 $\Omega$	MCMF0W2FF1100A10
Metal Film Resistor, 120 $\Omega$	MCMF0W2FF1200A10
Metal Film Resistor, 10k $\Omega$	MCMF0W2FF1202A10
Metal Film Resistor, 120k $\Omega$	MCMF0W2FF1203A10
Metal Film Resistor, 12 $\Omega$	MCMF0W2FF120JA10
Metal Film Resistor, 130 $\Omega$	MCMF0W2FF1300A10
Metal Film Resistor, 150 $\Omega$	MCMF0W2FF1500A10
Metal Film Resistor, 15k $\Omega$	MCMF0W2FF1502A10
Metal Film Resistor, 150k $\Omega$	MCMF0W2FF1503A10
Metal Film Resistor, 15 $\Omega$	MCMF0W2FF150JA10
Metal Film Resistor, 160 $\Omega$	MCMF0W2FF1600A10
Metal Film Resistor, 16 $\Omega$	MCMF0W2FF160JA10
Metal Film Resistor, 180 $\Omega$	MCMF0W2FF1800A10
Metal Film Resistor, 18k $\Omega$	MCMF0W2FF1802A10
Metal Film Resistor, 180k $\Omega$	MCMF0W2FF1803A10
Metal Film Resistor, 18 $\Omega$	MCMF0W2FF180JA10
Metal Film Resistor, 200 $\Omega$	MCMF0W2FF2000A10
Metal Film Resistor, 20 $\Omega$	MCMF0W2FF200JA10
Metal Film Resistor, 220 $\Omega$	MCMF0W2FF2200A10
Metal Film Resistor, 22k $\Omega$	MCMF0W2FF2202A10
Metal Film Resistor, 220k $\Omega$	MCMF0W2FF2203A10
Metal Film Resistor, 22 $\Omega$	MCMF0W2FF220JA10
Metal Film Resistor, 240 $\Omega$	MCMF0W2FF2400A10
Metal Film Resistor, 24k $\Omega$	MCMF0W2FF2402A10

Description	Part Number
Metal Film Resistor, 24 $\Omega$	MCMF0W2FF240JA10
Metal Film Resistor, 270 $\Omega$	MCMF0W2FF2700A10
Metal Film Resistor, 27k $\Omega$	MCMF0W2FF2702A10
Metal Film Resistor, 270k $\Omega$	MCMF0W2FF2703A10
Metal Film Resistor, 27 $\Omega$	MCMF0W2FF270JA10
Metal Film Resistor, 300 $\Omega$	MCMF0W2FF3000A10
Metal Film Resistor, 30 $\Omega$	MCMF0W2FF300JA10
Metal Film Resistor, 330 $\Omega$	MCMF0W2FF3300A10
Metal Film Resistor, 33k $\Omega$	MCMF0W2FF3302A10
Metal Film Resistor, 330k $\Omega$	MCMF0W2FF3303A10
Metal Film Resistor, 33 $\Omega$	MCMF0W2FF330JA10
Metal Film Resistor, 360 $\Omega$	MCMF0W2FF3600A10
Metal Film Resistor, 36 $\Omega$	MCMF0W2FF360JA10
Metal Film Resistor, 390 $\Omega$	MCMF0W2FF3900A10
Metal Film Resistor, 39k $\Omega$	MCMF0W2FF3902A10
Metal Film Resistor, 390k $\Omega$	MCMF0W2FF3903A10
Metal Film Resistor, 39 $\Omega$	MCMF0W2FF390JA10
Metal Film Resistor, 430 $\Omega$	MCMF0W2FF4300A10
Metal Film Resistor, 470 $\Omega$	MCMF0W2FF4700A10
Metal Film Resistor, 47k $\Omega$	MCMF0W2FF4702A10
Metal Film Resistor, 470k $\Omega$	MCMF0W2FF4703A10
Metal Film Resistor, 47 $\Omega$	MCMF0W2FF470JA10
Metal Film Resistor, 510 $\Omega$	MCMF0W2FF5100A10
Metal Film Resistor, 51 $\Omega$	MCMF0W2FF510JA10
Metal Film Resistor, 560 $\Omega$	MCMF0W2FF5600A10
Metal Film Resistor, 56k $\Omega$	MCMF0W2FF5602A10
Metal Film Resistor, 560k $\Omega$	MCMF0W2FF5603A10
Metal Film Resistor, 56 $\Omega$	MCMF0W2FF560JA10
Metal Film Resistor, 680 $\Omega$	MCMF0W2FF6800A10
Metal Film Resistor, 68k $\Omega$	MCMF0W2FF6802A10

# Precision Metal Film Resistor **multicomp** PRO

Description	Part Number
Metal Film Resistor, 680k $\Omega$	MCMF0W2FF6803A10
Metal Film Resistor, 68 $\Omega$	MCMF0W2FF680JA10
Metal Film Resistor, 75 $\Omega$	MCMF0W2FF750JA10
Metal Film Resistor, 820 $\Omega$	MCMF0W2FF8200A10
Metal Film Resistor, 82k $\Omega$	MCMF0W2FF8202A10

Description	Part Number
Metal Film Resistor, 820k $\Omega$	MCMF0W2FF8203A10
Metal Film Resistor, 82 $\Omega$	MCMF0W2FF820JA10
Metal Film Resistor, 2k $\Omega$	MCMF0W2FF2001A10
Metal Film Resistor, 2.2k $\Omega$	MCMF0W2FF2201A10
Metal Film Resistor, 4.7k $\Omega$	MCMF0W2FF4701A10
Metal Film Resistor, 51k $\Omega$	MCMF0W2FF5102A10

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