

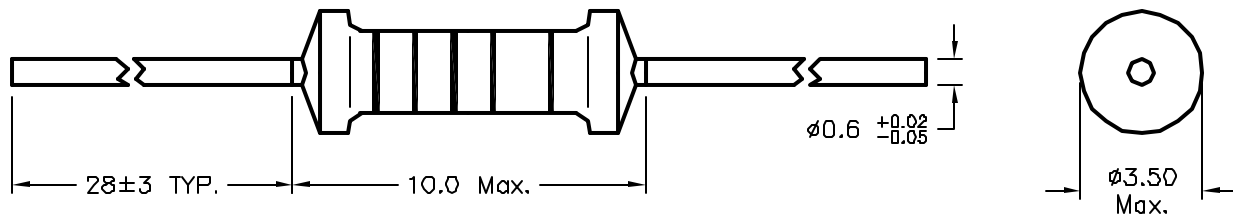
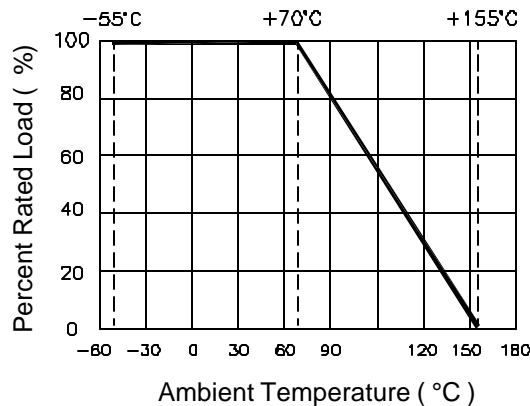
DCP #	REV	DESCRIPTION	DRAWN	DATE	CHECKD	DATE	APPRVD	DATE
1861	A	RELEASED	BYF	10/31/05	HO	11/2/05	JWM	10/31/05



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

**GENERAL SPECIFICATIONS:**

- Rating Wattage @ 70°C: 0.50W
- Dielectric Withstanding Voltage: 700V
- Maximum Working Voltage: 350V
- Maximum Overload Voltage: 700V
- Tolerance:  $\pm 1\%$
- T.C.R.:  $\pm 50\text{PPM}/^\circ\text{C}$
- Resistance Range: (See parts table)
- Rated Ambient Temp.: 70°C
- Operating Temp. Range:  $-55^\circ\text{C}$  to  $+155^\circ\text{C}$


**Derating Curve**


SPC-F004.DWG

TOLERANCES: UNLESS OTHERWISE SPECIFIED, DIMENSIONS ARE FOR REFERENCE PURPOSES ONLY.	DRAWN BY:	DATE:	DRAWING TITLE:		
	BASAM YOUSIF	10/31/05	RoHS Compliant Precision Metal Film Resistors, 1%		
	CHECKED BY:	DATE:	SIZE	DWG. NO.	ELECTRONIC FILE
	HISHAM QDISH	11/2/05	A	TA-669	TA-669.DWG
APPROVED BY:	DATE:	SCALE: NTS		U.O.M.: MILLIMETERS	REV
JEFF MCVICKER	10/31/05				A
			SHEET: 1 OF 3		

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Characteristics	Limits	Test Methods (JIS C 5201-1)															
DC. Resistance	Must be within the specified tolerance	5.1 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:  ±50 PPM/°C Maximum	5.2 Natural resistance change per temp. degree centigrade. $\frac{R_2 - R_1}{R_1(t_2 - t_1)} \times 10^6 \text{ (PPM/°C)}$ R <sub>1</sub> : Resistance value at room temperature (t <sub>1</sub> ) R <sub>2</sub> : Resistance value at room temp. plus 100°C (t <sub>2</sub> )															
Short time overload	Resistance change rate is ±(0.5% +0.05Ω) Max. with No evidence of mechanical damage.	5.5 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.	5.7 Resistors shall be clamped in the trough of a 90° metallic V-block and shall be tested at AC potential respectively specified in sheet '1'															
Pulse overload	Resistance change rate is ±(1% +0.05Ω) Max. with no evidence of mechanical damage.	5.8 Resistance change after 10,000 cycles (1 second "ON", 25 seconds "OFF") at 4 times RCWV															
Terminal strength	No evidence of mechanical damage.	<u>6.1 Direct load:</u> Resistance to a 2.5 kgs direct load for 10 seconds in the direction of the longitudinal axis of the terminal leads. <u>Twist test:</u> 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 directions for a total of 3 rotations.															
Resistance to soldering heat	Resistance change rate is ±(1% +0.05Ω) Max. with no evidence of mechanical damage.	6.4 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 Min.	6.5 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: 2-3 seconds															
Resistance to solvent	No deterioration of protective coating and markings.	6.9 Specimens shall be immersed in a bath of trichroethane completely for 3 mins with ultrasonic.															
Temperature cycling	Resistance change rate is ±(1% +0.05Ω) Max. with no evidence of mechanical damage.	7.4 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°C ±3°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°C ±2°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°C ±3°C	30	2	Room Temp.	10 ~ 15	3	+155°C ±2°C	30	4	Room Temp.	10 ~ 15
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1	-55°C ±3°C	30															
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3	+155°C ±2°C	30															
4	Room Temp.	10 ~ 15															
Load life in humidity	<table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Resistance Value</th> <th>ΔR/R</th> </tr> </thead> <tbody> <tr> <td>Normal type</td> <td>±1.5%</td> </tr> </tbody> </table>	Resistance Value	ΔR/R	Normal type	±1.5%	7.9 Resistance change after 1,000 hours (1.5 hours "ON, 0.5 hour "OFF" ) at * RCWV in humidity test chamber controlled at 40°C±2°C and 90 to 95% relative humidity.											
Resistance Value	ΔR/R																
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Load life	<table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Resistance Value</th> <th>ΔR/R</th> </tr> </thead> <tbody> <tr> <td>Normal type</td> <td>±1.5%</td> </tr> </tbody> </table>	Resistance Value	ΔR/R	Normal type	±1.5%	7.10 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 ±2°C ambient.											
Resistance Value	ΔR/R																
Normal type	±1.5%																

\*RCWV = Rated Continuous Working Voltage =  $\sqrt{\text{Rated Power} \times \text{Resistance Value}}$

ALL RIGHTS RESERVED. NO PORTION OF THIS PUBLICATION, WHETHER IN WHOLE OR IN PART CAN BE REPRODUCED WITHOUT THE EXPRESS WRITTEN CONSENT OF SPC TECHNOLOGY. SPC-F004.DWG	SIZE	DWG. NO.	ELECTRONIC FILE	REV
	A	TA-669	TA-669.DWG	A
DOC. NO. SPC-F004 * Effective: 7/8/02 * DCP No: 1398	SCALE: NTS	U.O.M.: Millimeters	SHEET: 2 OF 3	

Multicomp Mfr P/N #	Resistance
MCMFOW2FF100JA10	10 ohm
MCMFOW2FF110JA10	11 ohm
MCMFOW2FF120JA10	12 ohm
MCMFOW2FF130JA10	13 ohm
MCMFOW2FF150JA10	15 ohm
MCMFOW2FF160JA10	16 ohm
MCMFOW2FF180JA10	18 ohm
MCMFOW2FF200JA10	20 ohm
MCMFOW2FF220JA10	22 ohm
MCMFOW2FF240JA10	24 ohm
MCMFOW2FF270JA10	27 ohm
MCMFOW2FF300JA10	30 ohm
MCMFOW2FF330JA10	33 ohm
MCMFOW2FF360JA10	36 ohm
MCMFOW2FF390JA10	39 ohm
MCMFOW2FF430JA10	43 ohm
MCMFOW2FF470JA10	47 ohm
MCMFOW2FF510JA10	51 ohm
MCMFOW2FF560JA10	56 ohm
MCMFOW2FF620JA10	62 ohm
MCMFOW2FF680JA10	68 ohm
MCMFOW2FF750JA10	75 ohm
MCMFOW2FF820JA10	82 ohm
MCMFOW2FF910JA10	91 ohm
MCMFOW2FF1000A10	100 ohm
MCMFOW2FF1100A10	110 ohm
MCMFOW2FF1200A10	120 ohm
MCMFOW2FF1300A10	130 ohm
MCMFOW2FF1500A10	150 ohm
MCMFOW2FF1600A10	160 ohm
MCMFOW2FF1800A10	180 ohm
MCMFOW2FF2000A10	200 ohm
MCMFOW2FF2200A10	220 ohm
MCMFOW2FF2400A10	240 ohm
MCMFOW2FF2700A10	270 ohm
MCMFOW2FF3000A10	300 ohm
MCMFOW2FF3300A10	330 ohm
MCMFOW2FF3600A10	360 ohm
MCMFOW2FF3900A10	390 ohm
MCMFOW2FF4300A10	430 ohm
MCMFOW2FF4700A10	470 ohm
MCMFOW2FF5100A10	510 ohm
MCMFOW2FF5600A10	560 ohm
MCMFOW2FF6200A10	620 ohm
MCMFOW2FF6800A10	680 ohm
MCMFOW2FF7500A10	750 ohm
MCMFOW2FF8200A10	820 ohm

Multicomp Mfr P/N #	Resistance
MCMFOW2FF9100A10	910 ohm
MCMFOW2FF1001A10	1 Kohm
MCMFOW2FF1101A10	1.1 Kohm
MCMFOW2FF1201A10	1.2 Kohm
MCMFOW2FF1301A10	1.3 Kohm
MCMFOW2FF1501A10	1.5 Kohm
MCMFOW2FF1601A10	1.6 Kohm
MCMFOW2FF1801A10	1.8 Kohm
MCMFOW2FF2001A10	2 Kohm
MCMFOW2FF2201A10	2.2 Kohm
MCMFOW2FF2401A10	2.4 Kohm
MCMFOW2FF2701A10	2.7 Kohm
MCMFOW2FF3001A10	3 Kohm
MCMFOW2FF3301A10	3.3 Kohm
MCMFOW2FF3601A10	3.6 Kohm
MCMFOW2FF3901A10	3.9 Kohm
MCMFOW2FF4301A10	4.3 Kohm
MCMFOW2FF4701A10	4.7 Kohm
MCMFOW2FF5101A10	5.1 Kohm
MCMFOW2FF5601A10	5.6 Kohm
MCMFOW2FF6201A10	6.2 Kohm
MCMFOW2FF6801A10	6.8 Kohm
MCMFOW2FF7501A10	7.5 Kohm
MCMFOW2FF8201A10	8.2 Kohm
MCMFOW2FF9101A10	9.1 Kohm
MCMFOW2FF1002A10	10 Kohm
MCMFOW2FF1102A10	11 Kohm
MCMFOW2FF1202A10	12 Kohm
MCMFOW2FF1302A10	13 Kohm
MCMFOW2FF1502A10	15 Kohm
MCMFOW2FF1602A10	16 Kohm
MCMFOW2FF1802A10	18 Kohm
MCMFOW2FF2002A10	20 Kohm
MCMFOW2FF2202A10	22 Kohm
MCMFOW2FF2402A10	24 Kohm
MCMFOW2FF2702A10	27 Kohm
MCMFOW2FF3002A10	30 Kohm
MCMFOW2FF3302A10	33 Kohm
MCMFOW2FF3602A10	36 Kohm
MCMFOW2FF3902A10	39 Kohm
MCMFOW2FF4302A10	43 Kohm
MCMFOW2FF4702A10	47 Kohm
MCMFOW2FF5102A10	51 Kohm
MCMFOW2FF5602A10	56 Kohm
MCMFOW2FF6202A10	62 Kohm
MCMFOW2FF6802A10	68 Kohm
MCMFOW2FF7502A10	75 Kohm

Multicomp Mfr P/N #	Resistance
MCMFOW2FF8202A10	82 Kohm
MCMFOW2FF9102A10	91 Kohm
MCMFOW2FF1003A10	100 Kohm
MCMFOW2FF1103A10	110 Kohm
MCMFOW2FF1203A10	120 Kohm
MCMFOW2FF1303A10	130 Kohm
MCMFOW2FF1503A10	150 Kohm
MCMFOW2FF1603A10	160 Kohm
MCMFOW2FF1803A10	180 Kohm
MCMFOW2FF2003A10	200 Kohm
MCMFOW2FF2203A10	220 Kohm
MCMFOW2FF2403A10	240 Kohm
MCMFOW2FF2703A10	270 Kohm
MCMFOW2FF3003A10	300 Kohm
MCMFOW2FF3303A10	330 Kohm
MCMFOW2FF3603A10	360 Kohm
MCMFOW2FF3903A10	390 Kohm
MCMFOW2FF4303A10	430 Kohm
MCMFOW2FF4703A10	470 Kohm
MCMFOW2FF5103A10	510 Kohm
MCMFOW2FF5603A10	560 Kohm
MCMFOW2FF6203A10	620 Kohm
MCMFOW2FF6803A10	680 Kohm
MCMFOW2FF7503A10	750 Kohm
MCMFOW2FF8203A10	820 Kohm
MCMFOW2FF9103A10	910 Kohm
MCMFOW2FF1004A10	1 Mohm

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SPC-F004.DWG

SIZE DWG. NO.

A

TA-669

ELECTRONIC FILE

TA-669.DWG

REV

A

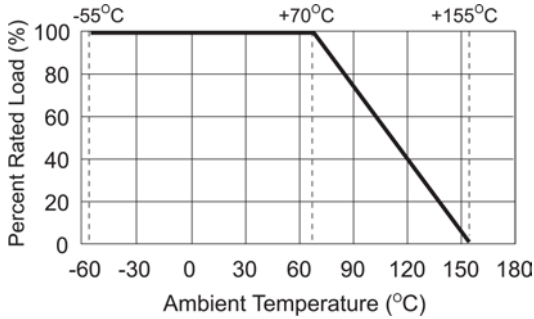
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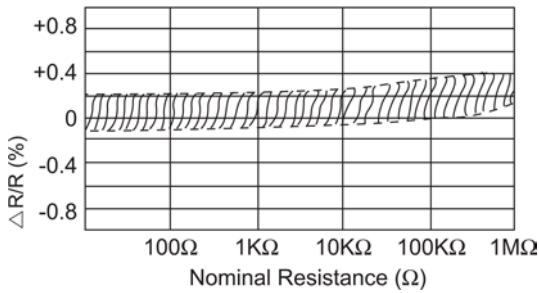
U.O.M.: Millimeters

SHEET: 3 OF 3

### Derating Curve



### Load Life



### Current Noise Level

