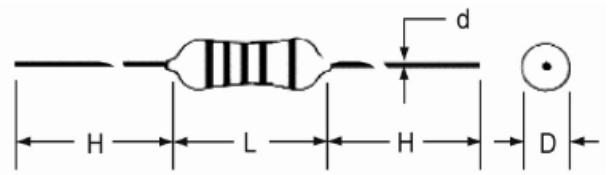
METAL FILM FIXED RESISTOR

MF (EPOXY COATING TYPE)
FMF (FLAME－PROOF COATING TYPE)

INTRODUCTION

MF

To fill the function gap of carbon film resistors, metal oxide film resistors or wire wound resistors so that SYNTON－TECH makes metal film resistors. The resistive element is a high contests of AL203 ceramic rod on which a thin film of Ni/Cr alloy is deposited by vacuum sputtering system. Then contact caps are pressed onto the ends of the rod and a helical groove cut through the film to give the required resistance value. Connecting copper wire are welded to the end caps. Finally the resistors are coated with multiple layers of insulation lacquer. SYNTON－TECH's MF series are suitable for all circuit applications especially tighter tolerance and low temperature coefficient are required.



FEATURES

- Met American military specification MIL－R－10509F!
- Very low current noise!
- Broad selection of temperature coefficient : ±100ppm, ±50ppm, ±25ppm, ±15ppm, ±10ppm/℃
- Tolerance available : ±5%, ±2%, ±1%, ±0.5%, ±0.25%, ±0.1%, ±0.05%, ±0.01%
- Voltage available : 1/16W, 1/8W, 1/6W, 1/3W, 1/4W, 0.4W, 1/2W, 0.6W, 1W, 2W, 3W
- Major applications are switching power supplies, communication equipments, monitors, testing meters.

FMF

Flame-proof metal film resistors are coated with layers of non-flame lacquer which is resistant to 800 ℃ high temperature and without causing crack, breakage, or even a fire hazard. SYNTON－TECH's FMF series are designed to replace metal oxide film resistors and wire wound resistors when small size is needed.

SPECIFICATIONS

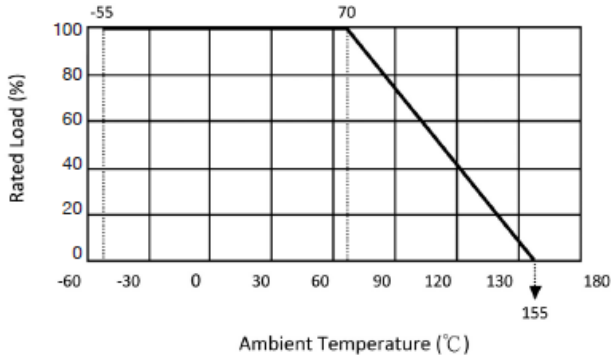
TYPE	POWER RATING @70℃	DIMENSIONS (mm)				MAXIMUM WORKING VOLTAGE	MAXIMUM OVERLOAD VOLTAGE	RESISTANCE RANGE
		L	D	H	d			
MF-12	1/16W, 1/8W, 1/6W	3.5±0.3	1.8±0.3	25±3	0.43±0.05	200V	400V	* STANDARD 10Ω～1MEGΩ * SPECIAL LOW TO 0.1Ω HIGH TO 30MEGΩ
MF-25S	1/4W	3.5±0.3	1.8±0.3	25±3	0.43±0.05	250V	500V	
MF-40S	0.4W	3.5±0.3	1.8±0.3	25±3	0.43±0.05	350V	700V	
MF-33S	1/3W	6.0±0.5	2.3±0.3	25±3	0.54±0.1	250V	500V	
MF-25	1/4W	6.0±0.5	2.3±0.3	25±3	0.54±0.1	350V	700V	
MF-50S	1/2W	6.0±0.5	2.3±0.3	25±3	0.54±0.1	350V	700V	
MF-60S	0.6W	6.0±0.5	2.3±0.3	25±3	0.54±0.1	350V	700V	
MF-50	1/2W	9.0±0.5	3.2±0.5	25±3	0.58±0.1	500V	1000V	
MF-100S	1W	9.0±0.5	3.2±0.5	25±3	0.58±0.1	500V	1000V	
MF-100	1W	11±1.0	4.5±0.5	35±3	0.75±0.1	500V	1000V	
MF-200S	2W	11±1.0	4.5±0.5	35±3	0.75±0.1	500V	1000V	
MF-200	2W	15±1.0	5.0±0.5	35±3	0.75±0.1	500V	1000V	
MF-300S	3W	15±1.0	5.0±0.5	35±3	0.75±0.1	500V	1000V	

* FMF series have the same specifications as MF series except flame retardant.

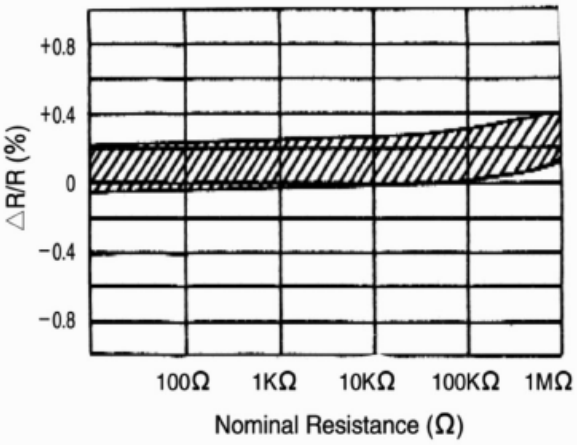
CHARACTERISTICS

TEST	TEST METHOD	LIMITS
SHORT—TIME OVERLOAD	Resistors shall be tested at 2.5 times rated voltage for 5 seconds at ambient room temperature.	Resistance shall not change more than ±0.5%. No evidence of mechanical damage.
TERMINAL STRENGTH	Pull a resistor with a weight of 1kg for 30 seconds. Bend the terminal lead wire with 500gs weight for 90 degree and bend it for 90 degree oppositely and return to normal.	Resistance shall not change more than ±0.2%. No evidence of mechanical damage.
RESISTANCE TO SOLDERING HEAT	Immerse each terminal wire of a resistor up to 4±0.8mm away from the resistor body in the solder tank at 350±10℃ for 3±0.5 seconds. Measure resistance in 3 hours.	Resistance shall not change more than ±0.25%. No evidence of mechanical damage.
MOISTURE RESISTANCE	At temperature of 40±2℃ and a relative humidity of 90~95% for 1000±12 hours, under a rating DC voltage for 1 hour on and 1/2 hour off.	Resistance shall not change more than ±1%. No evidence of mechanical damage.
LOAD LIFE	Thermostatic chamber at a temperature of 70±5℃ under a rated DC voltage for 1.5 hours on and 1/2 hour off, repeat this cycle for 1000±12 hours.	Resistance shall not change more than ±1.5%. No evidence of mechanical damage.
INSULATION RESISTANCE	Resistors shall be clamped in the trough of a 90 degree metallic V—block, apply DC 100V between this electrode and another lead wire for 1 minute.	1,000M ohm above.
NOISE	Quan—Tech Laboratories Inc. Model 515B	100K ohm below : 0.3μ V/V 100K ohm ~1M ohm below : 0.5μ V/V 1M ohm ~5.6M ohm : 1.0μ V/V
VIBRATION	Total amplitude of 1.5mm. The frequency shall vary from 10HZ to 55HZ, for approximate 1 second. Make this test in the direction parallel to the resistor axis, and up/down for 2 hours respectively. (altogether 6 hours.)	Resistance shall not change more than ±0.25%. No evidence of mechanical damage.
DIELECTRIC WITHSTANDING VOLTAGE	Resistors shall be clamped in the trough of a 90 degree metallic V—block, apply AC between this electrode and another lead wire for 1 minute.	Resistance shall not change more than ±0.5%. No evidence of mechanical damage
RESISTANCE TO SOLVENTS	Immerse a resistor completely in reagent at a temperature of 20—25℃ for 30±5 seconds.	No evidence of mechanical damage.
SOLDERABILITY	Apply flux to the terminal wire of a resistor up to 4±0.8mm away from the resistor body and immerse the flux applied portion in the solder tank at 260±5℃ for 3±0.5 seconds.	More than 95% of a circumference of the immersed portion shall be completely covered with new solder.
DISCONTINUOUS OVERLOAD	3 times Power Rating 1 second on 25 seconds off Cycles 1,000±100	Resistance shall not change more than ±(0.5%+0.05 ohm)
TEMPERATURE CYCLING	STEP 1 2 3 4 TEMP —55℃ 25℃ 155℃ 25℃ TIME 30min. 10—15min. 30min. 10—15min. From 1 to 4 is a cycle as shown above, repeat 5 cycles and measure the resistance after 1 hour in normal temperature.	Resistance shall not change more than ±0.5%. No evidence of mechanical damage.

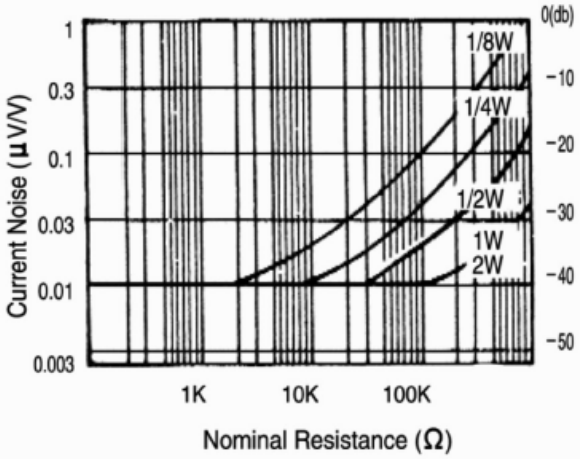
DERATING CURVE



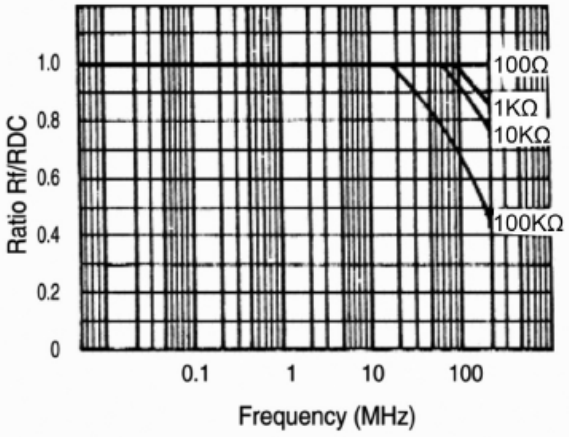
LOAD LIFE



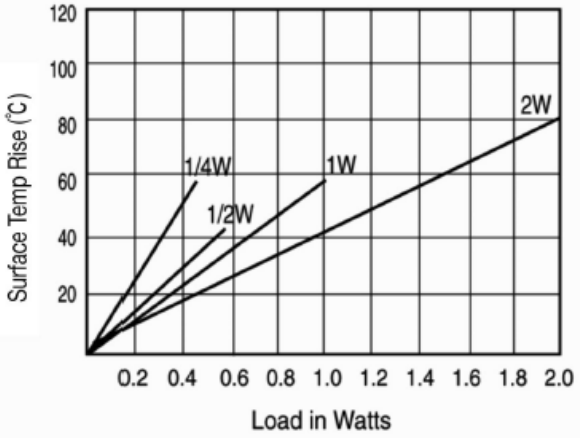
CURRENT NOISE



HIGH FREQUENCY



SURFACE TEMP. RISE VS. LOAD



RESISTANCE DISTRIBUTION