

Note:

ELECTRICAL CHARACTERISTICS

| STYLE | MMF-12 | MMF25S | MMF204 | MMF-25 | MMF50S | MMF207 | MMF-50 | MMFIWS |
|-----------------------------|--|--------|--------|--------|--------|--------|--------|--------|
| Power Rating at 70°C | 1/6W | 1/4W | 0.4W | 1/4W | 1/2W | 0.6W | 1/2W | 1W |
| Maximum Working Voltage | 150V | 200V | | 250V | | | 350V | |
| Maximum Overload Voltage | 300V | 400V | | 500V | | | 700V | |
| Voltage Proof on Insulation | 300V | | | 500V | | | 700V | |
| Resistance Range | 1Ω - 1MΩ & 0Ω for E24 & E96 series value, 100Ω - 100KΩ for E192 series value | | | | | | | |
| Operating Temp. Range | -55°C to +155°C | | | | | | | |
| Temperature Coefficient | ±15ppm/°C, ±25ppm/°C, ±50ppm/°C, ±100ppm/°C | | | | | | | |

Note: Special value is available on request

ENVIRONMENTAL CHARACTERISTICS

| PERFORMANCE TEST | TEST METHOD | | APPRAISE |
|-------------------------------|------------------|--|---|
| Short Time Overload | IEC 60115-1 4.13 | 2.5 times RCWV for 5 Sec. | ±0.5%+0.05Ω |
| Voltage Proof on Insulation | IEC 60115-1 4.7 | in V-block for 60 Sec., test voltage by type | By type |
| Temperature Coefficient | IEC 60115-1 4.8 | -55°C to +155°C | By type |
| Insulation Resistance | IEC 60115-1 4.6 | in V-block for 60 Sec. | >10,000MΩ |
| Solderability | IEC 60115-1 4.17 | 235±5°C for 3±0.5 Sec. | 95% Min. coverage |
| Solvent Resistance of Marking | IEC 60115-1 4.30 | IPA for 5±0.5 Min. with ultrasonic | No deterioration of coatings and markings |
| Periodic-pulse Overload | IEC 60115-1 4.39 | 4 times RCWV 10,000 cycles (1 Sec. on, 25 Sec. off) | ±1.0%+0.05Ω |
| Damp Heat Steady State | IEC 60115-1 4.24 | 40±2°C, 90-95% RH for 56 days, loaded with 0.1 times RCWV | ±2.0%+0.1Ω |
| Endurance at 70°C | IEC 60115-1 4.25 | 70±2°C at RCWV for 1,000 Hr. (1.5 Hr. on, 0.5 Hr. off) | ±2.0%+0.1Ω |
| Temperature Cycling | IEC 60115-1 4.19 | -55°C ⇄ Room Temp. ⇄ +155°C ⇄ Room Temp. (5 cycles) | ±0.75%+0.05Ω |
| Resistance to Soldering Heat | IEC 60115-1 4.18 | 260±3°C for 10±1 Sec., immersed to a point 3±0.5mm from the body | ±0.5%+0.05Ω |

Note: RCWV(Rated Continuous Working Voltage) = $\sqrt{\text{Power Rating} \times \text{Resistance Value}}$ or Max. working voltage listed above, whichever less.

Revision: 201304



EXPLANATIONS OF ORDERING CODE

| MFR | -12 | F | T | F | 52- | 100R |
|---|--|--|---|---|---|--|
| Code 1 - 3 Series Name See Index | Code 4 - 6 Power Rating -05 = \varnothing d0.5mm -06 = \varnothing d0.6mm -07 = \varnothing d0.7mm -08 = \varnothing d0.8mm -10 = \varnothing d1.0mm -14 = \varnothing d1.4mm -12 = 1/6W -25 = 1/4W 25S = 1/4WS -50 = 1/2W 50S = 1/2WS 100 = 1W 1WS = 1WS 200 = 2W 2WS = 2WS 204 = 0.4W 207 = 0.6W 300 = 3W 3WS = 3WS 3WM = 3WM 400 = 4W 500 = 5W 5WS = 5WS 5SS = 5WSS 700 = 7W 7WS = 7WS 10A = 10W 20A = 20W 30A = 30W 40A = 40W 50A = 50W 10S = 10WS 15A = 15W 25A = 25W 10B = 100W 25B = 250W | Code 7 Tolerance P = $\pm 0.02\%$ A = $\pm 0.05\%$ B = $\pm 0.1\%$ C = $\pm 0.25\%$ D = $\pm 0.5\%$ F = $\pm 1\%$ G = $\pm 2\%$ J = $\pm 5\%$ K = $\pm 10\%$ - = Base on Spec. | Code 8 Packing Style T = Tape/Box R = Tape/Reel B = Bulk | Code 9 Temperature Coef- ficient of Resistance - = Base on Spec. A = ± 5 ppm/ $^{\circ}$ C B = ± 10 ppm/ $^{\circ}$ C C = ± 15 ppm/ $^{\circ}$ C S = ± 20 ppm/ $^{\circ}$ C D = ± 25 ppm/ $^{\circ}$ C E = ± 50 ppm/ $^{\circ}$ C F = ± 100 ppm/ $^{\circ}$ C G = ± 200 ppm/ $^{\circ}$ C H = ± 250 ppm/ $^{\circ}$ C I = ± 300 ppm/ $^{\circ}$ C J = ± 350 ppm/ $^{\circ}$ C | Code 10 - 12 Forming Type 26- = 26mm 52- = 52.4mm 73- = 73mm 81- = 81mm 91- = 91mm F = F Type FK = FK Type FKK = FKK Type FFK = F-form Kink M = M-Type Forming MB = M-form W/flat MT = MT Type Forming MR = MR Type AV = AVIsert PN = PANAsert | Code 13 - 17 Resistance Value 0R1 = 0.1 100R = 100 10K = 10,000 10M = 10,000,000 |

EXCEPTION:

• Cement series:

<Code 8>: Special packing style code

B: Bulk with wirewound or metal oxide sub-assembly for resistance value

W: Bulk with ceramic based wirewound sub-assembly for resistance value

M: Bulk with metal oxide sub-assembly for resistance value

F: Bulk with Fiberglass based wirewound sub-assembly for resistance value

<Code 10-12>: Without forming code

Example: **SQP500JB-10R**

• JPW series:

<Code 13-17>: without resistance value code

Example: **JPW-06-T-52-**