

Metal Oxide Leaded Film Resistor



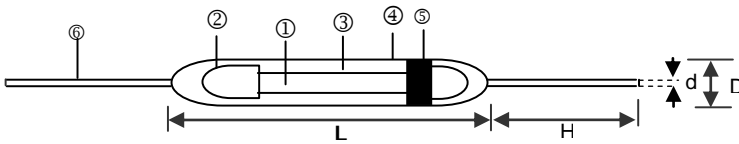
■Features

- Excellent Long-Time stability
- High surge / overload capability
- Wide resistance range : 0.1Ω~10MΩ
- Controlled temperature coefficient
- Resistance standard tolerance: ±5% (consult factory for ±2%, 1%)
- Electrical and mechanical stability and high reliability

■Applications

- Automotive
- Telecommunication
- Medical Equipment

■Construction



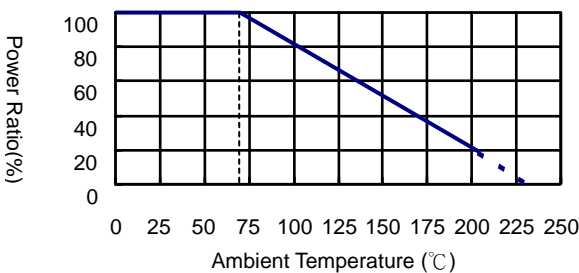
| | |
|--------------------|---------------------------------------|
| ① Ceramic Rod | ④ Non-flame Paint With Sol Vent-proof |
| ② Tinned Iron Caps | ⑤ Color Code |
| ③ Metal Oxide Film | ⑥ Lead Wire |

■Dimensions

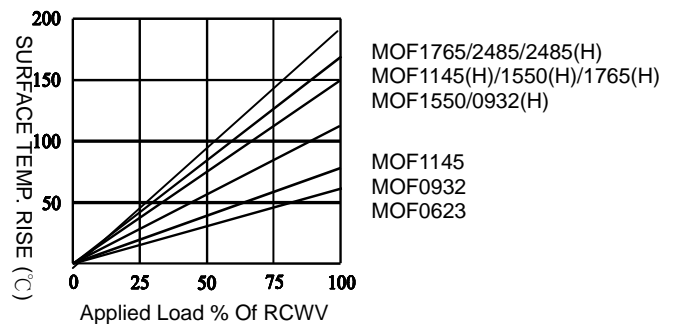
Unit: mm

| Type | L | D | H | d | Weight (g) (1000pcs) |
|---------|----------|---------|--------|-----------|----------------------|
| MOF0623 | 6.3±0.5 | 2.3±0.3 | 28±2.0 | 0.55±0.03 | 156 |
| MOF0932 | 9.0±0.5 | 3.2±0.5 | 26±2.0 | 0.65±0.03 | 355 |
| MOF1145 | 11.5±1.0 | 4.5±0.5 | 35±2.0 | 0.78±0.03 | 760 |
| MOF1550 | 15.5±1.0 | 5.0±0.5 | 32±2.0 | 0.78±0.03 | 1040 |
| MOF1765 | 17.0±1.0 | 6.0±0.5 | 35±2.0 | 0.78±0.03 | 1800 |
| MOF2485 | 24.0±1.0 | 8.0±0.5 | 35±2.0 | 0.78±0.03 | 4000 |

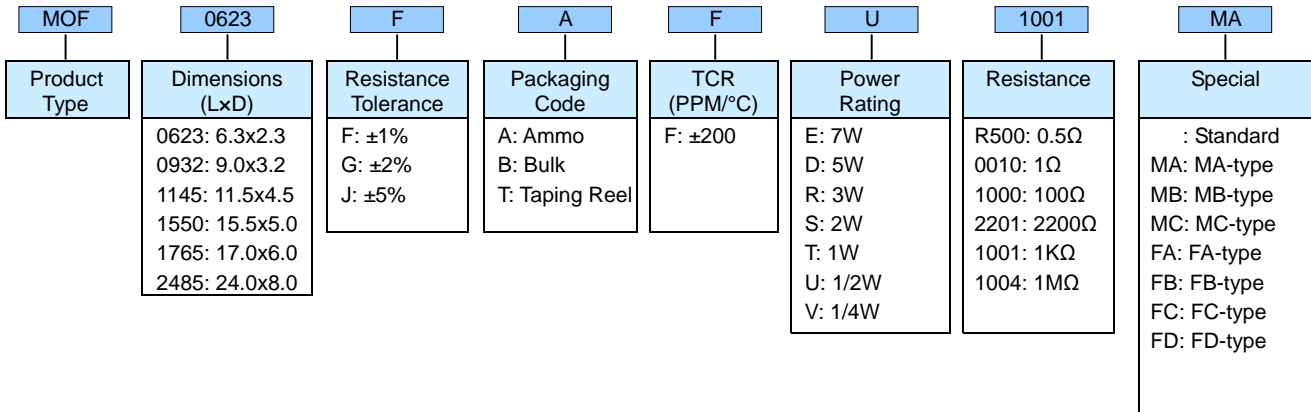
■Derating Curve



■Hot-Spot Temperature



Part Numbering



Standard Electrical Specifications

| Item Type | Power Rating at 70°C | Operating Temp. Range | Max. Working Voltage | Max. Overload Voltage | Dielectric Withstanding Voltage | Resistance Range | | | TCR (PPM/°C) |
|-----------|----------------------|-----------------------|----------------------|-----------------------|---------------------------------|------------------|--------------|------------|--------------|
| | | | | | | ±1% | ±2% | ±5% | |
| 0623 | 1/4W | -55 ~ +155°C | 200V | 350V | 350V | 0.1Ω - 10MΩ | | 0.1Ω-22MΩ | ±200 |
| 0932 | 1/2W | | 250V | 400V | 350V | 0.1Ω - 1MΩ | 0.1Ω - 10MΩ | | |
| 1145 | 1W | | 500V | 600V | 500V | 0.1Ω - 1MΩ | 0.1Ω - 10MΩ | | |
| 1550 | 2W | | 550V | 600V | 500V | 0.1Ω - 1MΩ | 0.1Ω - 10MΩ | | |
| 1765 | 3W | | 800V | 1000V | 750V | 0.1Ω - 470KΩ | 0.1Ω - 560KΩ | 0.1Ω - 1MΩ | |
| 2485 | 5W | | 1000V | 1000V | 750V | 0.1Ω - 470KΩ | 0.1Ω - 560KΩ | 0.1Ω - 1MΩ | |

High Power Rating Electrical Specifications

| Item Type | Power Rating at 70°C | Operating Temp. Range | Max. Working Voltage | Max. Overload Voltage | Dielectric Withstanding Voltage | Resistance Range | | | TCR (PPM/°C) |
|-----------|----------------------|-----------------------|----------------------|-----------------------|---------------------------------|------------------|--------------|------------|--------------|
| | | | | | | ±1% | ±2% | ±5% | |
| 0623 | 1/2W | -55 ~ +155°C | 250V | 400V | 350V | 0.1Ω - 10MΩ | | | ±200 |
| 0932 | 1W | | 300V | 500V | 400V | 0.1Ω - 1MΩ | 0.1Ω - 10MΩ | | |
| 1145 | 2W | | 500V | 600V | 500V | 0.1Ω - 1MΩ | 0.1Ω - 10MΩ | | |
| 1550 | 3W | | 750V | 700V | 600V | 0.1Ω - 1MΩ | 0.1Ω - 10MΩ | | |
| 1765 | 5W | | 1000V | 1000V | 750V | 0.1Ω - 470KΩ | 0.1Ω - 560KΩ | 0.1Ω - 1MΩ | |
| 2485 | 7W | | 1000V | 1000V | 750V | 0.1Ω - 470KΩ | 0.1Ω - 560KΩ | 0.1Ω - 1MΩ | |

Operating Voltage= $\sqrt{P \cdot R}$ or Max. operating voltage listed above, whichever is lower.
 Overload Voltage= $2.5 \cdot \sqrt{P \cdot R}$ or Max. overload voltage listed above, whichever is lower.

■ Resistor body color: Standard Power Rating: Grey
 High Power Rating : Grey or Pink are available

■ Environmental Characteristics

| Item | Requirement | Test Method |
|---------------------------------|---|--|
| Short Time Overload | $\pm(0.25\%+0.05\Omega)$ | JIS-C-5201-1 5.5 RCWV*2.5 or Max. overload voltage whichever is lower for 5 seconds |
| Insulation Resistance | $> 1000M\Omega$ | JIS-C-5201-1 5.6 Apply 100V _{DC} for 1 minute |
| Endurance | $\pm(1.5\%+0.05\Omega)$ | JIS-C-5201-1 7.10 70 \pm 2°C, RCWV for 1000 hrs with 1.5 hrs "ON" and 0.5 hrs "OFF" |
| Damp Heat with Load | $\pm(1.5\%+0.05\Omega)$ | JIS-C-5201-1 7.9 40 \pm 2°C, 90~95% R.H. RCWV for 1000 hrs with 1.5 hrs "ON" and 0.5 hrs "OFF" |
| Solderability | 90% min. Coverage | JIS-C-5201-1 6.5 245 \pm 5°C for 3 seconds |
| Dielectric Withstanding Voltage | By Type | JIS-C-5201-1 5.7 Apply Max. Overload Voltage for 1 minute |
| Temperature Coefficient | By Type | Resistance value at room temperature and room temperature+100°C |
| Pulse Overload | $\pm(1\%+0.05\Omega)$ | JIS-C-5201-1 5.8 4 times RCWV for 10000 cycles with 1second "ON" and 25 seconds "OFF" |
| Resistance To Solvent | No deterioration of coatings and markings | JIS-C-5201-1 6.9 Trichroethane for 1 min. with ultrasonic |
| Terminal Strength | Tensile: $\geq 2.5kg$ | Direct Load for 10 seconds In the direction off the terminal leads |

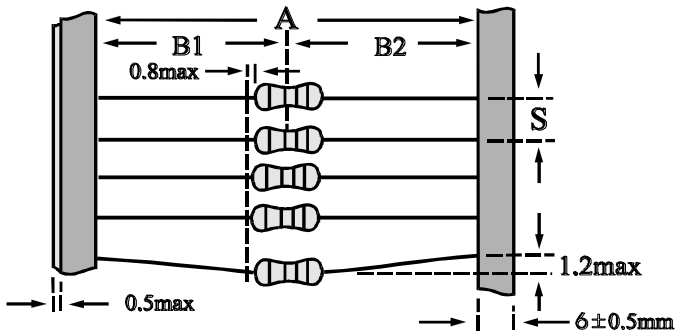
RCWV(Rated continuous working voltage)= $\sqrt{P \cdot R}$ or Max. Operating voltage whichever is lower

■ **Storage Temperature: 25 \pm 3°C; Humidity < 80%RH**

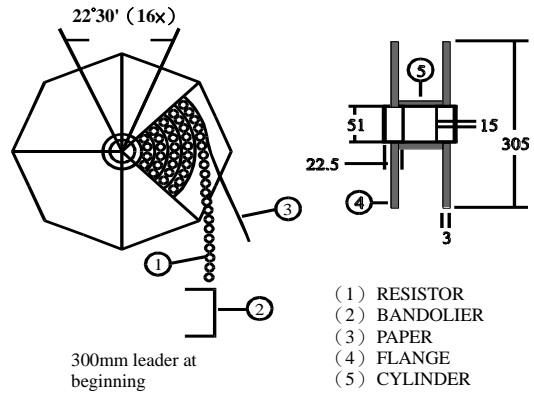
Taping/Packing Specifications

1. Standard Type (Reel & Ammo)

Packing Methods



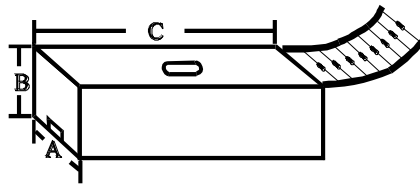
Reel Packing



Unit: mm

| Packaging Type | Packing Methods | | | Reel Packing | |
|-------------------|-----------------|-------|----|-------------------|-------|
| | A | B1-B2 | S | Across Flange (A) | Qty |
| 0623 | 52+1/-0 | 1.2 | 5 | 72 | 5,000 |
| | 26+1/-0 | 1.0 | | | |
| 0932 | 52+1/-0 | 1.2 | 5 | 72 | 2,500 |
| 1145 | 52+1/-0 | 1.5 | 5 | 95 | 2,000 |
| | 73+1/-0 | | | | |
| 1550 | 52+1/-0 | 1.5 | 10 | 95 | 1,000 |
| | 73+1/-0 | | | | |
| 1765 | 73+1/-0 | 1.5 | 10 | 95 | 1,000 |
| 2485 | 88+1/-0 | 1.5 | 10 | 110 | 500 |

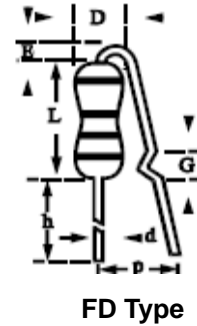
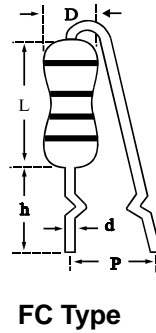
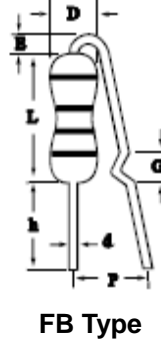
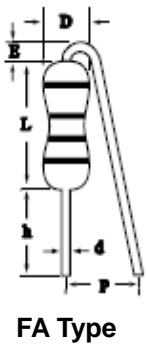
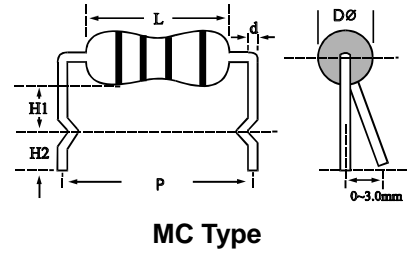
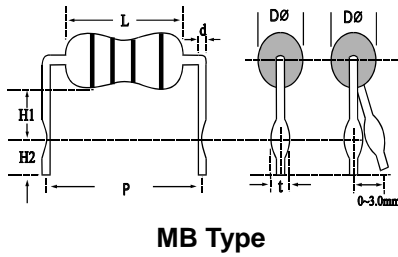
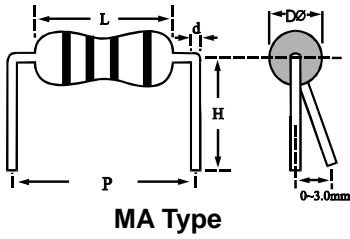
Ammo Packing



Unit: mm

| Packaging Type | Packing Methods | | | Ammo Packing | | | |
|-------------------|-----------------|-------|----|--------------|-----|-----|-------|
| | A | B1-B2 | S | A | B | C | Qty |
| 0623 | 52+1/-0 | 1.2 | 5 | 80 | 105 | 264 | 5,000 |
| | 26+1/-0 | 1.0 | | | | | |
| 0932 | 52+1/-0 | 1.2 | 5 | 80 | 46 | 264 | 1,000 |
| 1145 | 52+1/-0 | 1.5 | 5 | 103 | 82 | 265 | 1,000 |
| | 73+1/-0 | | | | | | |
| 1550 | 52+1/-0 | 1.5 | 10 | 103 | 96 | 265 | 1,000 |
| | 73+1/-0 | | | | | | |
| 1765 | 73+1/-0 | 1.5 | 10 | 105 | 75 | 270 | 500 |
| 2485 | 88+1/-0 | 1.5 | 10 | 115 | 75 | 270 | 250 |

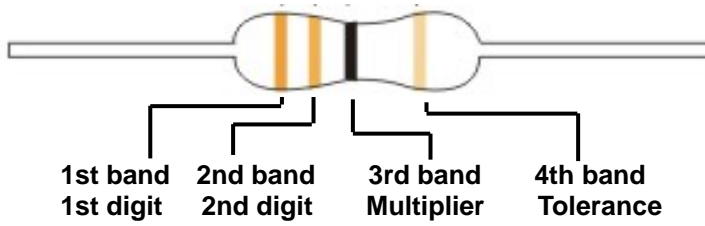
2. Special Type (Bulk)



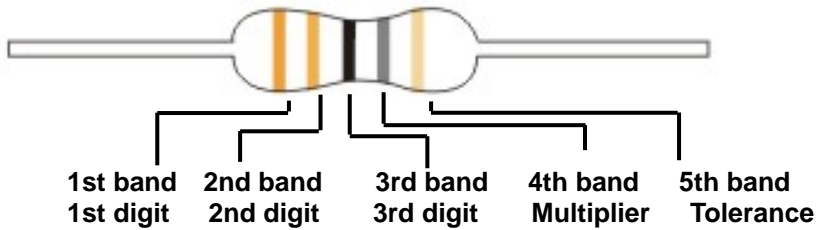
Unit: mm

| Codes | Type | P | H /H1/h | H2/G | t | D | L | d | E |
|-------|------|--------|---------|---------|---------|---------|----------|-----------|-----|
| 0623 | MA | 10±1 | 10.0±1 | - | - | 2.3±0.3 | 6.3±0.5 | 0.55±0.03 | - |
| | MC | 10±1 | 4.0±1 | 4.0±1 | - | 2.3±0.3 | 6.3±0.5 | 0.55±0.03 | - |
| | FA | 5~15 | 4.0±2 | - | - | 2.3±0.3 | 6.3±0.5 | 0.55±0.03 | 3±1 |
| | FB | 5~15 | 4.0±2 | 3.0±0.5 | - | 2.3±0.3 | 6.3±0.5 | 0.55±0.03 | 3±1 |
| | FD | 5~15 | 27.0±2 | 3.0±0.5 | - | 2.3±0.3 | 6.3±0.5 | 0.55±0.03 | 3±1 |
| 0932 | MA | 12.5±1 | 10.0±1 | - | - | 3.2±0.5 | 9.0±0.5 | 0.65±0.03 | - |
| | MC | 12.5±1 | 4.0±1 | 4.0±1 | - | 3.2±0.5 | 9.0±0.5 | 0.65±0.03 | - |
| | FA | 5~15 | 4.0±2 | - | - | 3.2±0.5 | 9.0±0.5 | 0.65±0.03 | 3±1 |
| | FB | 5~15 | 4.0±2 | 3.0±0.5 | - | 3.2±0.5 | 9.0±0.5 | 0.65±0.03 | 3±1 |
| | FC | 5~15 | 10.0±3 | - | - | 3.2±0.5 | 9.0±0.5 | 0.65±0.03 | - |
| 1145 | MA | 15±1 | 12.5±1 | - | - | 4.5±0.5 | 11.5±1.0 | 0.78±0.03 | - |
| | MC | 15±1 | 6.0±1 | 5.0±1.0 | - | 4.5±0.5 | 11.5±1.0 | 0.78±0.03 | - |
| | FA | 5~15 | 4.0±2 | - | - | 4.5±0.5 | 11.5±1.0 | 0.78±0.03 | 3±1 |
| | FB | 5~15 | 4.0±2 | 3.0±0.5 | - | 4.5±0.5 | 11.5±1.0 | 0.78±0.03 | 3±1 |
| | FC | 5~15 | 10.0±3 | - | - | 4.5±0.5 | 11.5±1.0 | 0.78±0.03 | - |
| 1550 | MA | 20±1 | 15.0±1 | - | - | 5.0±0.5 | 15.5±1.0 | 0.78±0.03 | - |
| | MC | 20±1 | 10.0±1 | 5.0±1.0 | - | 5.0±0.5 | 15.5±1.0 | 0.78±0.03 | - |
| | FA | 5~15 | 4.0±2 | - | - | 5.0±0.5 | 15.5±1.0 | 0.78±0.03 | 3±1 |
| | FB | 5~15 | 4.0±2 | 3.0±0.5 | - | 5.0±0.5 | 15.5±1.0 | 0.78±0.03 | 3±1 |
| | FC | 5~15 | 10.0±3 | - | - | 5.0±0.5 | 15.5±1.0 | 0.78±0.03 | - |
| 1765 | MA | 25±1 | 15.0±1 | - | - | 6.0±0.5 | 17.0±1.0 | 0.78±0.03 | - |
| | MB | 25±1 | 8.0±1 | 5.5±1 | 1.4±0.2 | 6.0±0.5 | 17.0±1.0 | 0.78±0.03 | - |
| | MC | 24±1 | 10.0±1 | 7.5±1 | - | 6.0±0.5 | 17.0±1.0 | 0.78±0.03 | - |
| 2485 | MA | 30±1 | 18.0±1 | - | - | 8.0±0.5 | 24.0±1.0 | 0.78±0.03 | - |
| | MB | 30±1 | 12.0±1 | 5.0±1 | 1.4±0.2 | 8.0±0.5 | 24.0±1.0 | 0.78±0.03 | - |

Marking & Resistance Tolerance



| | | | | | | | | | | | | | | | | | | | | | | | | | |
|--------|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| ±5.00% | E-24 | 1.0 | 1.1 | 1.2 | 1.3 | 1.5 | 1.6 | 1.8 | 2.0 | 2.2 | 2.4 | 2.7 | 3.0 | 3.3 | 3.6 | 3.9 | 4.3 | 4.7 | 5.1 | 5.6 | 6.2 | 6.8 | 7.5 | 8.2 | 9.1 |
| ±2.00% | | | | | | | | | | | | | | | | | | | | | | | | | |



| | | | | | | | | | | | | | | | | | | | | | | | | | |
|--------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| ±1.00% | E-96 | 1.00 | 1.02 | 1.05 | 1.07 | 1.10 | 1.13 | 1.15 | 1.18 | 1.21 | 1.24 | 1.27 | 1.30 | 1.33 | 1.37 | 1.40 | 1.43 | 1.47 | 1.50 | 1.54 | 1.58 | 1.62 | 1.65 | 1.69 | 1.74 |
| | | 1.78 | 1.82 | 1.87 | 1.91 | 1.96 | 2.00 | 2.05 | 2.10 | 2.15 | 2.21 | 2.26 | 2.32 | 2.37 | 2.43 | 2.49 | 2.55 | 2.61 | 2.67 | 2.74 | 2.80 | 2.87 | 2.94 | 3.01 | 3.09 |
| | | 3.16 | 3.24 | 3.32 | 3.40 | 3.48 | 3.57 | 3.65 | 3.74 | 3.83 | 3.92 | 4.02 | 4.12 | 4.22 | 4.32 | 4.42 | 4.53 | 4.64 | 4.75 | 4.87 | 4.99 | 5.11 | 5.23 | 5.36 | 5.49 |
| | | 5.62 | 5.76 | 5.90 | 6.04 | 6.19 | 6.34 | 6.49 | 6.65 | 6.81 | 6.98 | 7.15 | 7.32 | 7.50 | 7.68 | 7.87 | 8.06 | 8.25 | 8.45 | 8.66 | 8.87 | 9.09 | 9.31 | 9.53 | 9.76 |

| Color | Digit | Multiplier | Tolerance | |
|---------|-------|------------------|-----------|---|
| Without | - | - | - | - |
| Silver | - | 10 ⁻² | - | - |
| Gold | - | 10 ⁻¹ | ±5% | J |
| Black | 0 | 10 ⁰ | - | - |
| Brown | 1 | 10 ¹ | ±1% | F |
| Red | 2 | 10 ² | ±2% | G |
| Orange | 3 | 10 ³ | - | - |
| Yellow | 4 | 10 ⁴ | - | - |
| Green | 5 | 10 ⁵ | - | - |
| Blue | 6 | 10 ⁶ | - | - |
| Violet | 7 | 10 ⁷ | - | - |
| Grey | 8 | 10 ⁸ | - | - |
| White | 9 | 10 ⁹ | - | - |