*Viking*

# TO-220 Power Resistor

## ■Features

－20 Watts at 25°C case temperature heat sink mounted
－TO-220 style power package
－Molded case for protection and easy to mount
－Electrically isolated case
－Non-Inductive design

## ■Applications

－High Speed Switching Power Supplies
－Snubber Circuits
－Load Resistor for Pulse Generators
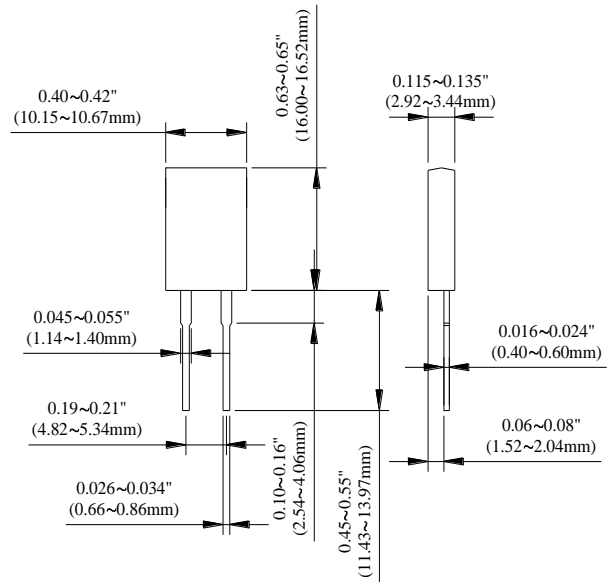－Voltage Regulation
－VHF Amplifiers

## ■Construction
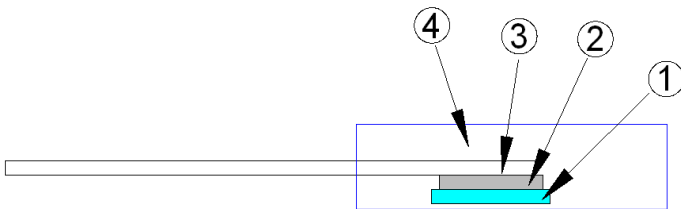


| ① Alumina Substrate | ③ Lead |
|---|---|
| ② Resistor Layer | ④ Molding |

## ■Dimensions

Unit: mm

| Type | Weight (g) (1000pcs) |
|---|---|
| TR20 | 1290 |



0.40~0.42"
(10.15~10.67mm)

0.63~0.65"
(16.00~16.52mm)

0.115~0.135"
(2.92~3.44mm)

0.045~0.055"
(1.14~1.40mm)

0.016~0.024"
(0.40~0.60mm)

0.19~0.21"
(4.82~5.34mm)

0.10~0.16"
(2.54~4.06mm)

0.06~0.08"
(1.52~2.04mm)

0.026~0.034"
(0.66~0.86mm)

0.45~0.55"
(11.43~13.97mm)

## ■Derating Curve

# 【TR20 Series】
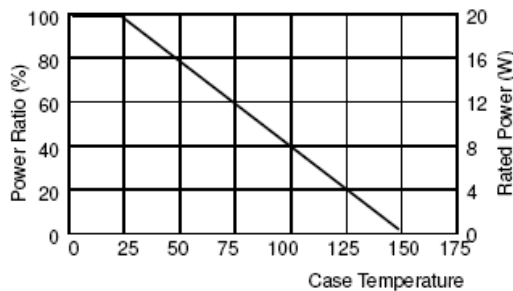
## TO-220 Power Resistor

## ■Part Numbering

| TR | 20 | J | B | D | 1001 |
|---|---|---|---|---|---|
| Product Type | Power | Resistance Tolerance | Packaging Code | TCR (PPM/°C) | Resistance |
|  | 20: 20 Watts | D: ±0.5%<br>F: ±1%<br>J: ±5%<br>K: ±10% | B: Bulk | D: ±50<br>E: ±100<br>F: ±200<br>G: ±300<br>- : No Specified | R100: 0.1Ω<br>0100: 10Ω<br>4700: 470Ω<br>1001: 1000Ω<br>1002: 10000Ω |

## ■Electrical Characteristics Specifications

| Item / Type | Resistance Range | | | | TCR (PPM/°C) |
|---|---|---|---|---|---|
|  | ±0.5% | ±1% | ±5% | ±10% |  |
| TR20 | - | - | 0.05Ω -1Ω | | No Specified |
|  | - | >1Ω -3Ω | | | ±300 |
|  | - | >3Ω -10Ω | | | ±100<br>±200 |
|  | >10Ω –1MΩ | | | | ±50<br>±100<br>±200 |

- Operating Voltage: 350V max.
- Dielectric Strength: 1800VAC
- Insulation Resistance: 10GΩ min.
- Working Temperature Range: -65°C to +150°C
- Resistance Value< 1Ω is available

## ■Environmental Characteristics

| Test Item | Requirement | Test Method |
|---|---|---|
| Temperature Coefficient of Resistance (T.C.R.) | As Spec. | Referenced to 25°C, ΔR taken at +105°C |
| Short Time Overload | ΔR±0.3% | 2 times rated power with applied voltage not to exceed 1.5 times Maximum continuous operating voltage for 5 seconds |
| Load Life | ΔR±1.0% | 2,000 hours at rated power |
| Damp Heat with Load | ΔR±0.5% | 40±2°C, 90~95% R.H. Max. RCWV for 1000 hrs with 1.5 hrs "ON" and 0.5 hrs "OFF" |
| Solderability | 90% min. coverage | 245±5°C for 3 seconds |
| Thermal Shock | ΔR±0.3% | -65℃~150℃, 100 cycles |
| Terminal Strength | ΔR±0.2% | (Pull Test) 2.4N |
| Vibration, High Frequency | ΔR±0.2% | 20g peak |

■Lead Material: Tinned Copper
■Without a Heat Sink
■When in Free Air at 25°C, the TR20 is Rated for 3W
■The Case Temperature is to be used for the Definition of the Applied Power Limit
■The Case Temperature Measurement must be made with a Thermocouple Contacting the Center of the Component mounted on the Designed Heat Sink.
■Thermal Grease should be Applied Properly
RCWV(Rated continuous working voltage)= $\sqrt{(P*R)}$ or Max. Operating voltage whichever is lower