

TO-220 (20W)

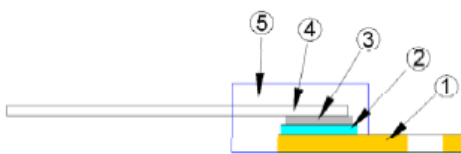
Features

- 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

- Switching Power Supplies
- Snubbers Circuits
- Automated Machine Controller
- RF Power Amplifiers
- Low Energy Pulse Loading
- UPS
- Voltage Regulation

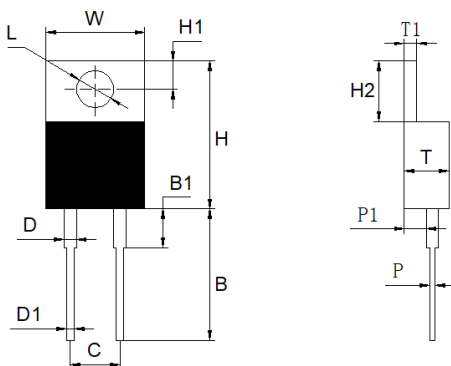
Construction



| | |
|---------------------|---------------|
| ① Radiator Fin | ④ Copper Lead |
| ② Alumina Substrate | ⑤ Molding |
| ③ Resistor Layer | |



Dimensions



| 型号 | W | H | H1 | B | B1 | D | D1 | L | C | T | T1 | H2 | P | P1 |
|---------------------|----------------|---------------|--------------|--------------|----------|--------------|---------------|--------------|---------------|-------------|-------------|---------------|---------------|---------------|
| PRT20 (Unit: mm) | 10.16 ±0.25 | 15.23 ±0.3 | 2.9 ±0.25 | 13.5 ±0.8 | Max 4 | 1.26 ±0.1 | 0.78 ±0.08 | 3.83 ±0.3 | 5.08 ±0.25 | 4.6 ±0.2 | 1.3 ±0.1 | 6.25 ±0.35 | 0.51 ±0.15 | 2.27 ±0.25 |

Part Numbering

| TO | 220 | 20W | 120R | 5% | ±50PPM |
|-------|-----|-----|--|--------------------------------------|---|
| ↓ | ↓ | ↓ | ↓ | ↓ | ↓ |
| 产品类别 | 封装 | 功率 | 阻值 | 精度 | 温度系数 |
| 大功率电阻 | 220 | 20W | R100: 0.1Ω 0100: 10Ω 4700: 470Ω 1001: 1000Ω 1002: 10000Ω | D=±0.5% F=±1% J=±5% K: ±10% | D: ±50 E: ±100 F: ±200 G: ±300 -: 未设定 |



地址：深圳市龙华新区观澜大布头路南通邦高新产业园 A 栋 8 楼



大功率电阻系列规格书

| | |
|------|------------|
| 系列号 | TO-220 |
| 修订日期 | 2022-02-16 |
| 版本号 | Ho-A2 |

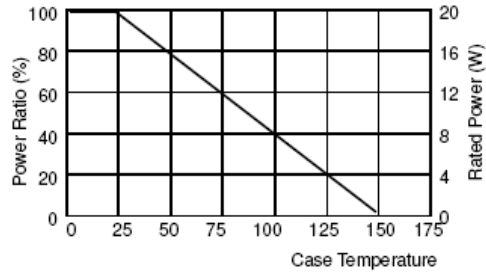
TO-220 (20W)

Electrical Characteristics Specifications

| Resistance Range | TCR (PPM/°C) | | | |
|------------------|---------------------|---------------------|---------------------|---------------------|
| | ±0.5% | ±1% | ±5% | ±10% |
| 0.05Ω - 0.1Ω | | | — | — |
| >0.1Ω - 1Ω | | | — | — |
| >1Ω - 3Ω | | ±100、±200 | ±100、±200 | ±100、±200 |
| >3Ω - 10Ω | | ±100 ±200 | ±100 ±200 | ±100 ±200 |
| >10Ω - 10KΩ | ±50 ±100 ±200 | ±50 ±100 ±200 | ±50 ±100 ±200 | ±50 ±100 ±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

Derating Curve



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. working voltage 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°C~150°C, 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 2.25W
- 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

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| | |
|------|------------|
| 系列号 | TO-220 |
| 修订日期 | 2022-01-21 |
| 版本号 | Ho-A2 |

TO-220 (30W)

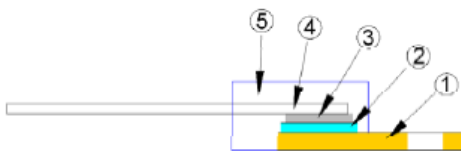
Features

- 30 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

- Switching Power Supplies
- Snubbers Circuits
- Automated Machine Controller
- RF Power Amplifiers.
- Low Energy Pulse Loading
- UPS
- Voltage Regulation

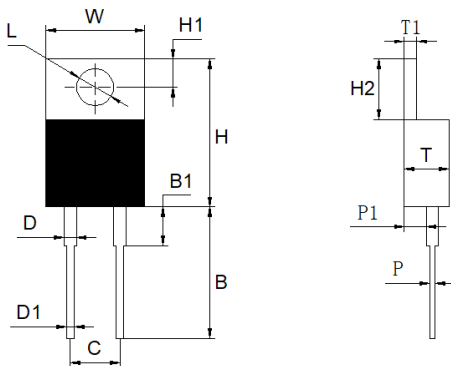
Construction



| | |
|---------------------|---------------|
| ① Radiator Fin | ④ Copper Lead |
| ② Alumina Substrate | ⑤ Molding |
| ③ Resistor Layer | |



Dimensions



| 型号 | W | H | H1 | B | B1 | D | D1 | L | C | T | T1 | H2 | P | P1 |
|---------------------|----------------|---------------|--------------|--------------|----------|--------------|---------------|--------------|---------------|-------------|-------------|---------------|---------------|---------------|
| PRT30 (Unit: mm) | 10.16 ±0.25 | 15.23 ±0.3 | 2.9 ±0.25 | 13.5 ±0.8 | Max 4 | 1.26 ±0.1 | 0.78 ±0.08 | 3.83 ±0.3 | 5.08 ±0.25 | 4.6 ±0.2 | 1.3 ±0.1 | 6.25 ±0.35 | 0.51 ±0.15 | 2.27 ±0.25 |

Part Numbering

| 产品类别 | 封装 | 功率 | 阻值 | 精度 | 温度系数 |
|-------|-----|-----|--|--------------------------------------|--|
| 大功率电阻 | 220 | 30W | R100: 0.1Ω 0100: 10Ω 4700: 470Ω 1001: 1000Ω 1002: 10000Ω | D=±0.5% F=±1% J=±5% K: ±10% | D: ±50 E: ±100 F: ±200 G: ±300 -:未设定 |



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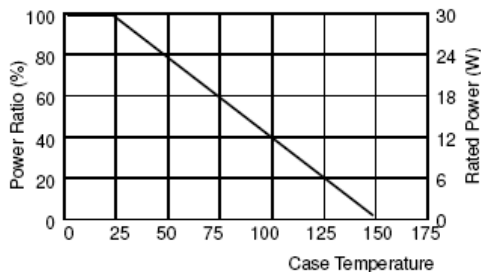
TO-220 (30W)

Electrical Characteristics Specifications

| Resistance Range | TCR (PPM/°C) | | | |
|------------------|---------------------|---------------------|---------------------|---------------------|
| | ±0.5% | ±1% | ±5% | ±10% |
| 0.05Ω - 0.1Ω | — | — | — | — |
| >0.1Ω - 1Ω | — | — | — | — |
| >1Ω - 3Ω | — | ±100、±200 | ±100、±200 | ±100、±200 |
| >3Ω - 10Ω | — | ±100 ±200 | ±100 ±200 | ±100 ±200 |
| >10Ω - 10KΩ | ±50 ±100 ±200 | ±50 ±100 ±200 | ±50 ±100 ±200 | ±50 ±100 ±200 |

- Operating Voltage: 350V max.
- Dielectric Strength: 1500VAC
- Insulation Resistance: 10GΩ min.
- Working Temperature Range: -65°C to +150°C
- Resistance Value < 1Ω is available

Derating Curve



Environmental Characteristics

| 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. working voltage 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°C~150°C, 100 cycles |
| Terminal Strength | ΔR±0.2% | (Pull Test) 2.4N |
| Vibration, High Frequency | ΔR±0.2% | 20g peak |

- Lead Material: Tinned Copper
- Maximum Torque: 0.9 N·m
- When in Free Air at 25°C, the TR30 is Rated for 2.25W
- 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

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TO-220 (35W)

Features

- 35 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

- Switching Power Supplies
- Snubbers Circuits
- Automated Machine Controller
- RF Power Amplifiers
- Low Energy Pulse Loading
- UPS
- Voltage Regulation

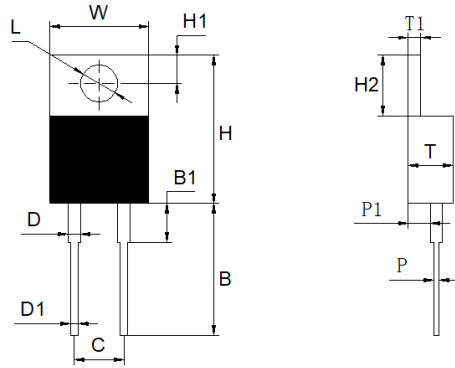
Construction



| | |
|---------------------|---------------|
| ① Radiator Fin | ④ Copper Lead |
| ② Alumina Substrate | ⑤ Molding |
| ③ Resistor Layer | |



Dimensions



| 型号 | W | H | H1 | B | B1 | D | D1 | L | C | T | T1 | H2 | P | P1 |
|---------------------|----------------|---------------|--------------|--------------|----------|--------------|---------------|--------------|---------------|-------------|-------------|---------------|---------------|---------------|
| PRT35 (Unit: mm) | 10.16 ±0.25 | 15.23 ±0.3 | 2.9 ±0.25 | 13.5 ±0.8 | Max 4 | 1.26 ±0.1 | 0.78 ±0.08 | 3.83 ±0.3 | 5.08 ±0.25 | 4.6 ±0.2 | 1.3 ±0.1 | 6.25 ±0.35 | 0.51 ±0.15 | 2.27 ±0.25 |

Part Numbering

| T0 | 220 | 35W | 120R | 5% | ±50PPM |
|-------|-----|-----|--|--------------------------------------|--|
| ↓ | ↓ | ↓ | ↓ | ↓ | ↓ |
| 产品类别 | 封装 | 功率 | 阻值 | 精度 | 温度系数 |
| 大功率电阻 | 220 | 35W | R100: 0.1Ω 0100: 10Ω 4700: 470Ω 1001: 1000Ω 1002: 10000Ω | D=±0.5% F=±1% J=±5% K: ±10% | D: ±50 E: ±100 F: ±200 G: ±300 -:未设定 |



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| 系列号 | TO-220 |
| 修订日期 | 2022-01-21 |
| 版本号 | Ho-A2 |

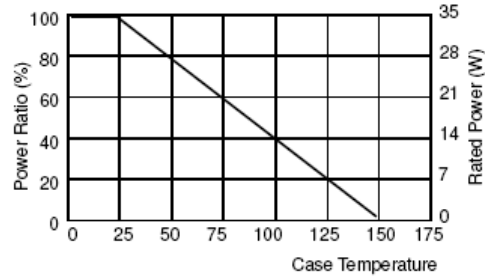
TO-220 (35W)

Electrical Characteristics Specifications

| Resistance Range | TCR (PPM/°C) | | | |
|------------------|---------------------|---------------------|---------------------|---------------------|
| | ±0.5% | ±1% | ±5% | ±10% |
| 0.05Ω - 0.1Ω | — | — | — | — |
| >0.1Ω - 1Ω | — | — | — | — |
| >1Ω - 3Ω | — | ±100、±200 | ±100、±200 | ±100、±200 |
| >3Ω - 10Ω | — | ±100 ±200 | ±100 ±200 | ±100 ±200 |
| >10Ω - 10KΩ | ±50 ±100 ±200 | ±50 ±100 ±200 | ±50 ±100 ±200 | ±50 ±100 ±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

Derating Curve



Environmental Characteristics

| 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. working voltage 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°C~150°C, 100 cycles |
| Terminal Strength | ΔR±0.2% | (Pull Test) 2.4N |
| Vibration, High Frequency | ΔR±0.2% | 20g peak |

- Lead Material: Tinned Copper
- Maximum Torque: 0.9 N-m
- Without a Heat Sink, When in Free Air at 25°C, the TR35 is Rated for 2.50W
- 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.

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| 系列号 | TO-220 |
| 修订日期 | 2022-02-18 |
| 版本号 | Ho-A2 |

TO-220 (50W)

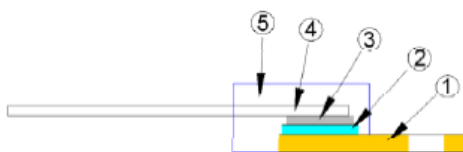
Features

- 50 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

- Switching Power Supplies
- Snubbers Circuits
- Automated Machine Controller
- RF Power Amplifiers.
- Low Energy Pulse Loading
- UPS
- Voltage Regulation

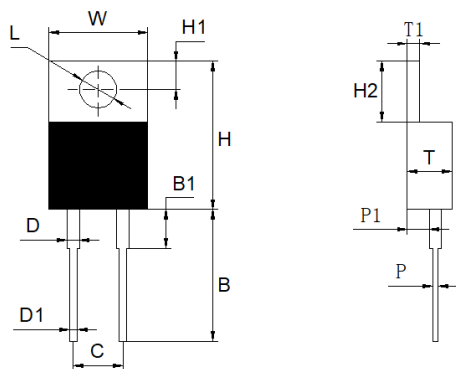
Construction



| | |
|---------------------|---------------|
| ① Radiator Fin | ④ Copper Lead |
| ② Alumina Substrate | ⑤ Molding |
| ③ Resistor Layer | |



Dimensions



| 型號 | W | H | H1 | B | B1 | D | D1 | L | C | T | T1 | H2 | P | P1 |
|---------------------|----------------|---------------|--------------|--------------|----------|--------------|---------------|--------------|---------------|-------------|-------------|---------------|---------------|---------------|
| PRT50 (Unit: mm) | 10.16 ±0.25 | 15.23 ±0.3 | 2.9 ±0.25 | 13.5 ±0.8 | Max 4 | 1.26 ±0.1 | 0.78 ±0.08 | 3.83 ±0.3 | 5.08 ±0.25 | 4.6 ±0.2 | 1.3 ±0.1 | 6.25 ±0.35 | 0.51 ±0.15 | 2.27 ±0.25 |

Part Numbering

| T0 | 220 | 50W | 120R | 5% | ±50PPM |
|-------|-----|-----|--|--------------------------------------|--|
| ↓ | ↓ | ↓ | ↓ | ↓ | ↓ |
| 产品类别 | 封装 | 功率 | 阻值 | 精度 | 温度系数 |
| 大功率电阻 | 220 | 50W | R100: 0.1Ω 0100: 10Ω 4700: 470Ω 1001: 1000Ω 1002: 10000Ω | D=±0.5% F=±1% J=±5% K: ±10% | D: ±50 E: ±100 F: ±200 G: ±300 -:未设定 |



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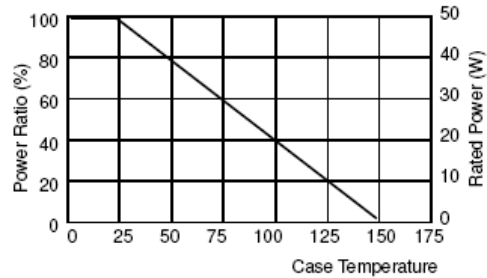
TO-220 (50W)

Electrical Characteristics Specifications

| Resistance Range | TCR (PPM/°C) | | | |
|------------------|---------------------|---------------------|---------------------|---------------------|
| | ±0.5% | ±1% | ±5% | ±10% |
| 0.05Ω - 0.1Ω | — | — | — | — |
| >0.1Ω - 1Ω | — | — | — | — |
| >1Ω - 3Ω | — | ±100、±200 | ±100、±200 | ±100、±200 |
| >3Ω - 10Ω | — | ±100 ±200 | ±100 ±200 | ±100 ±200 |
| >10Ω - 10KΩ | ±50 ±100 ±200 | ±50 ±100 ±200 | ±50 ±100 ±200 | ±50 ±100 ±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

Derating Curve



Environmental Characteristics

| 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. working voltage 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°C~150°C, 100 cycles |
| Terminal Strength | ΔR±0.2% | (Pull Test) 2.4N |
| Vibration, High Frequency | ΔR±0.2% | 20g peak |

- Lead Material: Tinned Copper
- Maximum Torque: 0.9 N-m
- Without a Heat Sink, When in Free Air at 25°C, the TR50 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.

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| | |
|------|------------|
| 系列号 | TO-247 |
| 修订日期 | 2022-02-18 |
| 版本号 | Ho-A2 |

TO-247 (100W)

Construction



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

Features

- 100 Watts at 25°C case temperature heat sink mounted
- TO-247 style power package
- Single M3 screw mounting to heat sink
- Molded case for protection and easy to mount
- Electrically isolated case
- Non-Inductive design

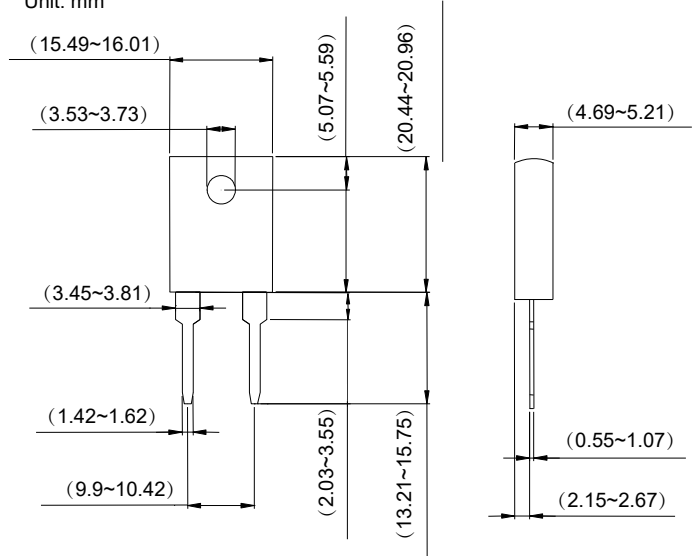
Applications

- Gate Resistors in Power Supplies
- Snubbers
- Load and Dumping Resistors in CRT Monitors
- Terminal Resistance in RF Power Amplifier
- Voltage Regulation
- Low Energy Pulse Loading
- UPS

Dimensions

| Type | Weight (g) (1000pcs) |
|-------|-------------------------|
| TR100 | 3381 |

Unit: mm



Part Numbering

| T0 | 247 | 100W | 15R | 5% | ±50PPM |
|-------|-----|------|--|--------------------------------------|---|
| ↓ | ↓ | ↓ | ↓ | ↓ | ↓ |
| 产品类别 | 封装 | 功率 | 阻值 | 精度 | 温度系数 |
| 大功率电阻 | 247 | 100W | R100: 0.1Ω 0100: 10Ω 4700: 470Ω 1001: 1000Ω 1002: 10000Ω | D=±0.5% F=±1% J=±5% K: ±10% | D: ±50 E: ±100 F: ±200 G: ±300 |



TO-247大功率电阻系列规格书

| | |
|------|------------|
| 系列号 | TO-247 |
| 修订日期 | 2022-02-18 |
| 版本号 | Ho-A2 |

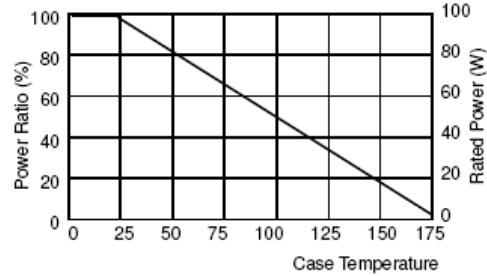
TO-247 (100W)

Electrical Characteristics Specifications

| Resistance Range | TCR (PPM/°C) | | |
|------------------|---------------------|---------------------|---------------------|
| | ±1% | ±5% | ±10% |
| 0.05Ω - 1Ω | | — | — |
| >1Ω - 3Ω | ±300 | | |
| >3Ω - 10Ω | ±100 ±200 | ±100 ±200 | ±100 ±200 |
| >10Ω - 10KΩ | ±50 ±100 ±200 | ±50 ±100 ±200 | ±50 ±100 ±200 |

- Operating Voltage: 350V Max.
- Dielectric Strength: 1800V AC
- Insulation Resistance: 10GΩ min.
- Working Temperature Range: -65°C to +175°C

Derating Curve



Environmental Characteristics

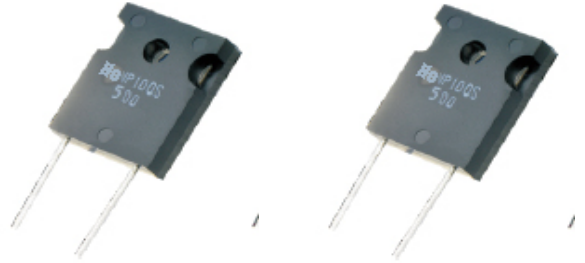
| Item | Requirement | Test Method |
|--|-------------------|--|
| Temperature Coefficient of Resistance (T.C.R.) | As Spec. | Referenced to 25°C, ΔR taken at +105°C |
| Load Life | ΔR±1.0% | Rated power, 2,000 hours |
| Solderability | 90% min. coverage | 245±5°C for 3 seconds |
| Momentary Overload | ΔR±0.5% | 1.5 times rated power and V (dc) ≤ 1.5V Max. for 5 seconds |
| Dielectric strength | ΔR±0.15% | 1800v AC, 60 seconds |
| Moisture resistance | ΔR±0.5% | -10°C~+65°C, RH>90%, cycle 240 hours |
| Thermal Shock | ΔR±0.5% | -65°C~150°C, 100 cycles |
| Terminal Strength | ΔR±0.2% | (Pull Test) 2.4N |
| Vibration, High Frequency | ΔR±0.4% | 20g peak |

- Lead Material: Tinned Copper
- When in Free Air at 25°C, the TR100 is Rated for 3.5W
- 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.

TO-247 封装，厚膜和薄膜技术，符合AEC-Q200 认证功率可达 140W热阻 0.9°C/W极好的频率特性

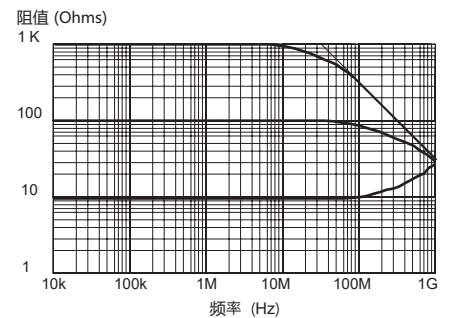
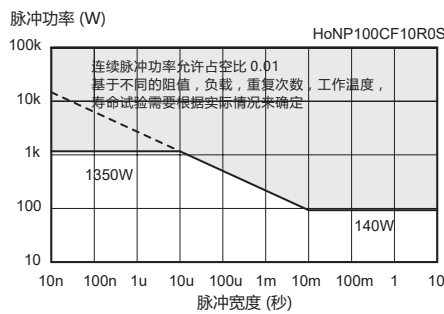
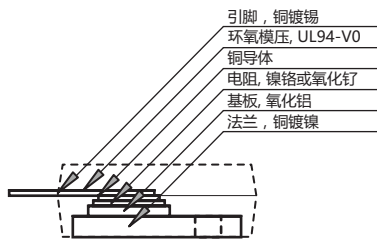
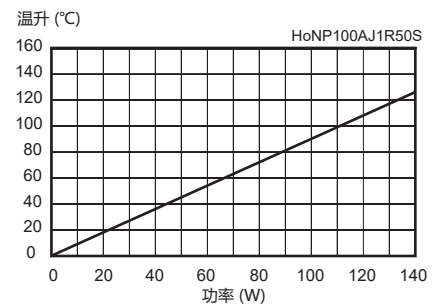
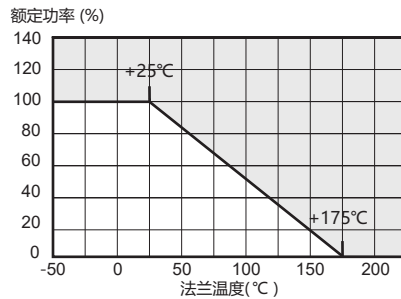
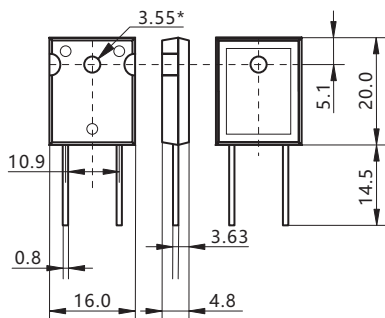
使用厚膜和薄膜两种电阻技术的 TO-247封装功率电阻

相比较厚膜电阻技术，薄膜电阻可以提供更好的温飘和精度。 HoNP100系列产品在10R-51KΩ的阻值范围内使用金属化薄膜电阻技术，不仅可以实现高达140W的功率，而且可以提供50ppm的温飘和1% 的阻值精度。本系列在0.02-510K Ω的阻值范围内也可以提供标准厚膜电阻技术。



| 系列 | 功率 | 阻值范围 | 阻值标准 | 温飘 | 可选精度 | 电阻技术 | 热阻 | 绝缘电压 | 最大工作电流 | 工作温度 | 频率特性 | |
|----------|------|------------|------|---------|----------|------|---------|---------|--------|------------|-------|------|
| | | | | | | | | | | | 并联电容 | 串联电感 |
| HoNP100H | 140W | 0.05-0.091 | E12 | ±250ppm | ±5% | 厚膜 | 0.9°C/W | 2000VAC | 25A | -55~+155°C | 4.5pF | 13nH |
| HoNP100A | 140W | 0.1-9.9R | E24 | ±100ppm | ±1%, ±5% | 厚膜 | 0.9°C/W | 2000VAC | 25A | -55~+155°C | 4.5pF | 13nH |
| HoNP100C | 140W | 10-51K | E24 | ±50ppm | ±1% | 薄膜 | 0.9°C/W | 2000VAC | 25A | -55~+155°C | 4.5pF | 13nH |

规格和参数



选型表

选型示例：HoNP100CF10R0S (RNP100C, ±50ppm/°C, 10R, ±1% 标准品)



系列号
HoNP100H
HoNP100A
HoNP100C

精度
F=±1%
J=±5%

阻值编码

R020=0.02R 1R00=1R
10R0=10R 1000=100R
1001=1K 1002=10K
1003=100K 5103=510K

定制编码
S=标准品
A-Z=识别码

