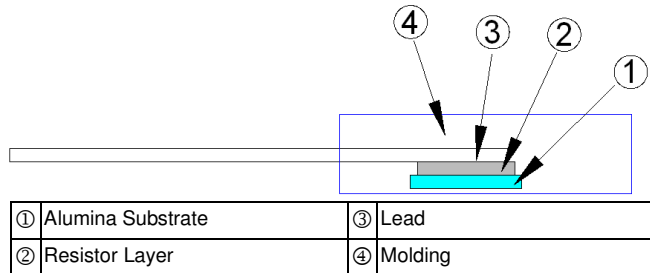


系列号	TO-220
修订日期	2022-01-20
版本号	Ho-A0

## TO-220 (1/4W)

### Construction



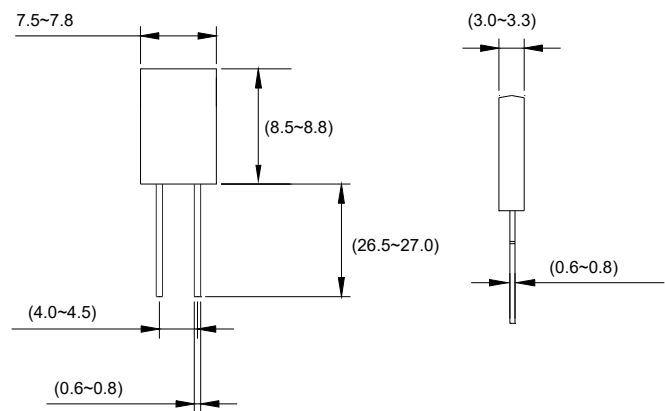
### Features

- 1/4 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

### Dimensions

Type	Weight (g) (1000pcs)
TR1/4	1290

Unit: mm



### Applications

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

### Part Numbering

TO	220	1/4W	4KR	1%	±50PPM
产品类别	封装	功率	阻值	精度	温度系数
大功率电阻	220	1/4W	1R~10KR	D=±0.5% F=±1% J=±5% K: ±10%	D: ±50 E: ±100 F: ±200 G: ±300



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 2022-01-20

版本号 Ho-A0

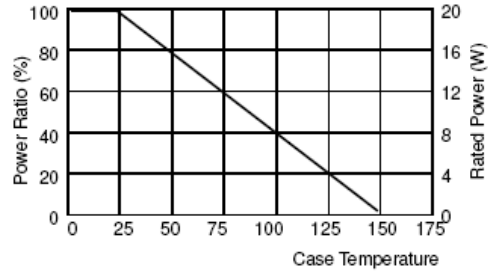
## TO-220 (1/4W)

### Electrical Characteristics Specifications

Resistance Range	TCR (PPM/°C)			
	±0.5%	±1%	±5%	±10%
0.002Ω - 0.1Ω			-	-
>0.1Ω - 1Ω			-	-
>1Ω - 3Ω		±300	±300	±300
>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

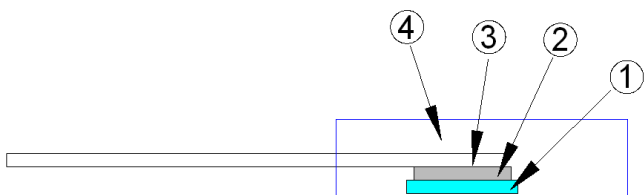
Test Item	Requirement	Test Method
Temperature Coefficient of Resistance (T.C.R.)	As Spec.	Referenced to 25°C, ΔR taken at +105°C
Short Time Overload	ΔR±0.3%	2 times rated power with applied voltage not to exceed 1.5 times Maximum continuous operating voltage for 5 seconds
Load Life	ΔR±1.0%	2,000 hours 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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## TO-220 (20W)

### Construction



① Alumina Substrate	③ Lead
② Resistor Layer	④ Molding



### 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

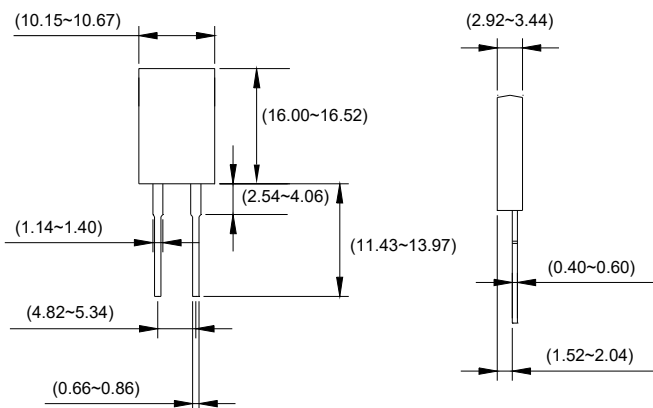
### Applications

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

### Dimensions

Type	Weight (g) (1000pcs)
TR20	1290

Unit: mm



### 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	1R~10KR	D=±0.5% F=±1% J=±5% K: ±10%	D: ±50 E: ±100 F: ±200 G: ±300



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# 大功率电阻系列规格书

系列号	TO-220
修订日期	2022-01-20
版本号	Ho-A0

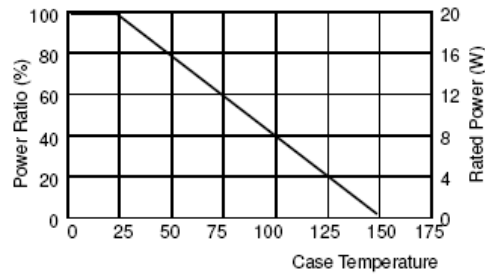
## TO-220 (20W)

### Electrical Characteristics Specifications

Resistance Range	TCR (PPM/°C)			
	±0.5%	±1%	±5%	±10%
0.002Ω - 0.1Ω	—	—	—	—
>0.1Ω - 1Ω	—	—	—	—
>1Ω - 3Ω	—	±300	±300	±300
>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

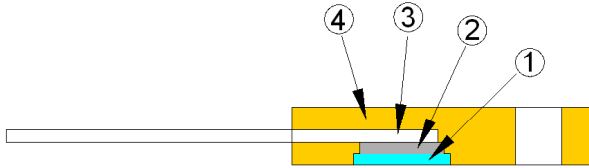
- Lead Material: Tinned Copper
- Without a Heat Sink
- When in Free Air at 25°C, the TR20 is Rated for 2.25W
- The Case Temperature is to be used for the Definition of the Applied Power Limit
- The Case Temperature Measurement must be made with a Thermocouple Contacting the Center of the Component mounted on the Designed Heat Sink.
- Thermal Grease should be Applied Properly

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系列号	TO-220
修订日期	2022-01-20
版本号	Ho-A0

## TO-220 (30W)

### Construction



① Alumina Substrate	③ Lead
② Resistor Layer	④ Molding



### Features

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

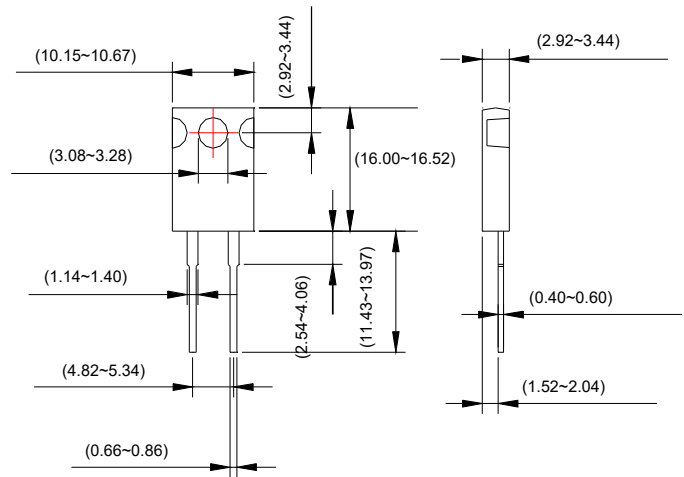
### Applications

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

### Dimensions

Type	Weight (g) (1000pcs)
TR30	1155

Unit: mm



### Part Numbering

T0	220	30W	10R	5%	±50PPM
↓	↓	↓	↓	↓	↓
产品类别	封装	功率	阻值	精度	温度系数
大功率电阻	220	30W	1R~10KR	D=±0.5% F=±1% J=±5% K: ±10%	D: ±50 E: ±100 F: ±200 G: ±300

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

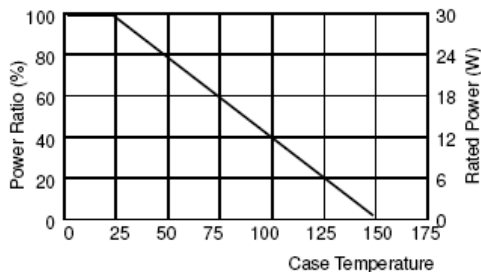
## TO-220 (30W)

### Electrical Characteristics Specifications

Resistance Range	TCR (PPM/°C)			
	±0.5%	±1%	±5%	±10%
0.002Ω - 0.1Ω	—	—	—	—
>0.1Ω - 1Ω	—	—	—	—
>1Ω - 3Ω	—	±300	±300	±300
>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

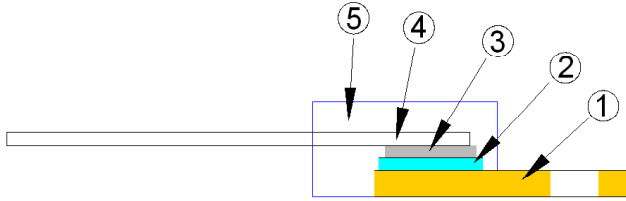
Item	Requirement	Test Method
Temperature Coefficient of Resistance (T.C.R.)	As Spec.	Referenced to 25°C, ΔR taken at +105°C
Short Time Overload	ΔR±0.3%	2 times rated power with applied voltage not to exceed 1.5 times maximum continuous operating voltage for 5 seconds
Load Life	ΔR±1.0%	2,000 hours at 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)

### Construction



① Flange	④ Lead
② Alumina Substrate	⑤ Molding
③ Resistor Layer	



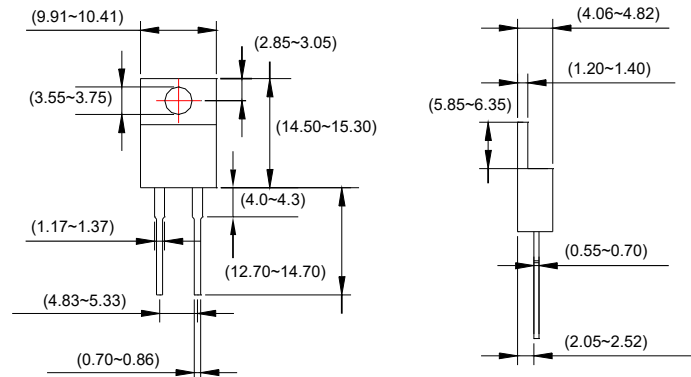
### Features

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

### Dimensions

Type	Weight (g) (1000pcs)
TR35	1902

Unit: mm



### Applications

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

### Part Numbering

T0	220	35W	47R	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	1R~10KR	D: ±0.5% F: ±1% J: ±5% K: ±10%	D: ±50 E: ±100 F: ±200 G: ±300

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	2022-01-20
版本号	Ho-A0

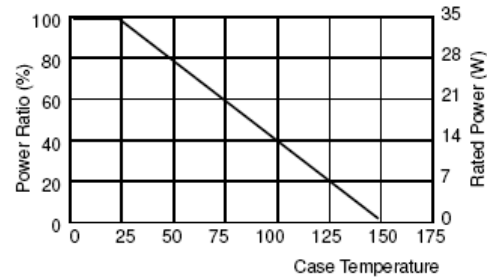
## TO-220 (35W)

### Electrical Characteristics Specifications

Resistance Range	TCR (PPM/°C)			
	±0.5%	±1%	±5%	±10%
0.002Ω - 0.1Ω			—	—
>0.1Ω - 1Ω			—	—
>1Ω - 3Ω		±300	±300	±300
>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

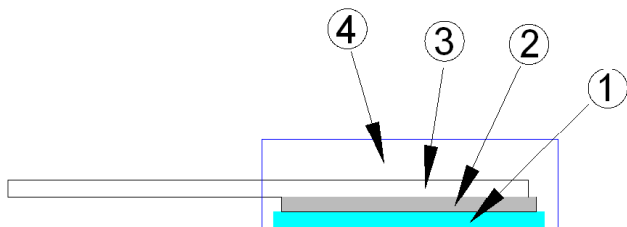
- Lead Material: Tinned Copper
- Maximum Torque: 0.9 N-m
- Without a Heat Sink, When in Free Air at 25°C, the TR35 is Rated for 2.50W
- The Case Temperature is to be used for the Definition of the Applied Power Limit
- The Case Temperature Measurement must be made with a Thermocouple Contacting the Center of the Component mounted on the Designed Heat Sink.
- Thermal Grease should be Applied Properly.

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## TO-220 (50W)

### Construction



① Alumina Substrate	③ Lead
② Resistor Layer	④ Molding



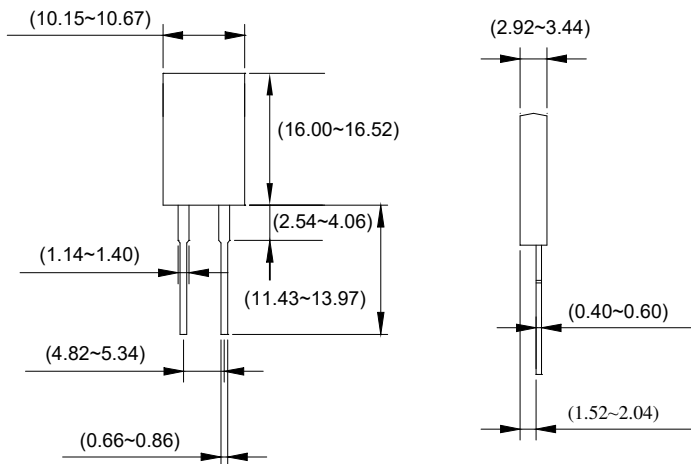
### Features

- 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

### Dimensions

Type	Weight (g) (1000pcs)
TR50	1290

Unit: mm



### Applications

- Switching Power Supplies
- Non-inductive Design for High Frequency
- Pulsing Applications
- UPS
- Voltage Regulation

### Part Numbering

T0	220	50W	15R	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	1R~10KR	D: ±0.5% F: ±1% J: ±5% K: ±10%	D: ±50 E: ±100 F: ±200 G: ±300

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

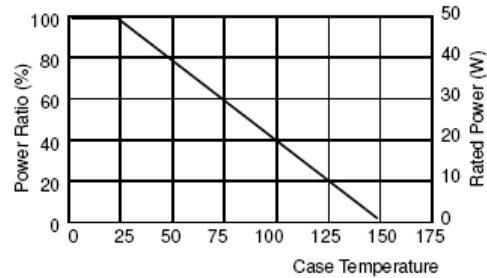
## TO-220 (50W)

### Electrical Characteristics Specifications

Resistance Range	TCR (PPM/°C)			
	±0.5%	±1%	±5%	±10%
0.002Ω - 1Ω			—	—
>1Ω - 3Ω		±300	±300	±300
>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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