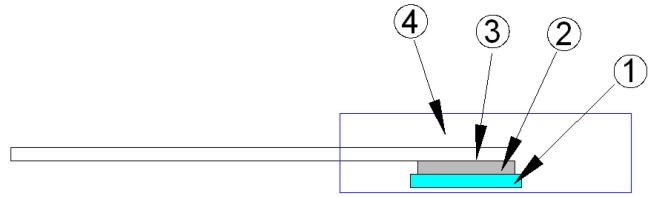


Construction



② 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

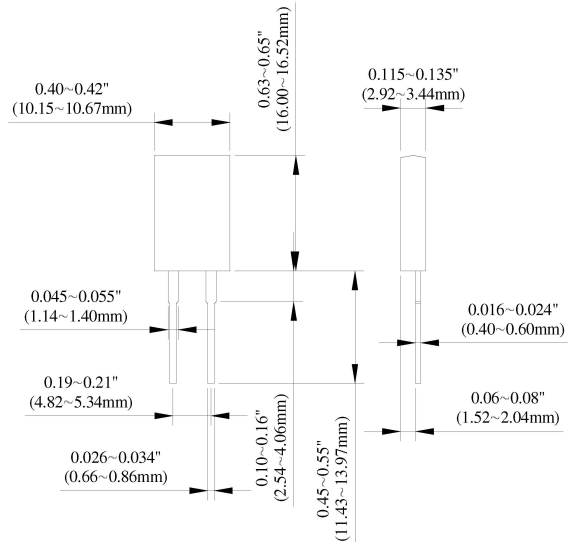
Unit: mm

Type	Weight (g) (1000pcs)
FBA20	1290

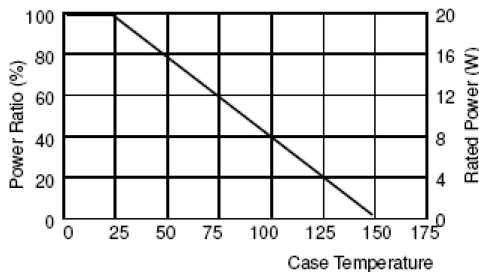
Electrical Characteristics Specifications

Resistance Range	TCR (PPM/°C)			
	±0.5%	±1%	±5%	±10%
0.005Ω - 0.1Ω	/	/	-	-
>0.1Ω - 1Ω	/	/	-	-
>1Ω - 3Ω	/	±300	±300	±300
>3Ω - 10Ω	/	±100	±100	±100
>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



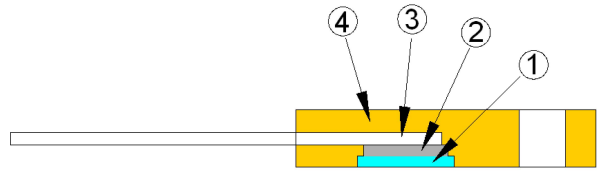
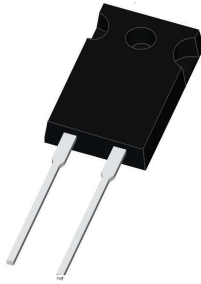
Derating Curve



Part Numbering

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

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

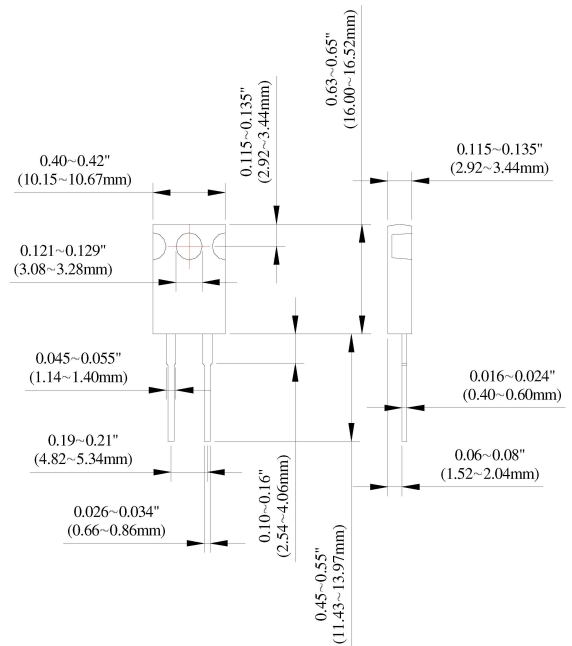
Unit: mm

Type	Weight (g) (1000pcs)
FBA30	1155

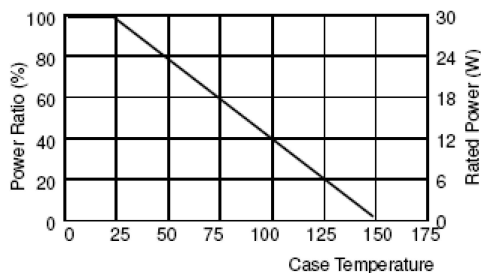
Electrical Characteristics Specifications

Resistance Range	TCR (PPM/°C)			
	±0.5%	±1%	±5%	±10%
0.005Ω - 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: 420V max.
- Dielectric Strength: 1800VAC
- Insulation Resistance: 10GΩ min.
- Working Temperature Range: -65°C to +150°C
- Resistance Value <1Ω is available



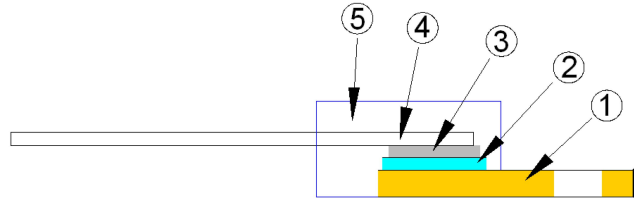
Derating Curve



Part Numbering

FBA	30	J	B	D	1001
Product Type	Power	Resistance Tolerance	Packaging Code	TCR (PPM/°C)	Resistance
	30: 30 Watts	D: ±0.5% F: ±1% J: ±5% K: ±10%	B: Bulk	D: ±50 E: ±100 F: ±200 G: ±300 - : No Specified	R100: 0.1Ω 0100: 10Ω 4700: 470Ω 1001: 1000Ω 1002: 10000Ω

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

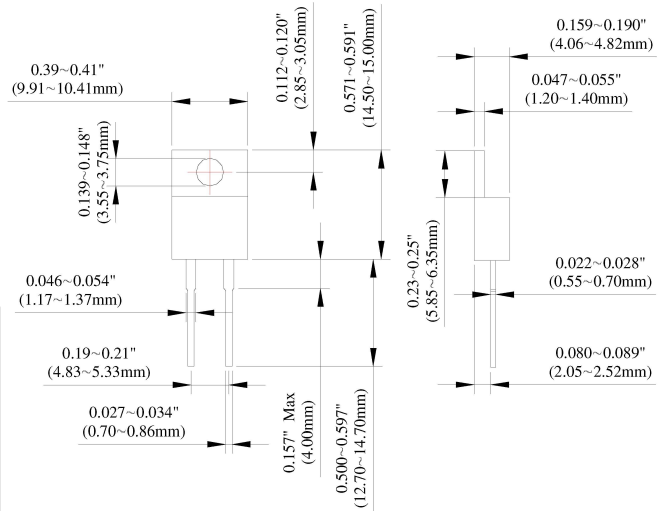
Dimensions

Unit: mm

Type	Weight (g) (1000pcs)
FBA35	1902

Applications

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

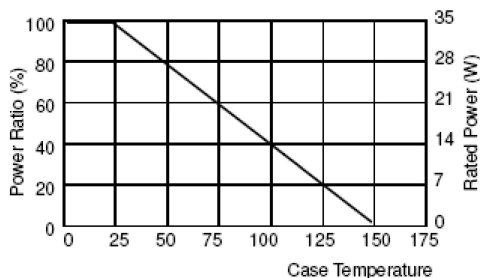


Electrical Characteristics Specifications

Resistance Range	TCR (PPM/°C)			
	±0.5%	±1%	±5%	±10%
0.005Ω - 0.1Ω			–	–
>0.1Ω - 1Ω			–	–
>1Ω - 3Ω		±50	±300	±300
>3Ω - 10Ω		±50	±100	±100
>10Ω - 10KΩ	±50	±50	±50	±50
	±100	±100	±100	±100
	±200	±200	±200	±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

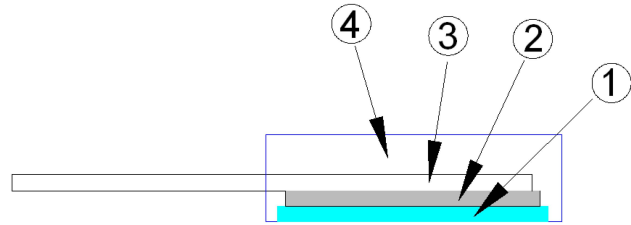
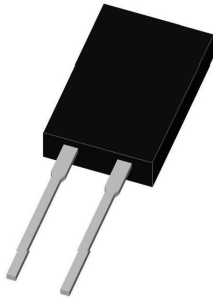
Derating Curve



Part Numbering

FBA	35	J	B	D	1001
Product Type	Power	Resistance Tolerance	Packaging Code	TCR (PPM/°C)	Resistance
	35: 35 Watts	D: ±0.5% F: ±1% J: ±5% K: ±10%	B: Bulk	D: ±50 E: ±100 F: ±200 G: ±300 - : No Specified	R100: 0.1Ω 0100: 10Ω 4700: 470Ω 1001: 1000Ω 1002: 10000Ω

Construction



① Alumina Substrate	③ Lead
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

Applications

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

Dimensions

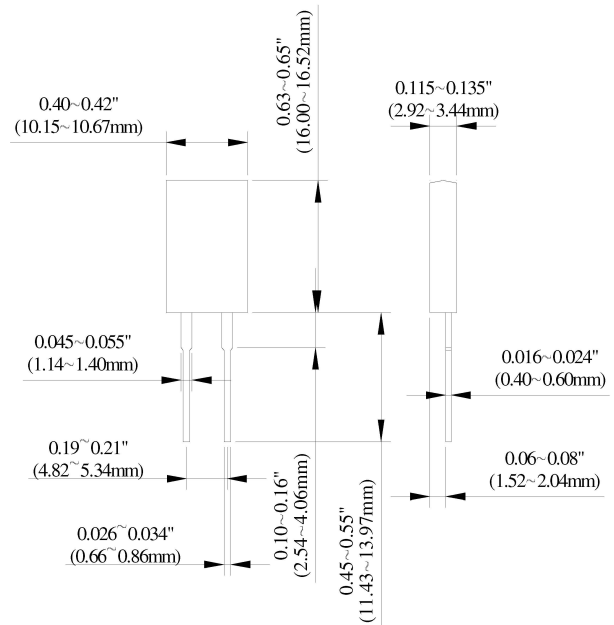
Unit: mm

Type	Weight (g) (1000pcs)
FBA50	1290

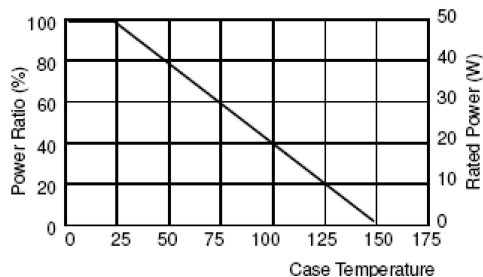
Electrical Characteristics Specifications

Resistance Range	TCR (PPM/°C)			
	±0.5%	±1%	±5%	±10%
0.0051Ω - 1Ω			–	–
>1Ω - 3Ω		±50	±300	±300
>3Ω - 10Ω		±50	±100	±100
>10Ω - 10KΩ	±50	±50	±50	±50
	±100	±100	±100	±100
	±200	±200	±200	±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



Part Numbering

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

■ 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	$\Delta R \pm 0.3\%$	2 times rated power with applied voltage not to exceed 1.5 times Maximum continuous operating voltage for 5 seconds
Load Life	$\Delta R \pm 1.0\%$	2,000 hours at rated power
Damp Heat with Load	$\Delta R \pm 0.5\%$	40 \pm 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 \pm 5°C for 3 seconds
Thermal Shock	$\Delta R \pm 0.3\%$	-65°C~150°C, 100 cycles
Terminal Strength	$\Delta R \pm 0.2\%$	(Pull Test) 2.4N
Vibration, High Frequency	$\Delta R \pm 0.2\%$	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