HIGH VOLTAGE POWER SCHOTTKY RECTIFIER MBR10100C

General Description

High voltage dual Schottky rectifier suited for switch mode power supplies and other power converters. This device is intended for use in medium voltage operation, and particularly, in high frequency circuits where low switching losses and low noise are required.

The MBR10100C is available in standard TO-220-3, TO-220-3 (2) and TO-220F-3 packages.

Features

- High Surge Capacity
- 150°C Operating Junction Temperature
- 10A Total (5A Per Diode Leg)
- Guard-ring for Stress Protection
- Pb-free Packages are available

Main Product Characteristics

$I_{F(AV)}$	2×5A
V_{RRM}	100V
T_J	150°C
V_F(max)	0.75V

Mechanical Characteristics

- Case: Epoxy, Molded
- Epoxy Meets UL 94V-0 @ 0.125in.
- Weight (Approximately): 1.9Grams (TO-220-3, TO-220-3 (2) and TO-220F-3)
- Finish: All External Surfaces Corrosion Resistant and Terminal
- Leads are Readily Solderable
- Lead Temperature for Soldering Purposes: 260°C Maximum for 10 Seconds

Applications

- Power Supply Output Rectification
- Power Management
- Instrumentation

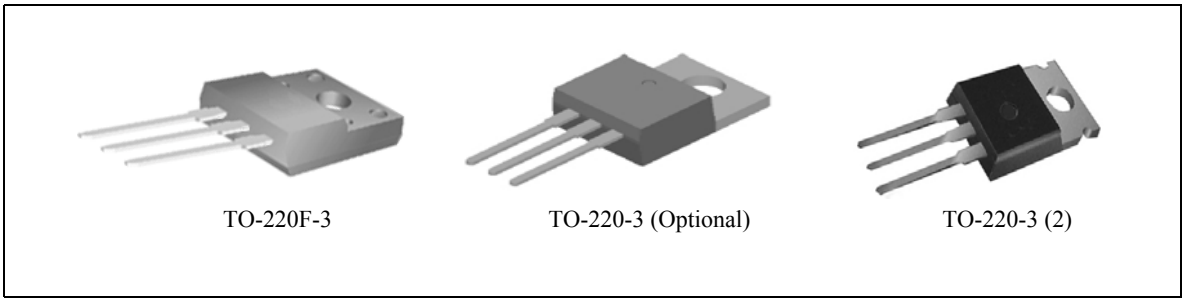


Figure 1. Package Types of MBR10100C

HIGH VOLTAGE POWER SCHOTTKY RECTIFIER MBR10100C

Pin Configuration

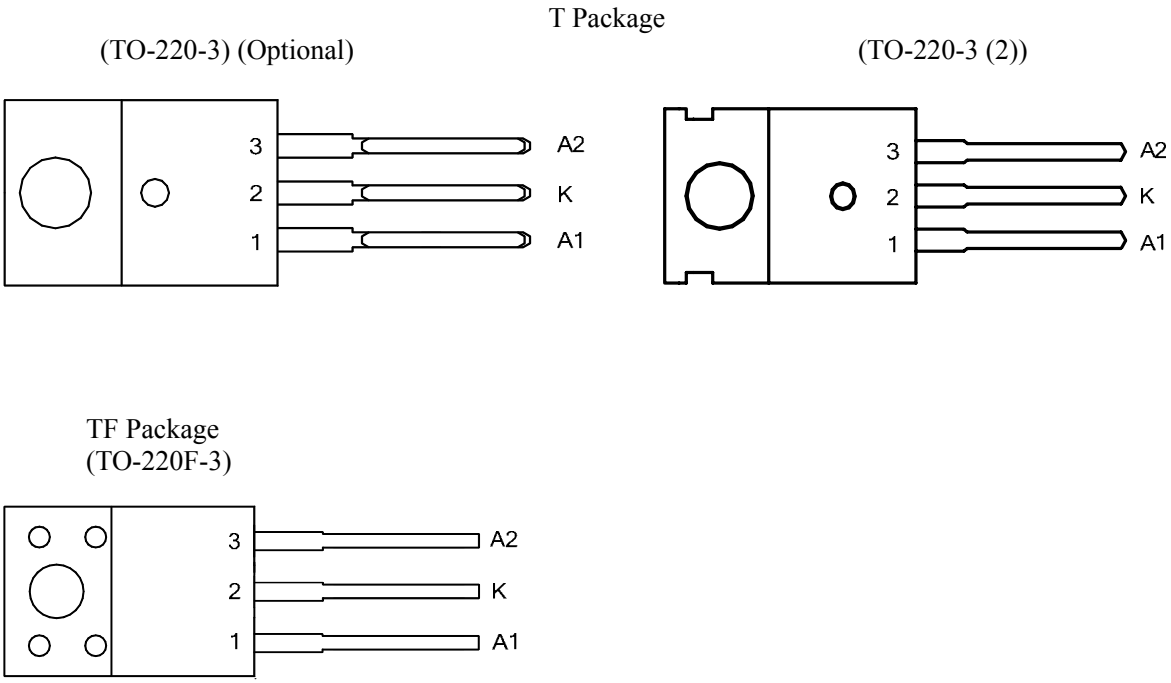


Figure 2. Pin Configuration of MBR10100C (Top View)

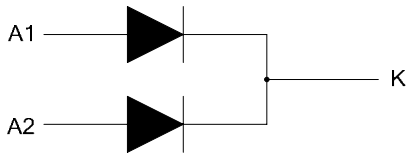
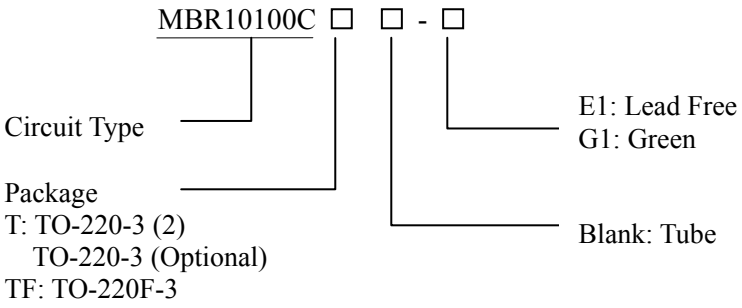


Figure 3. Internal Structure of MBR10100C

HIGH VOLTAGE POWER SCHOTTKY RECTIFIER MBR10100C

Ordering Information



Package	Part Number		Marking ID		Packing Type
	Lead Free	Green	Lead Free	Green	
TO-220-3 (2)	MBR10100CT-E1	MBR10100CT-G1	MBR10100CT-E1	MBR10100CT-G1	Tube
TO-220F-3	MBR10100CTF-E1	MBR10100CTF-G1	MBR10100CTF-E1	MBR10100CTF-G1	Tube

BCD Semiconductor's Pb-free products, as designated with "E1" suffix in the part number, are RoHS compliant. Products with “G1” suffix are available in green packages.

HIGH VOLTAGE POWER SCHOTTKY RECTIFIER MBR10100C

Absolute Maximum Ratings (Per Diode Leg) (Note 1)

Parameter	Symbol	Value	Unit
Peak Repetitive Reverse Voltage Working Peak Reverse Voltage DC Blocking Voltage	V_{RRM} V_{RWM} V_R	100	V
Average Rectified Forward Current (Rated V_R) T_C=136°C	$I_{F(AV)}$	5	A
Peak Repetitive Forward Current (Rated V_R, Square Wave, 20kHz) T_C=134°C	I_{FRM}	10	A
Non Repetitive Peak Surge Current (Surge Applied at Rated Load Conditions Half Wave, Single Phase, 60Hz)	I_{FSM}	100	A
Operating Junction Temperature Range (Note 2)	T_J	150	°C
Storage Temperature Range	T_{STG}	-55 to 150	°C
Voltage Rate of Change (Rated V_R)	dv/dt	10000	V/μs
ESD (Machine Model=C)		> 400	V
ESD (Human Body Model=3B)		> 8000	V

Note 1: Stresses greater than those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated under "Recommended Operating Conditions" is not implied. Exposure to "Absolute Maximum Ratings" for extended periods may affect device reliability.
Note 2: The heat generated must be less than the thermal conductivity from Junction−to−Ambient: $dP_D/dT_J < 1/\theta_{JA}$.

Recommended Operating Conditions

Parameter	Symbol	Condition	Value		Unit
Maximum Thermal Resistance	θ_{JC}	Junction to Case	TO-220-3/ TO-220-3 (2)	3.0	°C/W
			TO-220F-3	4.5	
	θ_{JA}	Junction to Ambient	TO-220-3/ TO-220-3 (2)	60	°C/W
			TO-220F-3	60	

Electrical Characteristics

Parameter	Symbol	Conditions	Value	Unit
Maximum Instantaneous Forward Voltage Drop (Note 3)	V_F	I_F=5A, T_C=25℃	0.85	V
		I_F=5A, T_C=125°C	0.75	
		I_F=10A, T_C=25°C	0.95	
		I_F=10A, T_C=125°C	0.85	
Maximum Instantaneous Reverse Current (Note 3)	I_R	Rated DC Voltage, T_C=125℃	6.0	mA
		Rated DC Voltage, T_C=25℃	0.1	

Note 3: Pulse Test: Pulse Width=300μs, Duty Cycle≤2.0%.

Typical Performance Characteristics

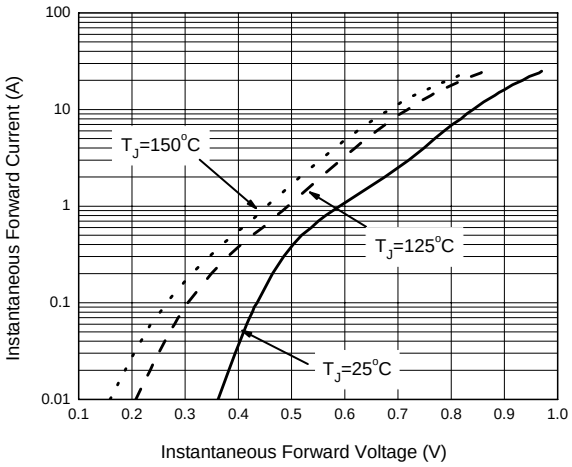


Figure 4. Typical Forward Voltage Per Diode

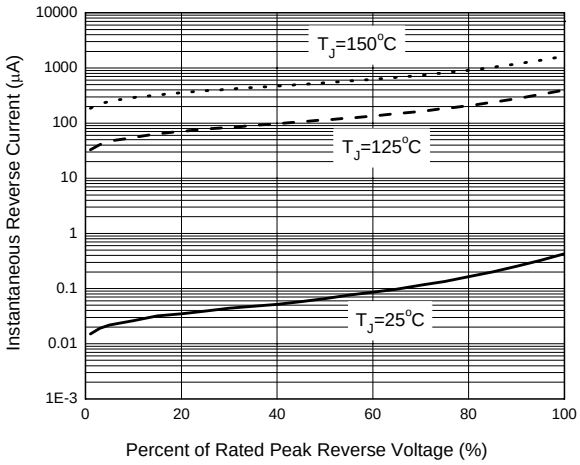


Figure 5. Typical Reverse Current Per Diode

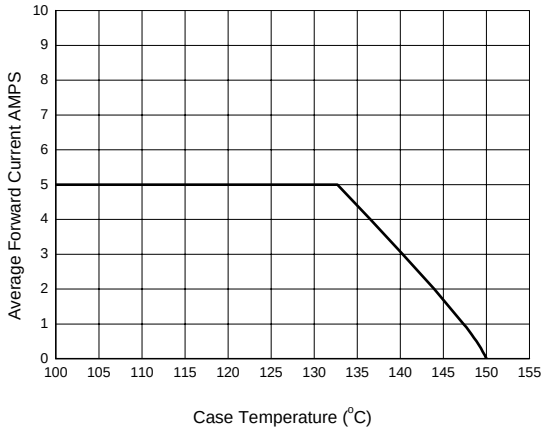
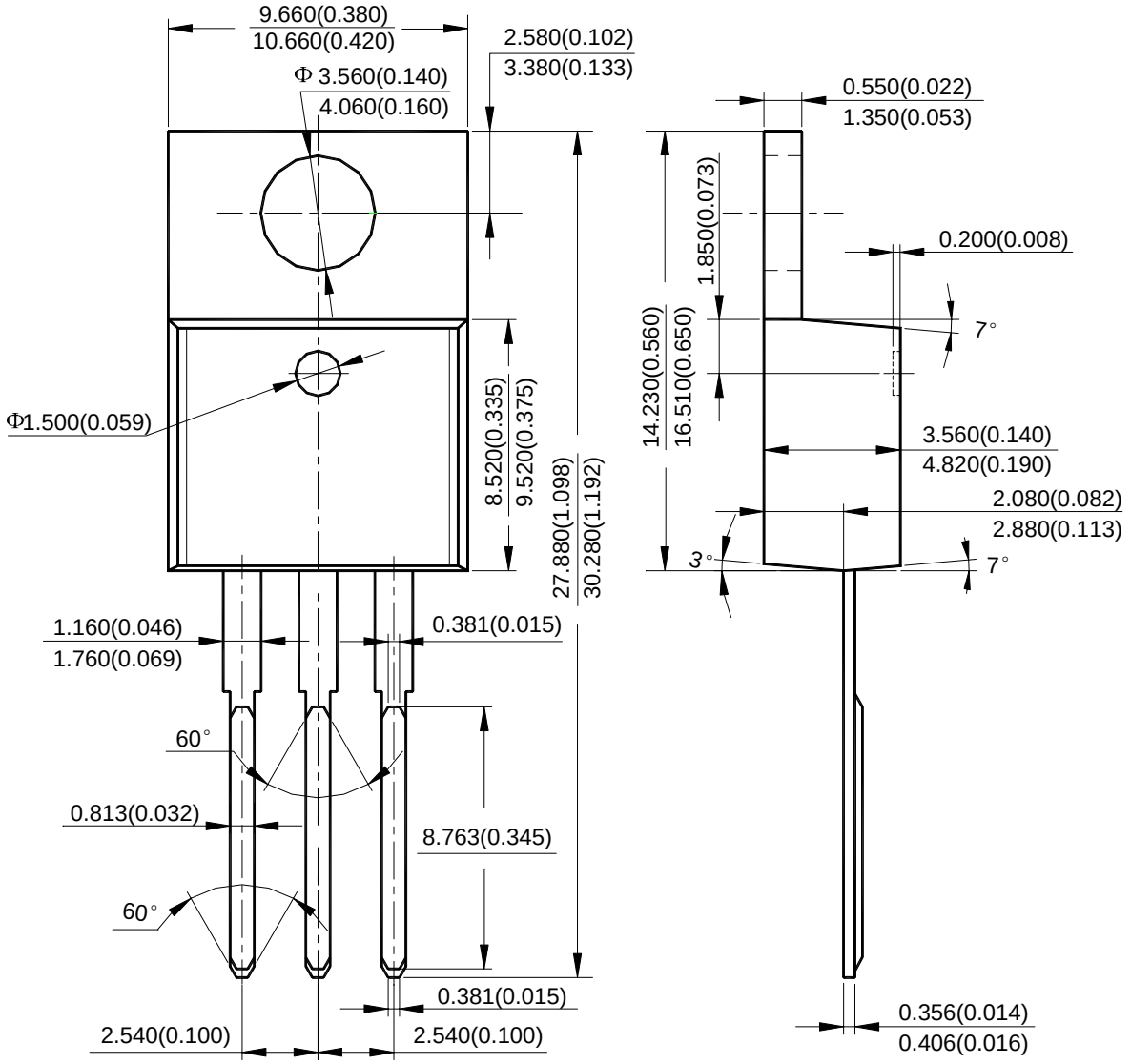


Figure 6. Average Forward Current vs. Case Temperature (Per Diode)

Mechanical Dimensions

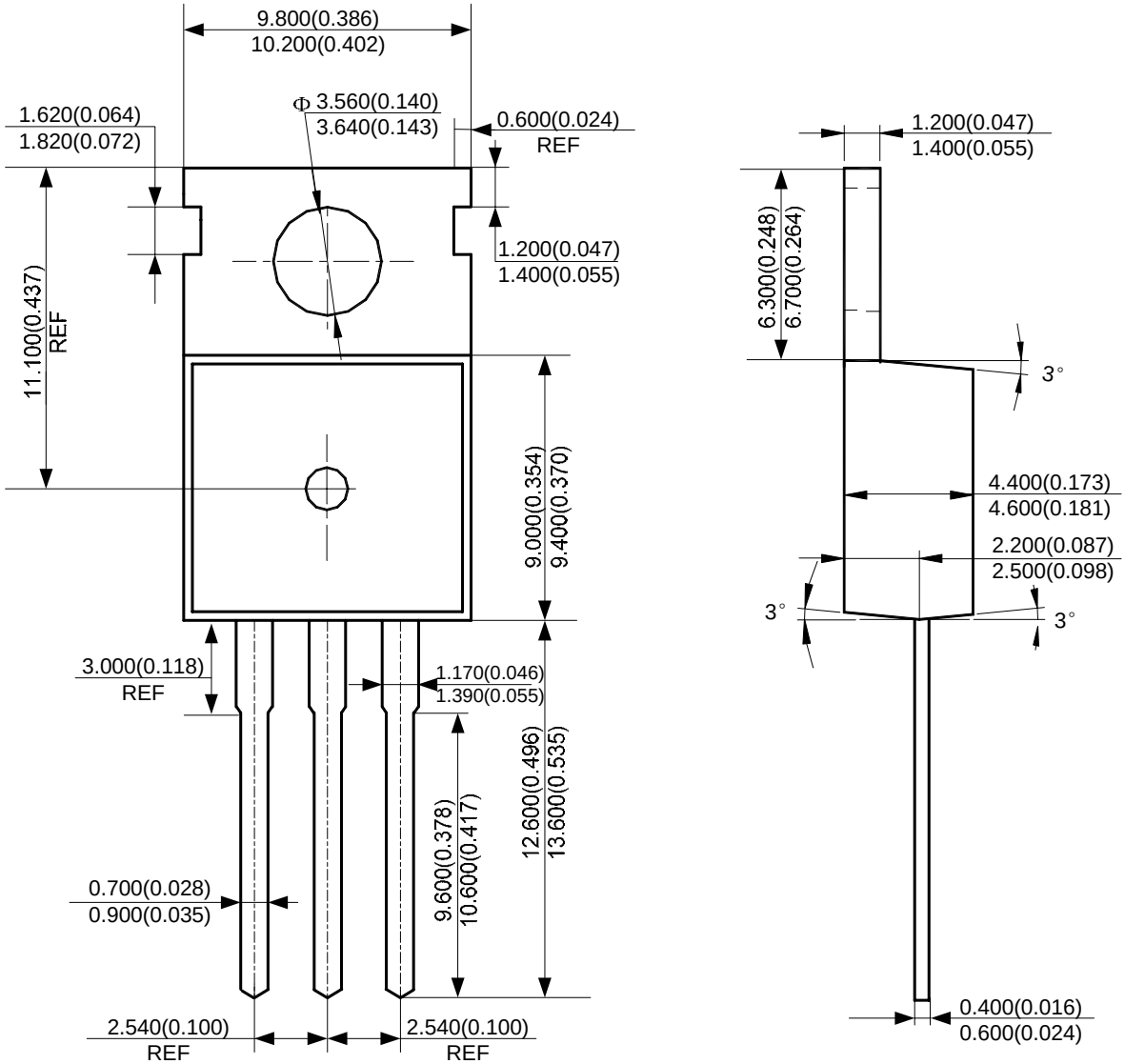
TO-220-3 **Unit: mm(inch)**

(Optional)



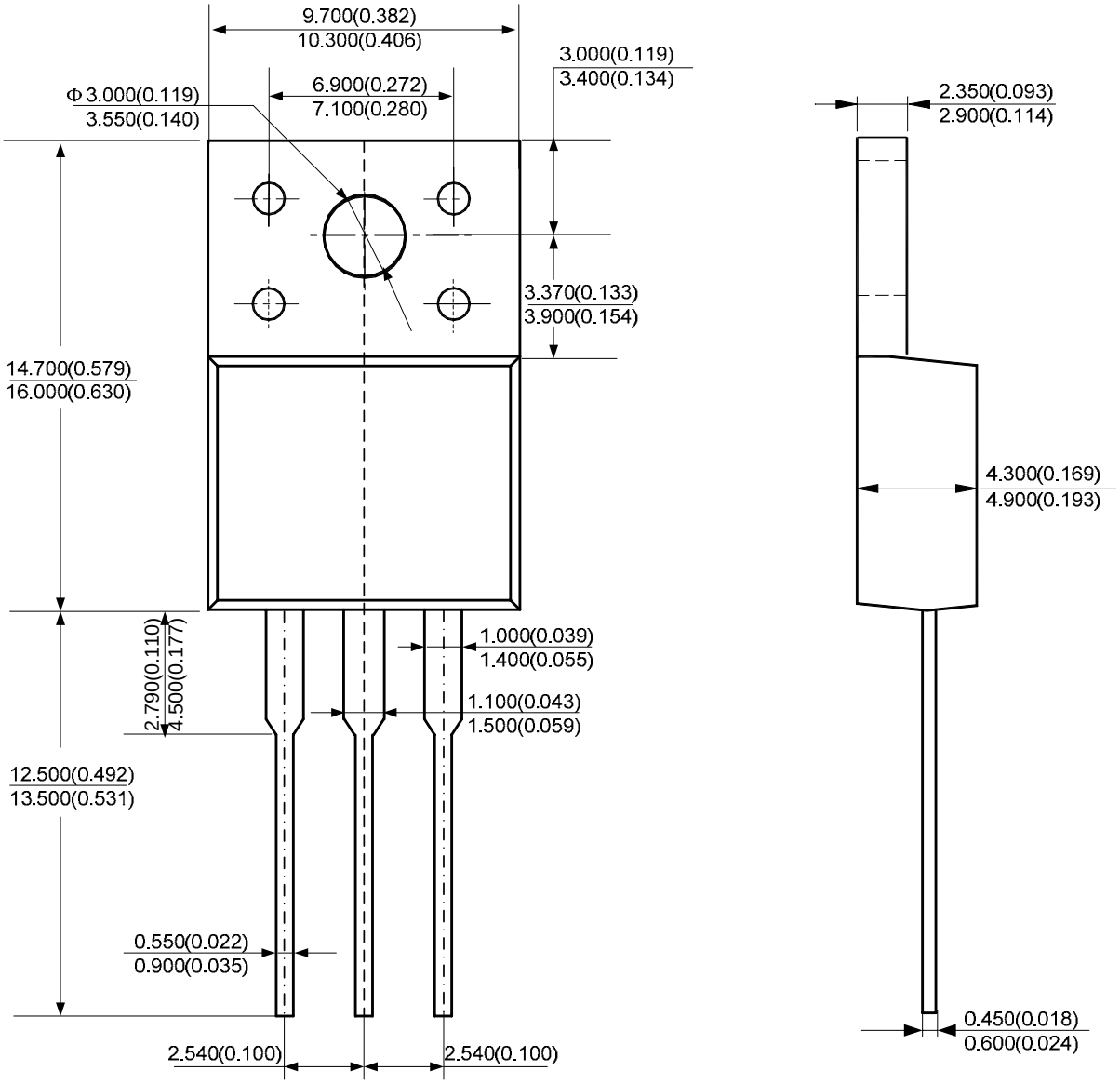
Mechanical Dimensions (Continued)

TO-220-3 (2) **Unit: mm(inch)**



Mechanical Dimensions (Continued)

TO-220F-3 **Unit: mm(inch)**



BCD Semiconductor Manufacturing Limited

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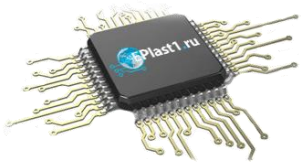

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