



# BCR8PM-12L

Triac

Medium Power Use

REJ03G0303-0200

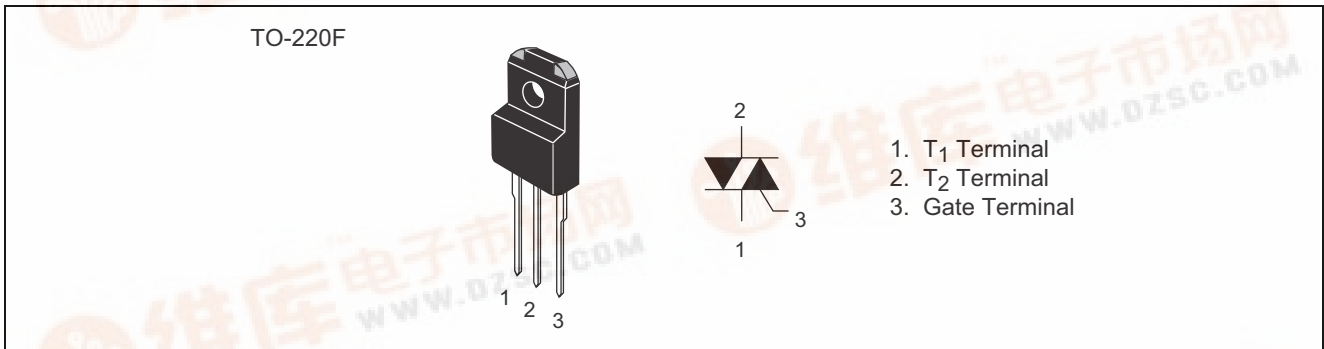
Rev.2.00

Nov.08.2004

## Features

- $I_T(RMS)$  : 8 A
- $V_{DRM}$  : 600 V
- $I_{FGT1}$ ,  $I_{RGT1}$ ,  $I_{RGT3}$  : 30 mA (20 mA)<sup>Note5</sup>
- $V_{ISO}$  : 2000 V
- Insulated Type
- Planar Passivation Type
- UL Recognized : Yellow Card No. E223904  
File No. E80271

## Outline



## Applications

Switching mode power supply, light dimmer, electronic flasher unit, control of household equipment such as TV sets, stereo systems, refrigerator, washing machine, infrared kotatsu, and carpet, solenoid driver, small motor control, copying machine, electric tool, electric heater control, and other general purpose control applications

## Maximum Ratings

Parameter	Symbol	Voltage class	Unit
		12	
Repetitive peak off-state voltage <sup>Note1</sup>	$V_{DRM}$	600	V
Non-repetitive peak off-state voltage <sup>Note1</sup>	$V_{DSM}$	720	V



## BCR8PM-12L

Parameter	Symbol	Ratings	Unit	Conditions
RMS on-state current	$I_{T(RMS)}$	8	A	Commercial frequency, sine full wave 360° conduction, $T_c = 88^\circ\text{C}$
Surge on-state current	$I_{TSM}$	80	A	60Hz sinewave 1 full cycle, peak value, non-repetitive
$I^2t$ for fusing	$I^2t$	26	$\text{A}^2\text{s}$	Value corresponding to 1 cycle of half wave 60Hz, surge on-state current
Peak gate power dissipation	$P_{GM}$	5	W	
Average gate power dissipation	$P_{G(AV)}$	0.5	W	
Peak gate voltage	$V_{GM}$	10	V	
Peak gate current	$I_{GM}$	2	A	
Junction temperature	$T_j$	- 40 to +125	$^\circ\text{C}$	
Storage temperature	$T_{stg}$	- 40 to +125	$^\circ\text{C}$	
Mass	—	2.0	g	Typical value
Isolation voltage	Viso	2000	V	$T_a = 25^\circ\text{C}$ , AC 1 minute, $T_1 \cdot T_2 \cdot G$ terminal to case

Notes: 1. Gate open.

## Electrical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test conditions	
Repetitive peak off-state current	$I_{DRM}$	—	—	2.0	mA	$T_j = 125^\circ\text{C}$ , $V_{DRM}$ applied	
On-state voltage	$V_{TM}$	—	—	1.6	V	$T_c = 25^\circ\text{C}$ , $I_{TM} = 12\text{ A}$ , Instantaneous measurement	
Gate trigger voltage <sup>Note2</sup>	I	$V_{FGTI}$	—	—	1.5	V	$T_j = 25^\circ\text{C}$ , $V_D = 6\text{ V}$ , $R_L = 6\ \Omega$ , $R_G = 330\ \Omega$
	II	$V_{RGTI}$	—	—	1.5	V	
	III	$V_{RGTIII}$	—	—	1.5	V	
Gate trigger current <sup>Note2</sup>	I	$I_{FGTI}$	—	—	30 <sup>Note5</sup>	mA	$T_j = 25^\circ\text{C}$ , $V_D = 6\text{ V}$ , $R_L = 6\ \Omega$ , $R_G = 330\ \Omega$
	II	$I_{RGTI}$	—	—	30 <sup>Note5</sup>	mA	
	III	$I_{RGTIII}$	—	—	30 <sup>Note5</sup>	mA	
Gate non-trigger voltage	$V_{GD}$	0.2	—	—	V	$T_j = 125^\circ\text{C}$ , $V_D = 1/2 V_{DRM}$	
Thermal resistance	$R_{th(j-c)}$	—	—	3.7	$^\circ\text{C}/\text{W}$	Junction to case <sup>Note3</sup>	
Critical-rate of rise of off-state commutating voltage <sup>Note4</sup>	$(dv/dt)_c$	10	—	—	$\text{V}/\mu\text{s}$	$T_j = 125^\circ\text{C}$	

Notes: 2. Measurement using the gate trigger characteristics measurement circuit.

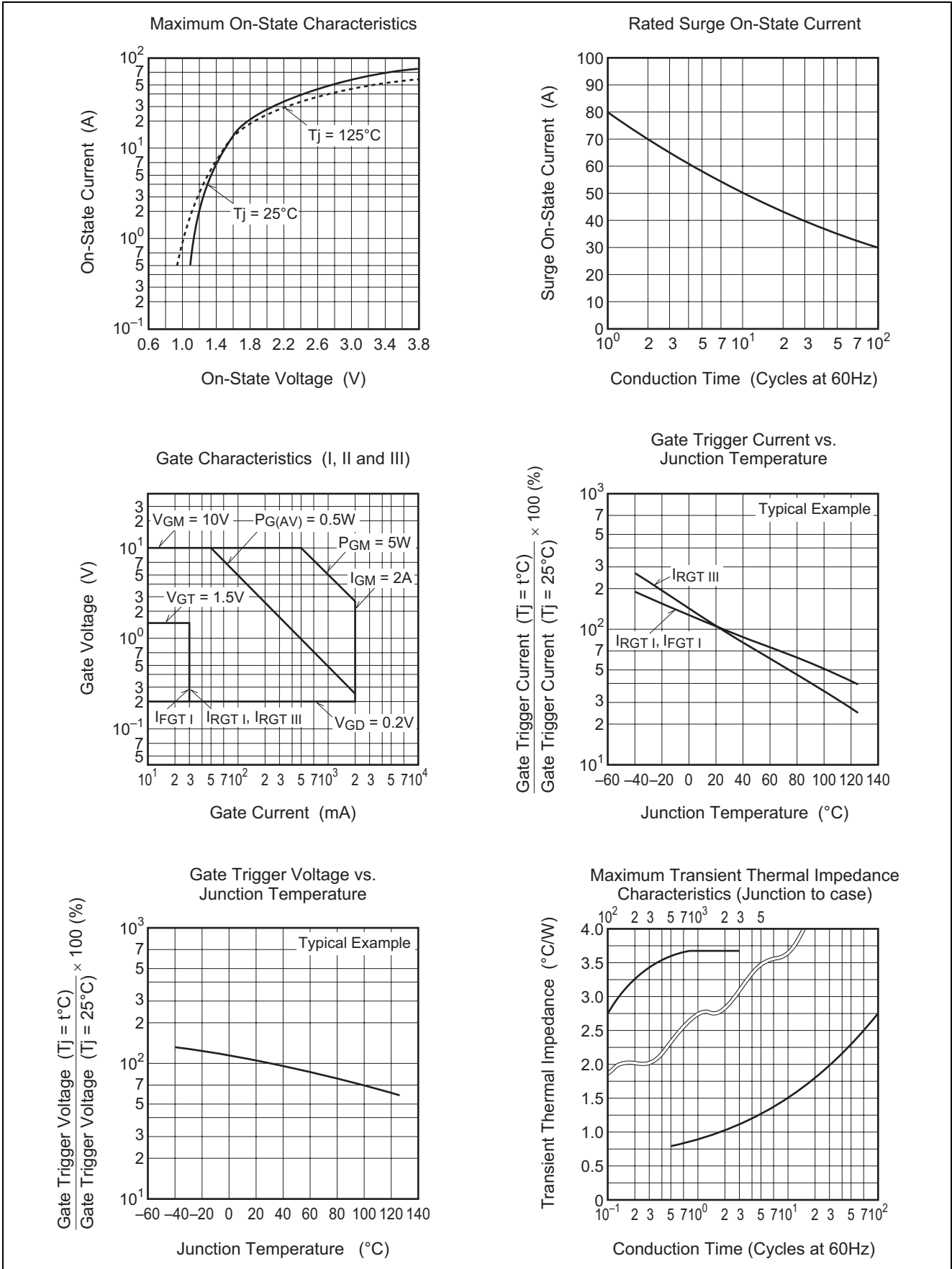
3. The contact thermal resistance  $R_{th(c-f)}$  in case of greasing is  $0.5^\circ\text{C}/\text{W}$ .

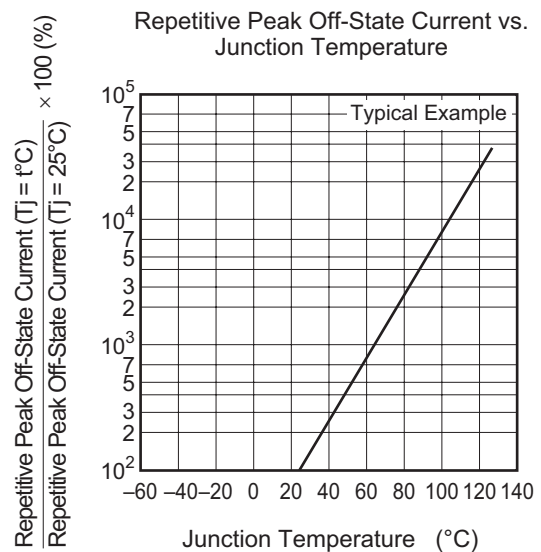
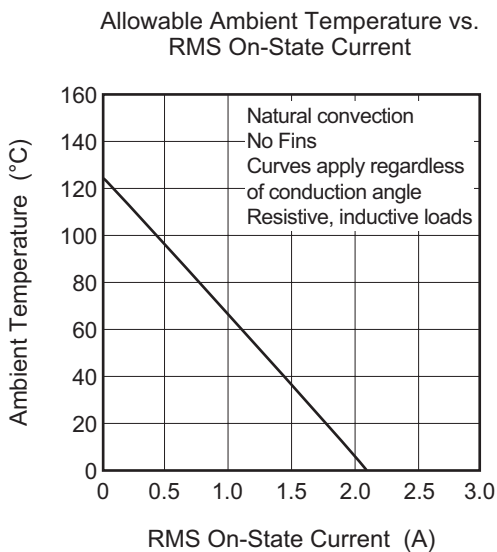
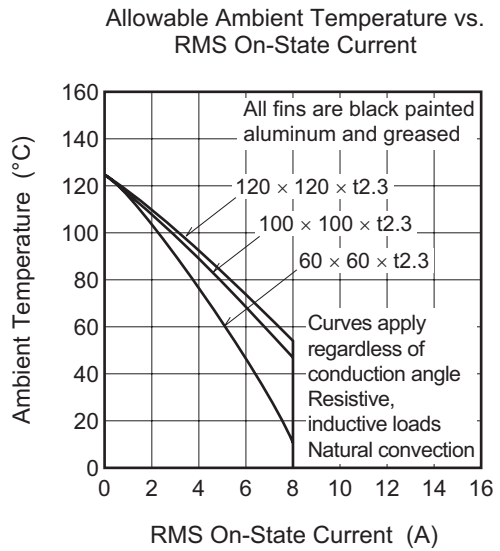
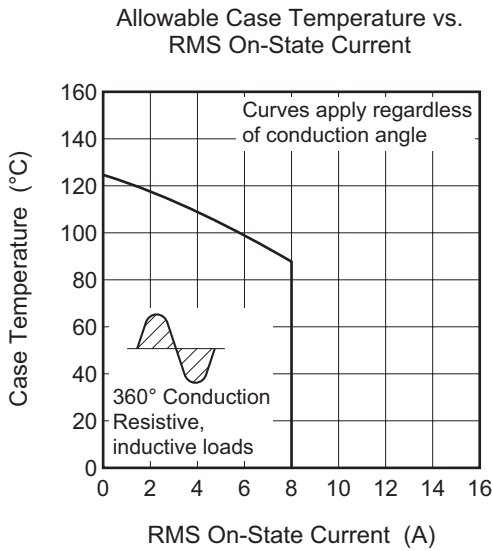
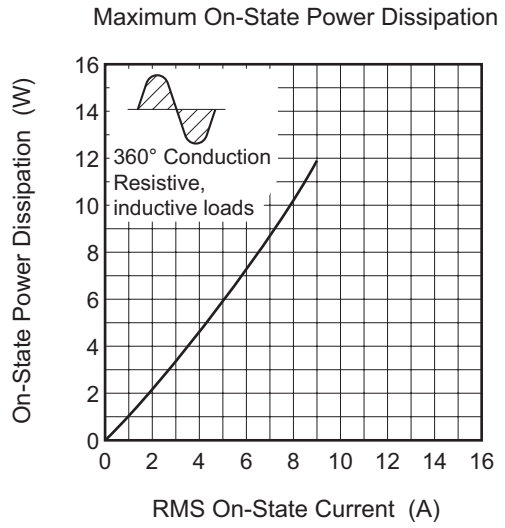
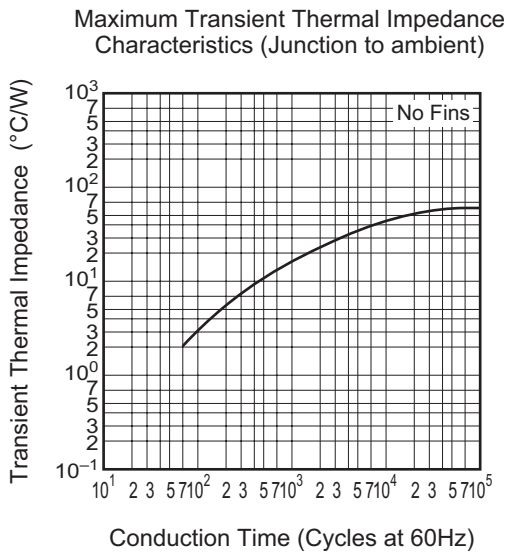
4. Test conditions of the critical-rate of rise of off-state commutating voltage is shown in the table below.

5. High sensitivity ( $I_{GT} \leq 20\text{ mA}$ ) is also available. ( $I_{GT}$  item: 1)

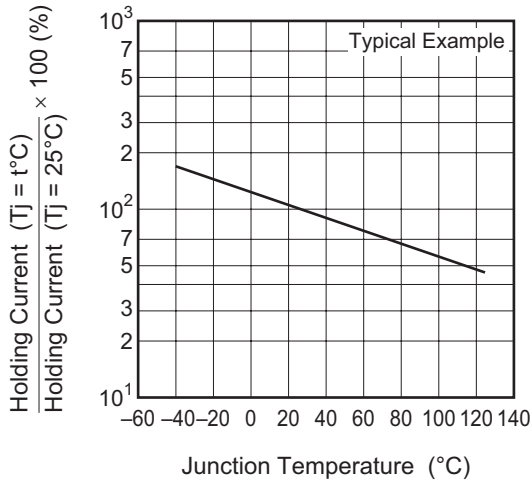
Test conditions	Commutating voltage and current waveforms (inductive load)
1. Junction temperature $T_j = 125^\circ\text{C}$ 2. Rate of decay of on-state commutating current $(di/dt)_c = -4.0\text{ A/ms}$ 3. Peak off-state voltage $V_D = 400\text{ V}$	

Performance Curves

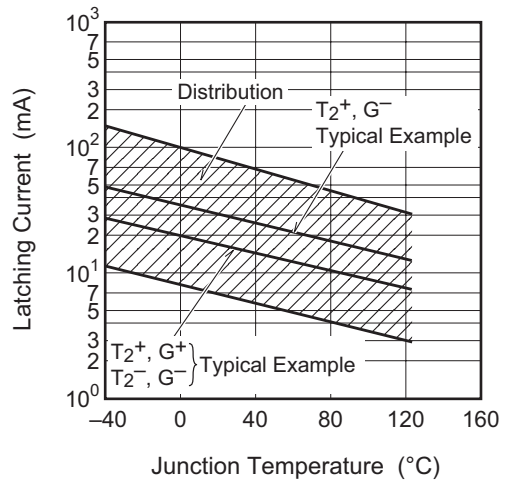




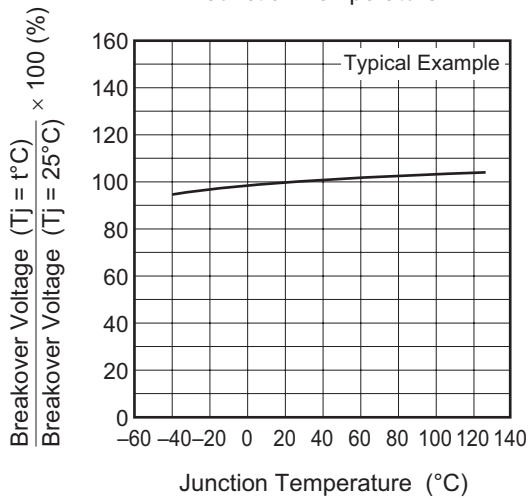
Holding Current vs. Junction Temperature



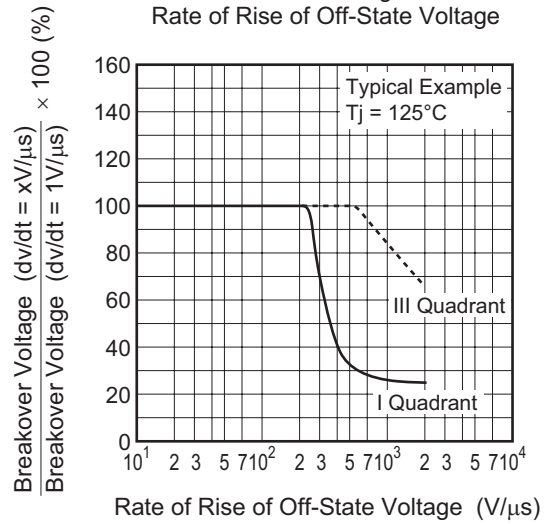
Latching Current vs. Junction Temperature



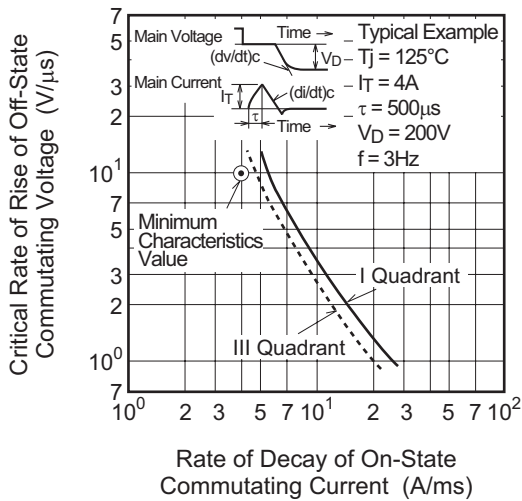
Breakover Voltage vs. Junction Temperature



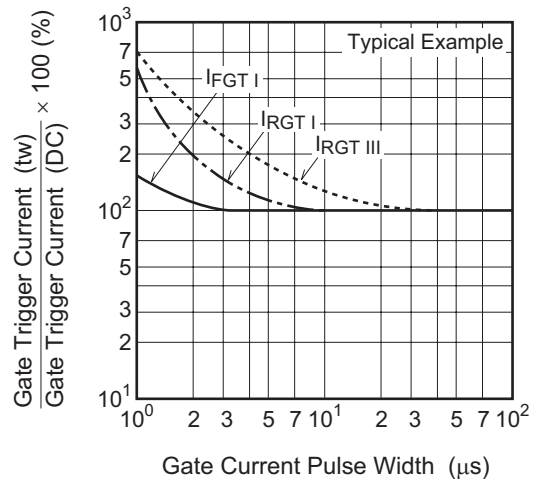
Breakover Voltage vs. Rate of Rise of Off-State Voltage



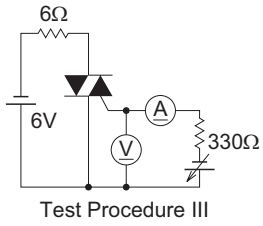
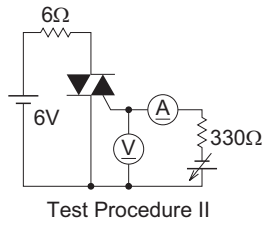
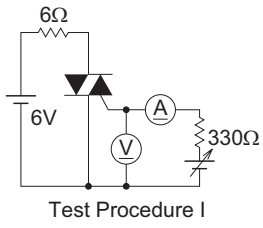
Commutation Characteristics



Gate Trigger Current vs. Gate Current Pulse Width



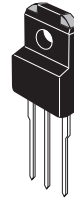
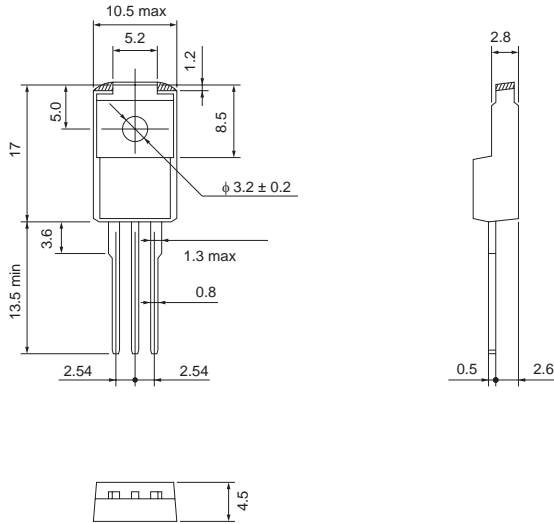
Gate Trigger Characteristics Test Circuits



## Package Dimensions

### TO-220F

EIAJ Package Code	JEDEC Code	Mass (g) (reference value)	Lead Material
Conforms	—	2.0	Cu alloy



Symbol	Dimension in Millimeters		
	Min	Typ	Max
A	—	—	—
A <sub>1</sub>	—	—	—
A <sub>2</sub>	—	—	—
b	—	—	—
D	—	—	—
E	—	—	—
e	—	—	—
x	—	—	—
y	—	—	—
y <sub>1</sub>	—	—	—
ZD	—	—	—
ZE	—	—	—

Note 1) The dimensional figures indicate representative values unless otherwise the tolerance is specified.

## Order Code

Lead form	Standard packing	Quantity	Standard order code	Standard order code example
Straight type	Vinyl sack	100	Type name +A	BCR8PM-12LA
Lead form	Plastic Magazine (Tube)	50	Type name +A – Lead forming code	BCR8PM-12LA-A8

Note : Please confirm the specification about the shipping in detail.

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