

# BCR20CM-12LB

600V - 20A - Triac

Medium Power Use

R07DS1151EJ0100

Rev.1.00

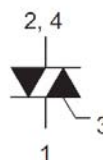
Jan 29, 2014

## Features

- $I_{T(RMS)}$  : 20 A
- $V_{DRM}$  : 600 V
- $I_{FGT}, I_{RGT}, I_{RGT III}$  :30 mA(20mA) <sup>Note6</sup>
- $T_j$ : 150 °C
- Planar Passivation Type
- Non-Insulated Type

## Outline

RENESAS Package code: PRSS0004AG-A  
(Package name: TO-220AB)



1. T<sub>1</sub> Terminal
2. T<sub>2</sub> Terminal
3. Gate Terminal
4. T<sub>2</sub> Terminal

## Applications

Vacuum cleaner, electric heater, light dimmer, copying machine, and controller for other motor and heater

## Maximum Ratings

Parameter	Symbol	Voltage class	
		12	Unit
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

Parameter	Symbol	Ratings	Unit	Conditions
RMS on-state current	$I_{T(RMS)}$	20	A	Commercial frequency, sine full wave 360°conduction, $T_c = 126^{\circ}C$ <sup>Note3</sup>
Surge on-state current	$I_{TSM}$	200	A	60 Hz sinewave 1 full cycle, peak value, non-repetitive
$I^2t$ for fusion	$I^2t$	167	A <sup>2</sup> s	Value corresponding to 1 cycle of half wave 60 Hz, 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 +150	°C	
Storage temperature	$T_{stg}$	-40 to +150	°C	
Mass	—	2.1	g	Typical value

## Electrical Characteristics

Parameter	Symbol	Rated value			Unit	Test conditions	
		Min.	Typ.	Max.			
Repetitive peak off-state current	$I_{DRM}$	—	—	2.0	mA	$T_j = 125^\circ\text{C}$ , $V_{DRM}$ applied	
		—	—	3.0		$T_j = 150^\circ\text{C}$ , $V_{DRM}$ applied	
On-state voltage	$V_{TM}$	—	—	1.5	V	$T_c = 25^\circ\text{C}$ , $I_{TM} = 30\text{A}$ , 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		
	III	$V_{RGTIII}$	—	—	1.5		
Gate trigger current <sup>Note2</sup>	I	$I_{FGTI}$	—	—	30 <sup>Note6</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>Note6</sup>		
	III	$I_{RGTIII}$	—	—	30 <sup>Note6</sup>		
Gate non-trigger voltage	$V_{GD}$	0.2	—	—	V	$T_j = 125^\circ\text{C}$ , $V_D = 1/2 V_{DRM}$	
		0.1	—	—	V	$T_j = 150^\circ\text{C}$ , $V_D = 1/2 V_{DRM}$	
Thermal resistance	$R_{th(j-c)}$	—	—	1.2	$^\circ\text{C/W}$	Junction to case <sup>Note3, Note4</sup>	
Critical-rate of rise of off-state commutation voltage <sup>Note5</sup>	$(dv/dt)_c$	10	—	—	$\text{V}/\mu\text{s}$	$T_j = 125^\circ\text{C}$	
		1	—	—		$T_j = 150^\circ\text{C}$	

Notes: 1. Gate open.

2. Measurement using the gate trigger characteristics measurement circuit.

3. Case temperature is measured at the  $T_2$  tab 1.5 mm apart from the molded case.

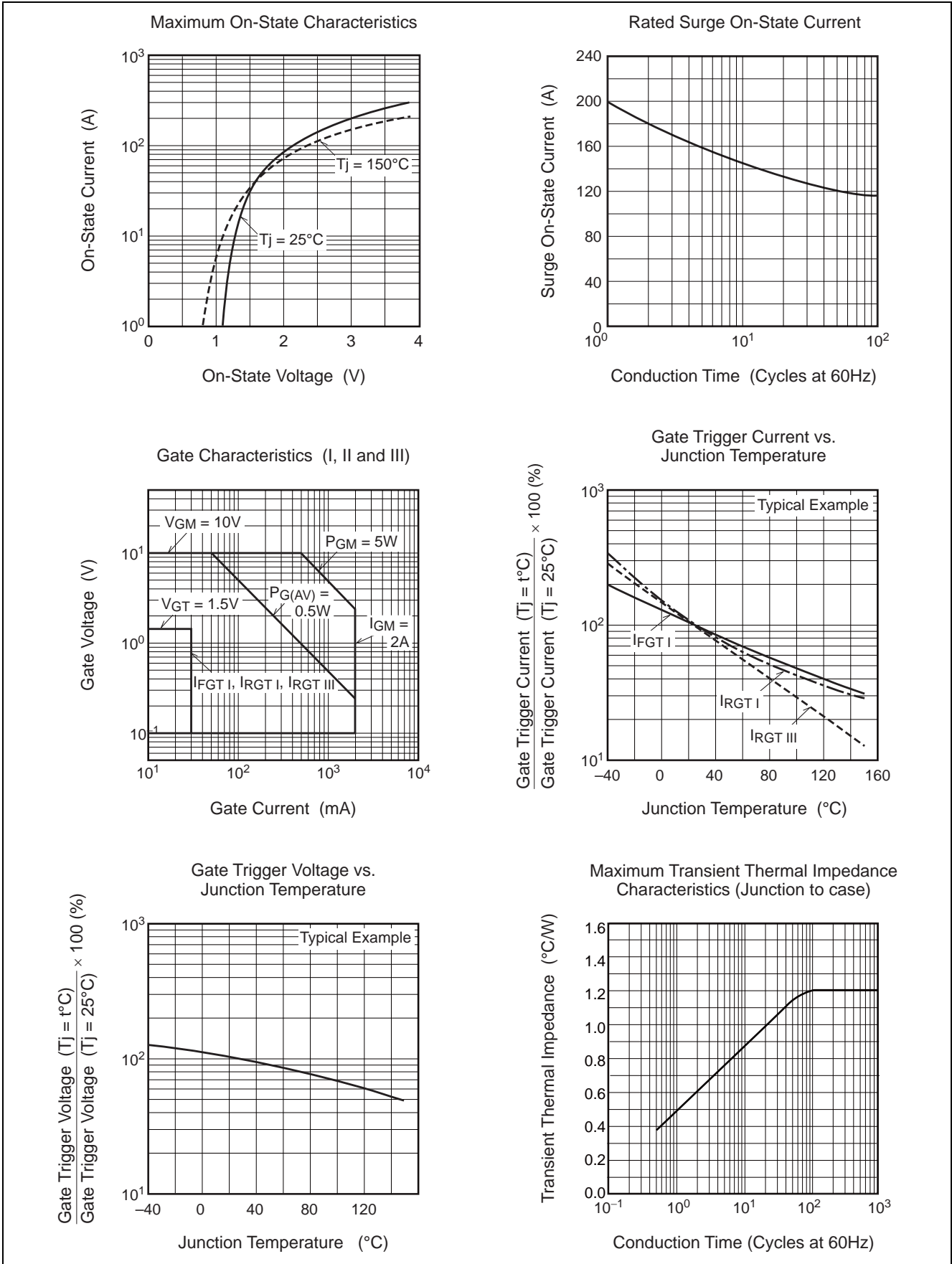
4. The contact thermal resistance  $R_{th(c-f)}$  in case of greasing is  $1.0^\circ\text{C}/\text{W}$ .

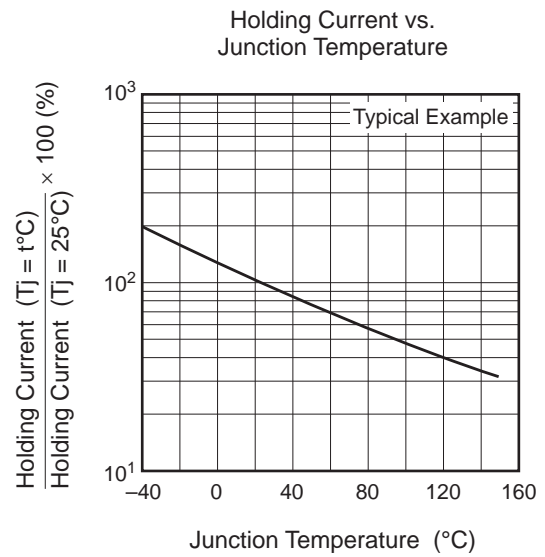
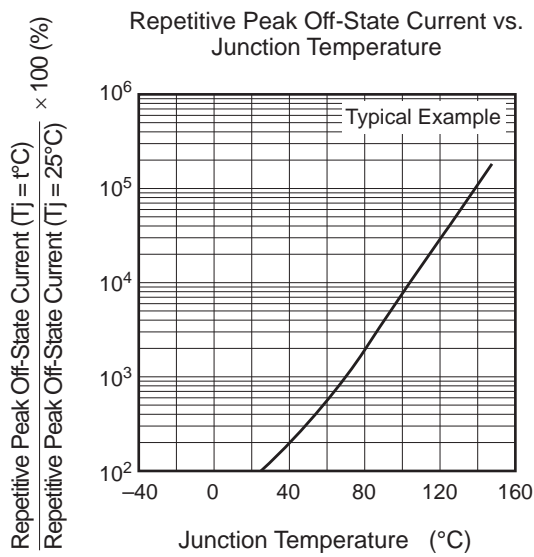
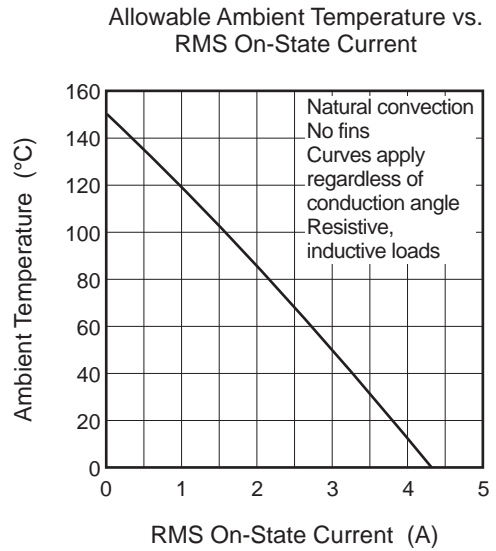
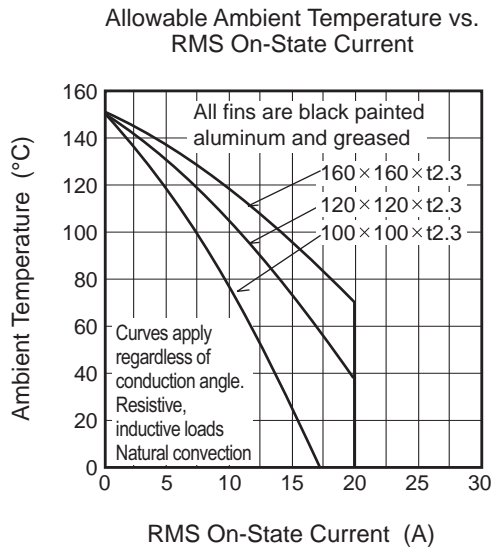
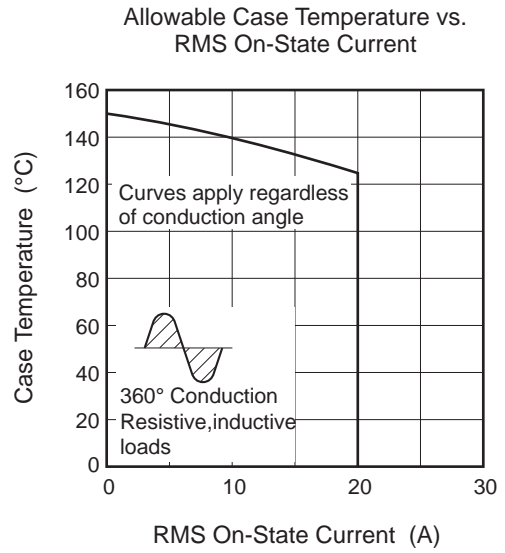
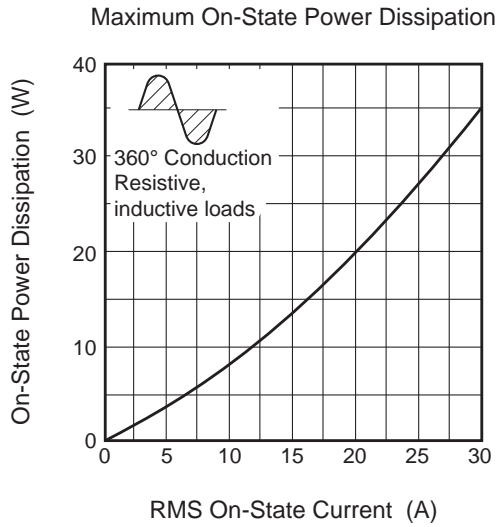
5. Test conditions of the critical-rate of rise of off-state commutation voltage is shown in the table below.

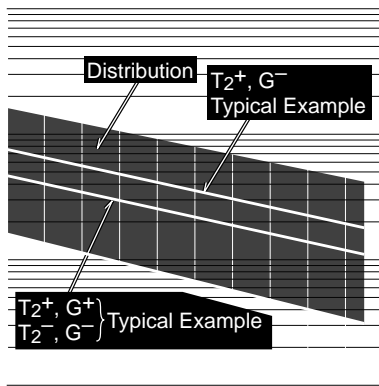
6. High sensitivity ( $I_{GT} \leq 20\text{ mA}$ ) is also available. ( $I_{GT}$  item: 1)

Test conditions	Commutating voltage and current waveforms (inductive load)
1. Junction temperature $T_j = 125/150^\circ\text{C}$ 2. Peak off-state voltage $V_D = 400\text{V}$ 3. Rate of decay of on-state commutating current $(di/dt)_c = -10\text{ A/ms}$	

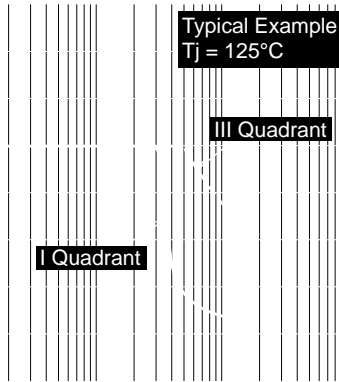
Performance Curves



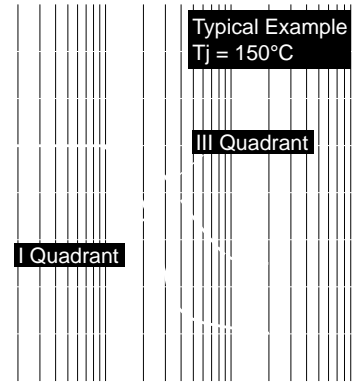




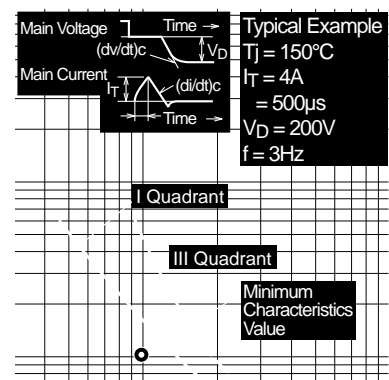
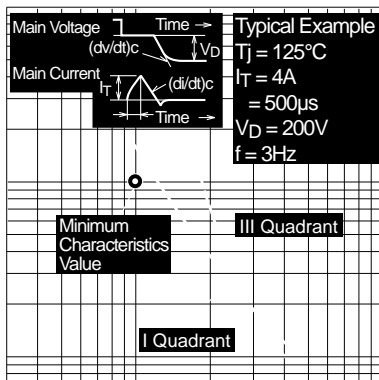
Typical Example



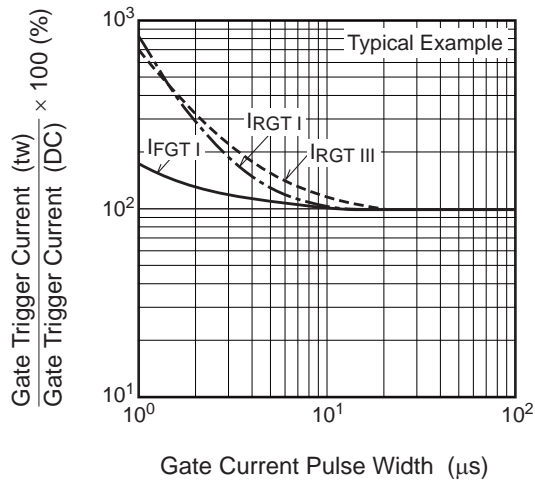
Typical Example  
Tj = 125°C



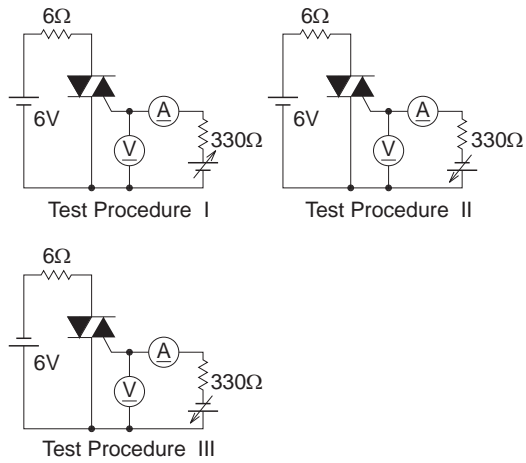
Typical Example  
Tj = 150°C



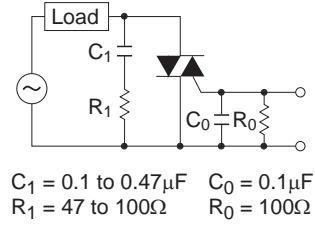
Gate Trigger Current vs. Gate Current Pulse Width



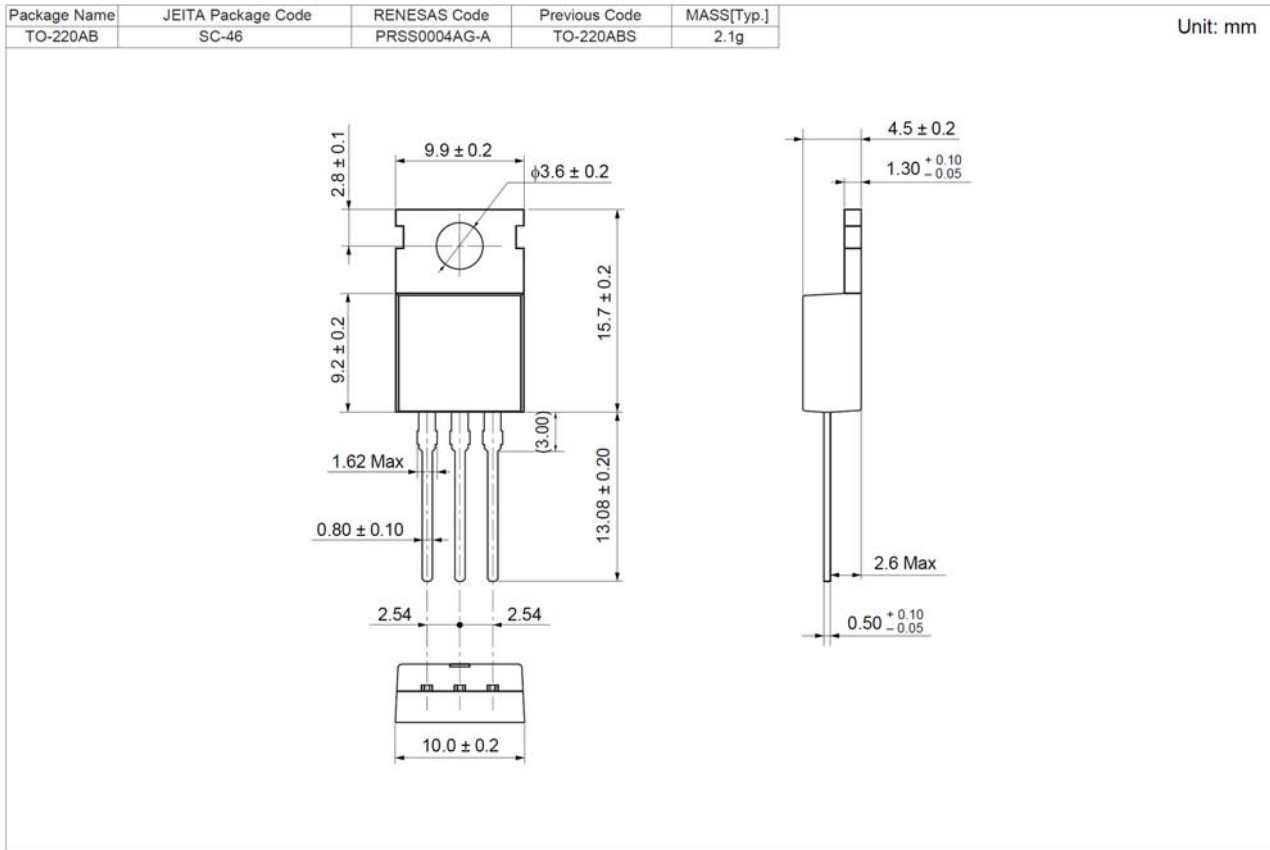
Gate Trigger Characteristics Test Circuits



Recommended Circuit Values Around The Triac



## Package Dimensions



## Ordering Information

Orderable Part Number	Packing	Quantity	Remark
BCR20CM-12LB#BB0	Tube	50 pcs.	Straight type
BCR20CM-12LB-1#BB0	Tube	50 pcs.	Straight type, l <sub>GT</sub> item: 1
BCR20CM-12LB□□#BB0	Tube	50 pcs.	□□: Lead forming type
BCR20CM12LB1□□#BB0	Tube	50 pcs.	□□: Lead forming type, l <sub>GT</sub> item: 1

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

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