

# BCR5CM-12LB

600V - 5A - Triac

Medium Power Use

R07DS1026EJ0200

Rev.2.00

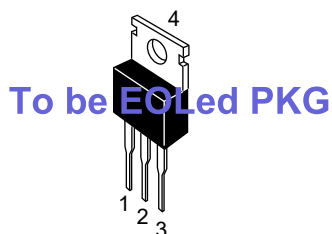
Jun. 28, 2018

## Features

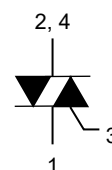
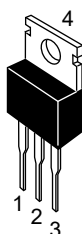
- $I_{T(RMS)}$  : 5 A
- $V_{DRM}$  : 600 V
- $I_{FGT1}$ ,  $I_{RGT1}$ ,  $I_{RGT III}$ : 20 mA (10 mA) <sup>Note6</sup>
- $T_j$ : 150°C
- Non-insulated Type
- Planar Passivation Type

## Outline

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



RENESAS Package code: PRSS0004AT-A  
(Package name: TO-220ABA)



1.  $T_1$  Terminal
2.  $T_2$  Terminal
3. Gate Terminal
4.  $T_2$  Terminal

## Application

Power supply, motor control, heater control, solenoid control, and other general purpose AC 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

Parameter	Symbol	Ratings	Unit	Conditions
RMS on-state current	$I_{T(RMS)}$	5	A	Commercial frequency, sine full wave 360°conduction, $T_c = 128^{\circ}\text{C}$ <sup>Note3</sup>
Surge on-state current	$I_{TSM}$	50	A	60 Hz sinewave 1 full cycle, peak value, non-repetitive
$I^2t$ for fusion	$I^2t$	10.4	A <sup>2</sup> s	Value corresponding to 1 cycle of half wave 60 Hz, surge on-state current
Peak gate power dissipation	$P_{GM}$	3	W	
Average gate power dissipation	$P_{G(AV)}$	0.3	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	

## Electrical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test conditions
Repetitive peak off-state current	$I_{DRM}$	—	—	2.0	mA	$T_J = 150^\circ\text{C}$ , $V_{DRM}$ applied
On-state voltage	$V_{TM}$	—	—	1.8	V	$T_c = 25^\circ\text{C}$ , $I_{TM} = 7\text{ A}$ , 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 $I_{FGTI}$	—	—	20 <sup>Note6</sup>	mA	$T_J = 25^\circ\text{C}$ , $V_D = 6\text{ V}$ , $R_L = 6\ \Omega$ , $R_G = 330\ \Omega$
	II $I_{RGTI}$	—	—	20 <sup>Note6</sup>	mA	
	III $I_{RGTIII}$	—	—	20 <sup>Note6</sup>	mA	
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	$R_{th(j-c)}$	—	—	3.0	$^\circ\text{C/W}$	Junction to case <sup>Note3 Note4</sup>
Critical-rate of rise of off-state commutation voltage <sup>Note5</sup>	$(dv/dt)_c$	5	—	—	$\text{V}/\mu\text{s}$	$T_J = 125^\circ\text{C}$
		1	—	—	$\text{V}/\mu\text{s}$	$T_J = 150^\circ\text{C}$

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 away from the molded case.

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

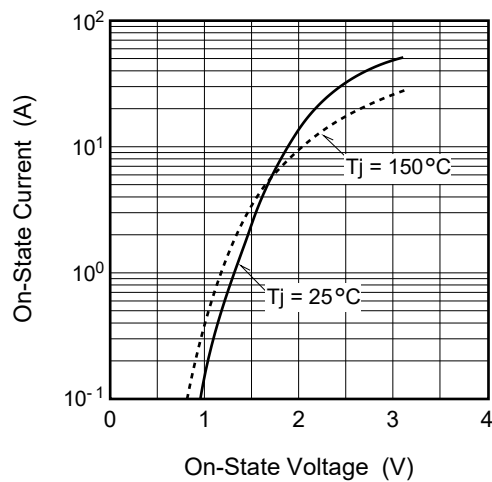
5. Test conditions of the critical-rate of rise of off-state commutation voltage is shown in the table below.

6. High sensitivity ( $I_{GT} \leq 10\text{ mA}$ ) is also available. ( $I_{GT}$  item:1)

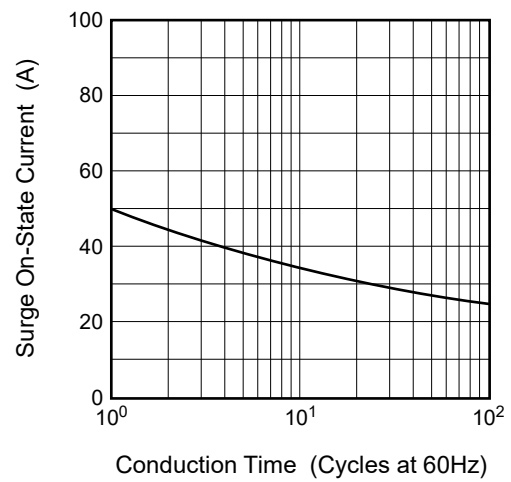
Test conditions	Commutating voltage and current waveforms (inductive load)
1. Junction temperature $T_J = 125^\circ\text{C}/150^\circ\text{C}$ 2. Rate of decay of on-state commutating current $(di/dt)_c = -2.5\text{ A/ms}$ 3. Peak off-state voltage $V_D = 400\text{ V}$	

## Performance Curves

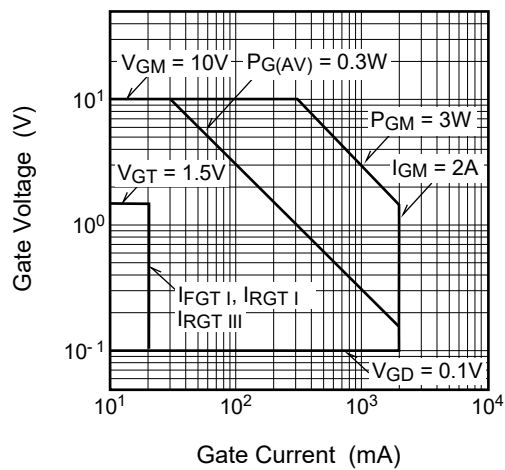
Maximum On-State Characteristics



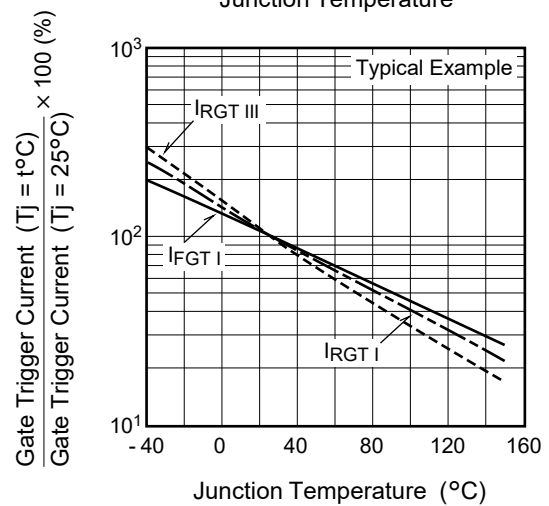
Rated Surge On-State Current



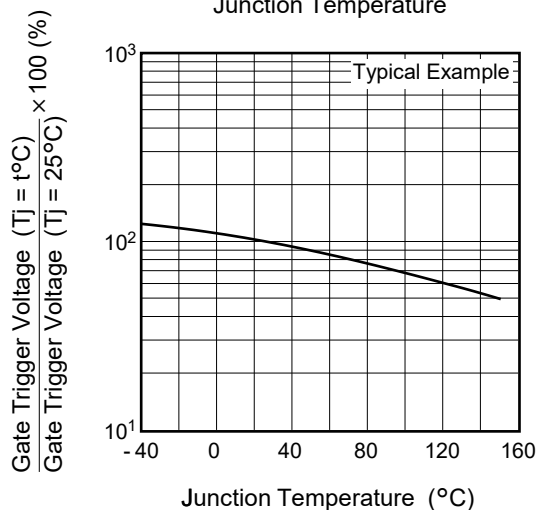
Gate Characteristics (I, II and III)



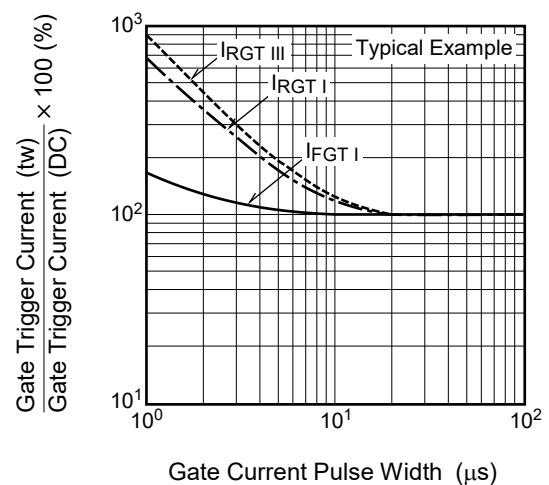
Gate Trigger Current vs. Junction Temperature

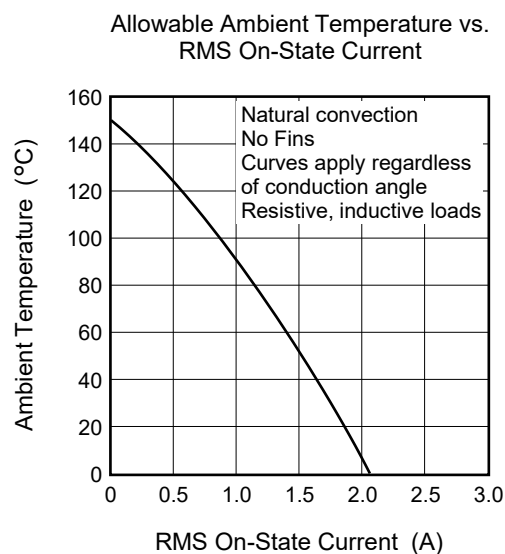
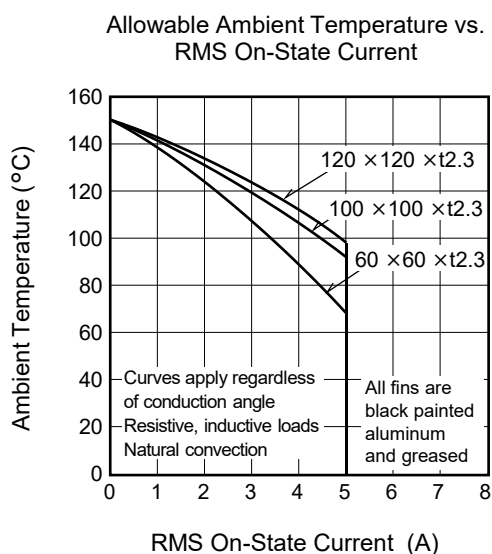
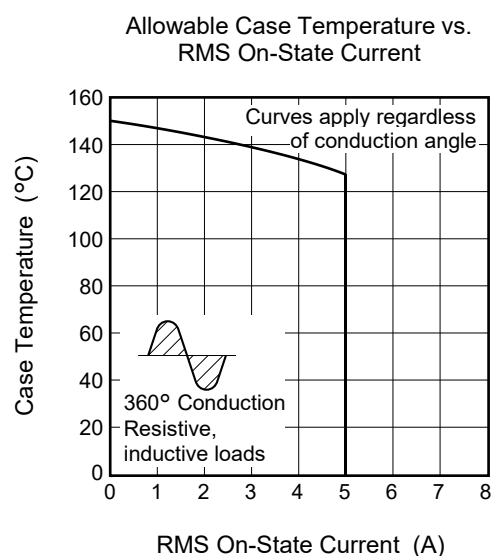
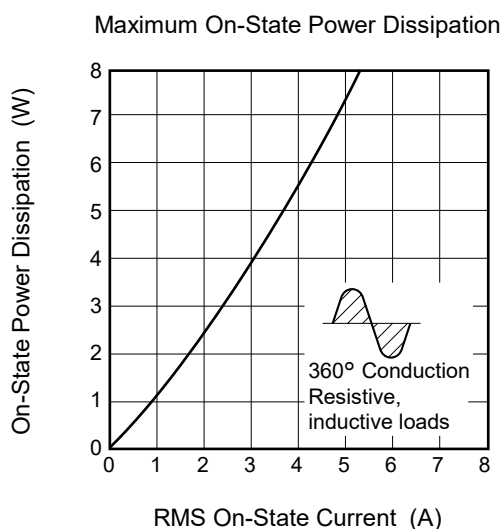
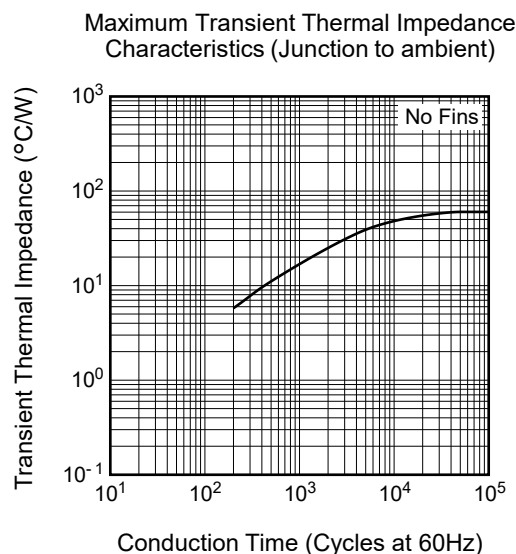
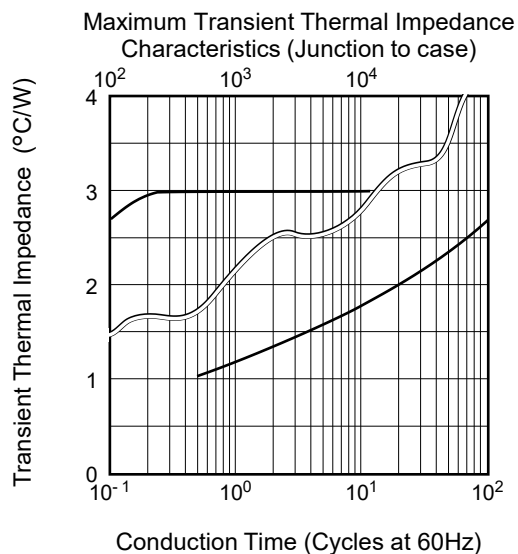


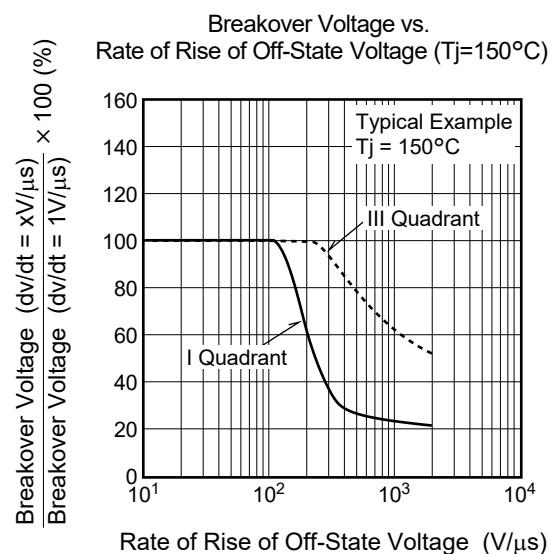
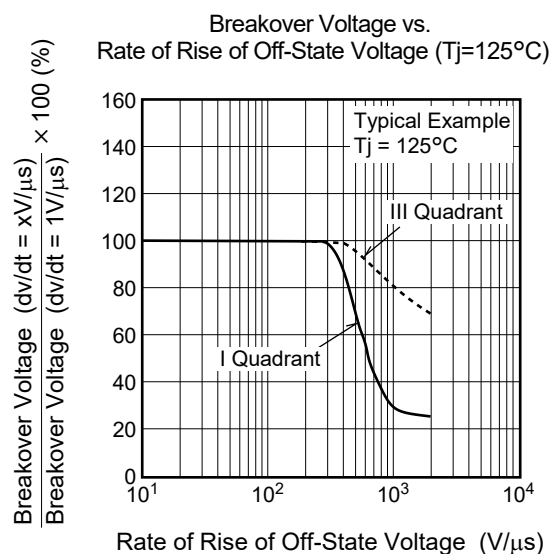
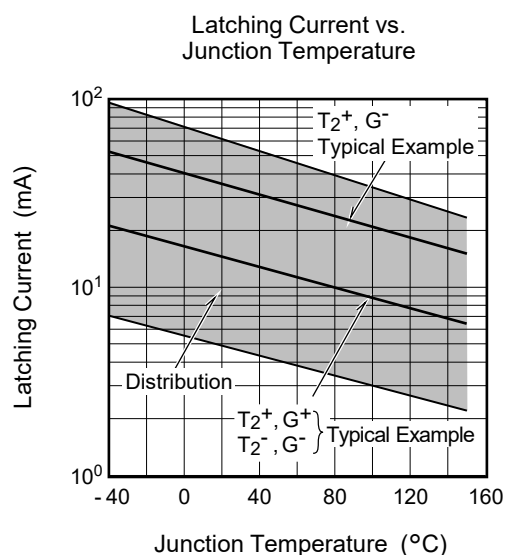
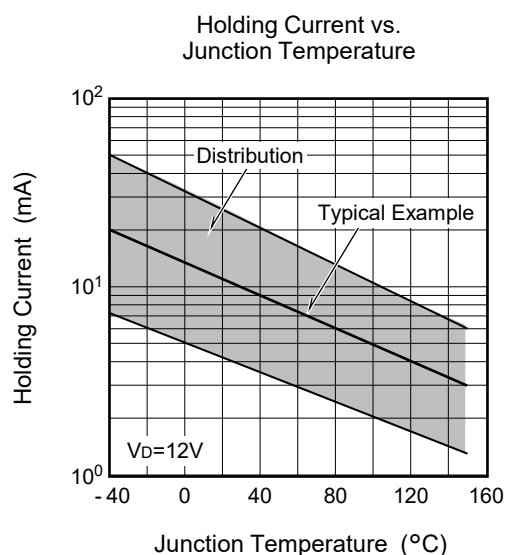
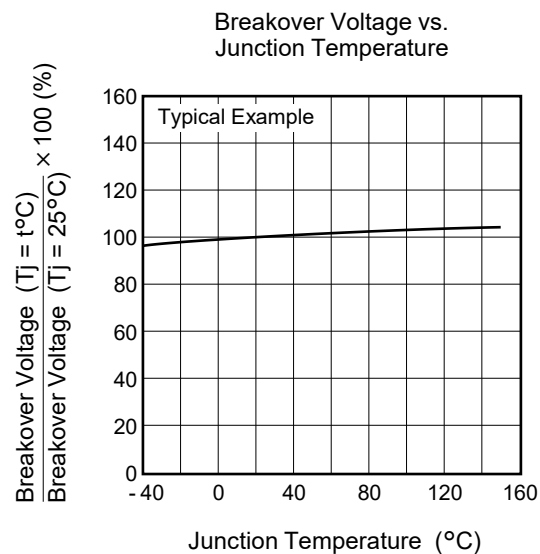
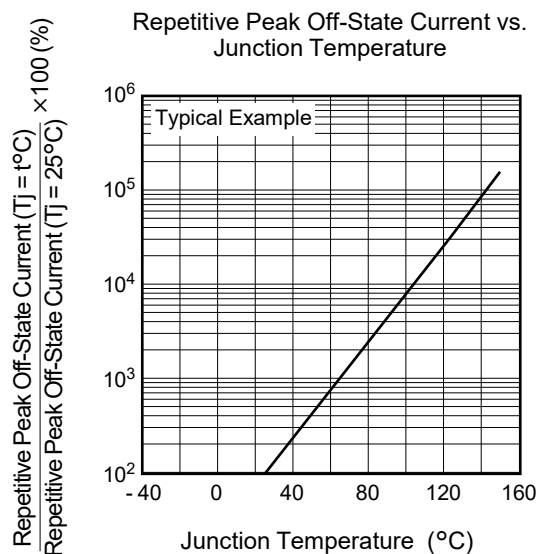
Gate Trigger Voltage vs. Junction Temperature

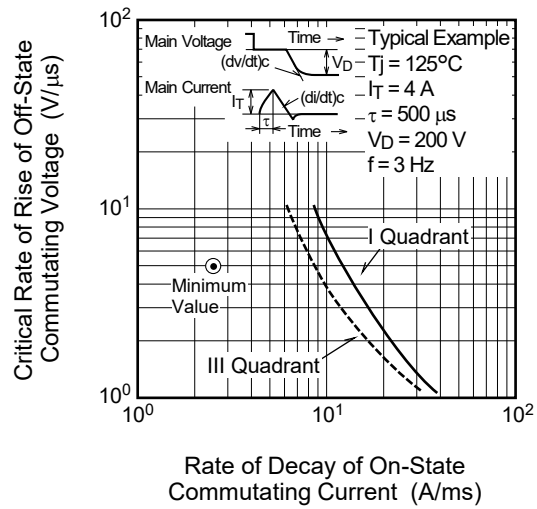
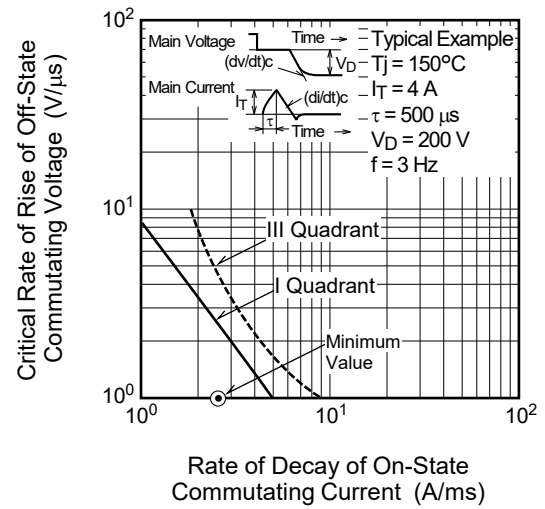


Gate Trigger Current vs. Gate Current Pulse Width

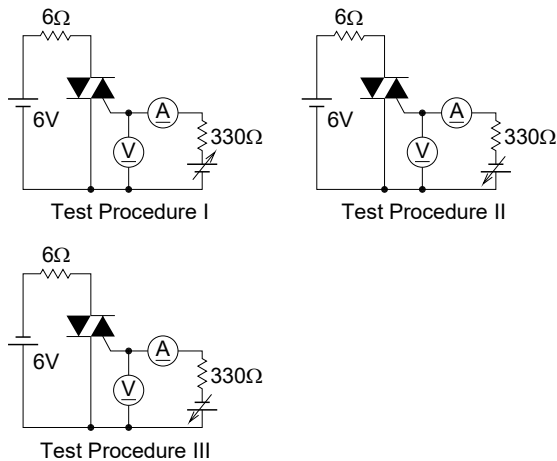




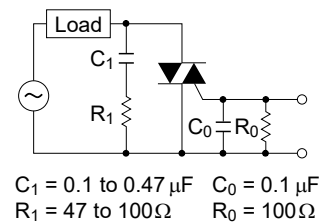


Commutation Characteristics ( $T_J=125^\circ\text{C}$ )Commutation Characteristics ( $T_J=150^\circ\text{C}$ )

Gate Trigger Characteristics Test Circuits

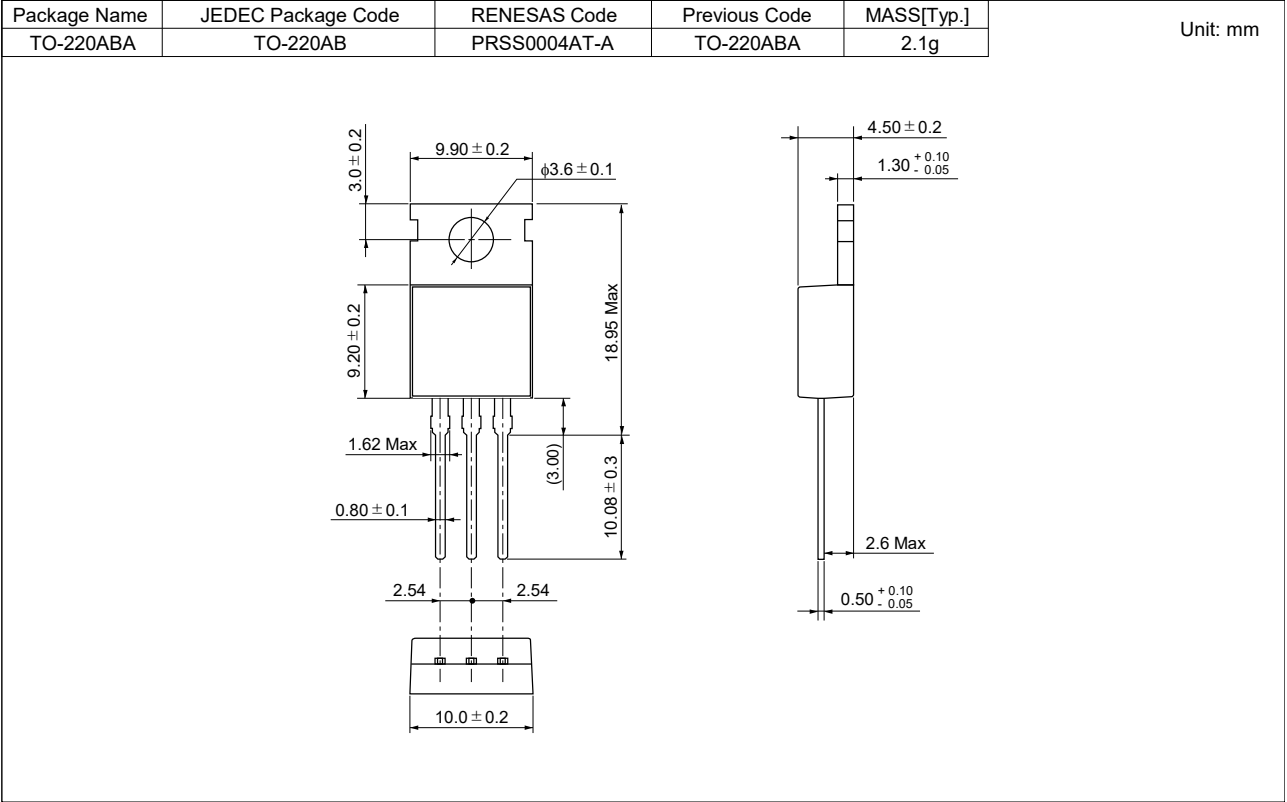


Recommended peripheral components for Triac

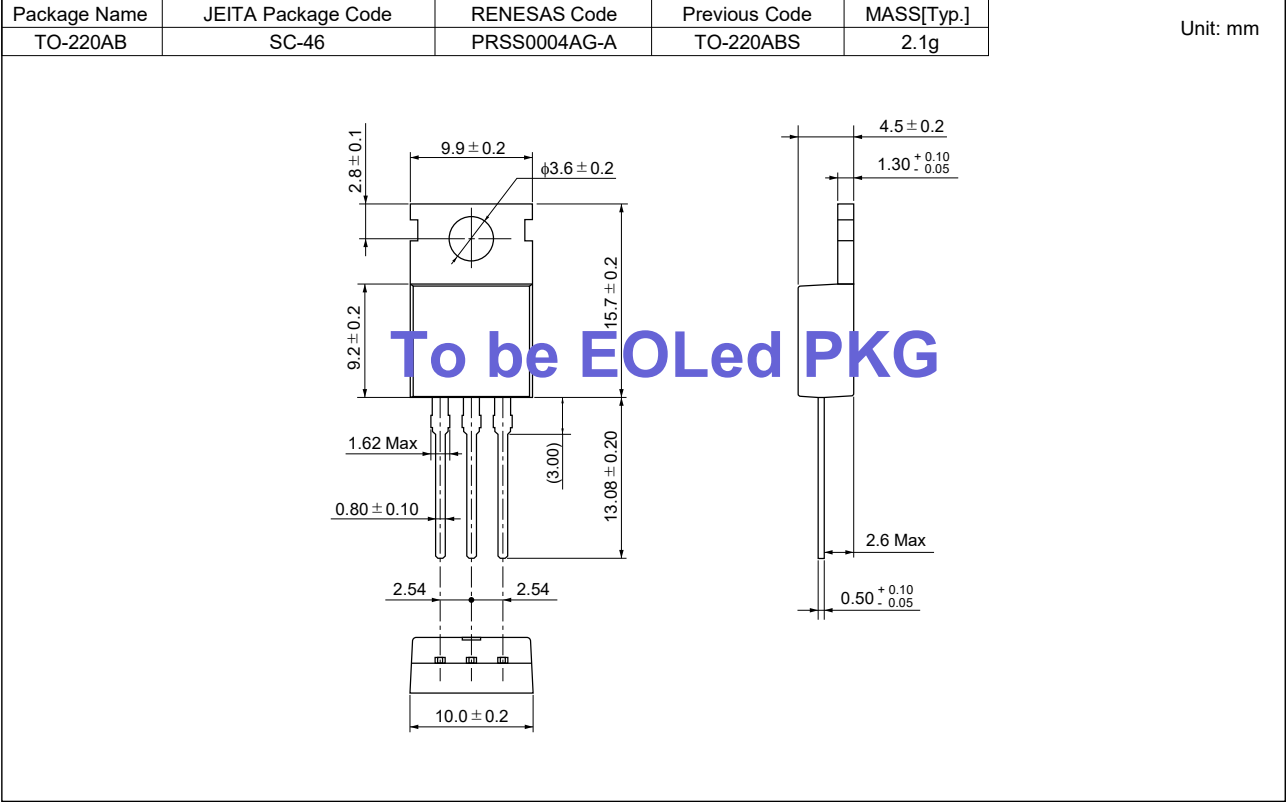


Package Dimensions

Ordering code: #BH0



Ordering code: #BB0



## Ordering Information

Orderable Part Number	Package	Quantity <sup>Note7</sup>	Remark	Status
BCR5CM-12LB#BH0	TO-220ABA	50 pcs./ tube	Straight type	Mass Production
BCR5CM-12LB-1#BH0	TO-220ABA	50 pcs./ tube	Straight type, I <sub>GT</sub> item:1	
BCR5CM-12LB#BB0	TO-220ABS	50 pcs./ tube	Straight type	EOL Candidate
BCR5CM-12LB-1#BB0	TO-220ABS	50 pcs./ tube	Straight type, I <sub>GT</sub> item:1	
BCR5CM-12LB-□□#BB0	TO-220ABS	50 pcs./ tube	□□:Lead form type	
BCR5CM-12LB1□□#BB0	TO-220ABS	50 pcs./ tube	□□:Lead form type, I <sub>GT</sub> item:1	

Notes: 7. Please confirm the specification about the shipping in detail.



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