

# BCR12CM-12LB

600V - 12A - Triac

Medium Power Use

R07DS1030EJ0500


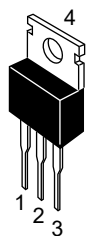
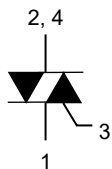
Rev.5.00

Jun. 28, 2018

## Features

- $I_T (RMS)$  : 12 A
- $V_{DRM}$  : 600 V
- $I_{FGT}$ ,  $I_{RGT}$ ,  $I_{RGT III}$ : 30 mA (20 mA) <sup>Note6</sup>
- $T_j$ : 150°C
- Non-insulated Type
- Planar Passivation Type

## Outline

<p>RENESAS Package code: PRSS0004AG-A (Package name: TO-220AB)</p>  <p><b>To be EOLed PKG</b></p>	<p>RENESAS Package code: PRSS0004AT-A (Package name: TO-220ABA)</p> 	 <p>1. T<sub>1</sub> Terminal 2. T<sub>2</sub> Terminal 3. Gate Terminal 4. T<sub>2</sub> Terminal</p>
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## Application

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

## 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	$I_T (RMS)$	12	A	Commercial frequency, sine full wave 360° conduction, $T_c = 123^\circ C$ <sup>Note3</sup>
Surge on-state current	$I_{TSM}$	120	A	60 Hz sinewave 1 full cycle, peak value, non-repetitive
$I^2t$ for fusion	$I^2t$	60	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	

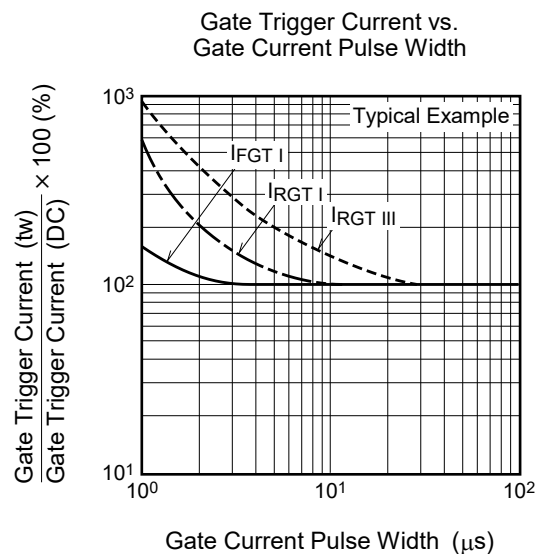
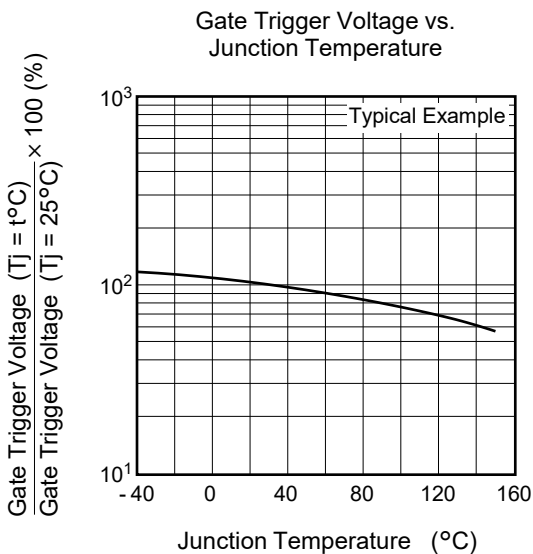
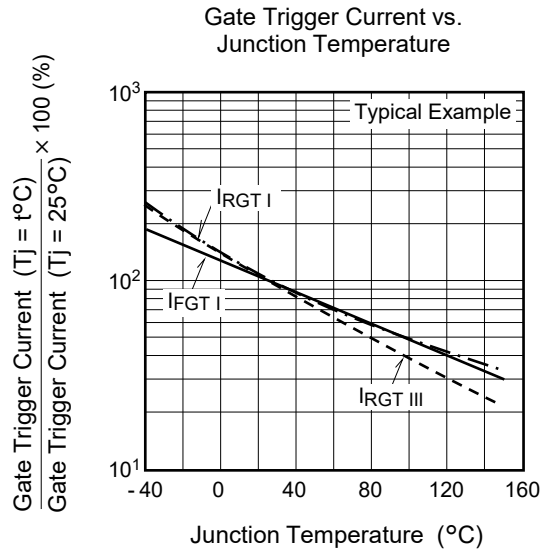
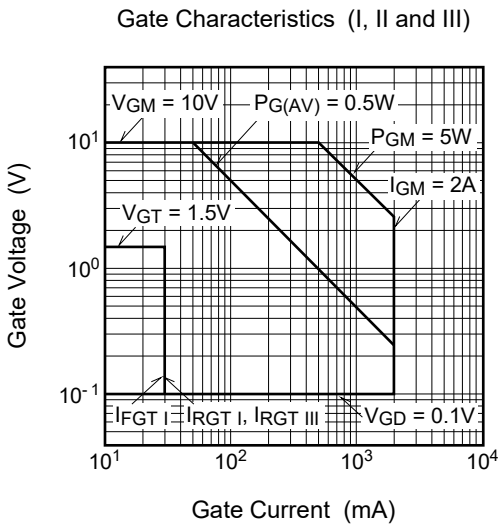
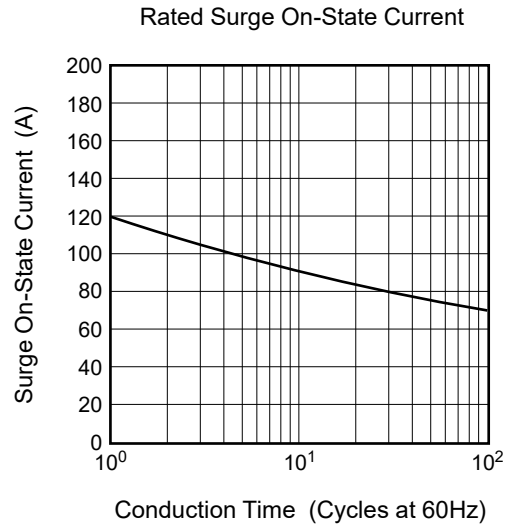
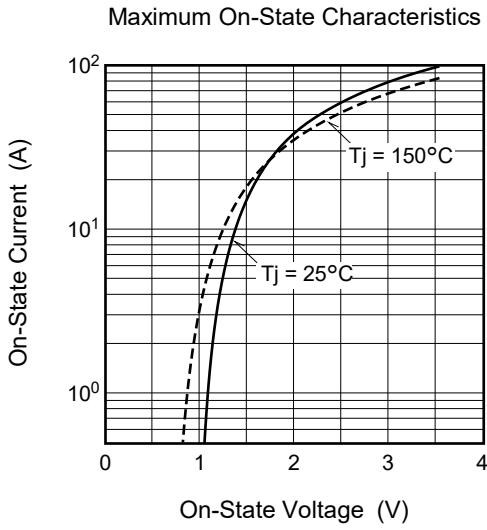
## Electrical Characteristics

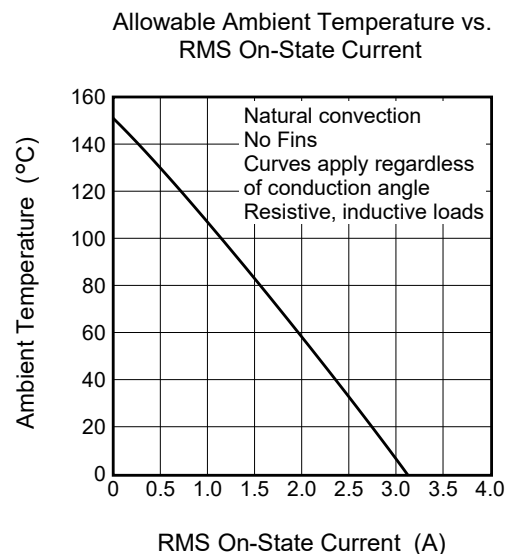
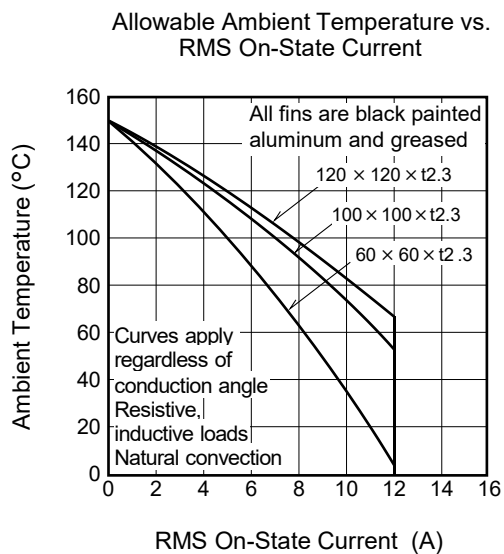
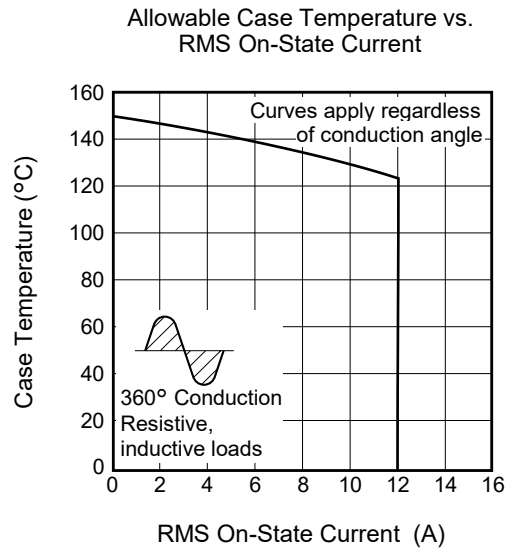
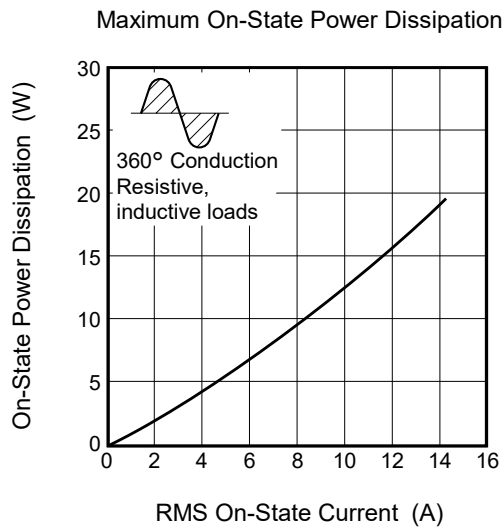
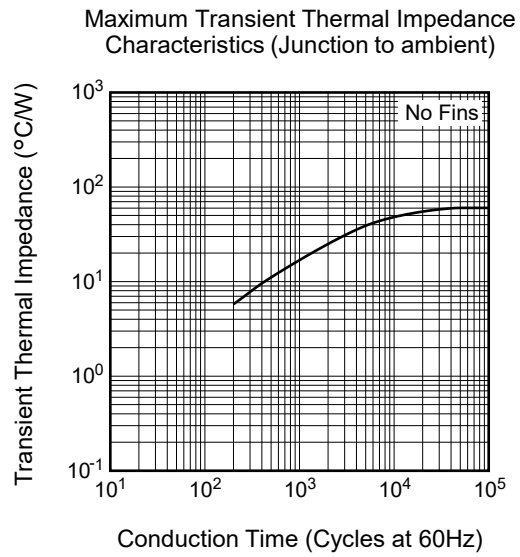
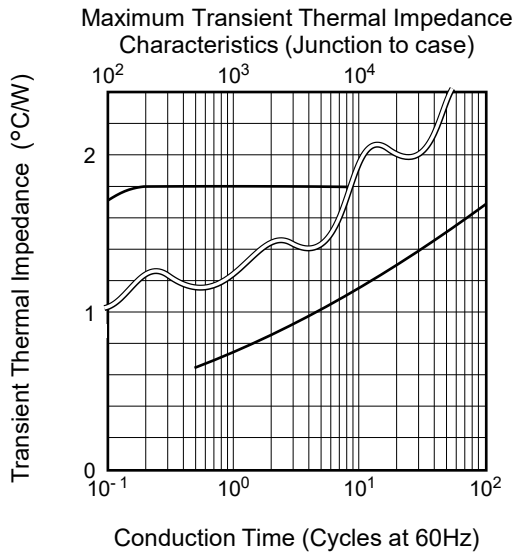
Parameter	Symbol	Min.	Typ.	Max.	Unit	Test conditions	
Repetitive peak off-state current	$I_{DRM}$	—	—	2.0	mA	$T_j = 150^\circ\text{C}$ , $V_{DRM}$ applied	
On-state voltage	$V_{TM}$	—	—	1.6	V	$T_c = 25^\circ\text{C}$ , $I_{TM} = 20\text{ A}$ , instantaneous measurement	
Gate trigger voltage <sup>Note2</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>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>	mA	
	III	$I_{RGTIII}$	—	—	30 <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	$R_{th(j-c)}$	—	—	1.8	$^\circ\text{C/W}$	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	—	—	$\text{V}/\mu\text{s}$	$T_j = 150^\circ\text{C}$	

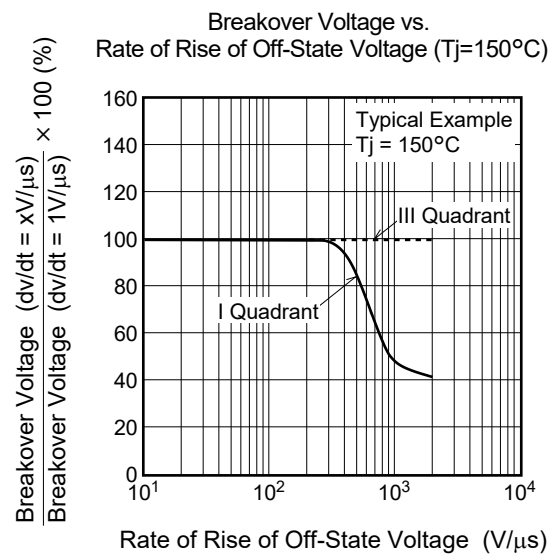
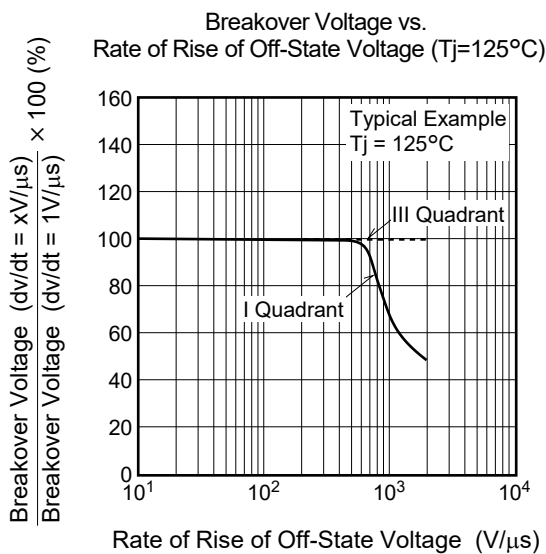
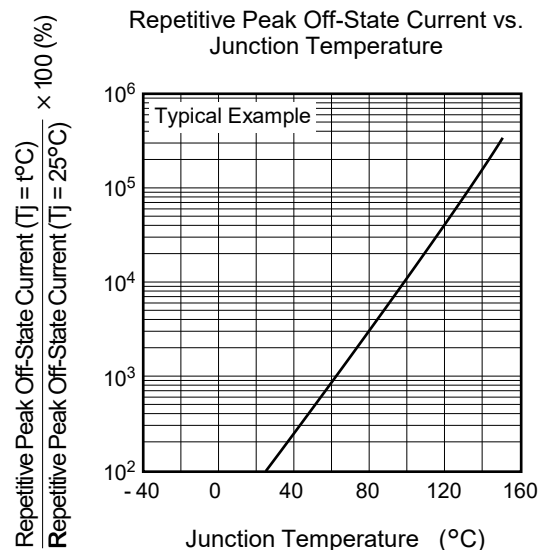
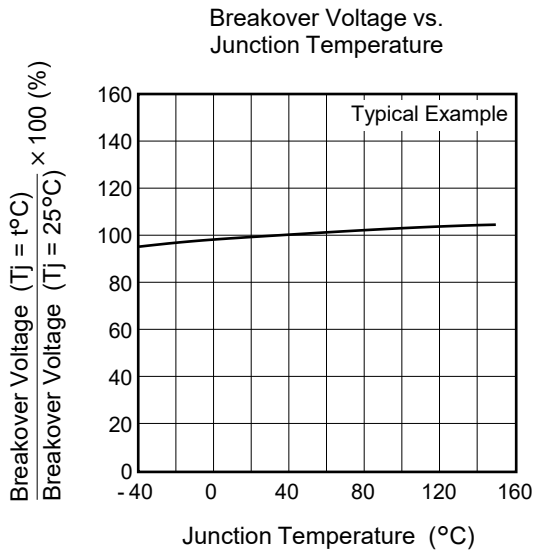
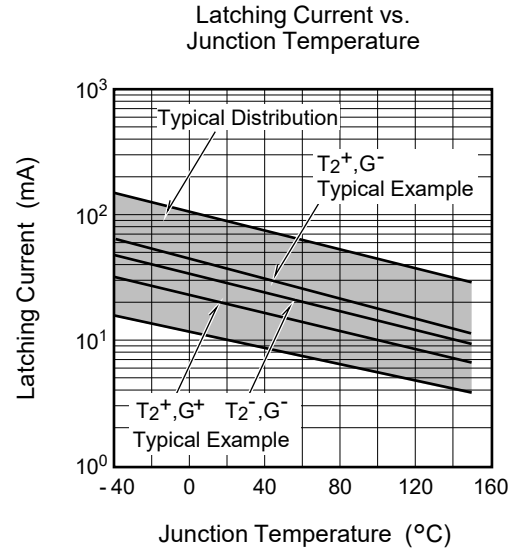
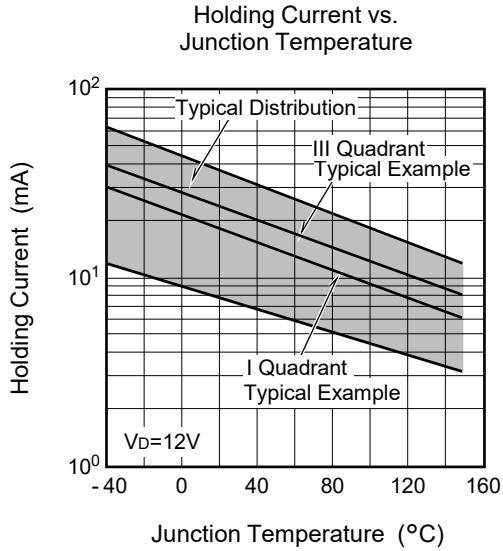
- Notes: 1. Gate open.  
 2. Measurement using the gate trigger characteristics measurement circuit.  
 3. Case temperature is measured at the  $T_2$  tab 1.5 mm away from the molded case.  
 4. The contact thermal resistance  $R_{th(c-f)}$  in case of greasing is  $1.0^\circ\text{C/W}$ .  
 5. Test conditions of the critical-rate of rise of off-state commutation voltage is shown in the table below.  
 6. High sensitivity ( $I_{GT} \leq 20\text{ mA}$ ) is also available. ( $I_{GT}$  item:1)

Test conditions	Commutating voltage and current waveforms (inductive load)
1. Junction temperature $T_j = 125^\circ\text{C}/150^\circ\text{C}$ 2. Rate of decay of on-state commutating current $(di/dt)_c = -6.0\text{ A/ms}$ 3. Peak off-state voltage $V_D = 400\text{ V}$	

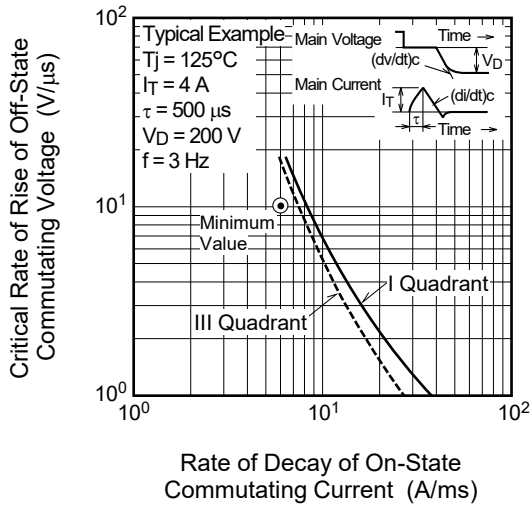
Performance Curves



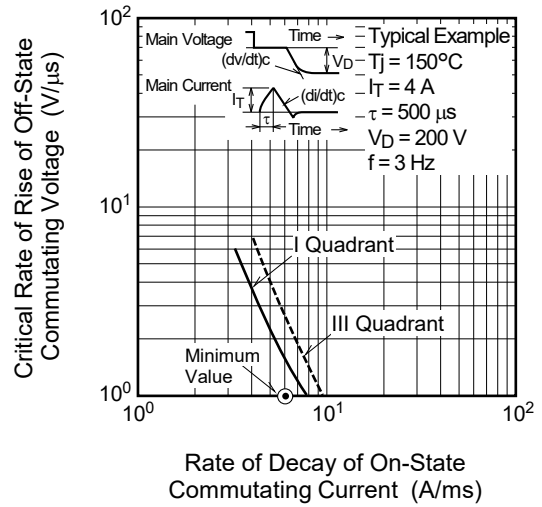




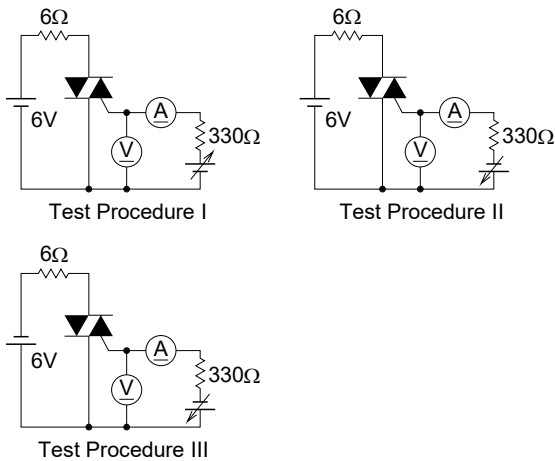
Commutation Characteristics (Tj=125°C)



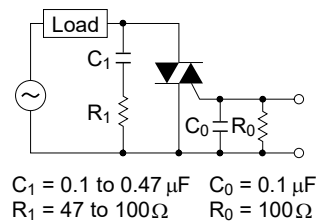
Commutation Characteristics (Tj=150°C)



Gate Trigger Characteristics Test Circuits

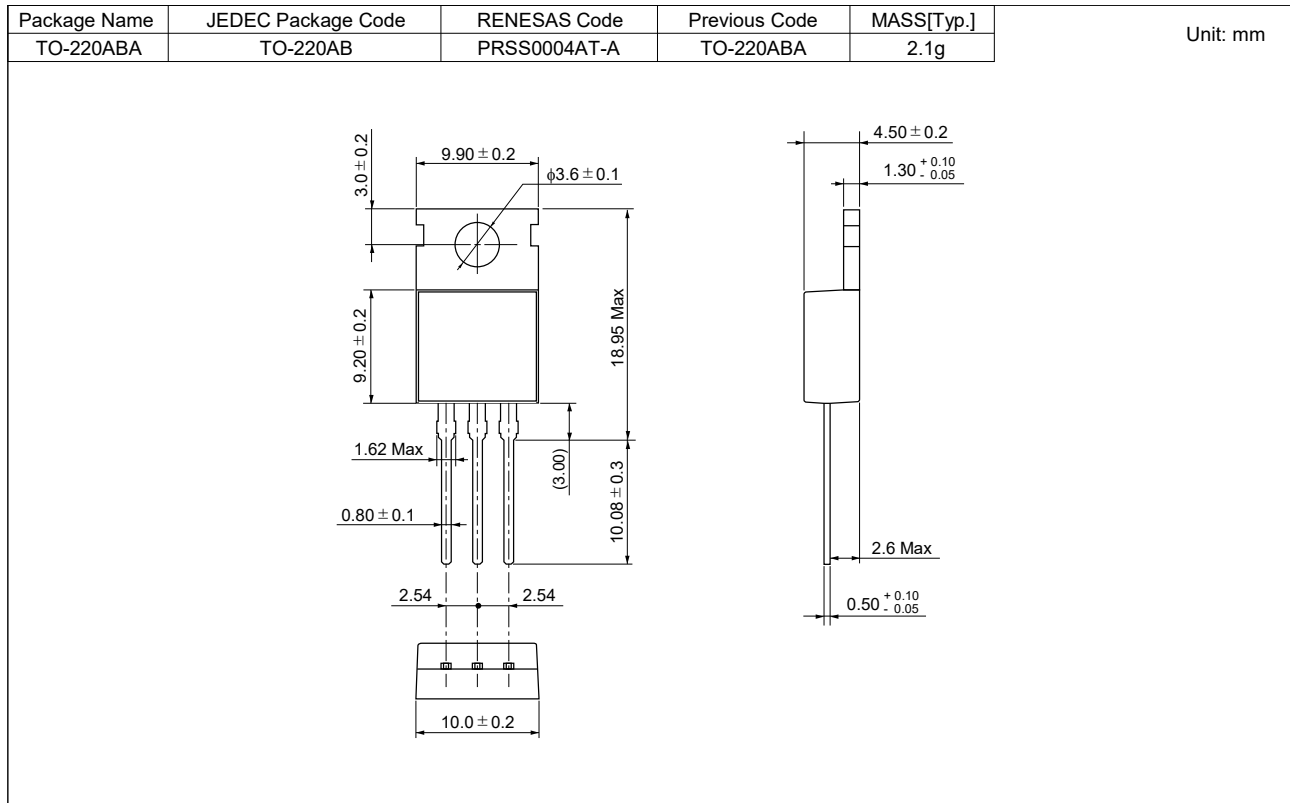


Recommended peripheral components for Triac

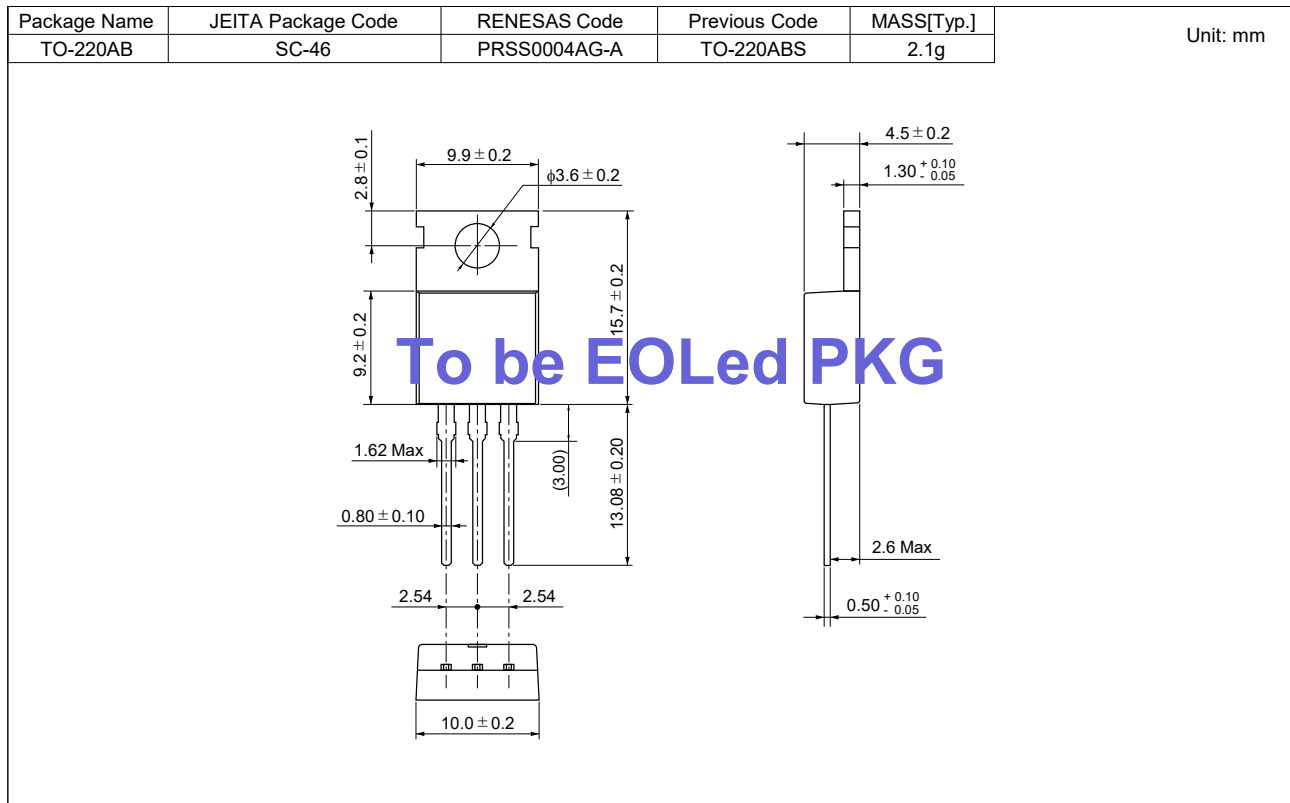


### Package Dimensions

Ordering code: #BH0



Ordering code: #BB0



## Ordering Information

Orderable Part Number	Package	Quantity <sup>Note7</sup>	Remark	Status
BCR12CM-12LB#BH0	TO-220ABA	50 pcs./ tube	Straight type	Mass Production
BCR12CM-12LB-1#BH0	TO-220ABA	50 pcs./ tube	Straight type, I <sub>GT</sub> item:1	
BCR12CM-12LB#BB0	TO-220ABS	50 pcs./ tube	Straight type	EOL Candidate
BCR12CM-12LB-1#BB0	TO-220ABS	50 pcs./ tube	Straight type, I <sub>GT</sub> item:1	
BCR12CM-12LB□□#BB0	TO-220ABS	50 pcs./ tube	□□:Lead form type	
BCR12CM12LB1□□#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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