

# BCR25CM-12LB

600V - 25A - Triac

Medium Power Use

R07DS1152EJ0200

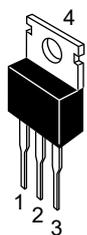
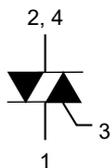
Rev.2.00

Sep. 11, 2018

## Features

- $I_T (RMS)$  : 25 A
- $V_{DRM}$  : 600 V
- $I_{FGT}$ ,  $I_{RGT}$ ,  $I_{RGT III}$ : 50 mA
- $T_j$ : 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

Motor control, Heater control, Power supply, Solid state relay, 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	$I_T (RMS)$	25	A	Commercial frequency, sine full wave 360°conduction, $T_c = 115^\circ C$ <sup>Note3</sup>
Surge on-state current	$I_{TSM}$	250	A	50 Hz sinewave 1 full cycle, peak value, non-repetitive
$I^2t$ for fusing	$I^2t$	313	A <sup>2</sup> s	Value corresponding to 1 cycle of half wave 50 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	

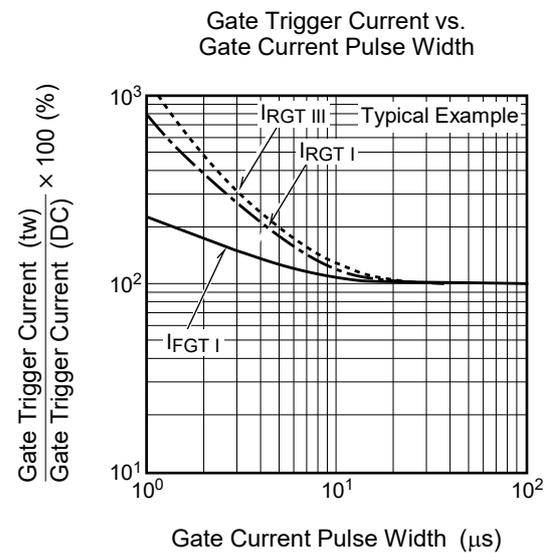
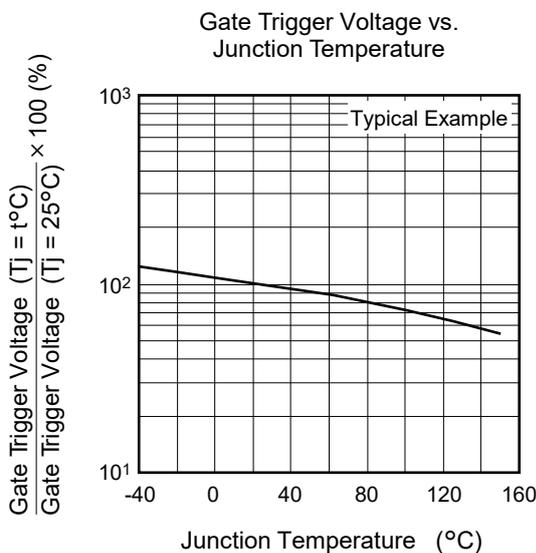
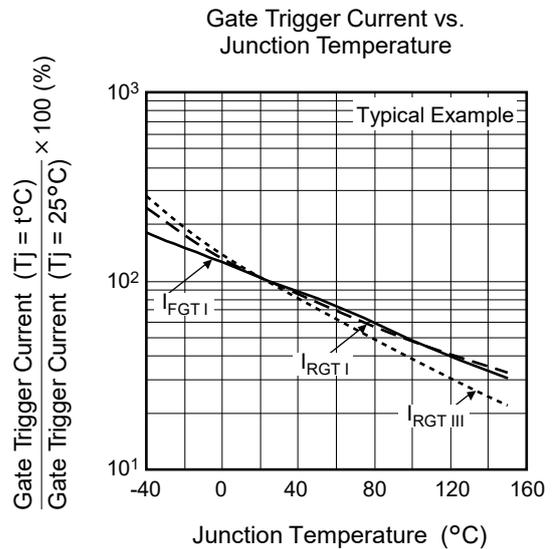
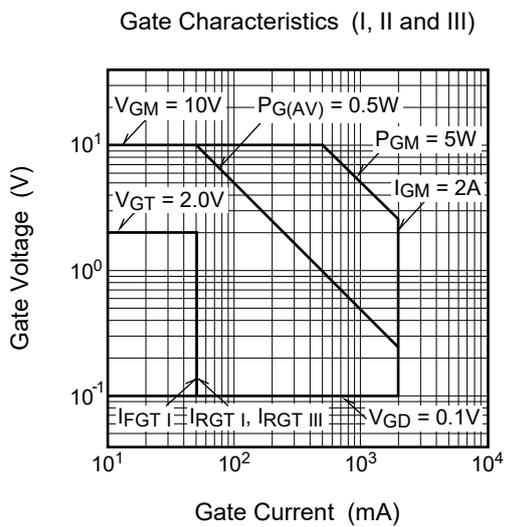
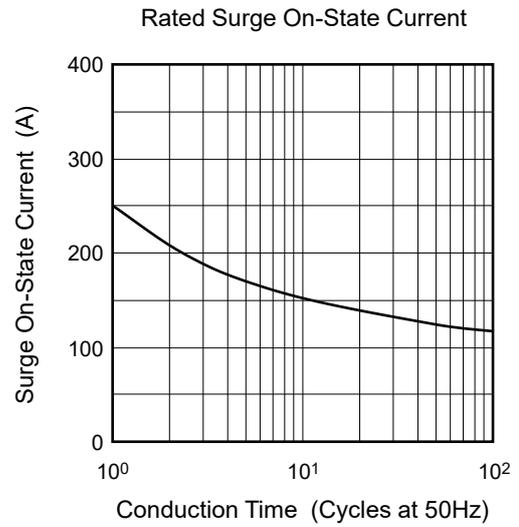
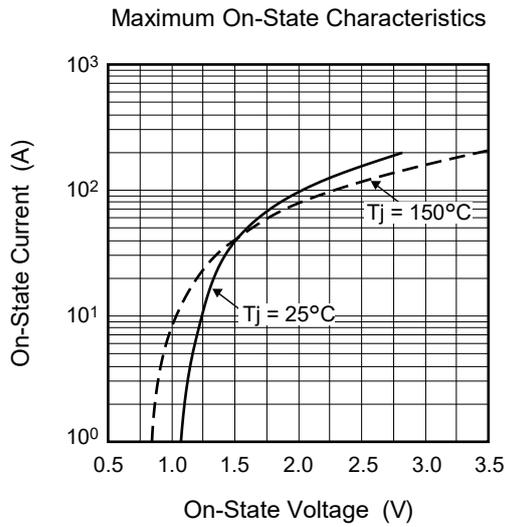
## Electrical Characteristics

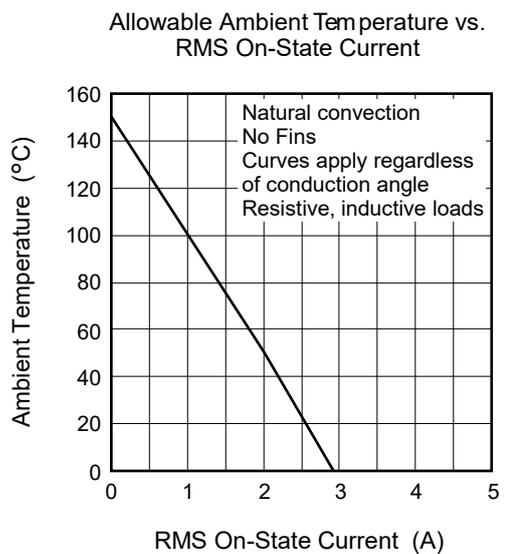
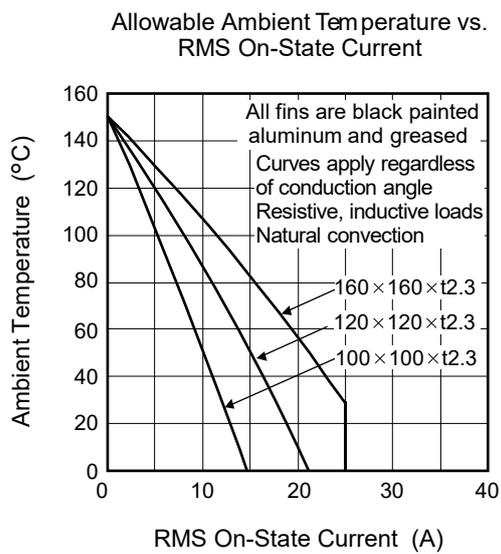
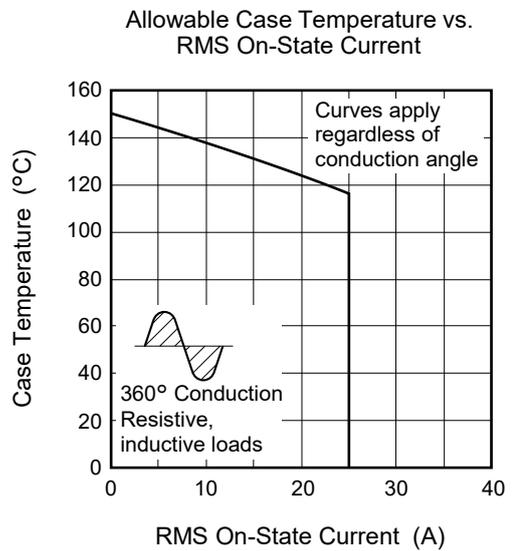
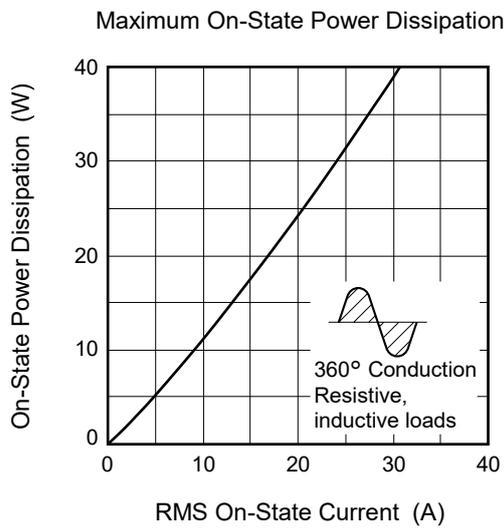
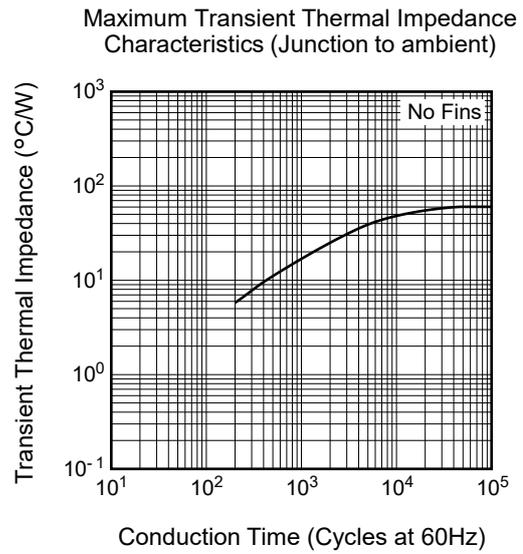
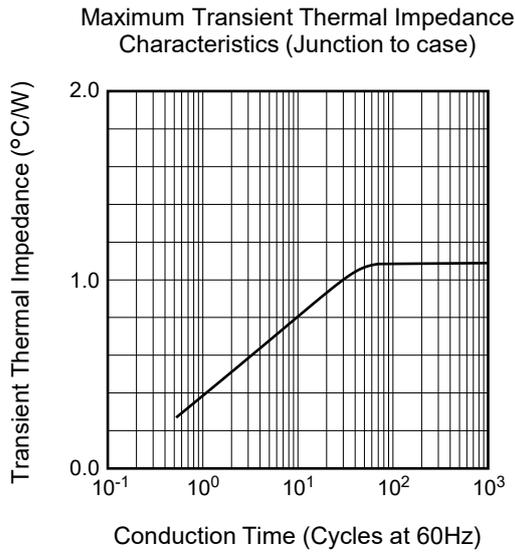
Parameter	Symbol	Min.	Typ.	Max.	Unit	Test conditions	
Repetitive peak off-state current	I <sub>DRM</sub>	—	—	3.0	mA	T <sub>J</sub> = 125°C, V <sub>DRM</sub> applied	
		—	—	5.0		T <sub>J</sub> = 150°C, V <sub>DRM</sub> applied	
On-state voltage	V <sub>TM</sub>	—	—	1.5	V	T <sub>C</sub> = 25°C, I <sub>TM</sub> = 40 A, instantaneous measurement	
Gate trigger voltage <sup>Note2</sup>	I	V <sub>FGTI</sub>	—	—	2.0	V	T <sub>J</sub> = 25°C, V <sub>D</sub> = 6 V, R <sub>L</sub> = 6 Ω, R <sub>G</sub> = 330 Ω
	II	V <sub>RGTI</sub>	—	—	2.0		
	III	V <sub>RGTIII</sub>	—	—	2.0		
Gate trigger current <sup>Note2</sup>	I	I <sub>FGTI</sub>	—	—	50	mA	T <sub>J</sub> = 25°C, V <sub>D</sub> = 6 V, R <sub>L</sub> = 6 Ω, R <sub>G</sub> = 330 Ω
	II	I <sub>RGTI</sub>	—	—	50		
	III	I <sub>RGTIII</sub>	—	—	50		
Gate non-trigger voltage	V <sub>GD</sub>	0.2	—	—	V	T <sub>J</sub> = 125°C, V <sub>D</sub> = 1/2 V <sub>DRM</sub>	
		0.1	—	—		T <sub>J</sub> = 150°C, V <sub>D</sub> = 1/2 V <sub>DRM</sub>	
Thermal resistance	R <sub>th(j-c)</sub>	—	—	1.1	°C/W	Junction to case <sup>Note3 Note4</sup>	
		—	—	—		—	
Critical-rate of rise of off-state commutation voltage <sup>Note5</sup>	(dv/dt) <sub>c</sub>	10	—	—	V/μs	T <sub>J</sub> = 125°C	
		1	—	—		T <sub>J</sub> = 150°C	

- Notes: 1. Gate open.  
 2. Measurement using the gate trigger characteristics measurement circuit.  
 3. Case temperature is measured at the T<sub>2</sub> tab 1.5 mm away from the molded case.  
 4. The contact thermal resistance R<sub>th(c-f)</sub> in case of greasing is 1.0°C/W.  
 5. Test conditions of the critical-rate of rise of off-state commutation voltage is shown in the table below.

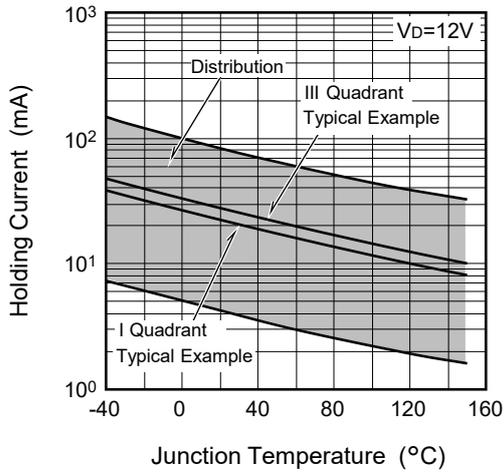
Test conditions	Commutating voltage and current waveforms (inductive load)
1. Junction temperature T <sub>J</sub> = 125°C/150°C 2. Rate of decay of on-state commutating current (di/dt) <sub>c</sub> = - 13 A/ms 3. Peak off-state voltage V <sub>D</sub> = 400 V	

Performance Curves

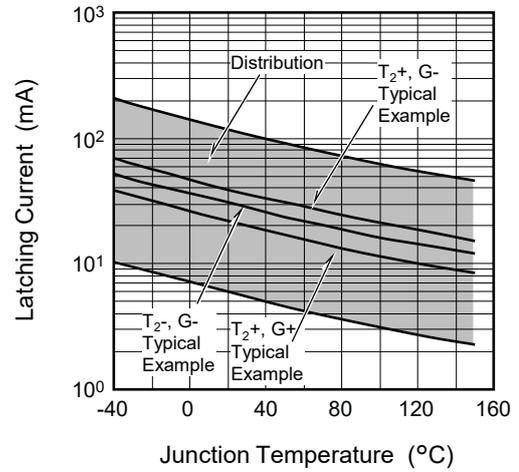




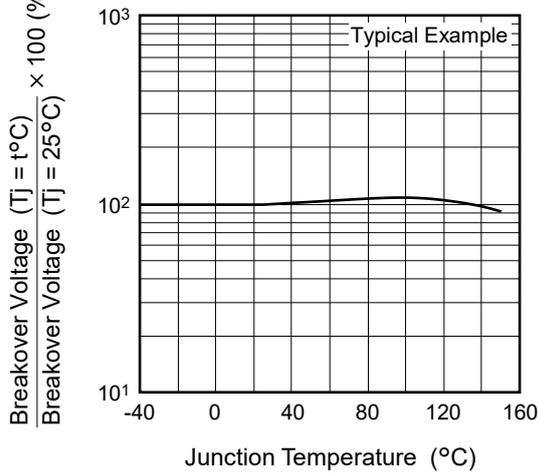
Holding Current vs. Junction Temperature



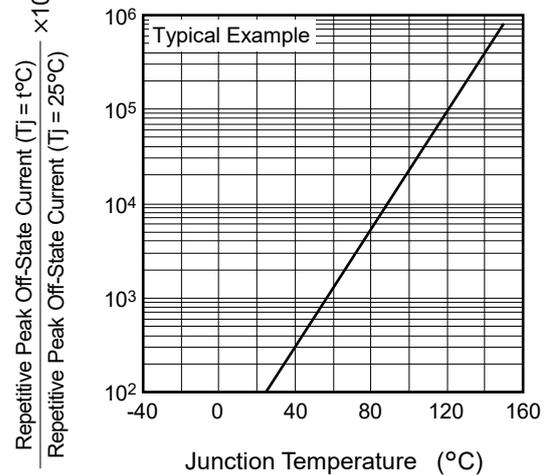
Latching Current vs. Junction Temperature



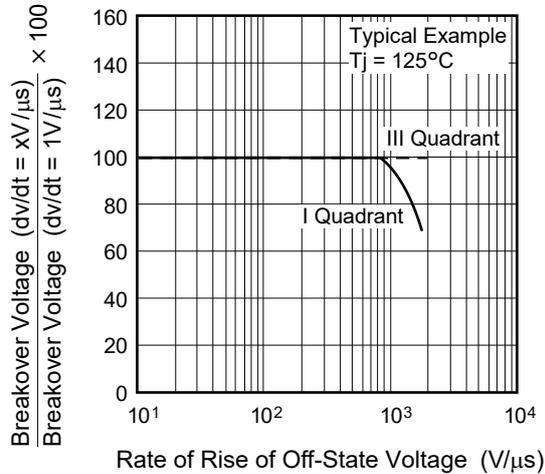
Breakover Voltage vs. Junction Temperature



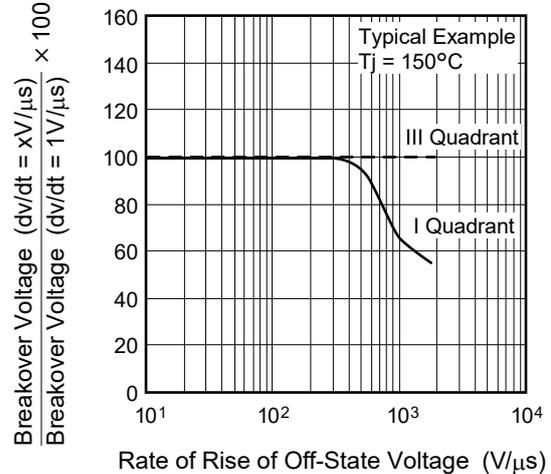
Repetitive Peak Off-State Current vs. Junction Temperature



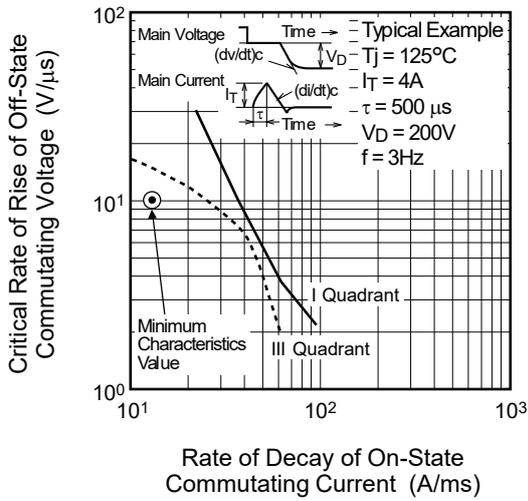
Breakover Voltage vs. Rate of Rise of Off-State Voltage (Tj=125°C)



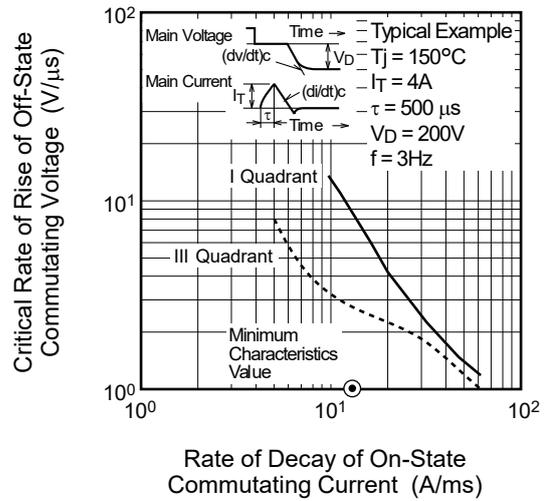
Breakover Voltage vs. Rate of Rise of Off-State Voltage (Tj=150°C)



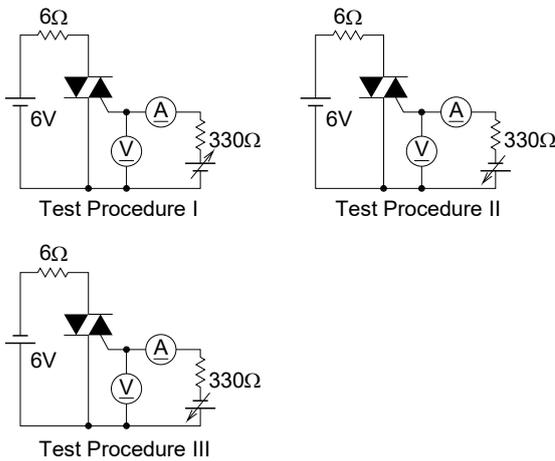
Commutation Characteristics (Tj=125°C)



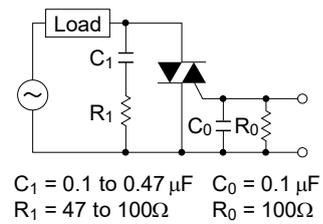
Commutation Characteristics (Tj=150°C)



Gate Trigger Characteristics Test Circuits

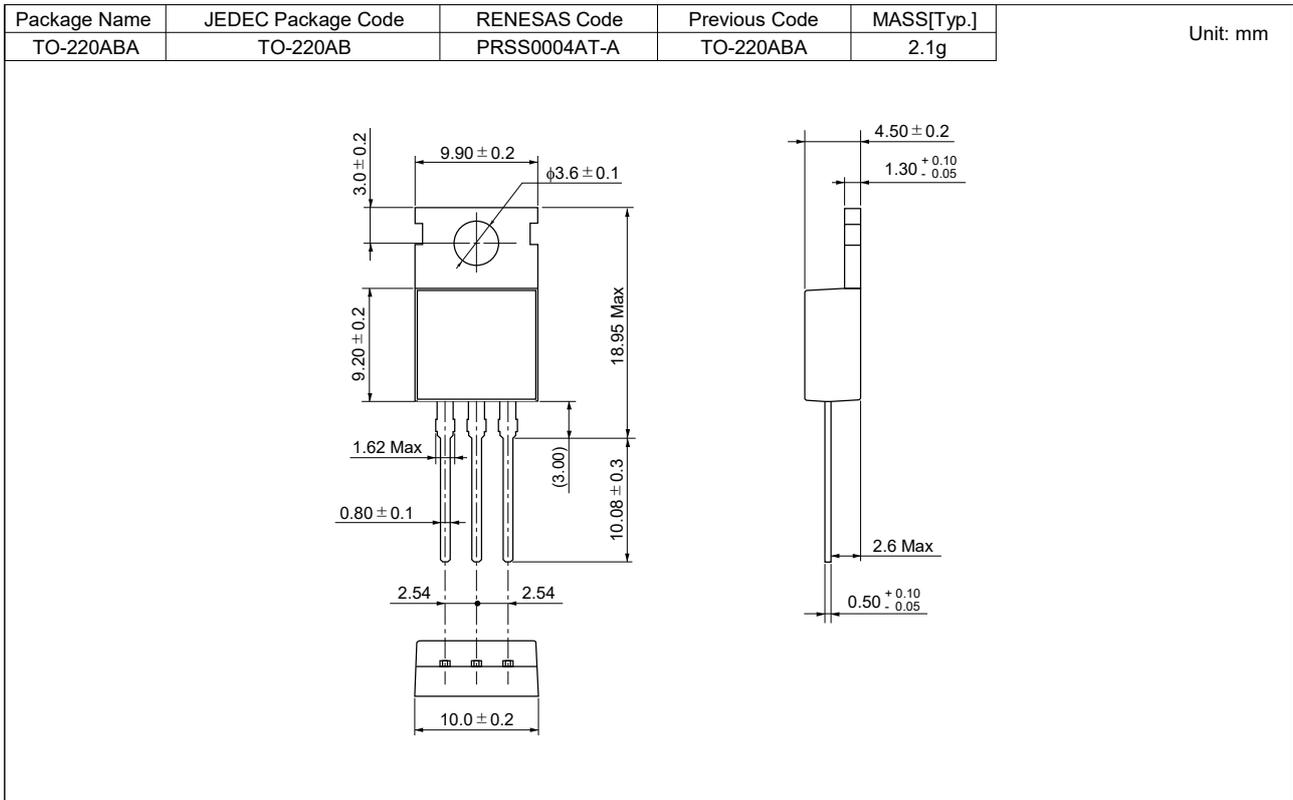


Recommended peripheral components for Triac

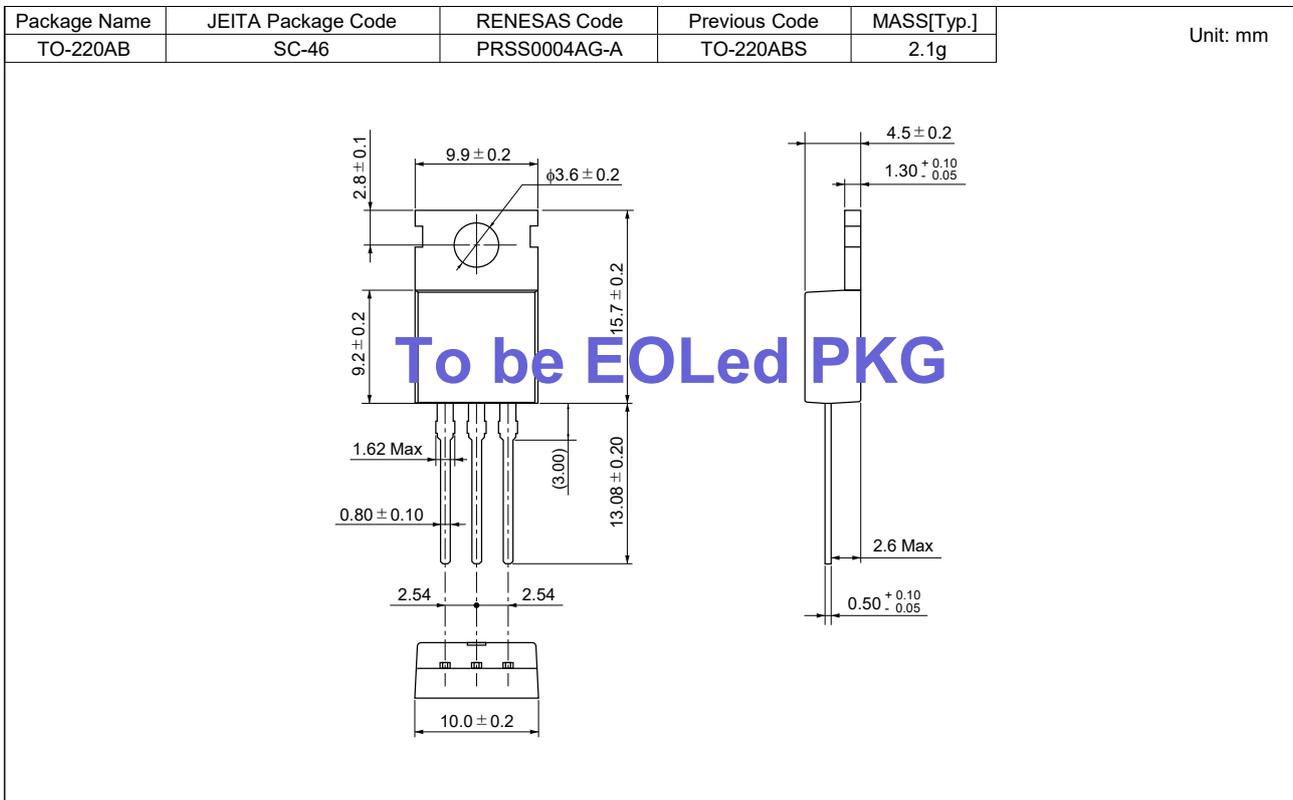


### Package Dimensions

Ordering code: #BH0



Ordering code: #BB0



## Ordering Information

Orderable Part Number	Package	Quantity <sup>Note7</sup>	Remark	Status
BCR25CM-12LB#BH0	TO-220ABA	50 pcs./ tube	Straight type	Mass Production
BCR25CM-12LB#BB0	TO-220ABS	50 pcs./ tube	Straight type	EOL Candidate
BCR25CM-12LB□□#BB0	TO-220ABS	50 pcs./ tube	□□:Lead form type	

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

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