

# BCR3AS-12B

600V - 3A - Triac

Low Power Use

R07DS1439EJ0500  
 (Previous: REJ03G0450-0400)  
 Rev.5.00  
 May. 10, 2019

## Features

- $I_{T(RMS)}$  : 3 A
- $V_{DRM}$  : 600 V
- $I_{FGTI}$ ,  $I_{RGTI}$ ,  $I_{RGTIII}$ : 15 mA
- $T_j$ : 150 °C
- Planar Passivation Type

## Outline

RENESAS Package code: PRSS0004ZG-A  
 (Package name: MP-3A)

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

## Application

Small motor control, heater 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

Notes: 1. Gate open.

Parameter	Symbol	Ratings	Unit	Conditions
RMS on-state current	$I_{T(RMS)}$	3	A	Commercial frequency, sine full wave 360°conduction, $T_c = 133^{\circ}C$ <sup>Note3</sup>
Surge on-state current	$I_{TSM}$	30	A	60 Hz sinewave 1 full cycle, peak value, non-repetitive
$I^2t$ for fusing	$I^2t$	3.7	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	$V_{GM}$	6	V	
Peak gate current	$I_{GM}$	0.3	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	$V_{TM}$	—	—	1.7	V	$T_c = 25^\circ\text{C}$ , $I_{TM} = 4.5\text{ A}$ , instantaneous measurement
Gate trigger voltage <sup>Note2</sup>	I	$V_{FGTI}$	—	—	1.5	$T_j = 25^\circ\text{C}$ , $V_D = 6\text{ V}$ , $R_L = 6\ \Omega$ , $R_G = 330\ \Omega$
	II	$V_{RGTI}$	—	—	1.5	
	III	$V_{RGTIII}$	—	—	1.5	
Gate trigger current <sup>Note2</sup>	I	$I_{FGTI}$	—	—	15	$T_j = 25^\circ\text{C}$ , $V_D = 6\text{ V}$ , $R_L = 6\ \Omega$ , $R_G = 330\ \Omega$
	II	$I_{RGTI}$	—	—	15	
	III	$I_{RGTIII}$	—	—	15	
Gate non-trigger voltage	$V_{GD}$	0.2	—	—	V	$T_j = 125^\circ\text{C}$ , $V_D = 1/2 V_{DRM}$
		0.1	—	—		$T_j = 150^\circ\text{C}$ , $V_D = 1/2 V_{DRM}$
Thermal resistance	$R_{th(j-c)}$	—	—	3.8	$^\circ\text{C/W}$	Junction to case <sup>Note3</sup>
Critical-rate of rise of off-state commutating voltage <sup>Note4</sup>	$(dv/dt)_c$	5	—	—	$\text{V}/\mu\text{s}$	$T_j = 125^\circ\text{C}$
		1	—	—		$T_j = 150^\circ\text{C}$

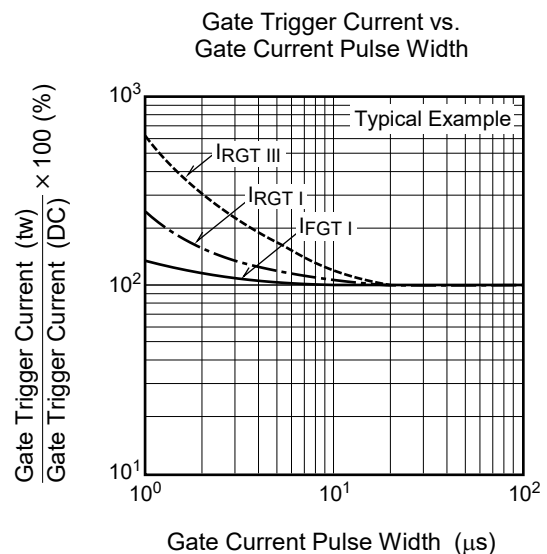
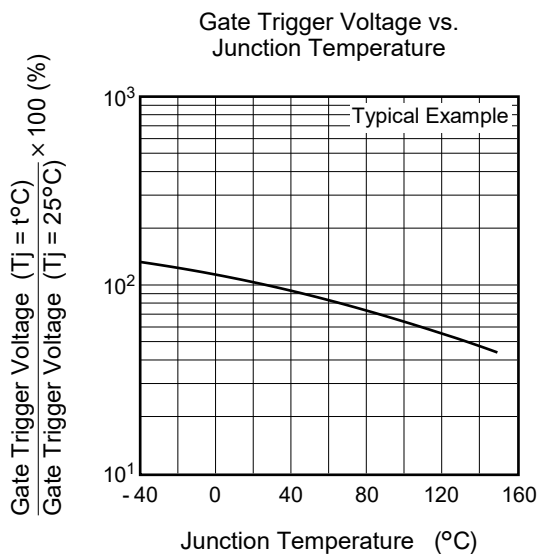
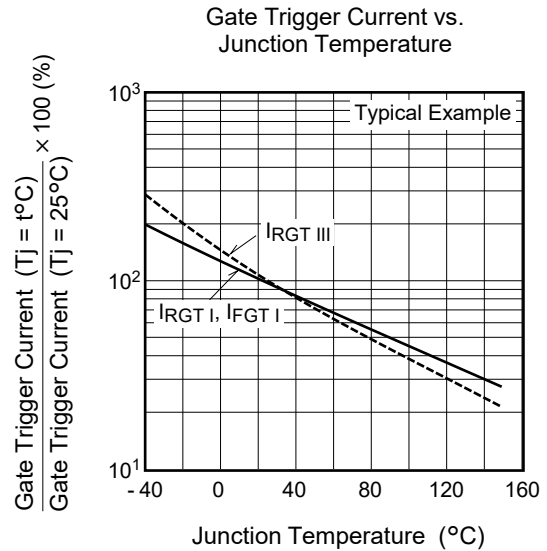
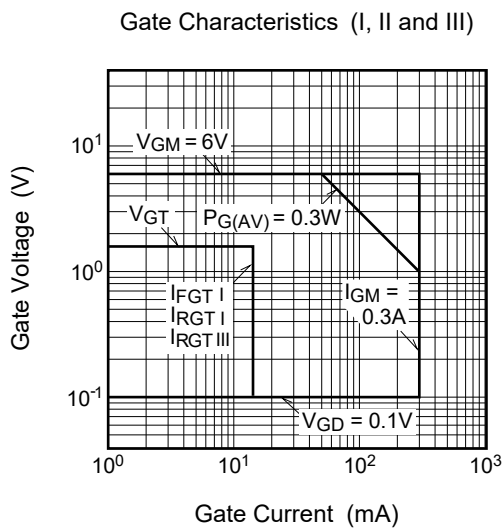
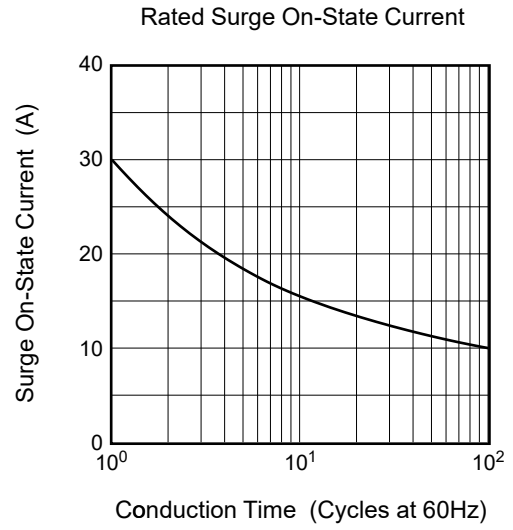
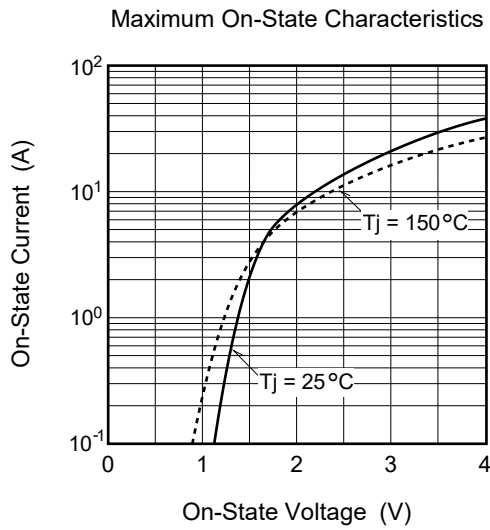
Notes: 2. Measurement using the gate trigger characteristics measurement circuit.

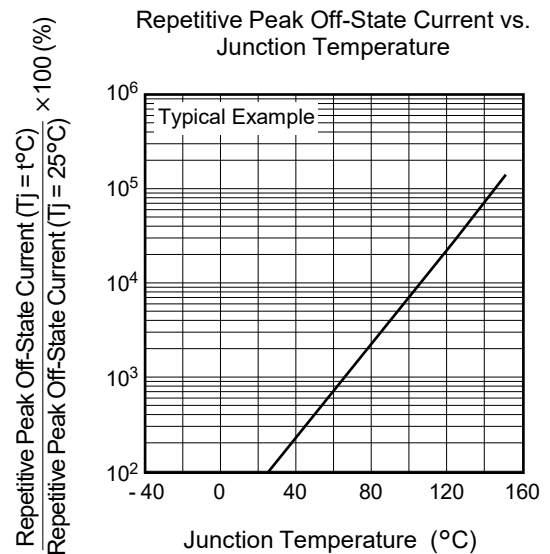
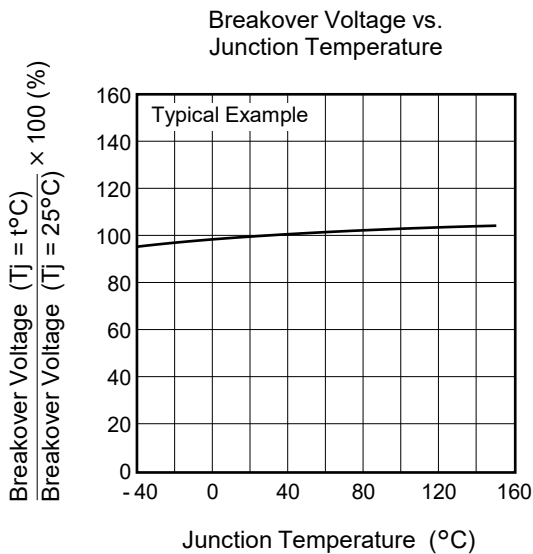
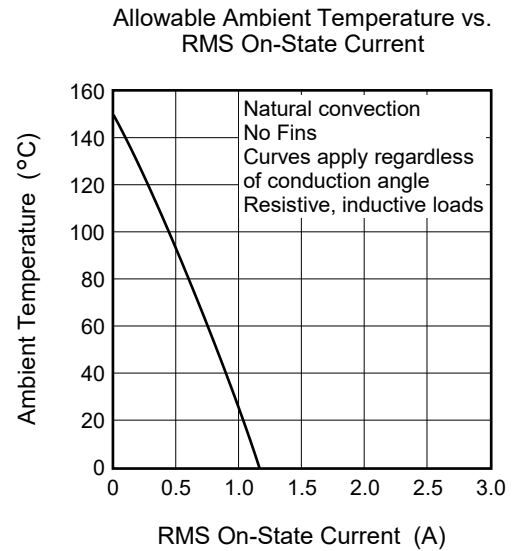
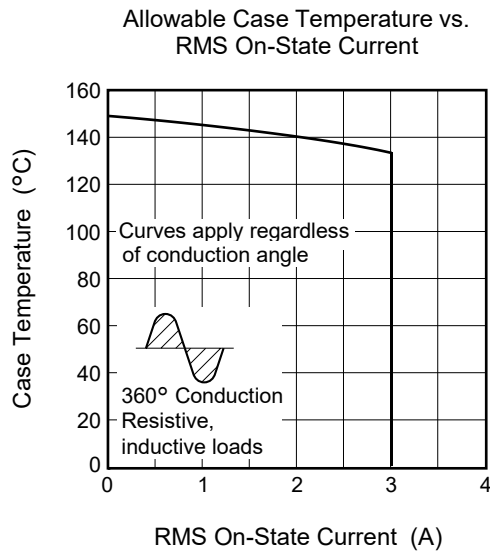
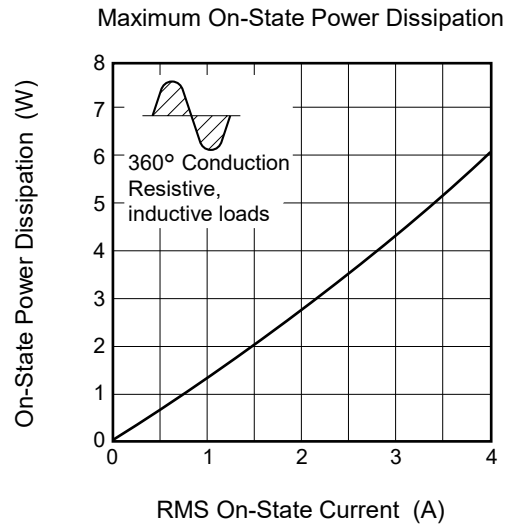
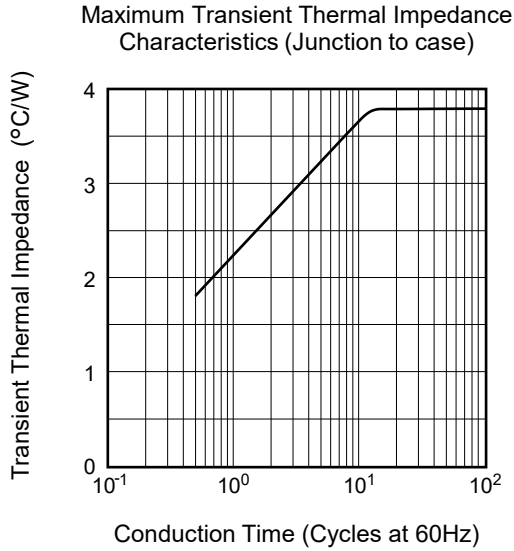
3. Case temperature is measured on the  $T_2$  tab.

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

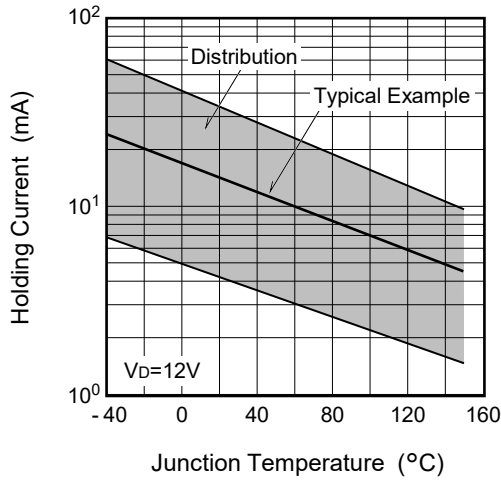
Test conditions	Commutating voltage and current waveforms (inductive load)
1. Junction temperature $T_j = 125^\circ\text{C}/150^\circ\text{C}$ 2. Rate of decay of on-state commutating current $(di/dt)_c = -1.5\text{ A/ms}$ 3. Peak off-state voltage $V_D = 400\text{ V}$	

Performance Curves

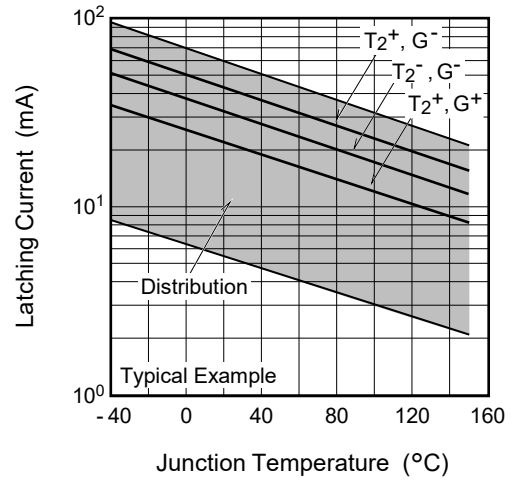




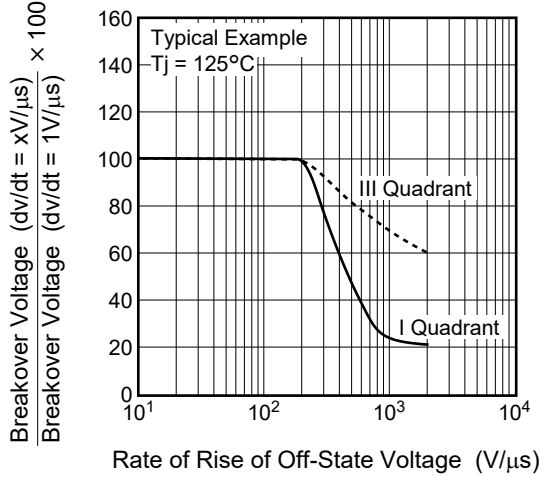
Holding Current vs. Junction Temperature



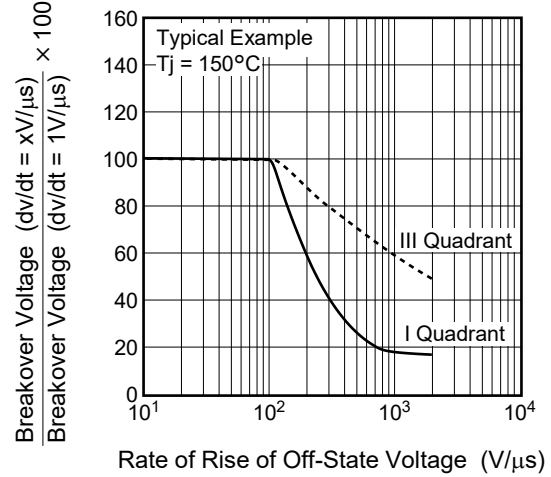
Latching Current vs. Junction Temperature



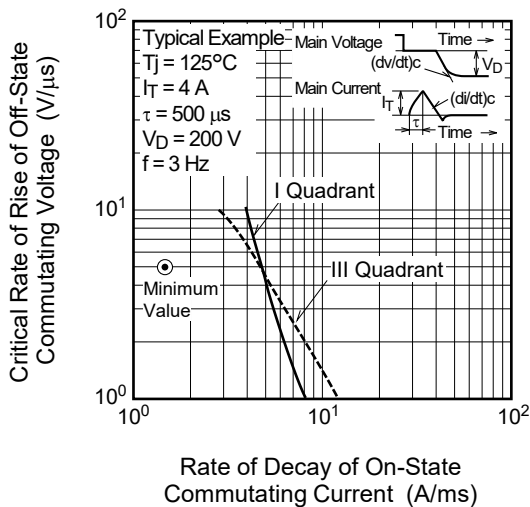
Breakover Voltage vs. Rate of Rise of Off-State Voltage (T<sub>J</sub>=125°C)



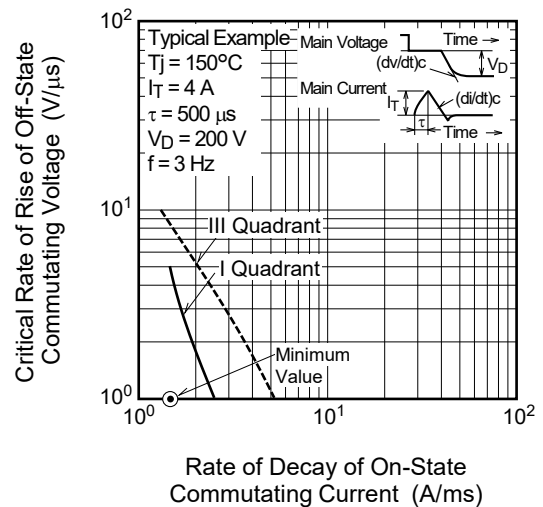
Breakover Voltage vs. Rate of Rise of Off-State Voltage (T<sub>J</sub>=150°C)



Commutation Characteristics (T<sub>J</sub>=125°C)

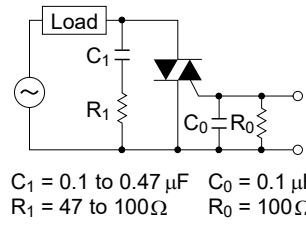
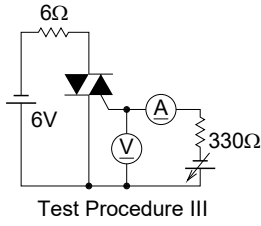
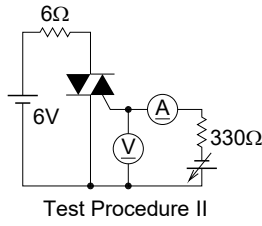
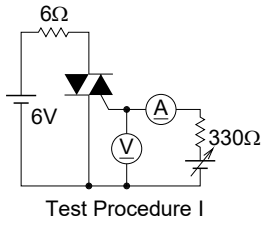


Commutation Characteristics (T<sub>J</sub>=150°C)



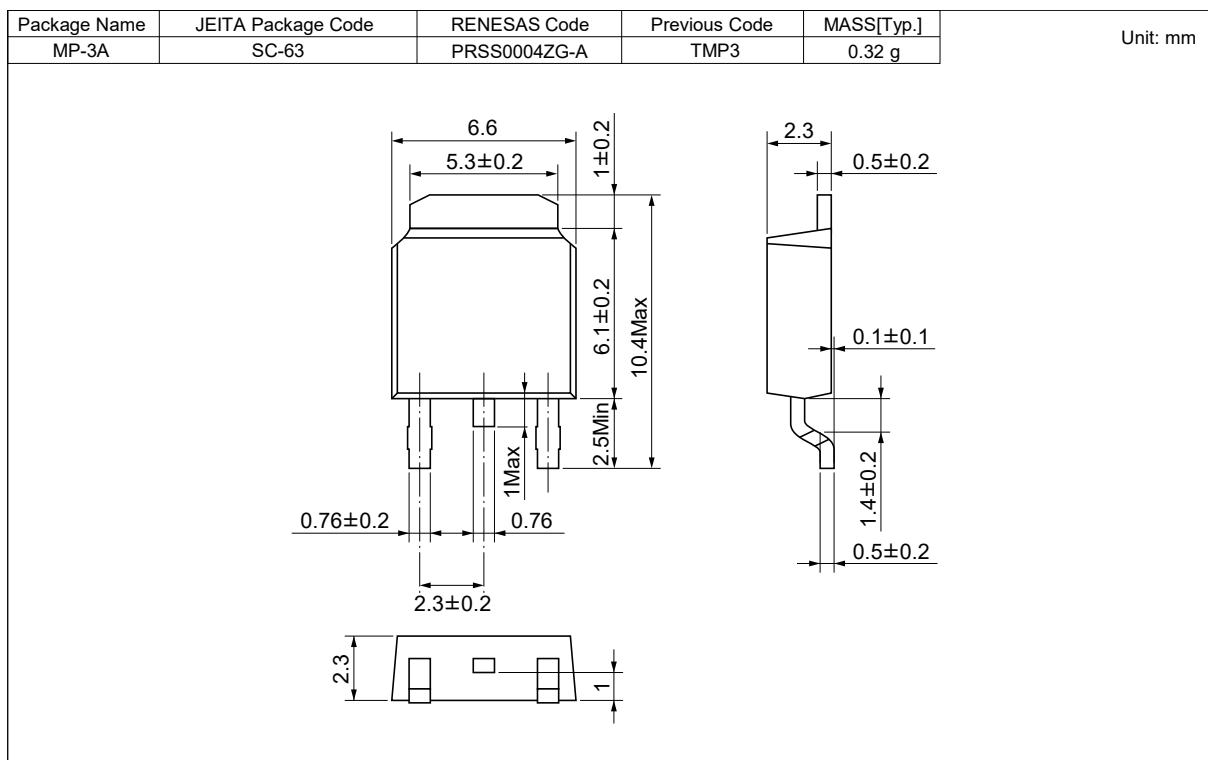
Gate Trigger Characteristics Test Circuits

Recommended peripheral components for Triac



## Package Dimensions

Package Name: MP-3A



## Ordering Information

Orderable Part Number	Package	Packing <sup>Note5</sup>	Quantity	Remark
BCR3AS-12B-T13#B01	MP-3A	Embossed tape	3000 pcs.	
BCR3AS-12B#B01	MP-3A	Tube	75 pcs.	Tube packing is to be abolished.

Note: 5. Please confirm the specification about the shipping in detail.

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