



# BCR20AM-12LA

Triac

Medium Power Use

REJ03G0299-0300

Rev.3.00

Nov 30, 2007

## Features

- $I_T(RMS)$  : 20 A
- $V_{DRM}$  : 600 V
- $I_{FGT1}$ ,  $I_{RGT1}$ ,  $I_{RGT III}$  : 30 mA (20 mA)<sup>Note6</sup>
- Non-Insulated Type
- Planar Passivation Type

## Outline

RENESAS Package code: PRSS0004AA-A  
(Package name: TO-220)



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	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



## BCR20AM-12LA

Parameter	Symbol	Ratings	Unit	Conditions
RMS on-state current	$I_{T(RMS)}$	20	A	Commercial frequency, sine full wave 360° conduction, $T_c = 109^\circ\text{C}$ <sup>Note3</sup>
Surge on-state current	$I_{TSM}$	200	A	60Hz sinewave 1 full cycle, peak value, non-repetitive
$I^2t$ for fusing	$I^2t$	167	$\text{A}^2\text{s}$	Value corresponding to 1 cycle of half wave 60Hz, 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 +125	$^\circ\text{C}$	
Storage temperature	$T_{stg}$	- 40 to +125	$^\circ\text{C}$	
Mass	—	2.0	g	Typical value

Notes: 1. Gate open.

## Electrical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test conditions	
Repetitive peak off-state current	$I_{DRM}$	—	—	2.0	mA	$T_J = 125^\circ\text{C}$ , $V_{DRM}$ 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	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	$T_J = 125^\circ\text{C}$ , $V_D = 1/2 V_{DRM}$	
Thermal resistance	$R_{th(j-c)}$	—	—	0.8	$^\circ\text{C}/\text{W}$	Junction to case <sup>Note3 Note4</sup>	
Critical-rate of rise of off-state commutating voltage <sup>Note5</sup>	$(dv/dt)_c$	10	—	—	$\text{V}/\mu\text{s}$	$T_J = 125^\circ\text{C}$	

Notes: 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.

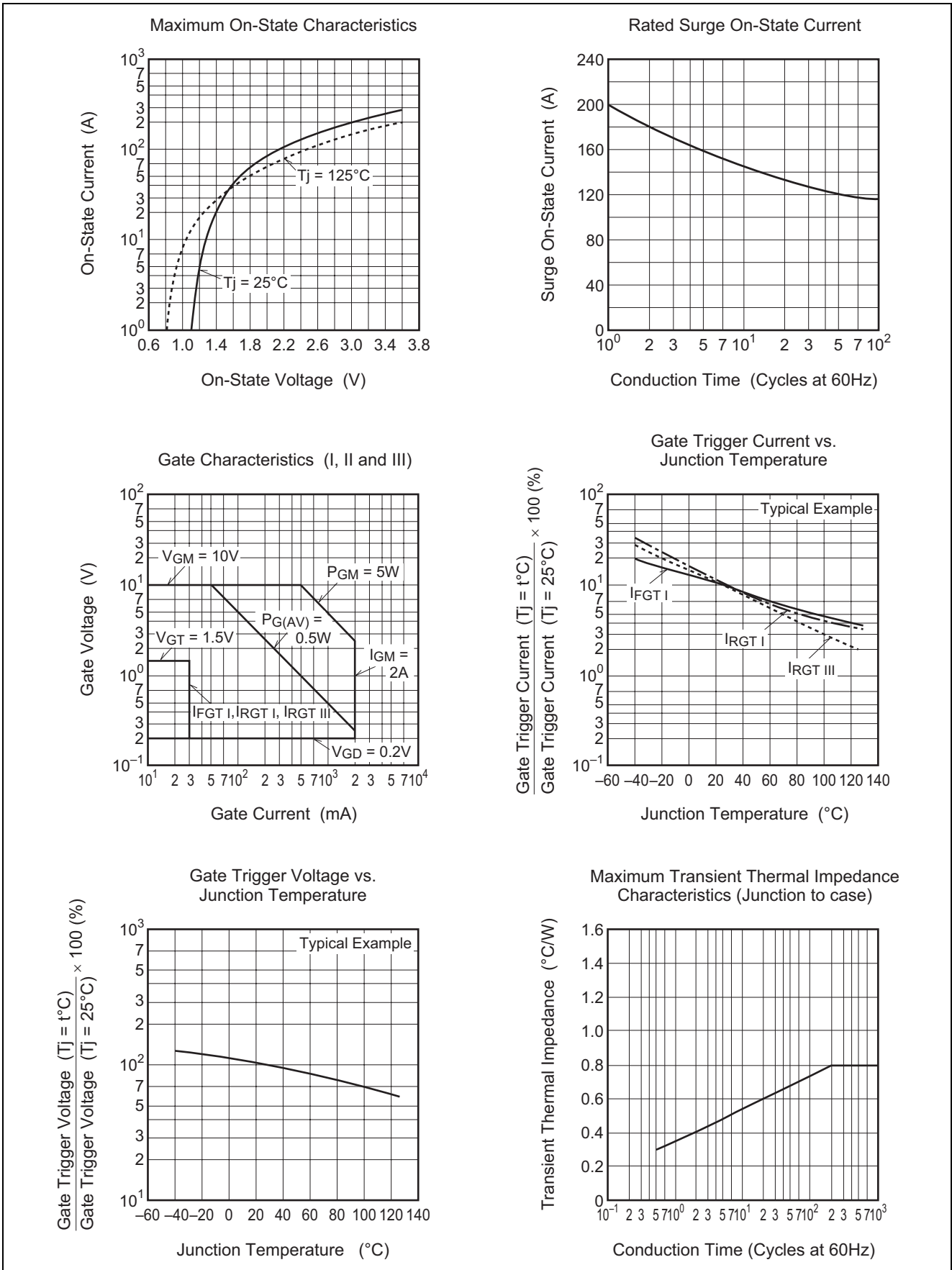
4. The contact thermal resistance  $R_{th(c-f)}$  in case of greasing is  $1.0^\circ\text{C}/\text{W}$ .

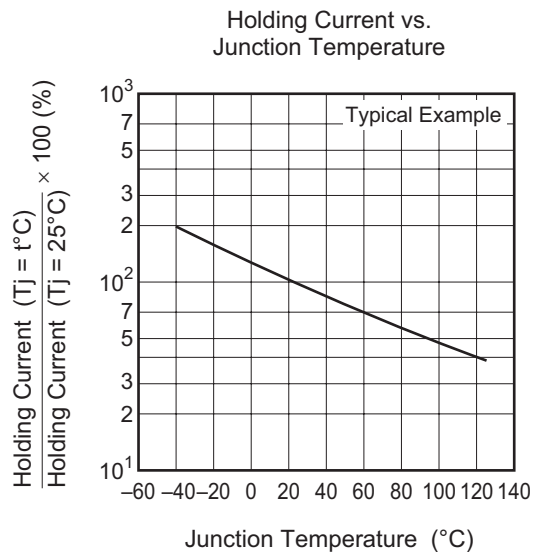
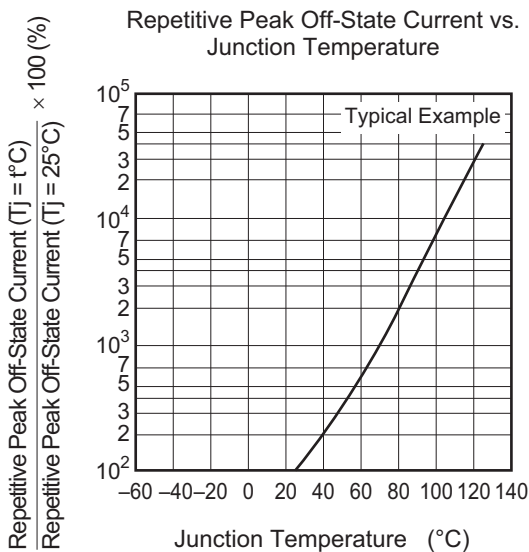
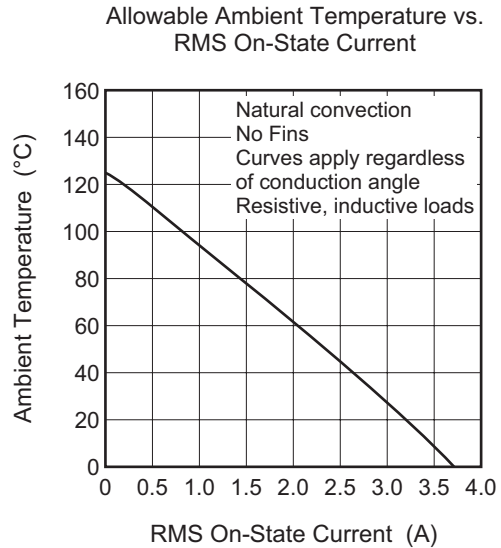
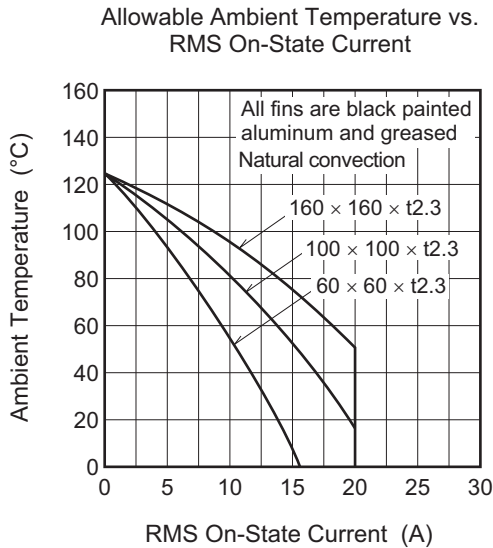
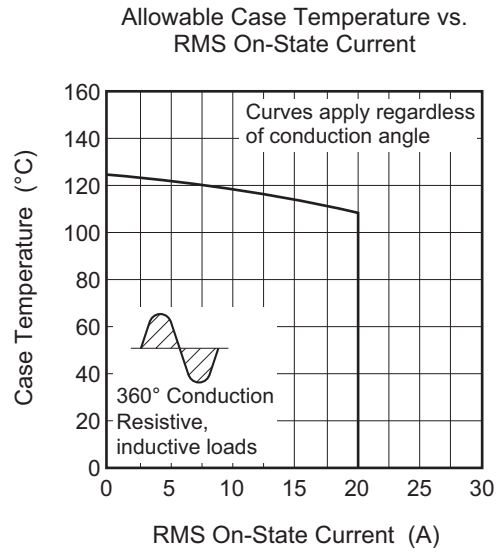
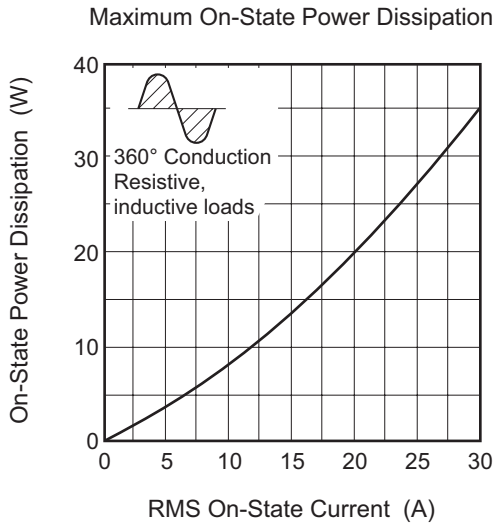
5. Test conditions of the critical-rate of rise of off-state commutating voltage is shown in the table below.

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

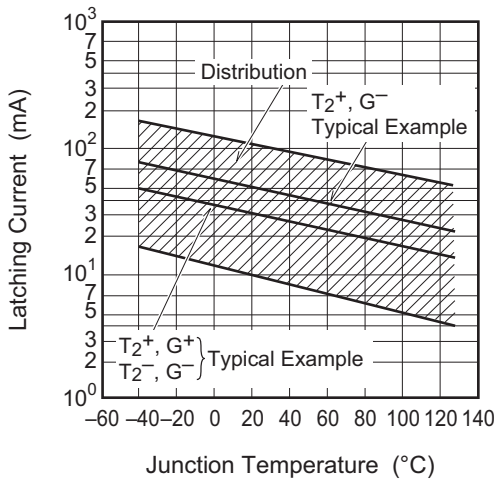
Test conditions	Commutating voltage and current waveforms (inductive load)
1. Junction temperature $T_J = 125^\circ\text{C}$ 2. Rate of decay of on-state commutating current $(di/dt)_c = -10\text{ A/ms}$ 3. Peak off-state voltage $V_D = 400\text{ V}$	

Performance Curves

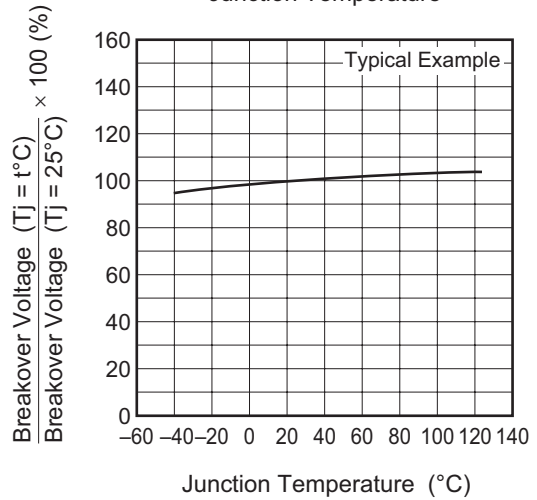




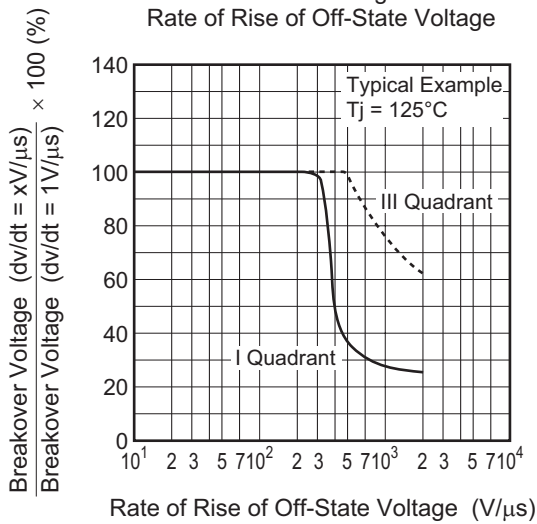
Latching Current vs. Junction Temperature



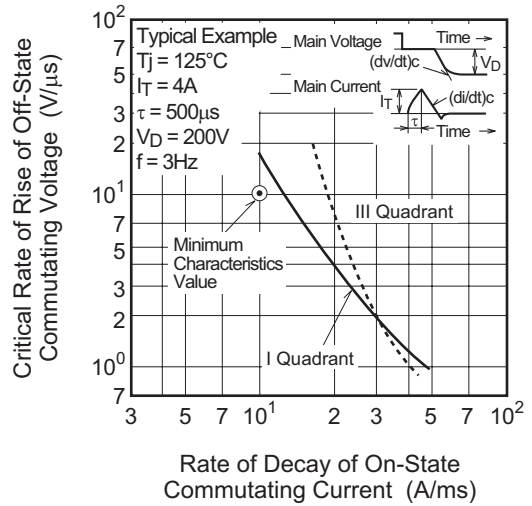
Breakover Voltage vs. Junction Temperature



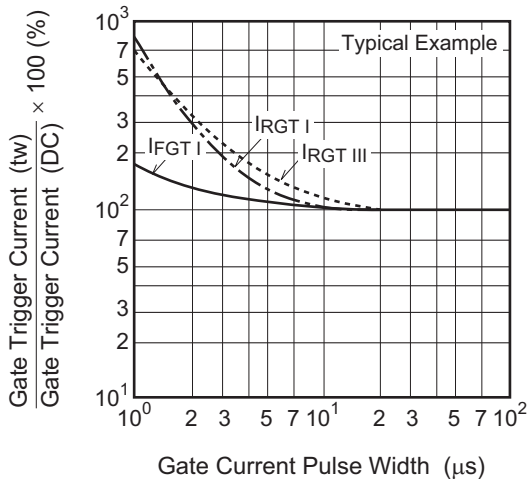
Breakover Voltage vs. Rate of Rise of Off-State Voltage



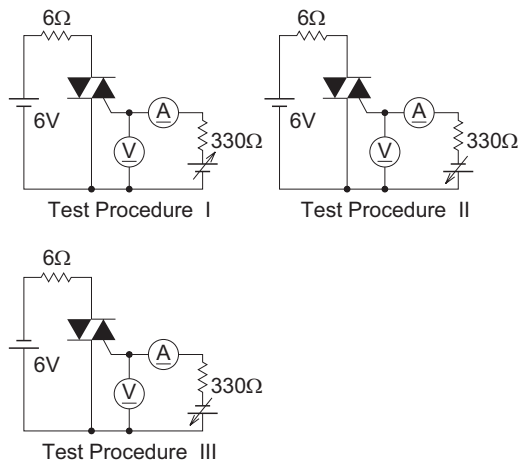
Commutation Characteristics



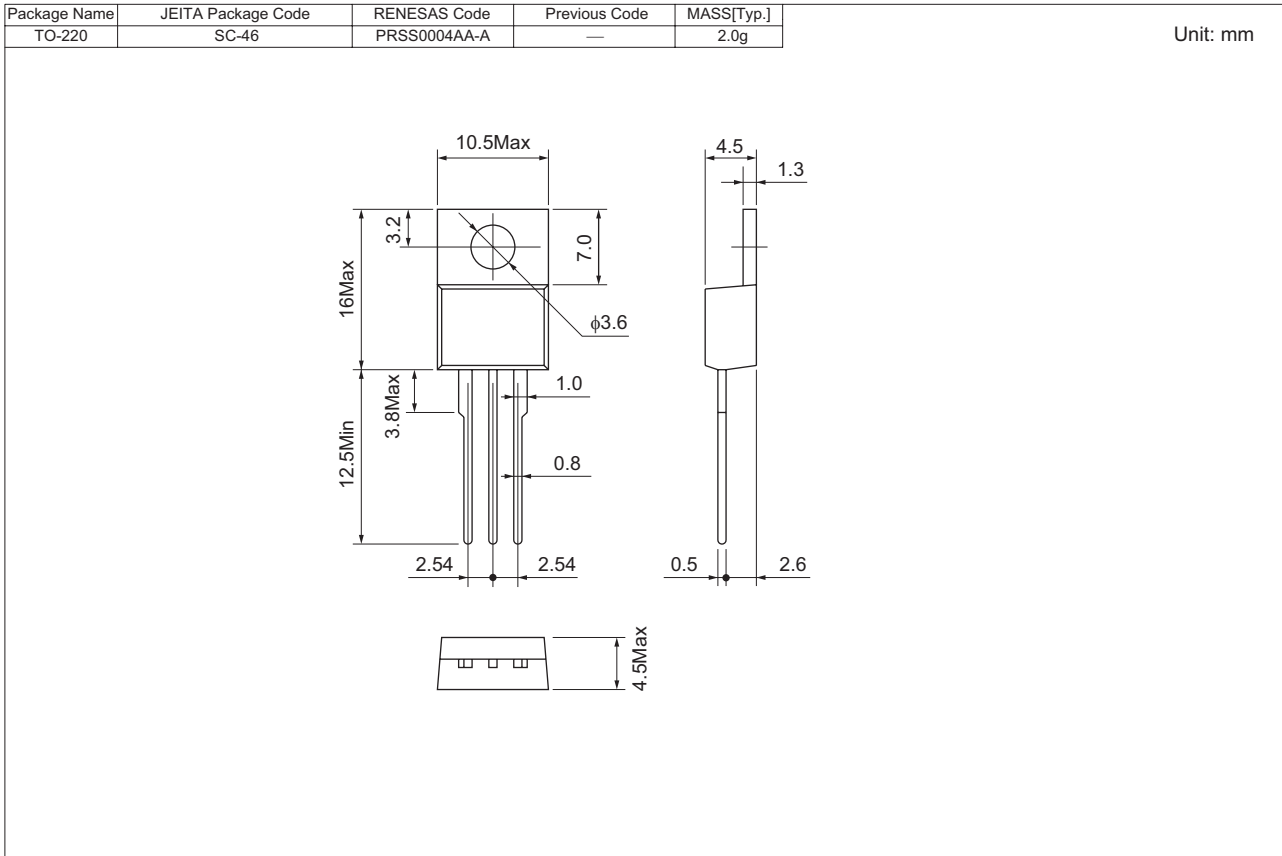
Gate Trigger Current vs. Gate Current Pulse Width



Gate Trigger Characteristics Test Circuits



Package Dimensions



Order Code

Lead form	Standard packing	Quantity	Standard order code	Standard order code example
Straight type	Vinyl sack	100	Type name	BCR20AM-12LA
Lead form	Plastic Magazine (Tube)	50	Type name – Lead forming code	BCR20AM-12LA-A8

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

Notes:

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