

# BCR4CM-16LH

Triac  
Medium Power Use

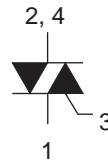
R07DS0255EJ0100  
Rev.1.00  
Feb 28, 2011

## Features

- $I_{T(RMS)}$  : 4 A
- $V_{DRM}$  : 800 V
- $I_{FGT}$ ,  $I_{RGT}$ ,  $I_{RGT III}$  : 35 mA or 10mA( $I_{GT}$  item:1)
- High Commutation
- The Product guaranteed maximum junction temperature 150°C
- Planar 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

Switching mode power supply, small motor control, heater control, and other general purpose AC power control applications

## Maximum Ratings

Parameter	Symbol	Voltage class	
		16	Unit
Repetitive peak off-state voltage <sup>Note1</sup>	$V_{DRM}$	800	V
Non-repetitive peak off-state voltage <sup>Note1</sup>	$V_{DSM}$	960	V

Notes: 1. Gate open.

Parameter	Symbol	Ratings	Unit	Conditions
RMS on-state current	$I_{T(RMS)}$	4	A	Commercial frequency, sine full wave 360°conduction, $T_c = 132^{\circ}\text{C}$ <sup>Note3</sup>
Surge on-state current	$I_{TSM}$	30	A	60 Hz sinewave 1 full cycle, peak value, non-repetitive
$I^2t$ for fusion	$I^2t$	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	$V_{GM}$	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	
Mass	—	2.0	g	Typical value

Notes: 1. Gate open.

## Electrical Characteristics

Parameter	Symbol	BCR4CM-16LH-1 (I <sub>GT</sub> item: 1)			BCR4CM-16LH			Unit	Test conditions	
		Min.	Typ.	Max.	Min.	Typ.	Max.			
Repetitive peak off-state current	I <sub>DRM</sub>	—	—	2.0	—	—	2.0	mA	T <sub>j</sub> = 150°C V <sub>DRM</sub> applied	
On-state voltage	V <sub>TM</sub>	—	—	1.6	—	—	1.6	V	T <sub>c</sub> = 25°C, I <sub>TM</sub> = 6 A instantaneous measurement	
Gate trigger voltage <sup>Note2</sup>	I	V <sub>FGTI</sub>	—	—	1.5	—	—	1.5	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>	—	—	1.5	—	—	1.5	V	
	III	V <sub>RGTIII</sub>	—	—	1.5	—	—	1.5	V	
Gate trigger current <sup>Note2</sup>	I	I <sub>FGTI</sub>	—	—	10	—	—	35	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>	—	—	10	—	—	35	mA	
	III	I <sub>RGTIII</sub>	—	—	10	—	—	35	mA	
Gate non-trigger voltage	V <sub>GD</sub>	0.2	—	—	0.2	—	—	V	T <sub>j</sub> = 125°C V <sub>D</sub> = 1/2 V <sub>DRM</sub>	
		0.1	—	—	0.1	—	—	V	T <sub>j</sub> = 150°C V <sub>D</sub> = 1/2 V <sub>DRM</sub>	
Thermal resistance	R <sub>th (j-c)</sub>	—	—	3.3	—	—	3.3	°C/W	Junction to case <sup>Note3,4</sup>	
Critical-rate of decay of on-state commutating current <sup>Note5</sup>	(di/dt) <sub>c</sub>	2.5	—	—	—	—	—	A/ms	T <sub>j</sub> = 125°C (dv/dt) <sub>c</sub> < 10 V/μs	
		—	—	—	3.0	—	—	A/ms	T <sub>j</sub> = 125°C (dv/dt) <sub>c</sub> < 100 V/μs	

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

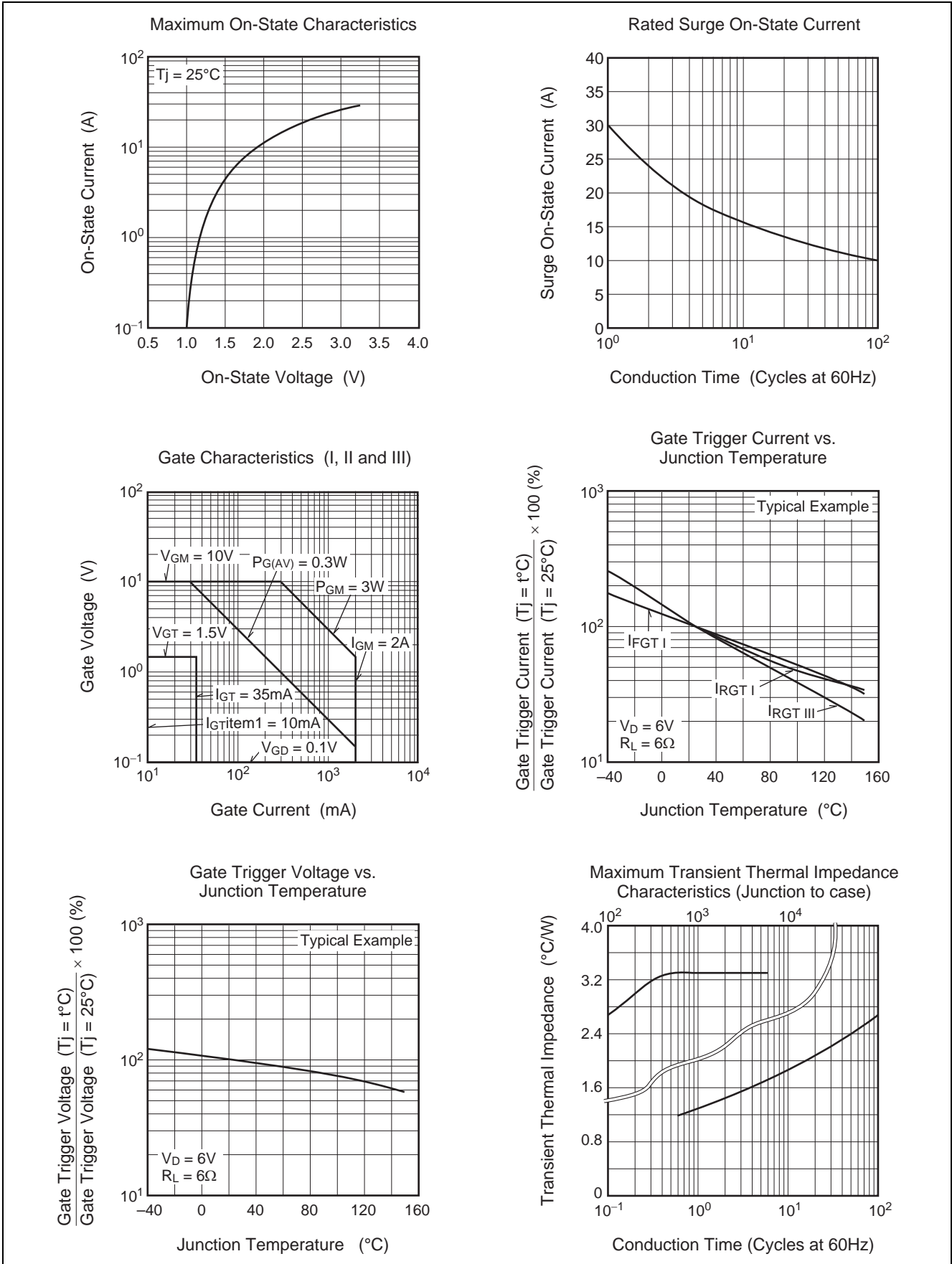
3. Case temperature is measured at the T<sub>2</sub> tab 1.5 mm apart from the molded case.

4. The contact thermal resistance R<sub>th (c-f)</sub> in case of greasing is 1.0°C/W.

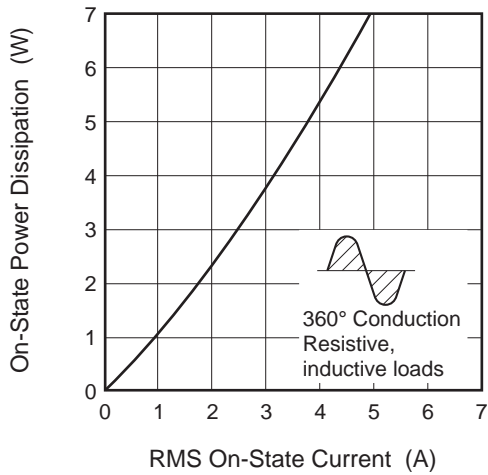
5. Test conditions of the critical-rate of decay of on-state commutation current are shown in the table below.

Test conditions	Commutating voltage and current waveforms (inductive load)
1. Junction temperature T <sub>j</sub> = 125°C 2. Peak off-state voltage V <sub>D</sub> = 400 V 2. Rate of rise of off-state commutating voltage (dv/dt) <sub>c</sub> < 10 V/μs (I <sub>GT</sub> item : 1) (dv/dt) <sub>c</sub> < 100 V/μs	

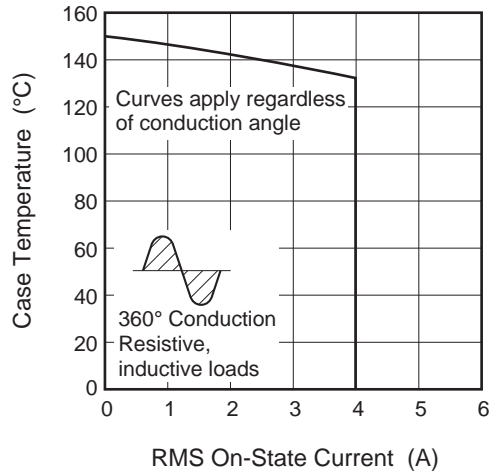
Performance Curve



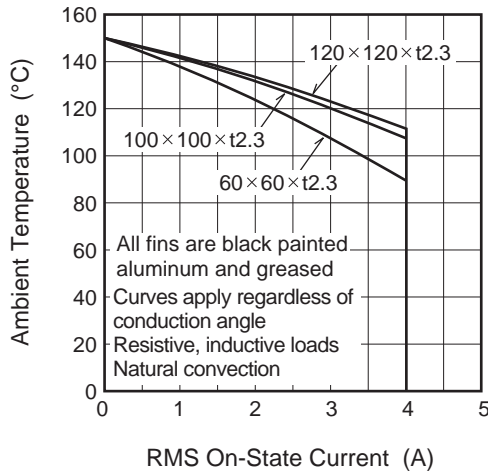
Maximum On-State Power Dissipation



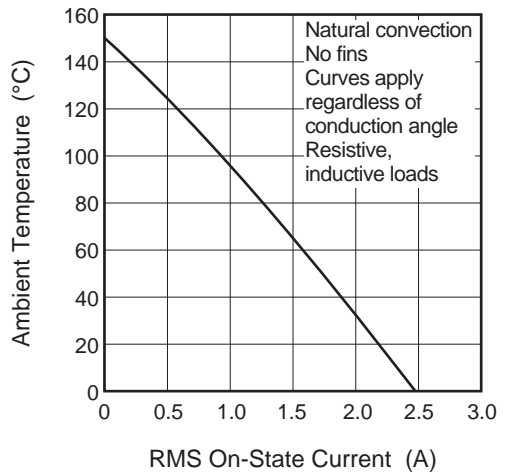
Allowable Case Temperature vs. RMS On-State Current



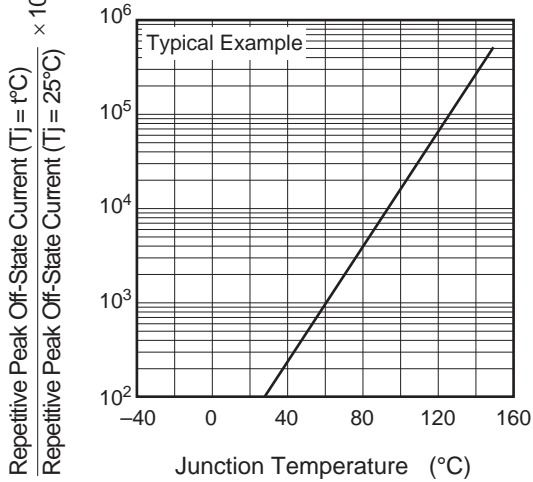
Allowable Ambient Temperature vs. RMS On-State Current



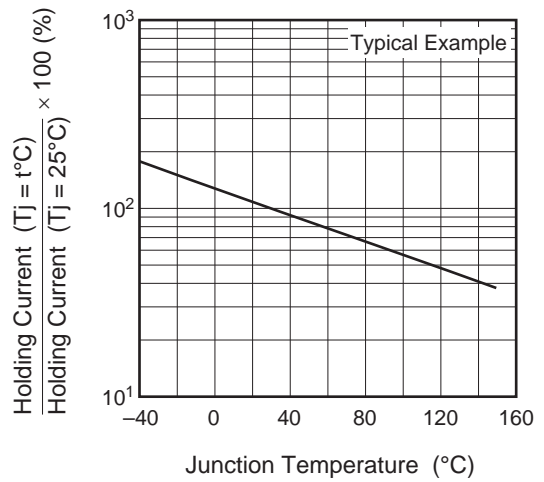
Allowable Ambient Temperature vs. RMS On-State Current



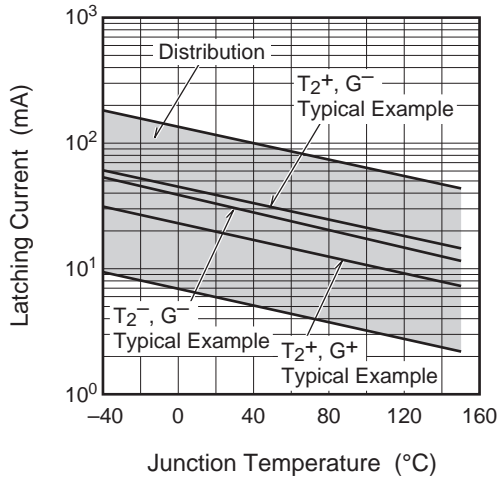
Repetitive Peak Off-State Current vs. Junction Temperature



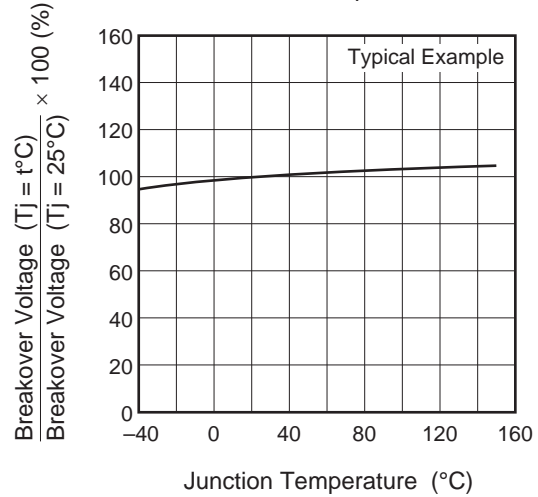
Holding Current vs. Junction Temperature



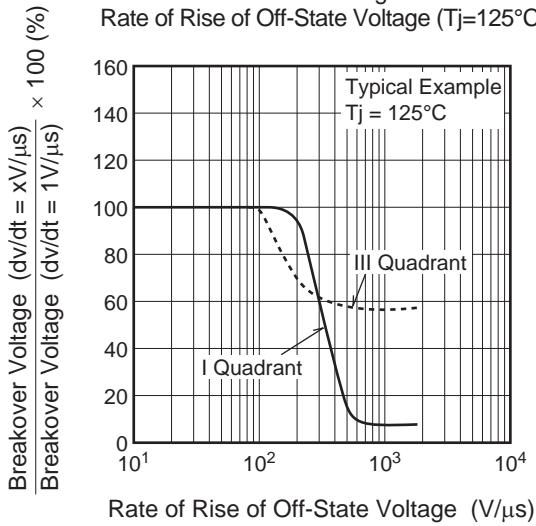
Latching Current vs. Junction Temperature



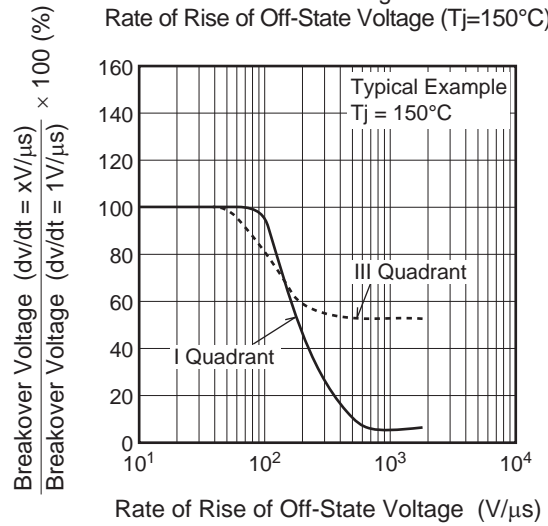
Breakover Voltage vs. Junction Temperature



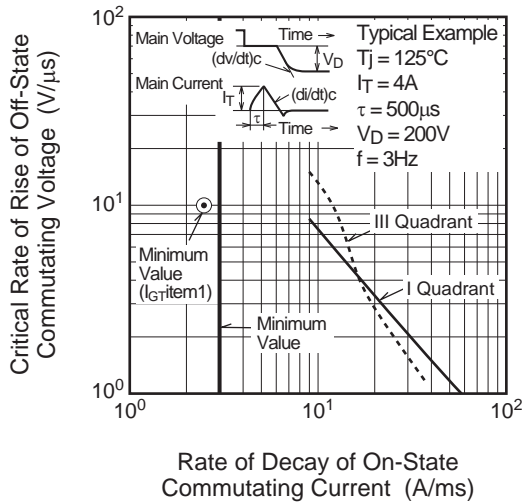
Breakover Voltage vs. Rate of Rise of Off-State Voltage (Tj=125°C)



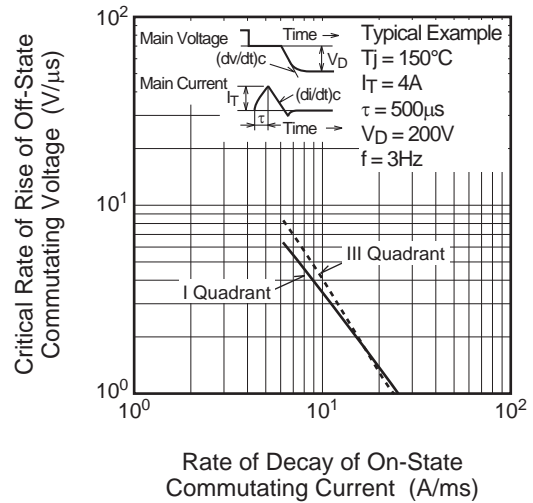
Breakover Voltage vs. Rate of Rise of Off-State Voltage (Tj=150°C)



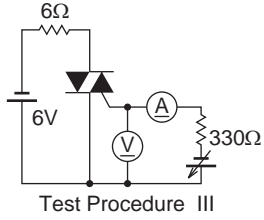
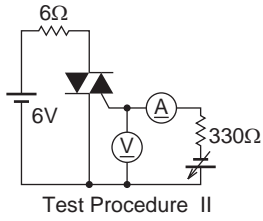
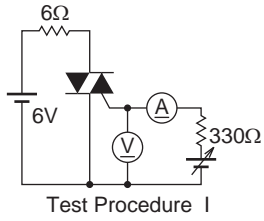
Commutation Characteristics (Tj=125°C)



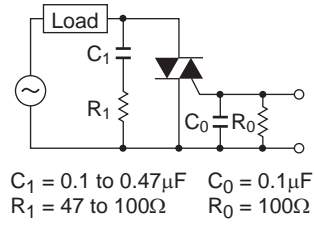
Commutation Characteristics (Tj=150°C)



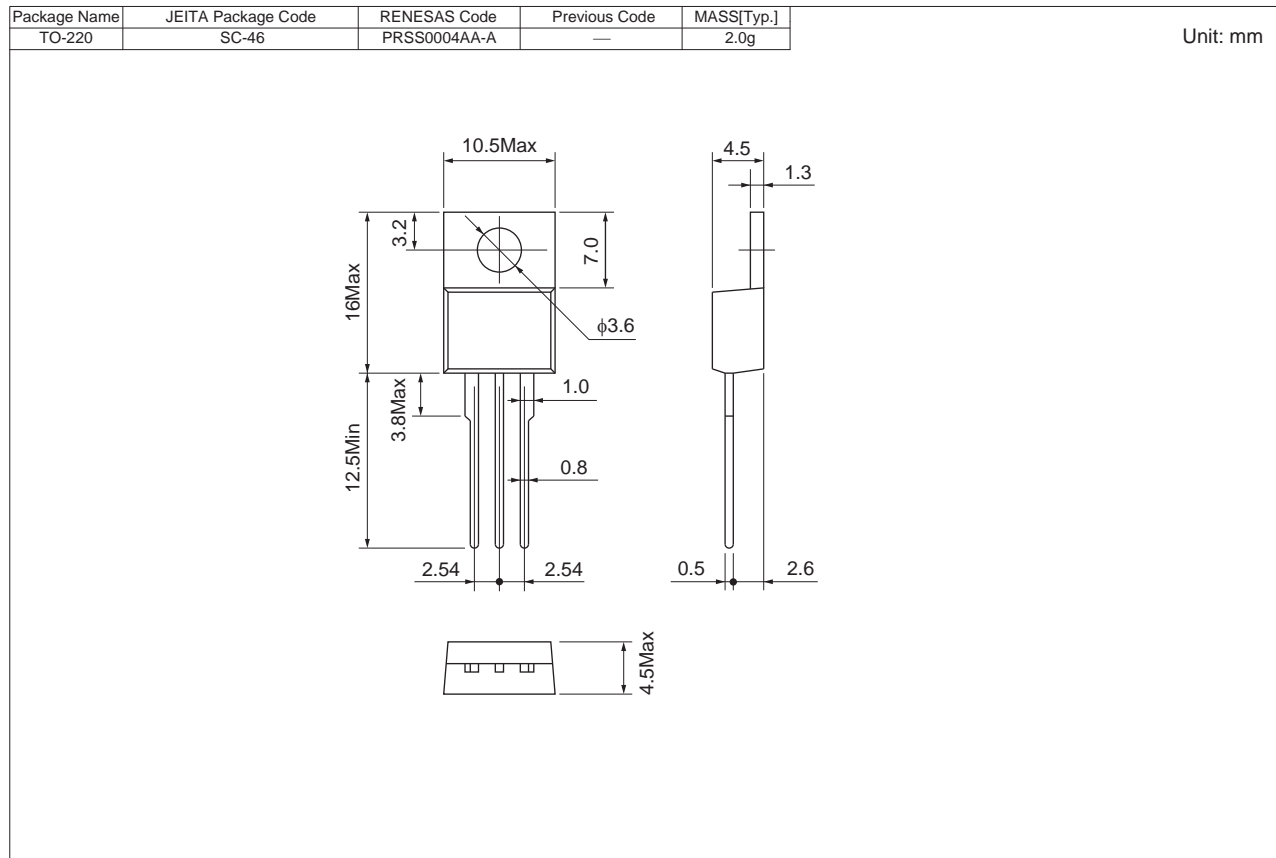
Gate Trigger Characteristics Test Circuits



Recommended Circuit Values Around The Triac



## Package Dimensions



## Ordering Information

Orderable Part Number	Packing	Quantity	Remark
BCR4CM-16LH#B00	Bag	100 pcs.	Straight type
BCE4CM-16LH-1#B00	Bag	100 pcs.	Straight type, IGT item1

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

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