

BCR12CM-16LB

800V - 12A - Triac
Medium Power Use

R07DS0976EJ0200
Rev.2.00
Feb 25, 2013

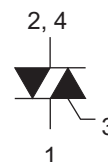
Features

- $I_{T(RMS)}$: 12 A
- V_{DRM} : 800 V
- I_{FGTB} , I_{RGTB} , $I_{RGT III}$: 30 mA
- The Product guaranteed maximum junction temperature 150°C
- Non-Insulated Type
- Planar Type

Outline

RENESAS Package code: PRSS0004AG-A
(Package name: TO-220AB)

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



1. T₁ Terminal
2. T₂ Terminal
3. Gate Terminal
4. T₂ Terminal

Applications

Switching mode power supply, washing machine, motor control, heater control, and other general purpose control applications

Maximum Ratings

Parameter	Symbol	Voltage class		Unit
		16		
Repetitive peak off-state voltage ^{Note1}	V_{DRM}	800		V
Non-repetitive peak off-state voltage ^{Note1}	V_{DSM}	960		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°C ^{Note3}
Surge on-state current	I_{TSM}	120	A	60 Hz sinewave 1 full cycle, peak value, non-repetitive
I ² t for fusion	I ² t	60	A ² 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	
Mass	—	2.1	g	Typical value

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 ^{Note2}	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 ^{Note2}	I	I_{FGTI}	—	—	30	$T_j = 25^\circ\text{C}$, $V_D = 6\text{ V}$, $R_L = 6\ \Omega$, $R_G = 330\ \Omega$
	II	I_{RGTI}	—	—	30	
	III	I_{RGTIII}	—	—	30	
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 ^{Note3,4}
Critical-rate of rise of off-state commutation voltage ^{Note5}	$(dv/dt)_c$	10	—	—	V/ μs	$T_j = 125^\circ\text{C}$
		1	—	—	V/ μs	$T_j = 150^\circ\text{C}$

Notes: 1. Gate open.

2. Measurement using the gate trigger characteristics measurement circuit.

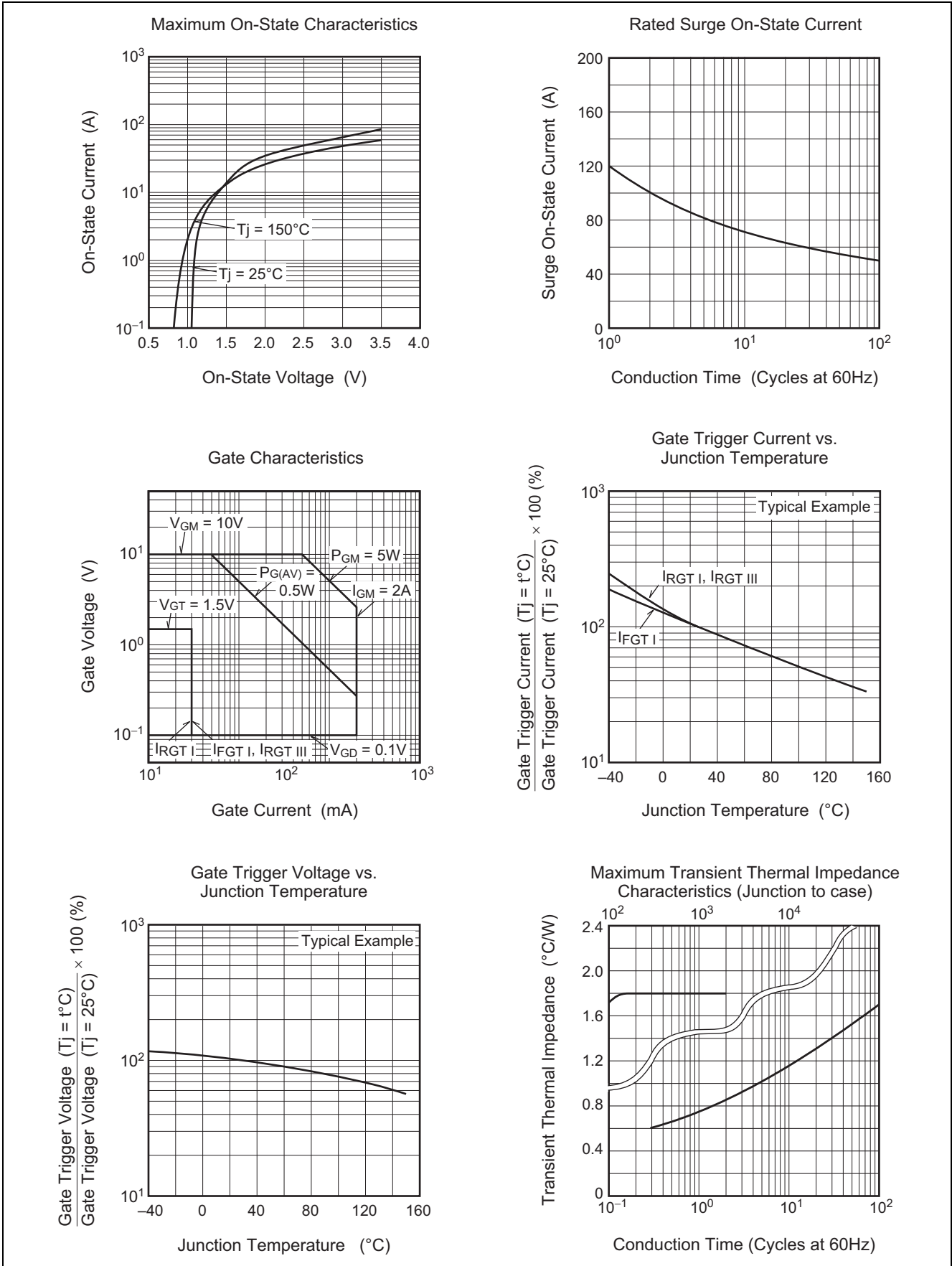
3. Case temperature is measured at the T_2 tab 1.5 mm apart from the molded case.

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

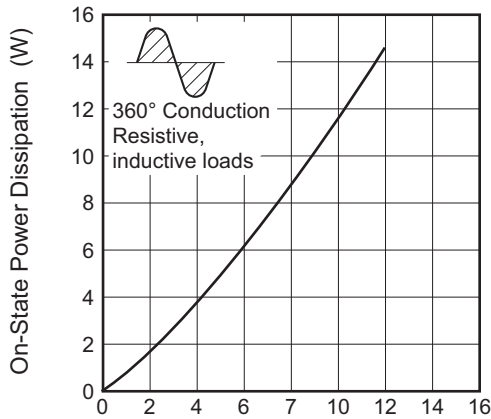
5. Test conditions of the critical-rate of rise of off-state commutation voltage is shown in the table below.

Test conditions	Commutating voltage and current waveforms (inductive load)
1. Junction temperature $T_j = 125^\circ\text{C}/150^\circ\text{C}$ 2. Rate of decay of on-state commutating current $(di/dt)_c = -6\text{ A/ms}$ 3. Peak off-state voltage $V_D = 400\text{ V}$	

Performance Curves

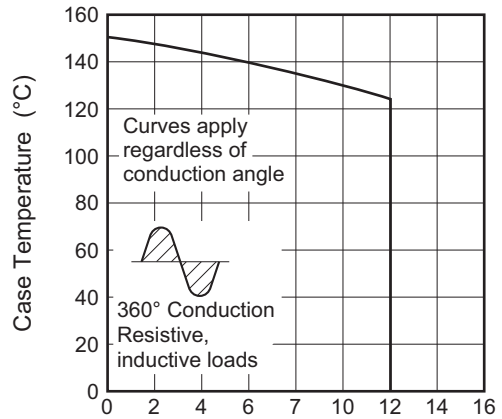


Maximum On-State Power Dissipation



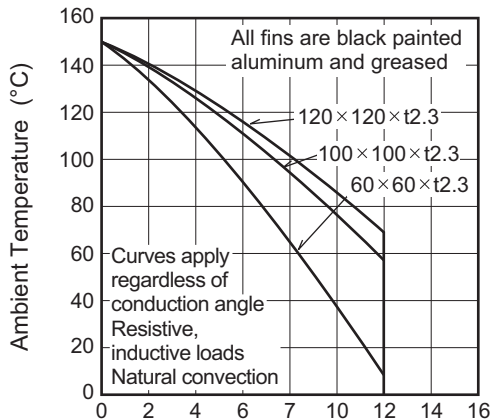
RMS On-State Current (A)

Allowable Case Temperature vs. RMS On-State Current



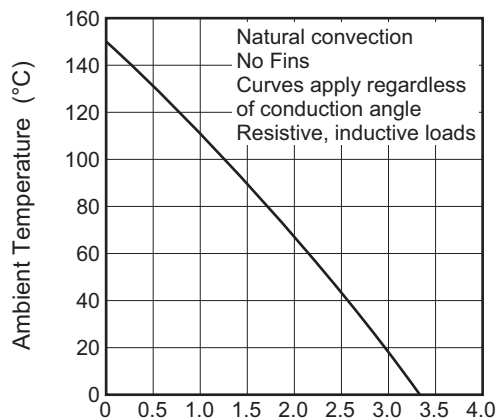
RMS On-State Current (A)

Allowable Ambient Temperature vs. RMS On-State Current



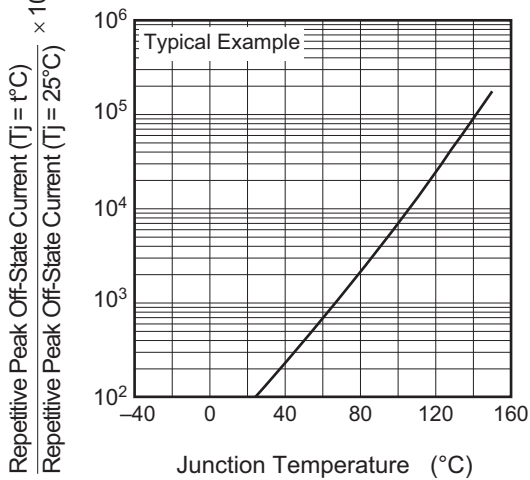
RMS On-State Current (A)

Allowable Ambient Temperature vs. RMS On-State Current

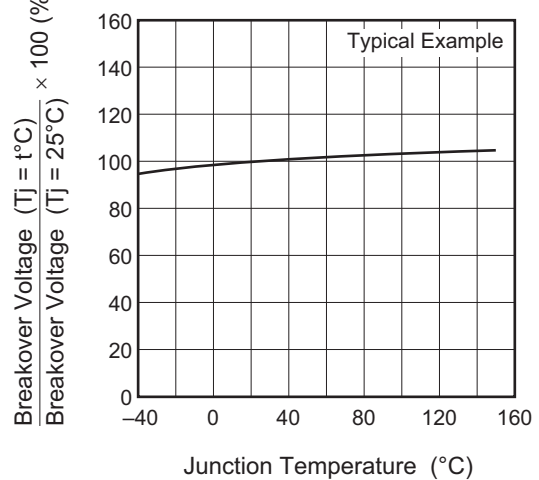


RMS On-State Current (A)

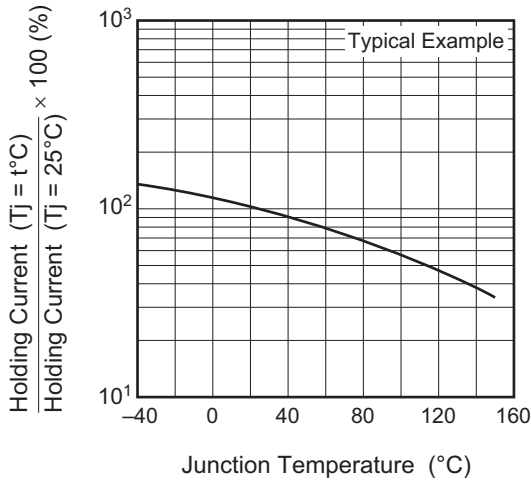
Repetitive Peak Off-State Current vs. Junction Temperature



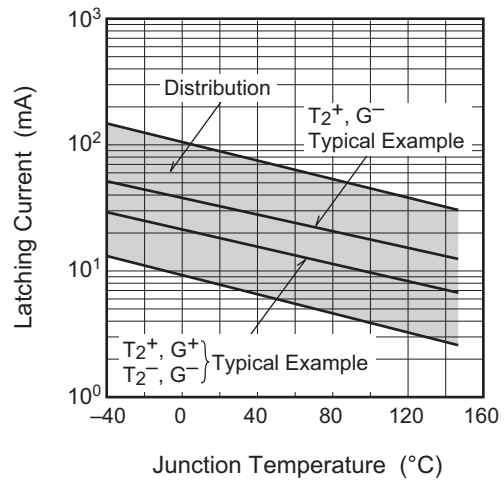
Breakover Voltage vs. Junction Temperature



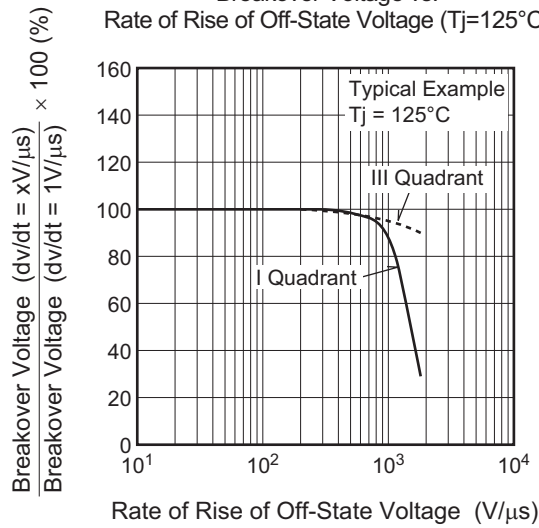
Holding Current vs. Junction Temperature



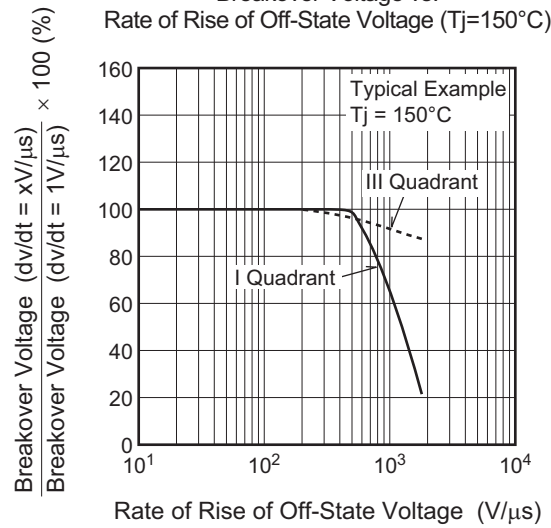
Latching Current vs. Junction Temperature



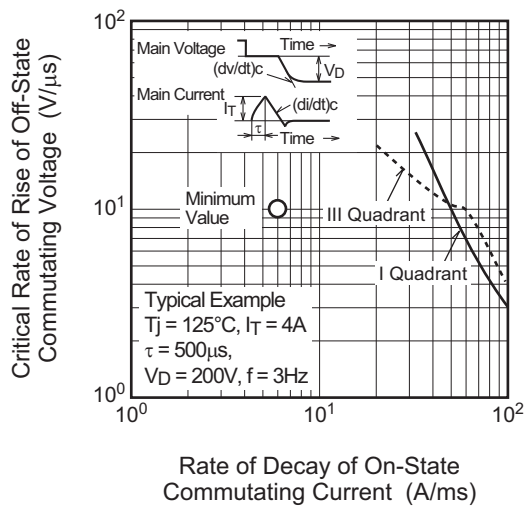
Breakover Voltage vs. Rate of Rise of Off-State Voltage (Tj=125°C)



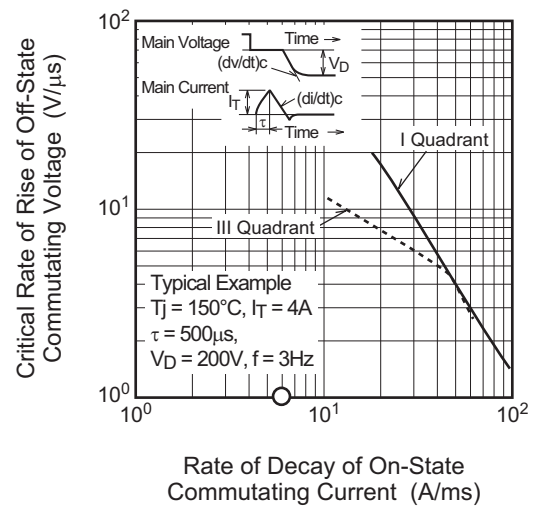
Breakover Voltage vs. Rate of Rise of Off-State Voltage (Tj=150°C)



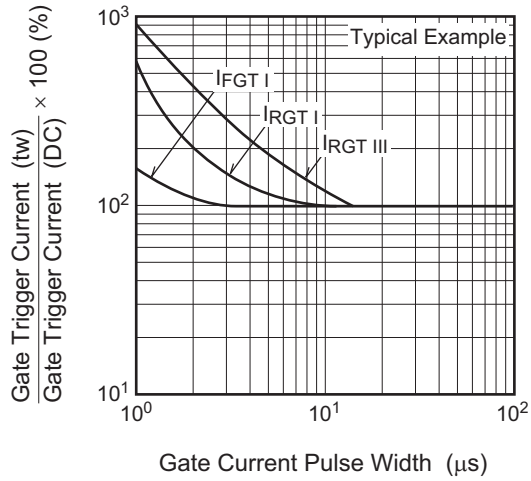
Commutation Characteristics (Tj=125°C)



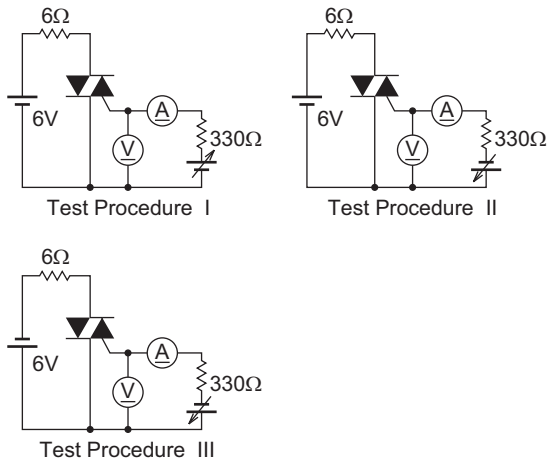
Commutation Characteristics (Tj=150°C)



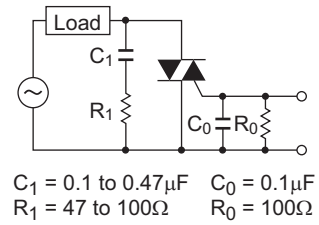
Gate Trigger Current vs. Gate Current Pulse Width



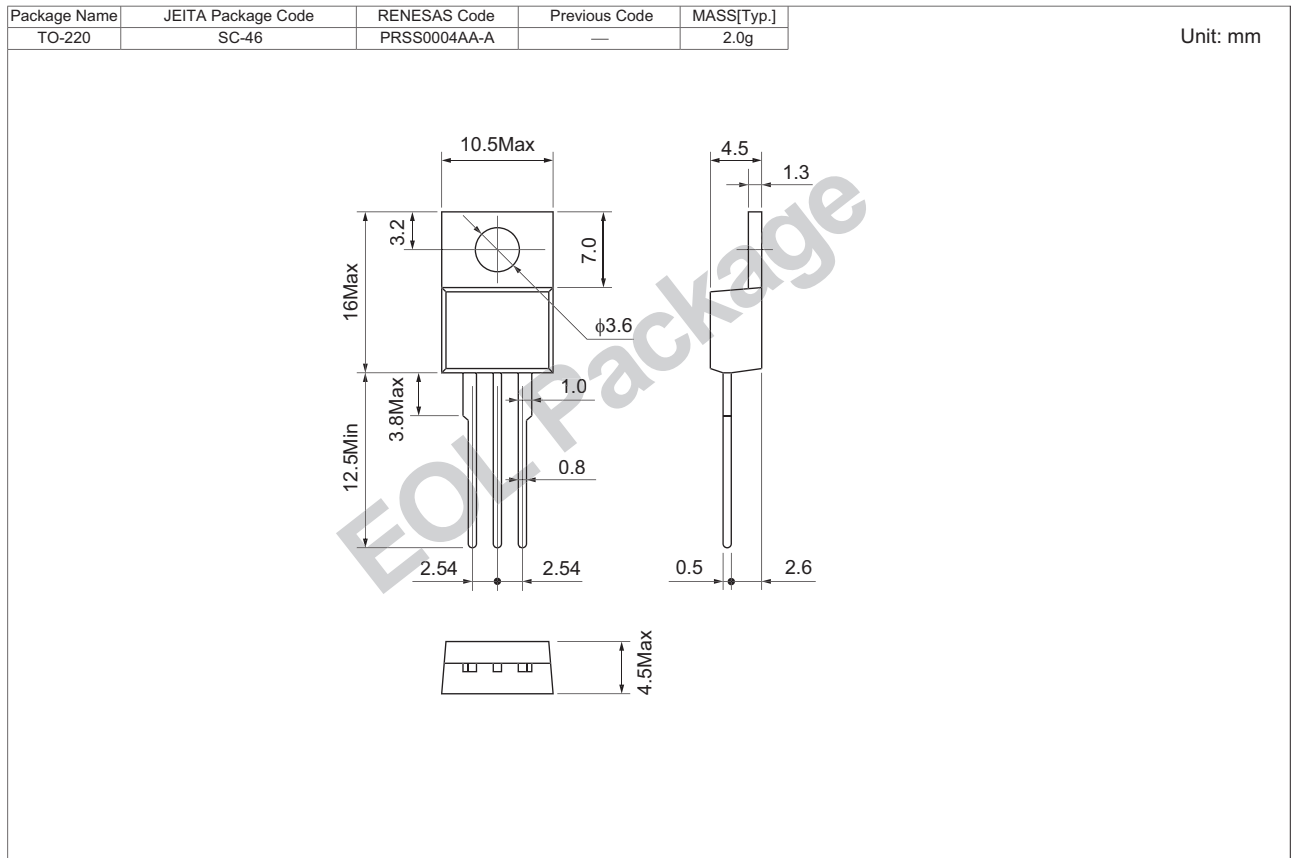
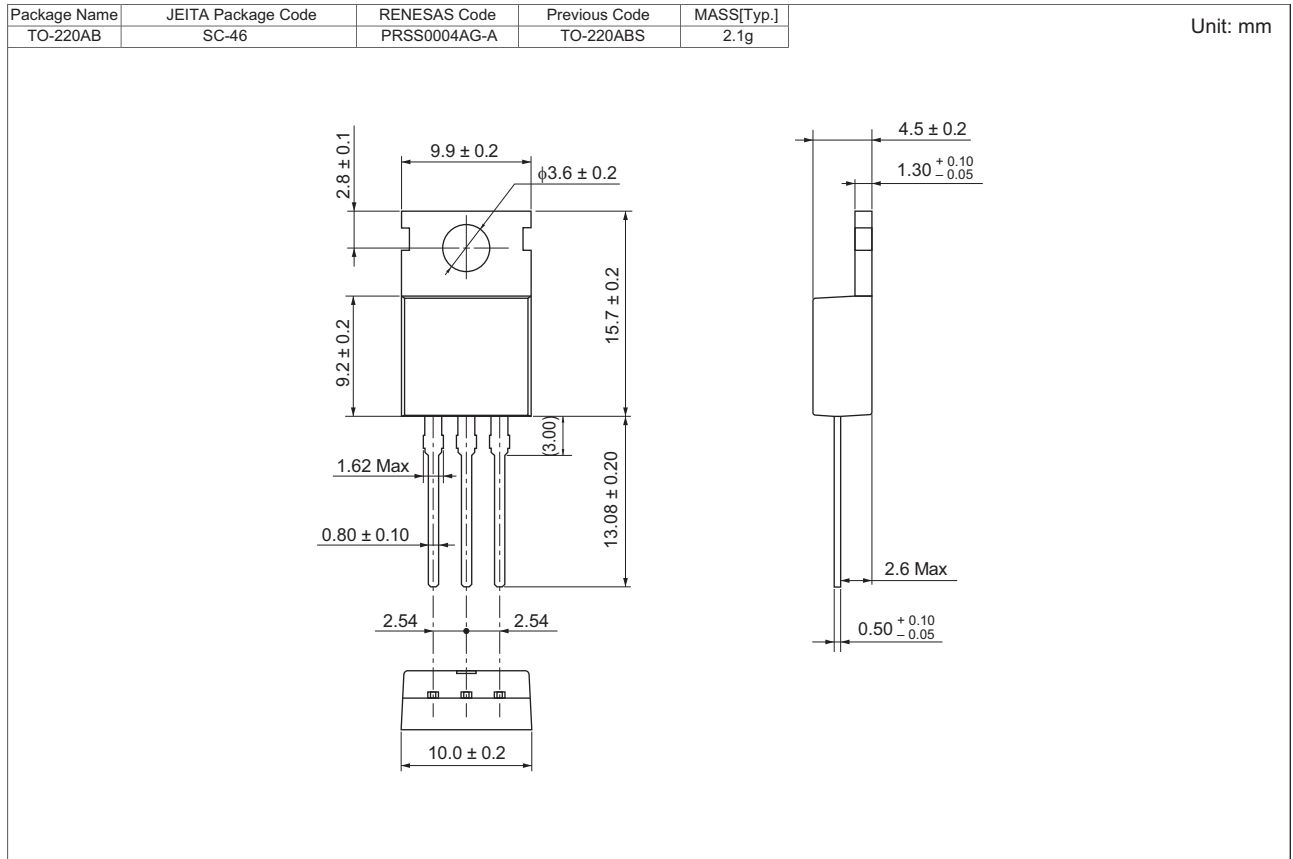
Gate Trigger Characteristics Test Circuits



Recommended Circuit Values Around The Triac



Package Dimensions



Ordering Information

Orderable Part Number	Packing	Quantity	Remark
BCR12CM-16LB#BB0	Tube	50 pcs.	Straight type
BCR12CM-16LBA8#BB0	Tube	50 pcs.	A8 Lead form

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

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