

BCR20CM-12LB

600V - 20A - Triac

Medium Power Use

R07DS1151EJ0200

Rev.2.00

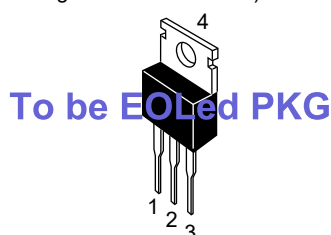
Sep. 11, 2018

Features

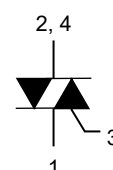
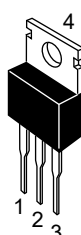
- $I_T(RMS)$: 20 A
- V_{DRM} : 600 V
- I_{FGT1} , I_{RGT1} , $I_{RGT III}$: 30 mA(20mA) ^{Note6}
- T_j : 150 °C
- Non-insulated Type
- Planar Passivation Type

Outline

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



RENESAS Package code: PRSS0004AT-A
(Package name: TO-220ABA)



1. T_1 Terminal
2. T_2 Terminal
3. Gate Terminal
4. T_2 Terminal

Application

Motor control, Heater control, Power supply, Solid state relay, and other general purpose AC control applications.

Maximum Ratings

Parameter	Symbol	Voltage class	Unit
		12	
Repetitive peak off-state voltage ^{Note1}	V_{DRM}	600	V
Non-repetitive peak off-state voltage ^{Note1}	V_{DSM}	720	V

Parameter	Symbol	Ratings	Unit	Conditions
RMS on-state current	$I_T(RMS)$	20	A	Commercial frequency, sine full wave 360°conduction, $T_c = 126^{\circ}C$ ^{Note3}
Surge on-state current	I_{TSM}	200	A	60 Hz sinewave 1 full cycle, peak value, non-repetitive
I^2t for fusing	I^2t	167	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	

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
		—	—	3.0		$T_j = 150^\circ\text{C}$, V_{DRM} applied
On-state voltage	V_{TM}	—	—	1.5	V	$T_c = 25^\circ\text{C}$, $I_{\text{TM}} = 30\text{ A}$, instantaneous measurement
Gate trigger voltage ^{Note2}	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 ^{Note2}	I	I_{FGTI}	—	30 ^{Note6}	mA	$T_j = 25^\circ\text{C}$, $V_D = 6\text{ V}$, $R_L = 6\ \Omega$, $R_G = 330\ \Omega$
	II	I_{RGTI}	—	30 ^{Note6}	mA	
	III	I_{RGTIII}	—	30 ^{Note6}	mA	
Gate non-trigger voltage	V_{GD}	0.2	—	—	V	$T_j = 125^\circ\text{C}$, $V_D = 1/2 V_{\text{DRM}}$
		0.1	—	—		$T_j = 150^\circ\text{C}$, $V_D = 1/2 V_{\text{DRM}}$
Thermal resistance	$R_{\text{th(j-c)}}$	—	—	1.2	$^\circ\text{C/W}$	Junction to case ^{Note3 Note4}
Critical-rate of rise of off-state commutation voltage ^{Note5}	$(dv/dt)_c$	10	—	—	V/ μs	$T_j = 125^\circ\text{C}$
		1	—	—		$T_j = 150^\circ\text{C}$

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 away from the molded case.

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

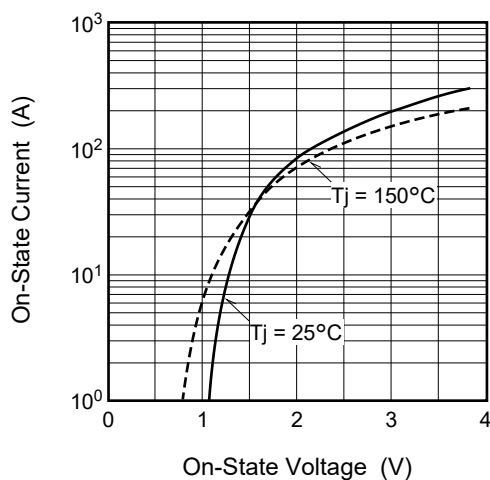
5. Test conditions of the critical-rate of rise of off-state commutation voltage is shown in the table below.

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

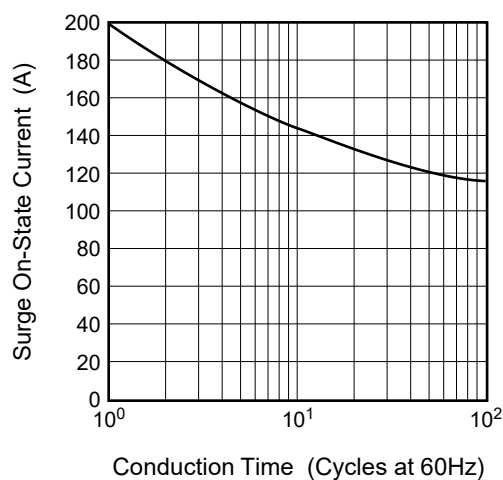
Test conditions	Commutating voltage and current waveforms (inductive load)
1. Junction temperature $T_j = 125^\circ\text{C}/150^\circ\text{C}$ 2. Rate of decay of on-state commutating current $(di/dt)_c = -10\text{ A/ms}$ 3. Peak off-state voltage $V_D = 400\text{ V}$	

Performance Curves

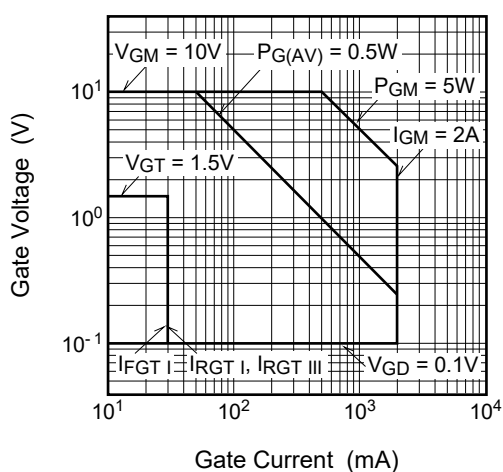
Maximum On-State Characteristics



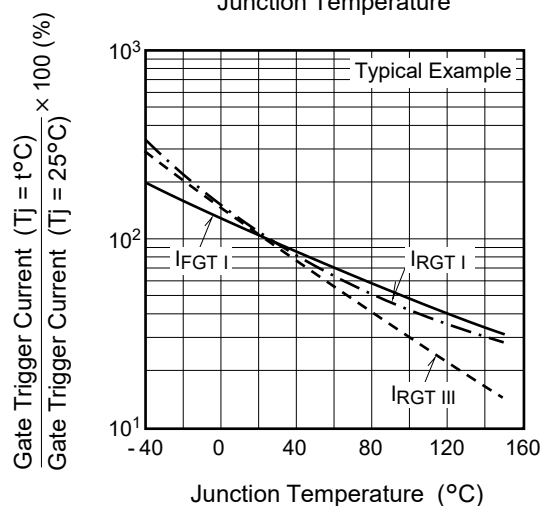
Rated Surge On-State Current



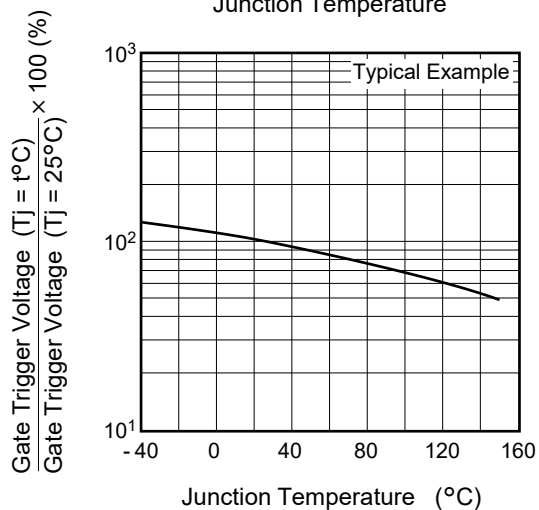
Gate Characteristics (I, II and III)



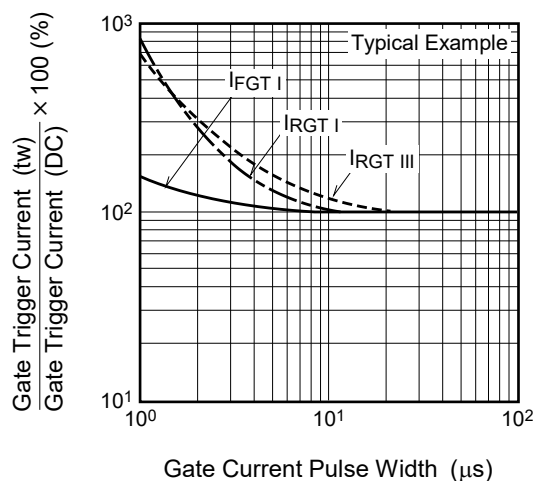
Gate Trigger Current vs. Junction Temperature

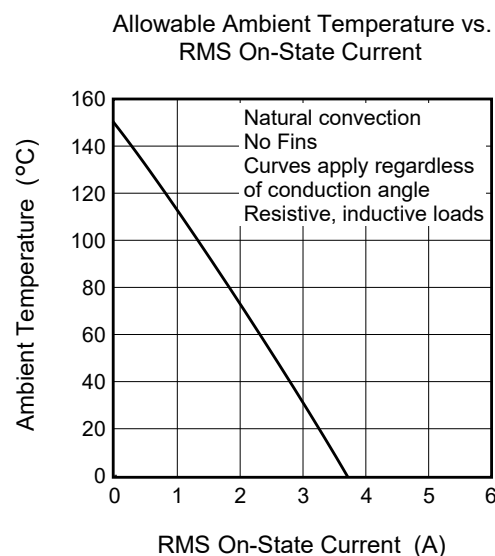
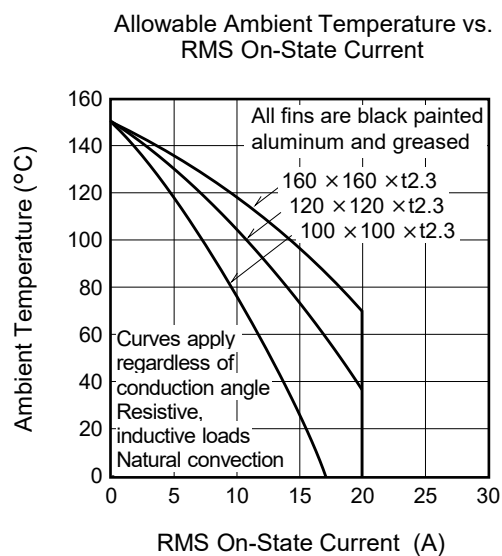
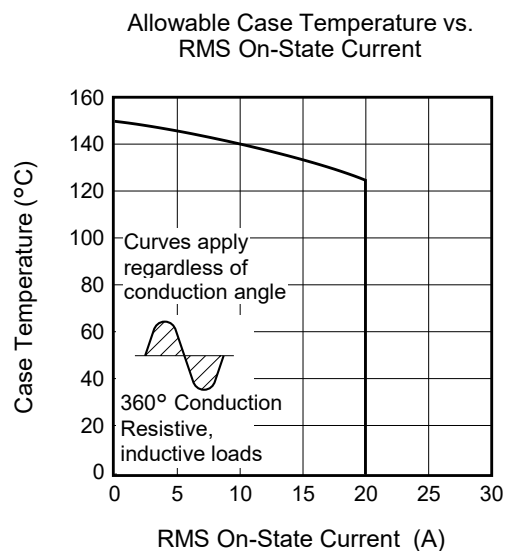
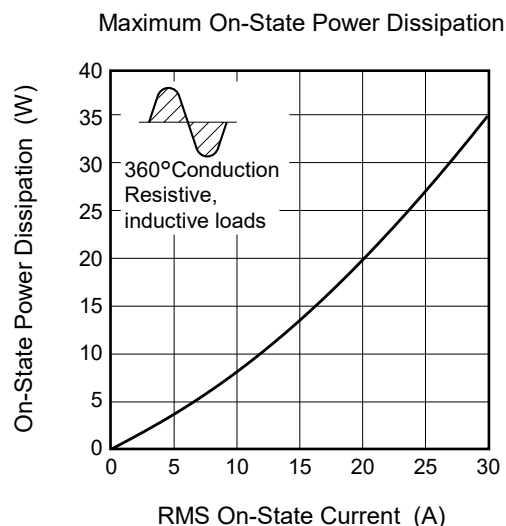
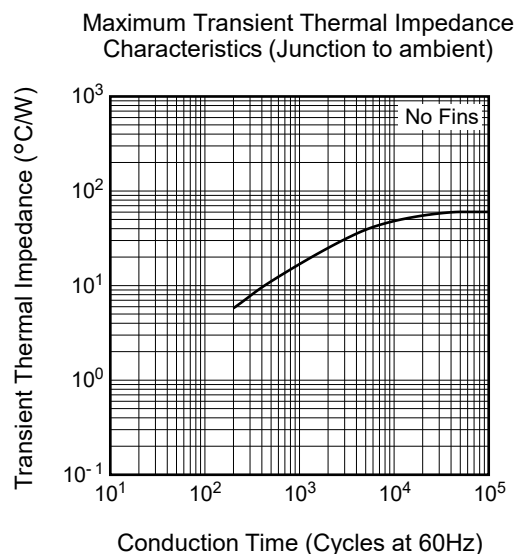
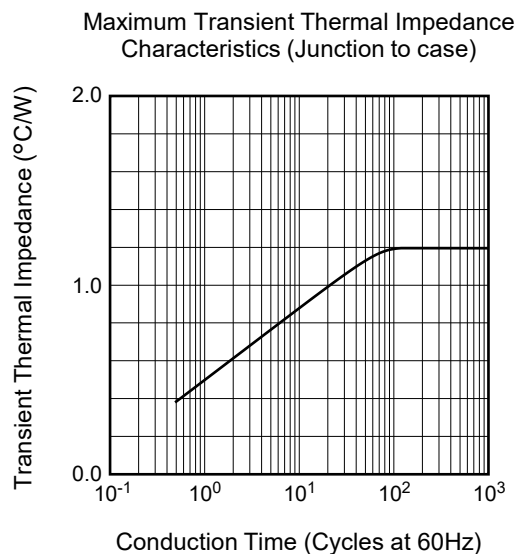


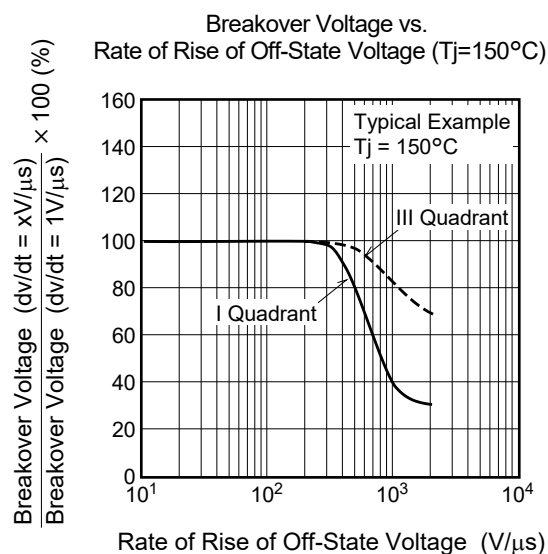
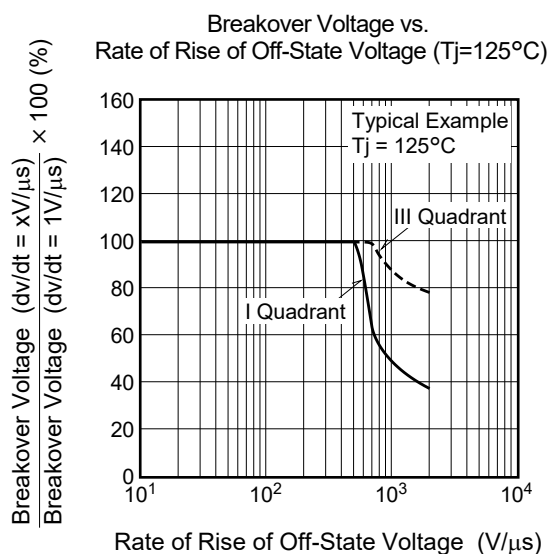
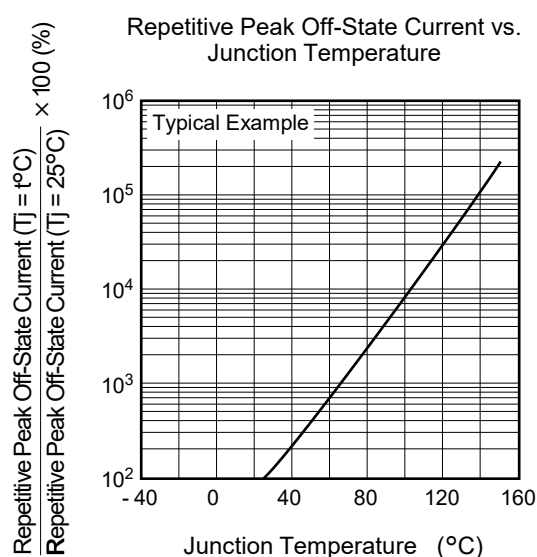
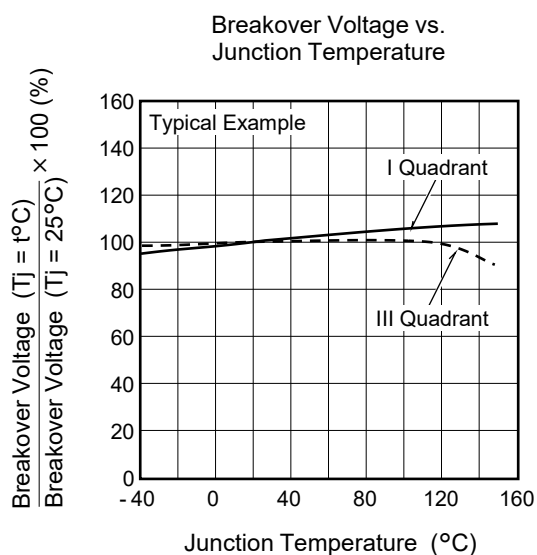
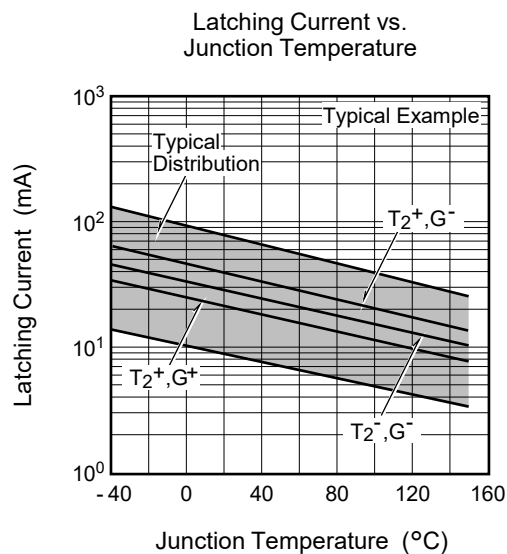
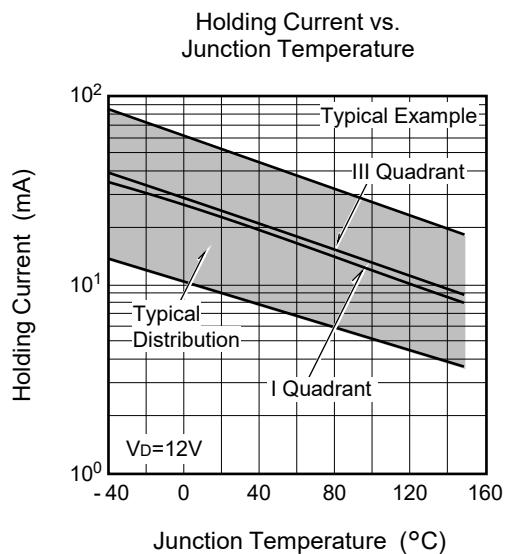
Gate Trigger Voltage vs. Junction Temperature

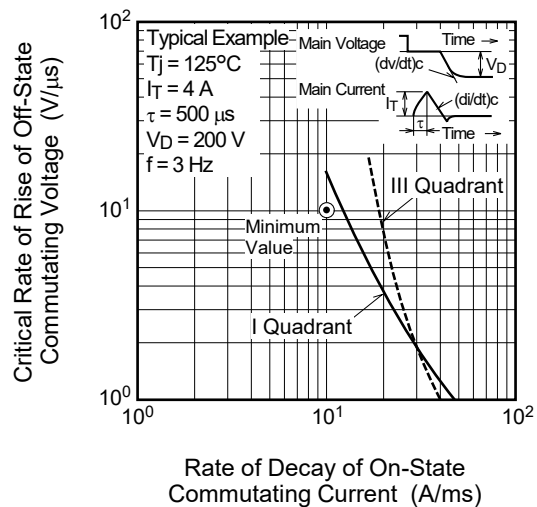
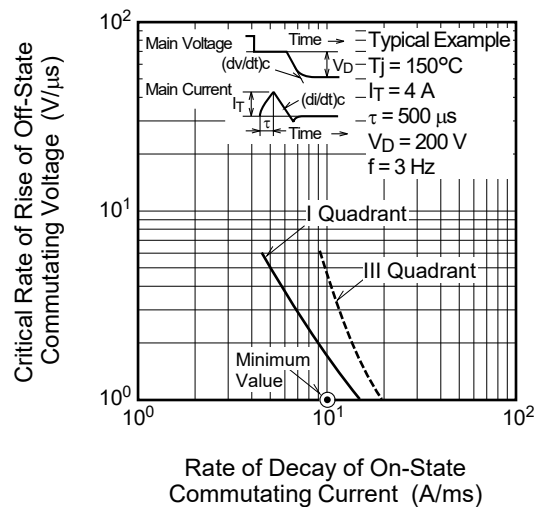


Gate Trigger Current vs. Gate Current Pulse Width

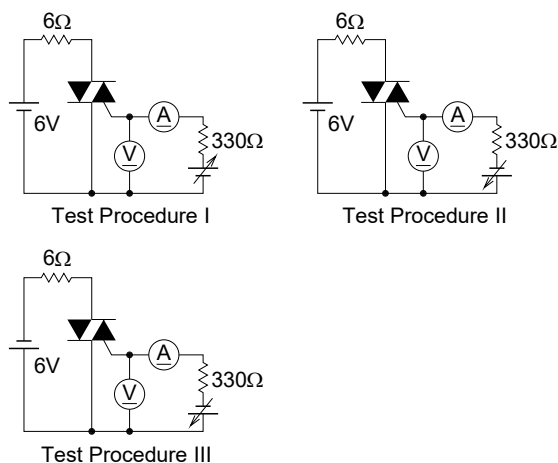




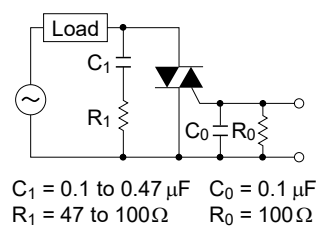


Commutation Characteristics ($T_j=125^\circ\text{C}$)Commutation Characteristics ($T_j=150^\circ\text{C}$)

Gate Trigger Characteristics Test Circuits

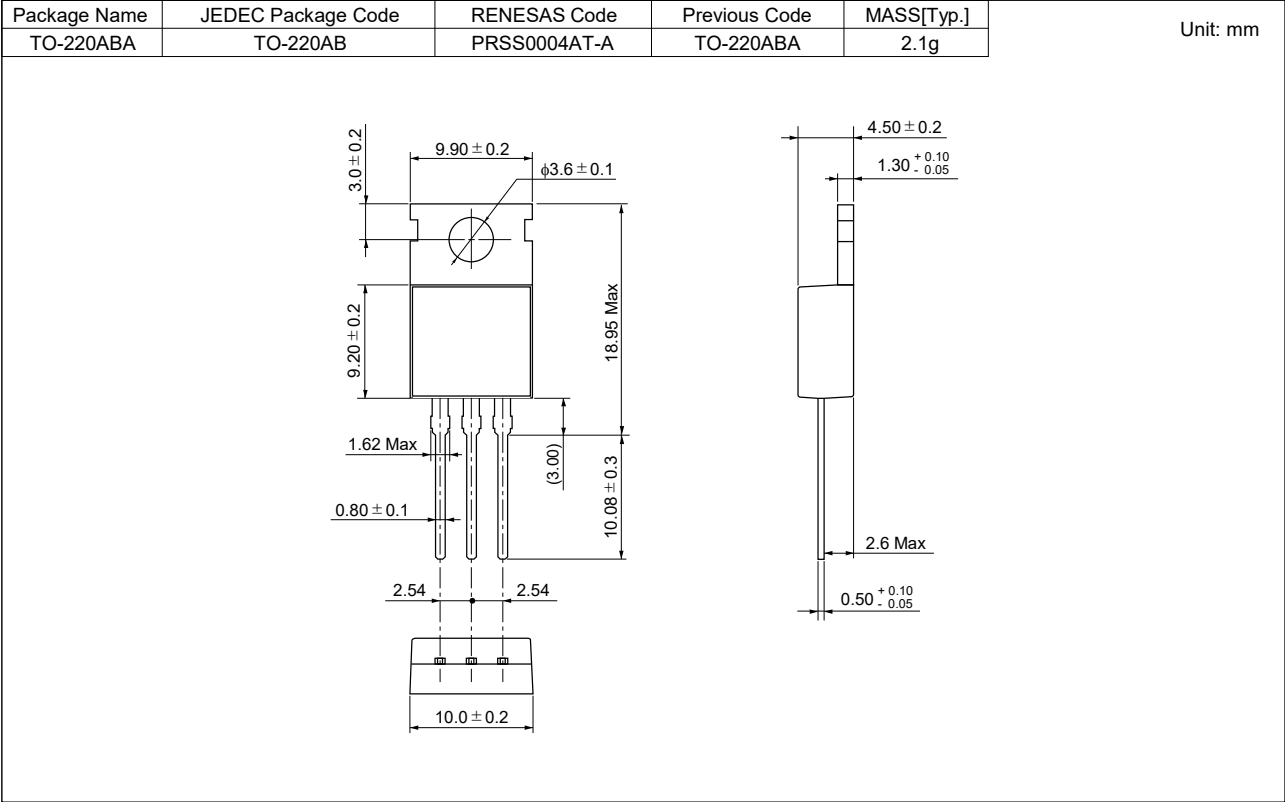


Recommended peripheral components for Triac

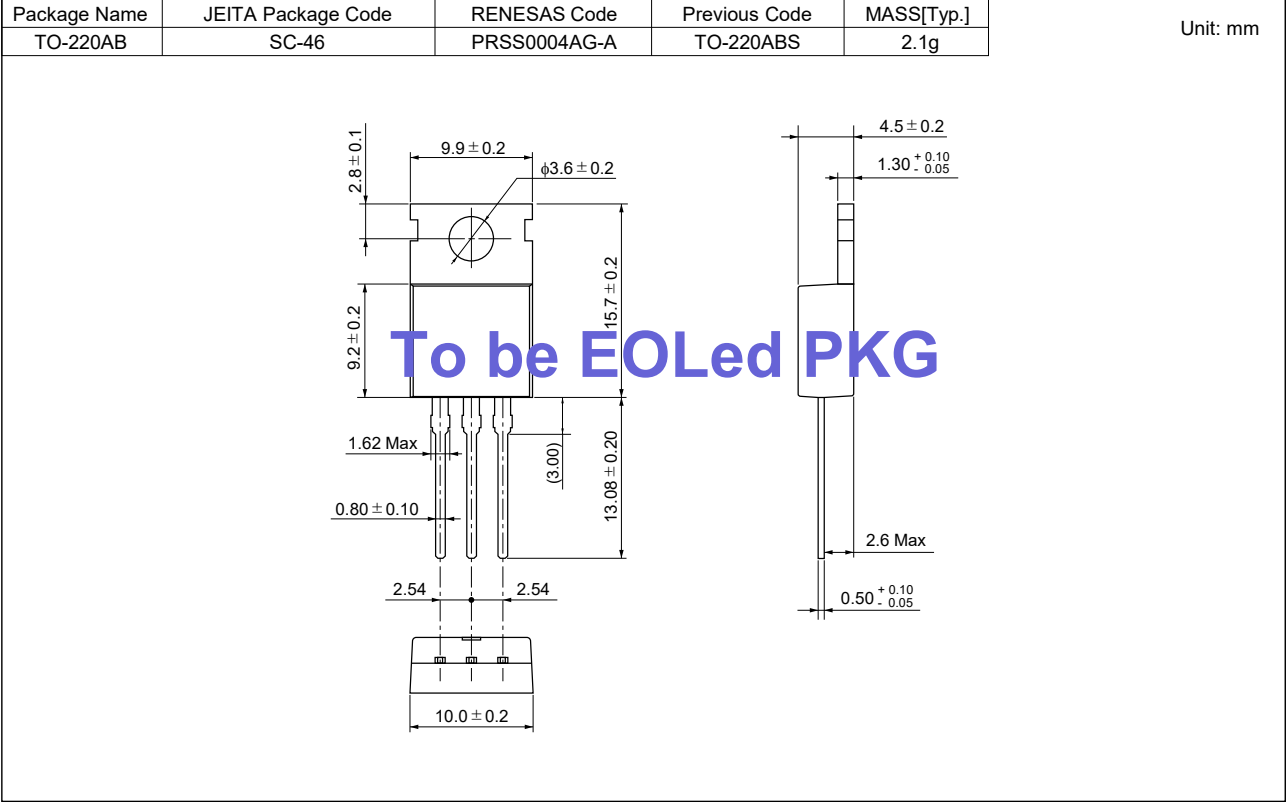


Package Dimensions

Ordering code: #BH0



Ordering code: #BB0



Ordering Information

Orderable Part Number	Package	Quantity ^{Note7}	Remark	Status
BCR20CM-12LB#BH0	TO-220ABA	50 pcs./ tube	Straight type	Mass Production
BCR20CM-12LB-1#BH0	TO-220ABA	50 pcs./ tube	Straight type, I _{GT} item:1	
BCR20CM-12LB#BB0	TO-220ABS	50 pcs./ tube	Straight type	EOL Candidate
BCR20CM-12LB-1#BB0	TO-220ABS	50 pcs./ tube	Straight type, I _{GT} item:1	
BCR20CM-12LB□□#BB0	TO-220ABS	50 pcs./ tube	□□:Lead form type	
BCR20CM12LB1□□#BB0	TO-220ABS	50 pcs./ tube	□□:Lead form type, I _{GT} item:1	

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

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