

BCR12FM-14LJ

700V - 12A - Triac
Medium Power Use

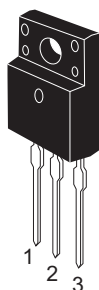
R07DS0908EJ0100
Rev.1.00
Nov 14, 2012

Features

- $I_{T(RMS)}$: 12 A
- V_{DRM} : 800 V ($T_j = 125^\circ\text{C}$)
- T_j : 150°C
- I_{FGT} , I_{RGT} , $I_{RGT III}$: 30 mA
- Viso: 2000 V
- Insulated Type
- Planar Passivation Type

Outline

RENESAS Package code: PRSS0003AG-A
(Package name: TO-220FP)



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

Applications

Washing machine, inversion operation of capacitor motor, and other general controlling devices.

Maximum Ratings

Parameter	Symbol	Voltage class	Unit	Conditions
		14		
Repetitive peak off-state voltage ^{Note1}	V_{DRM}	800	V	$T_j = 125^\circ\text{C}$
		700		$T_j = 150^\circ\text{C}$
Non-repetitive peak off-state voltage ^{Note1}	V_{DSM}	840	V	

Parameter	Symbol	Ratings	Unit	Conditions
RMS on-state current	$I_{T(RMS)}$	12	A	Commercial frequency, sine full wave 360° conduction, $T_c = 93^\circ\text{C}$
Surge on-state current	I_{TSM}	120	A	60Hz sinewave 1 full cycle, peak value, non-repetitive
I^2t for fusion	I^2t	60	A^2s	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	$^\circ\text{C}$	
Storage temperature	T_{stg}	-40 to +150	$^\circ\text{C}$	
Mass	—	1.9	g	Typical value
Isolation voltage ^{Note5}	Viso	2000	V	$T_a = 25^\circ\text{C}$, AC 1 minute $T_1 \bullet T_2 \bullet G$ terminal to case

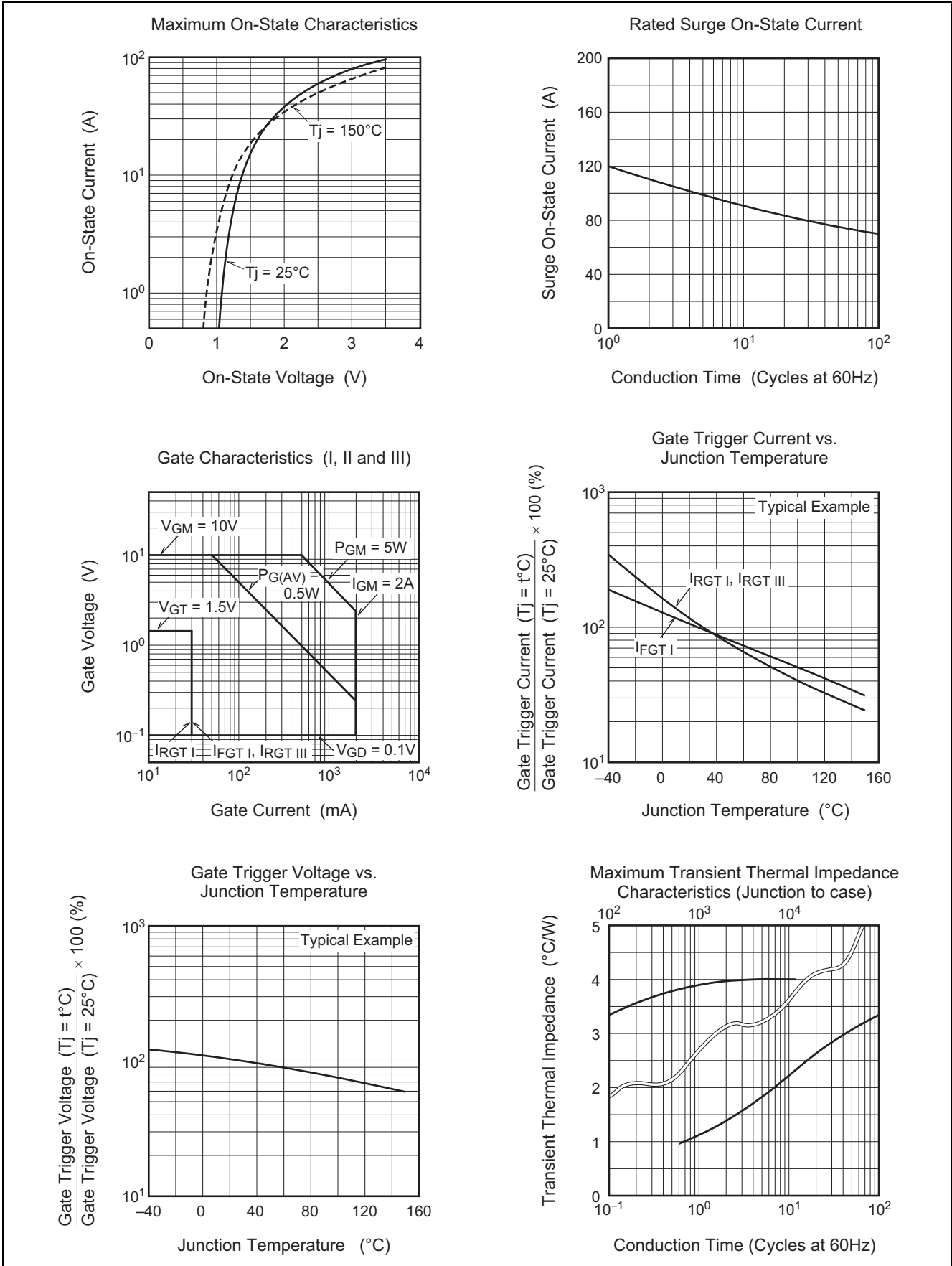
Electrical Characteristics

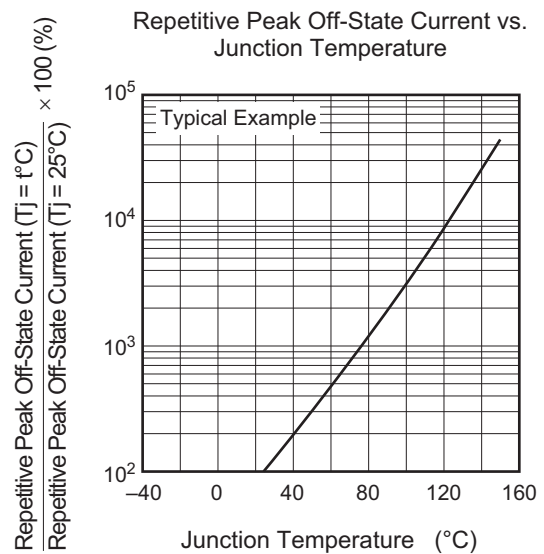
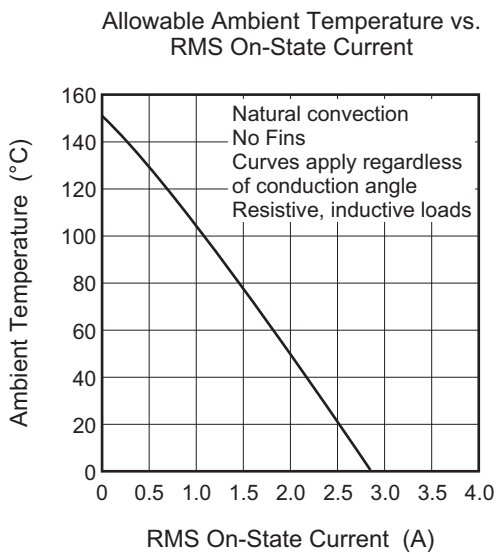
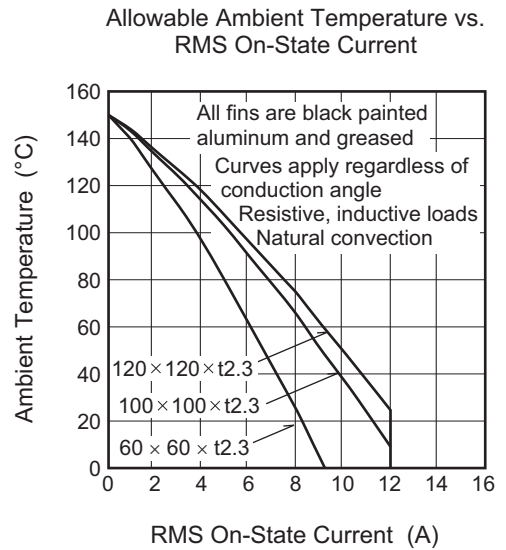
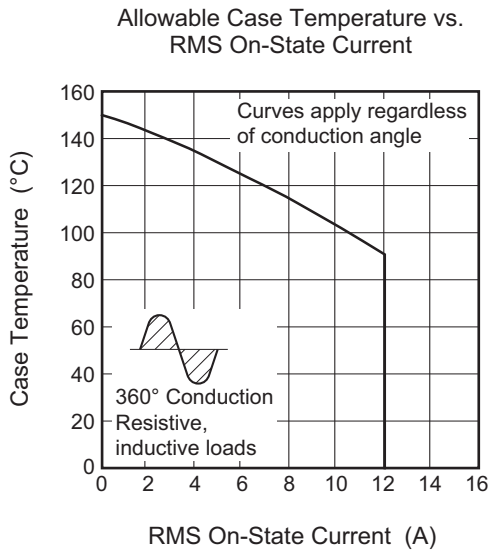
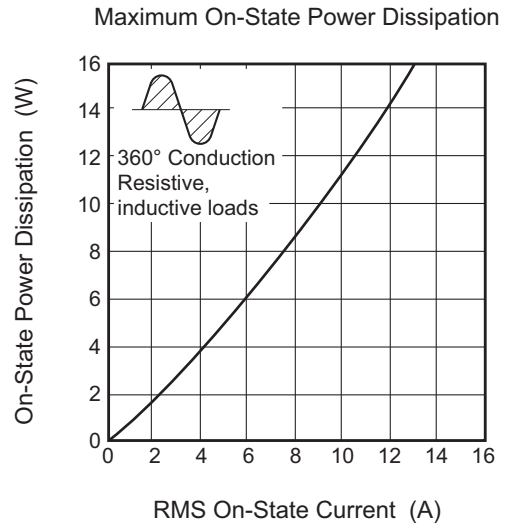
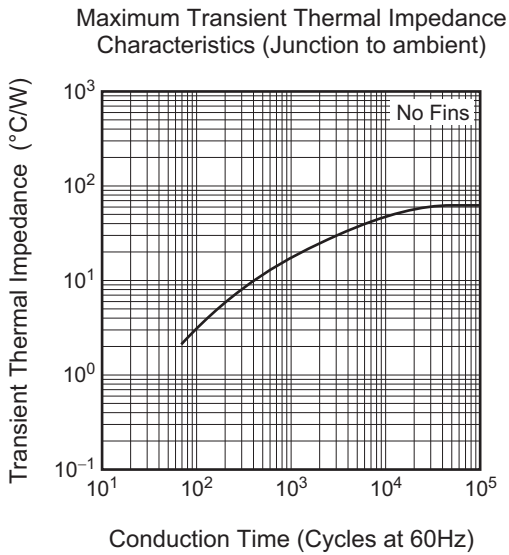
Parameter	Symbol	Rated value			Unit	Test conditions
		Min.	Typ.	Max.		
Repetitive peak off-state current	I_{DRM}	—	—	2.0	mA	$T_j = 150^\circ\text{C}$, V_{DRM} applied
On-state voltage	V_{TM}	—	—	1.6	V	$T_c = 25^\circ\text{C}$, $I_{TM} = 20\text{A}$, instantaneous measurement
Gate trigger voltage ^{Note2}	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	$R_{th(j-c)}$	—	—	4.0	$^\circ\text{C/W}$	Junction to case ^{Note3}
Critical-rate of rise of off-state commutation voltage ^{Note4}	$(dv/dt)_c$	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. The contact thermal resistance $R_{th(c-f)}$ in case of greasing is 0.5°C/W .
 4. Test conditions of the critical-rate of rise of off-state commutation voltage is shown in the table below.
 5. Make sure that your finished product containing this device meets your safe isolation requirements.
 For safety, it's advisable that heatsink is electrically floating.

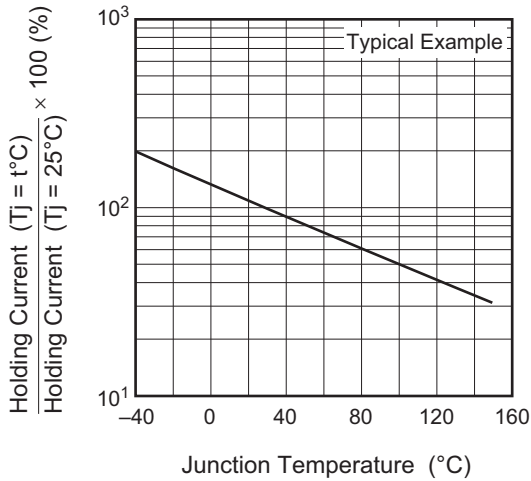
Test conditions	Commutating voltage and current waveforms (inductive load)
1. Junction temperature $T_j = 125/150^\circ\text{C}$ 2. Rate of decay of on-state commutating current $(di/dt)_c = -6.0\text{A/ms}$ 3. Peak off-state voltage $V_D = 400\text{V}$	

Performance Curves

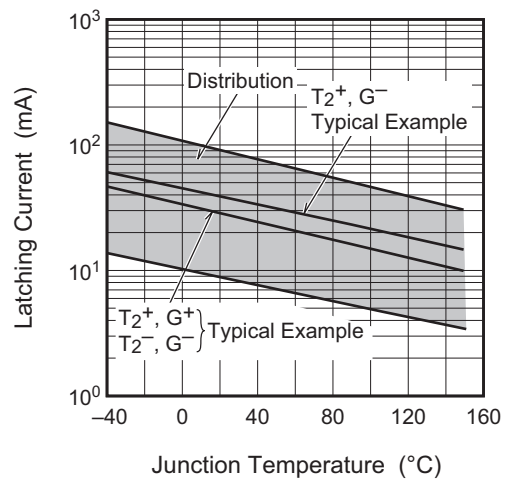




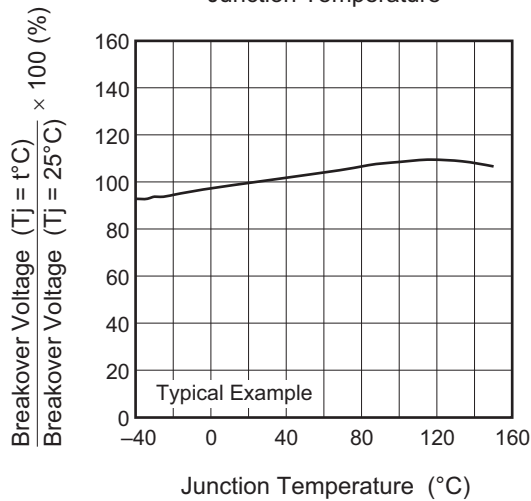
Holding Current vs. Junction Temperature



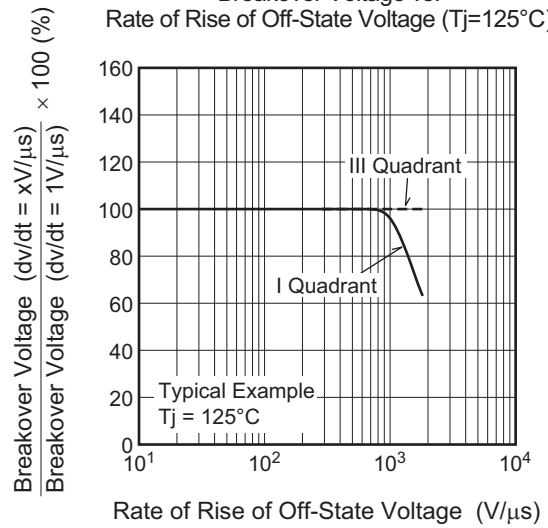
Latching Current vs. Junction Temperature



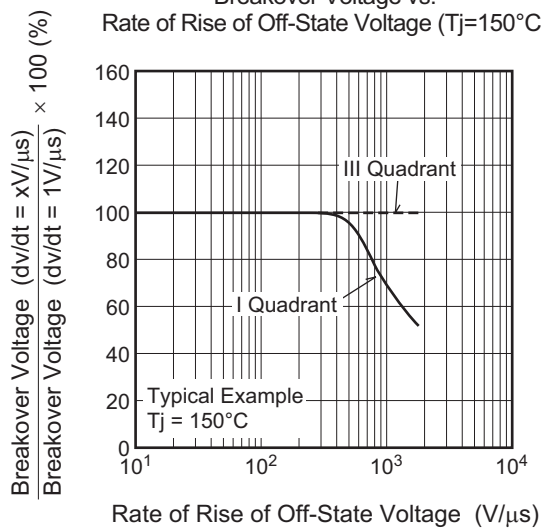
Breakover Voltage vs. Junction Temperature



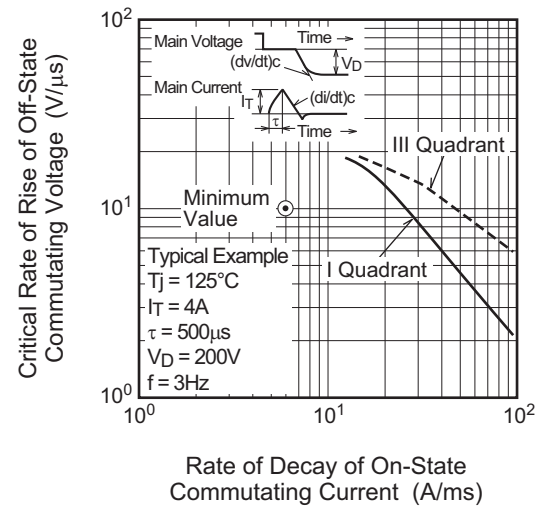
Breakover Voltage vs. Rate of Rise of Off-State Voltage (Tj=125°C)

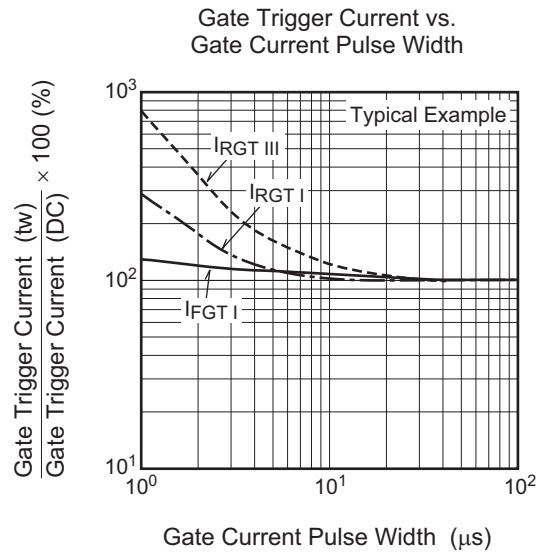
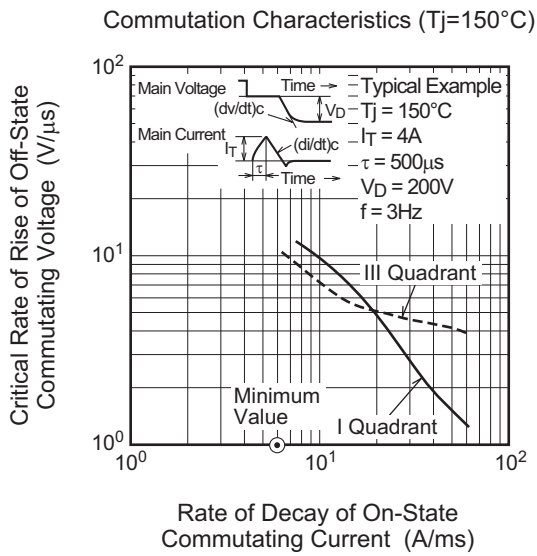


Breakover Voltage vs. Rate of Rise of Off-State Voltage (Tj=150°C)

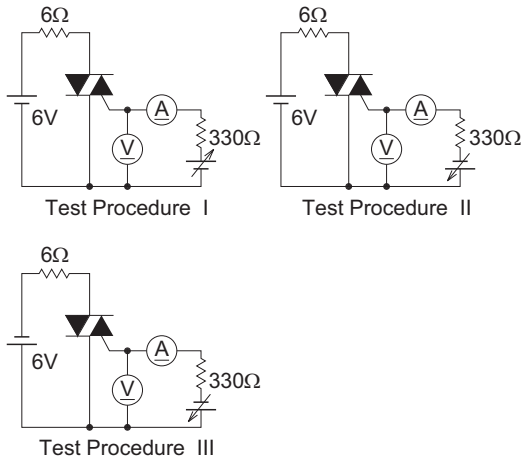


Commutation Characteristics (Tj=125°C)

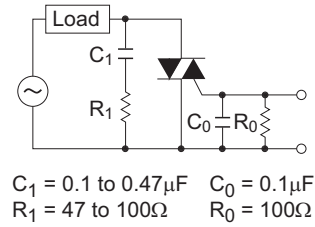




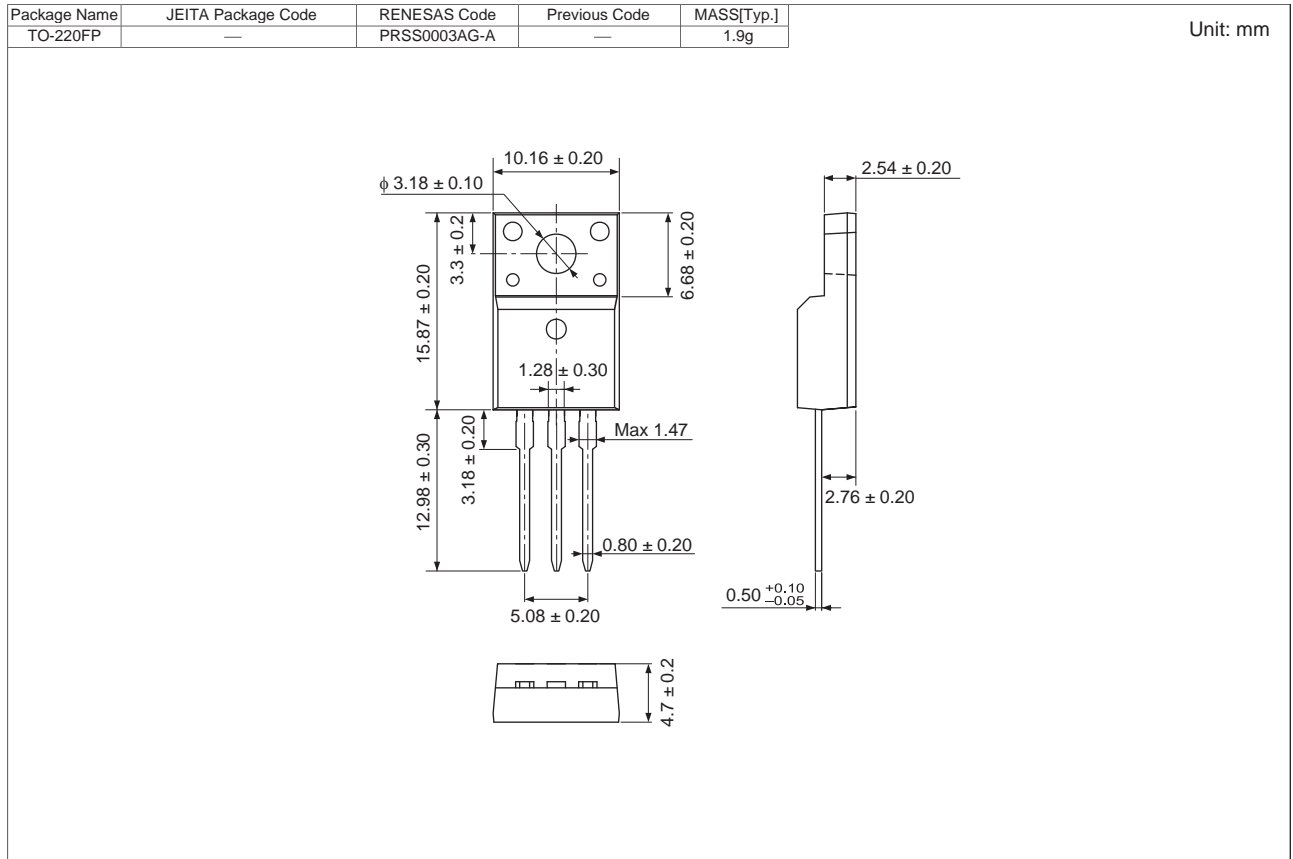
Gate Trigger Characteristics Test Circuits



Recommended Circuit Values Around The Triac



Package Dimensions



Orderable Part Number	Packing	Quantity	Remark
BCR12FM-14LJ#BB0	Tube	50 pcs.	Straight type
BCR12FM-14LJA8#BB0	Tube	50 pcs.	A8 Lead form

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

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