RENESAS

Datasheet

BCR8FM-12LB

600V - 8A - Triac

Medium Power Use

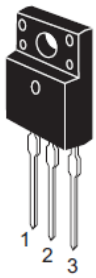
R07DS1186EJ0100
Rev.1.00
Mar 03, 2014

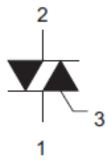
Features

- $I_{T\ (RMS)}$: 8 A
- V_{DRM} : 600 V
- Tj: 150 °C
- I_{FGTI}, I_{RGTI}, $I_{RGT\ III}$:30 mA(20mA) Note5
- Insulated Type
- Planar Passivation Type
- Viso: 2000V

Outline

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





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

Applications

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

Maximum Ratings

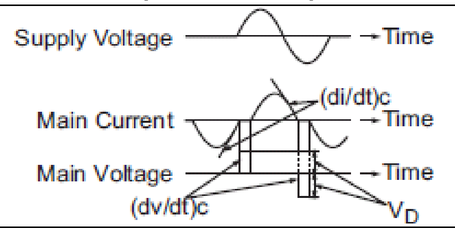
Parameter	Symbol	Voltage class	Unit
		12	
Repetitive peak off-state voltage Note1	V_{DRM}	600	V
Non-repetitive peak off-state voltage Note1	V_{DSM}	720	V

Parameter	Symbol	Ratings	Unit	Conditions
RMS on-state current	$I_{T\ (RMS)}$	8	A	Commercial frequency, sine full wave 360°conduction, Tc = 114°C
Surge on-state current	I_{TSM}	80	A	60 Hz sinewave 1 full cycle, peak value, non-repetitive
I^2t for fusion	I^2t	26	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	Tj	–40 to +150	°C	
Storage temperature	Tstg	–40 to +150	°C	
Mass	—	1.9	g	Typical value
Isolation voltage Note6	V_{iso}	2000	V	Ta=25°C, AC 1 minute, T_1•T_2•G terminal to case

Electrical Characteristics

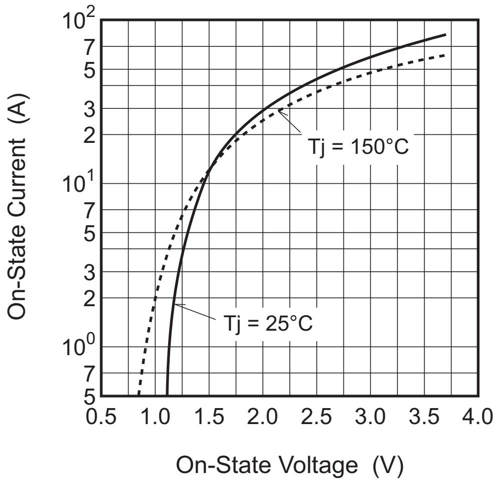
Parameter		Symbol	Min.	Typ.	Max.	Unit	Test conditions
Repetitive peak off-state current		I_{DRM}	—	—	2.0	mA	Tj = 150°C, V_{DRM} applied
On-state voltage		V_{TM}	—	—	1.6	V	Tc = 25°C, I_{TM} = 12A, instantaneous measurement
Gate trigger voltage[Note2]	I	V_{FGTI}	—	—	1.5	V	Tj = 25°C, V_D = 6 V, R_L = 6 Ω, R_G = 330 Ω
	II	V_{RGTI}	—	—	1.5	V	
	III	V_{RGTIII}	—	—	1.5	V	
Gate trigger curent[Note2]	I	I_{FGTI}	—	—	30 [Note5]	mA	Tj = 25°C, V_D = 6 V, R_L = 6 Ω, R_G = 330 Ω
	II	I_{RGTI}	—	—	30 [Note5]	mA	
	III	I_{RGTIII}	—	—	30 [Note5]	mA	
Gate non-trigger voltage		V_{GD}	0.2	—	—	V	Tj = 125°C, V_D = 1/2 V_{DRM}
			0.1	—	—		Tj = 150°C, V_D = 1/2 V_{DRM}
Thermal resistance		$R_{th\ (j-c)}$	—	—	3.6	°C/W	Junction to case[Note3]
Critical-rate of rise of off-state commutation voltage[Note4]		(dv/dt)c	10	—	—	V/µs	Tj = 125°C
			1	—	—		Tj = 150°C

Notes: 1. Gate open.
2. Measurement using the gate trigger characteristics measurement circuit.
3. The contact themal 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. High sensitivity (I_{GT}≤20mA) is also available.(I_{GT} item:1)
6. Make sure that your finished product containing this device meets your safe isolation requirements. For safety, it's advisable that heatsink is electrically floating.

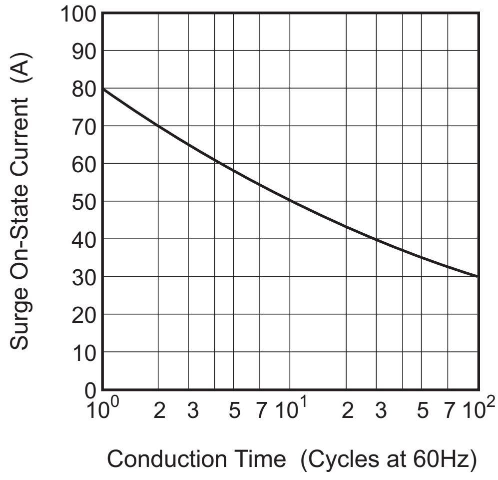
Test conditions	Commutating voltage and current waveforms (inductive load)
1. Junction temperature Tj = 125°C/150°C 2.Rate of rise of off-state commutating voltage (dv/dt)c =-4 A/ms 3.Peak off-state voltage V_D = 400 V	

Performance Curves

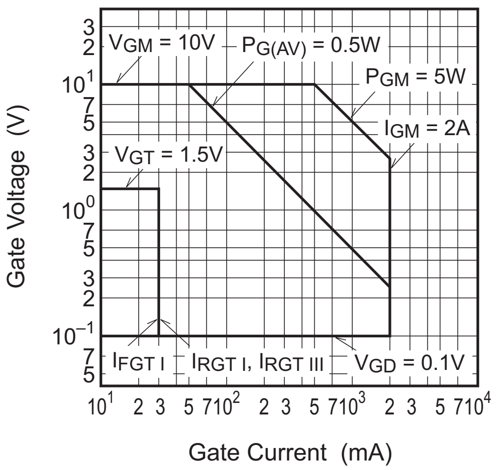
Maximum On-State Characteristics



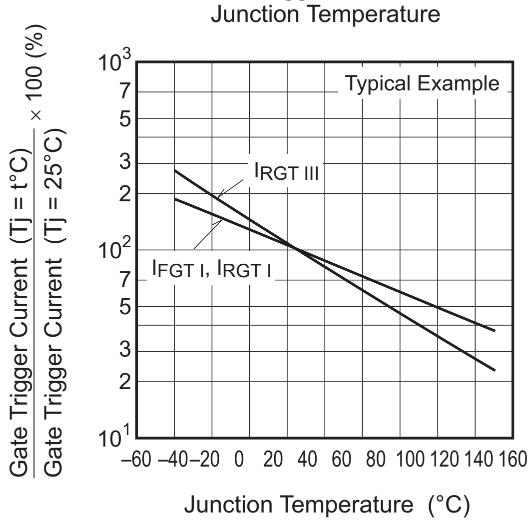
Rated Surge On-State Current



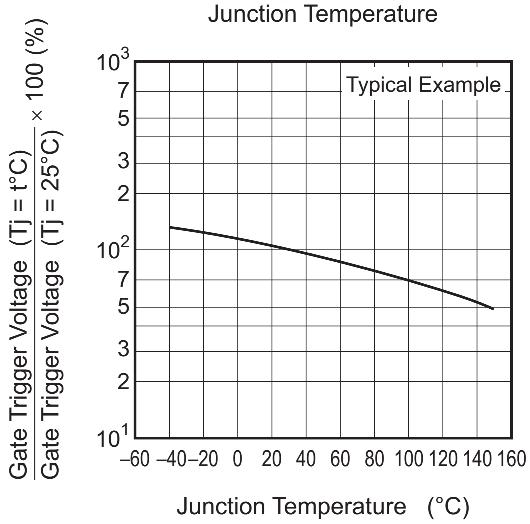
Gate Characteristics (I, II and III)



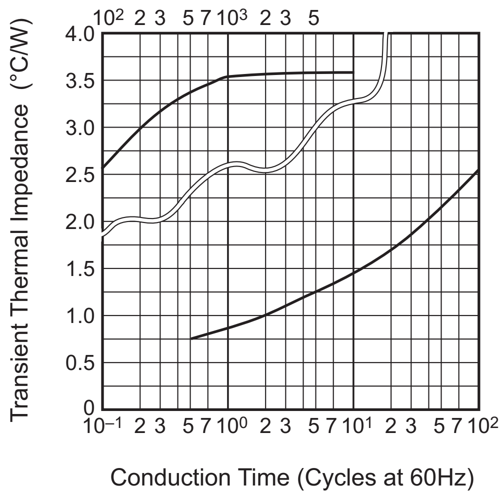
Gate Trigger Current vs.
Junction Temperature



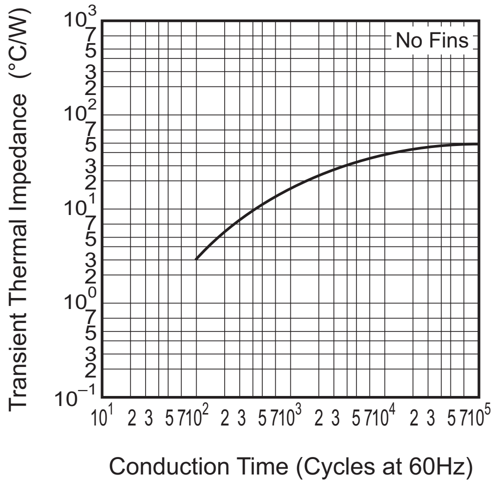
Gate Trigger Voltage vs.
Junction Temperature



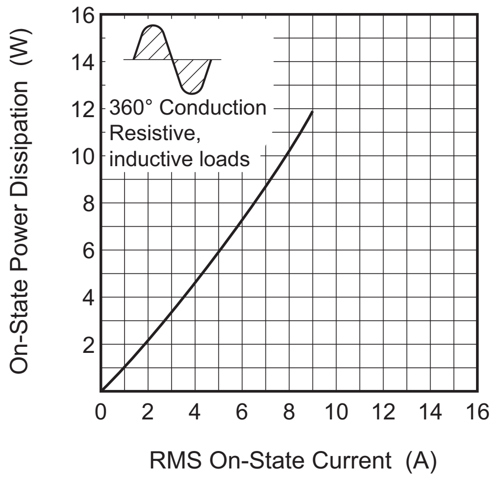
Maximum Transient Thermal Impedance
Characteristics (Junction to case)



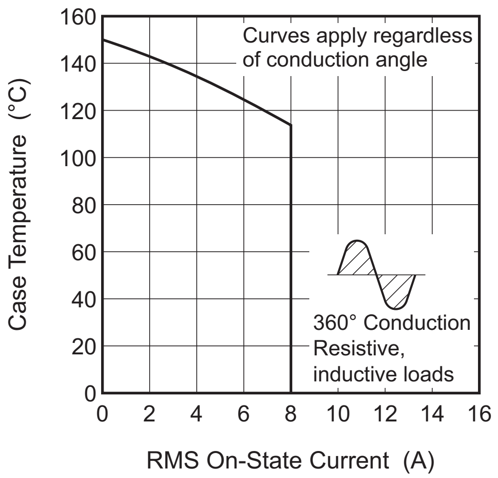
Maximum Transient Thermal Impedance Characteristics (Junction to ambient)



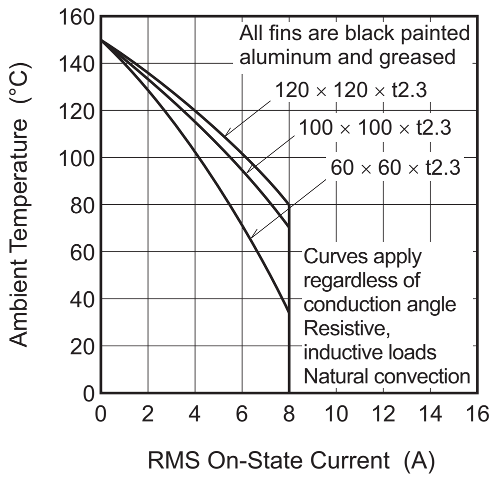
Maximum On-State Power Dissipation



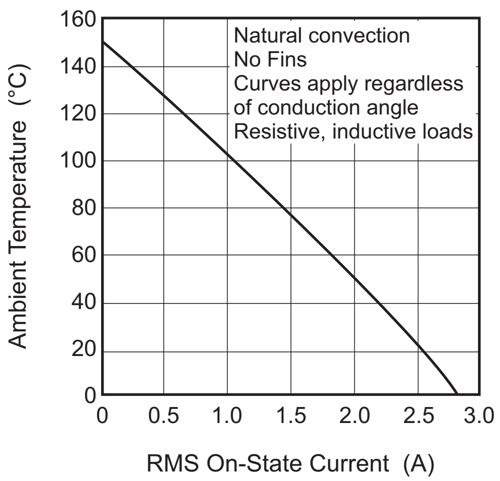
Allowable Case Temperature vs. RMS On-State Current



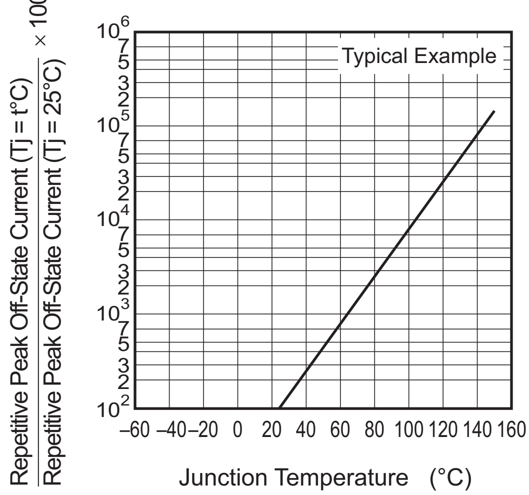
Allowable Ambient Temperature vs. RMS On-State Current



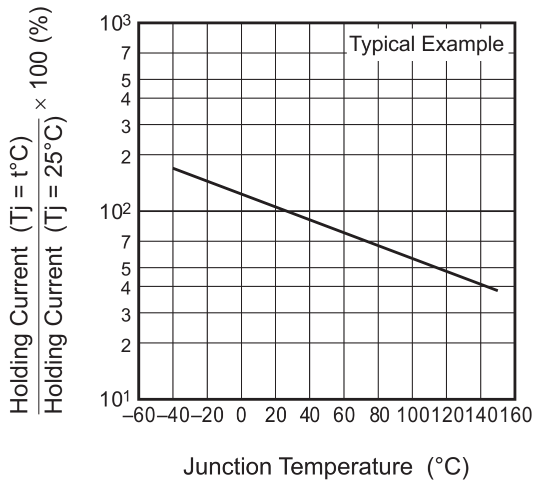
Allowable Ambient Temperature vs. RMS On-State Current



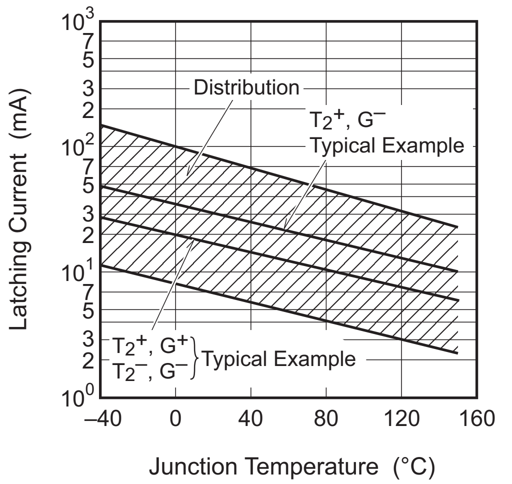
Repetitive Peak Off-State Current vs. Junction Temperature



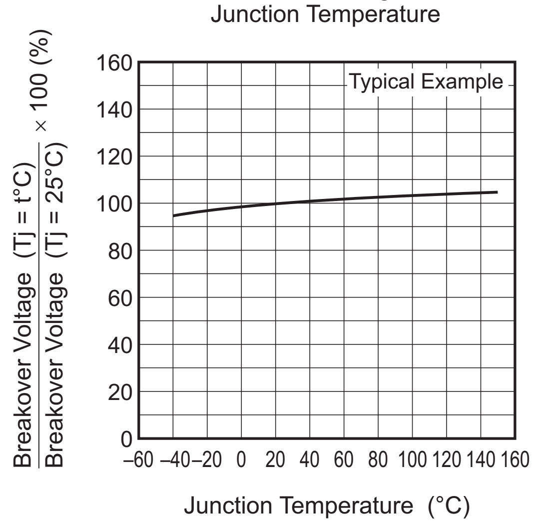
Holding Current vs.
Junction Temperature



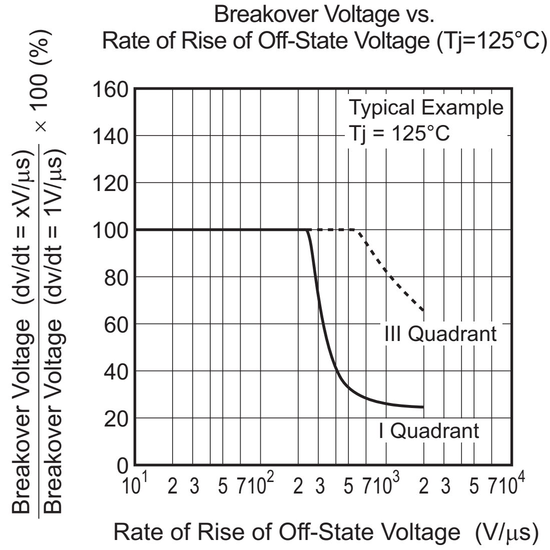
Latching Current vs.
Junction Temperature



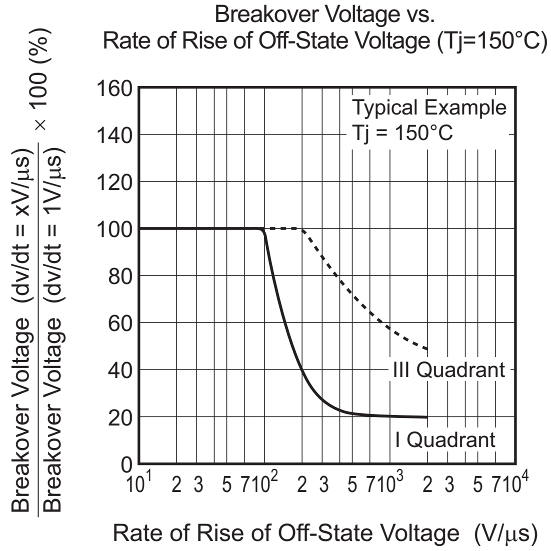
Breakover Voltage vs.
Junction Temperature



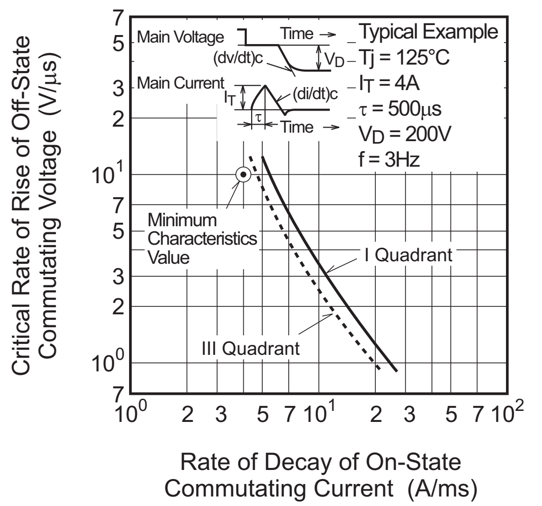
Breakover Voltage vs.
Rate of Rise of Off-State Voltage (Tj=125°C)



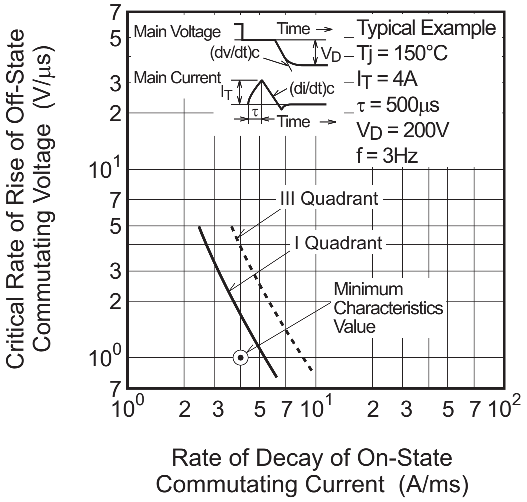
Breakover Voltage vs.
Rate of Rise of Off-State Voltage (Tj=150°C)



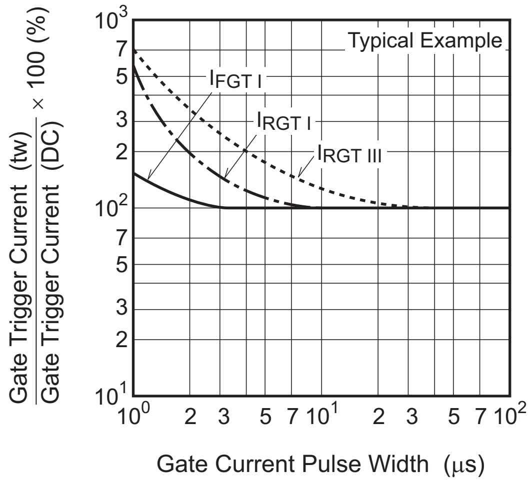
Commutation Characteristics (Tj=125°C)



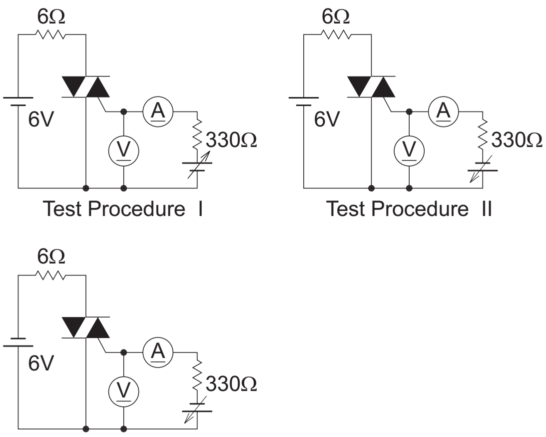
Commutation Characteristics (Tj=150°C)



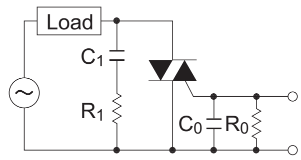
Gate Trigger Current vs. Gate Current Pulse Width



Gate Trigger Characteristics Test Circuits



Recommended Circuit Values Around The Triac



C_1 = 0.1 to 0.47µF C_0 = 0.1µF
R_1 = 47 to 100Ω R_0 = 100Ω

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