

BCR20LM-16LB

Triac
Medium Power Use

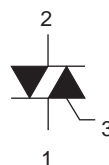
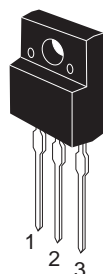
R07DS0594EJ0100
Rev.1.00
Dec 09, 2011

Features

- $I_{T(RMS)}$: 20 A
- V_{DRM} : 800 V
- $I_{FGTI}, I_{RGTI}, I_{RGT III}$: 30 mA
- V_{iso} : 1800V
- The Product guaranteed maximum junction temperature 150°C
- Insulated Type
- Planar Type
- UL Recognized : File No. E223904

Outline

RENESAS Package code: PRSS0003AF-A)
(Package name: TO-220FL)



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

Applications

Vacuum cleaner, electric heater, washing machine, light dimmer, copying machine, and other general purpose AC power control applications

Maximum Ratings

Parameter	Symbol	Voltage class	
		16	Unit
Repetitive peak off-state voltage ^{Note1}	V_{DRM}	800	V
Non-repetitive peak off-state voltage ^{Note1}	V_{DSM}	960	V

Notes: 1. Gate open.

Parameter	Symbol	Ratings	Unit	Conditions
RMS on-state current	$I_{T(RMS)}$	20	A	Commercial frequency, sine full wave 360°conduction, T _c = 65°C
Surge on-state current	I_{TSM}	200	A	60 Hz sinewave 1 full cycle, peak value, non-repetitive
I ² t for fusion	I ² t	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	
Mass	—	1.5	g	Typical value
Isolation voltage	V_{iso}	1800	V	T _a = 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	$T_j = 125^\circ\text{C}$, V_{DRM} applied
		—	—	5.0		$T_j = 150^\circ\text{C}$, V_{DRM} applied
On-state voltage	V_{TM}	—	—	1.5	V	$T_c = 25^\circ\text{C}$, $I_{TM} = 30\text{ A}$, 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	$R_{th(j-c)}$	—	—	3.5	$^\circ\text{C/W}$	Junction to case ^{Note3}
Critical-rate of rise of off-state commutation voltage ^{Note4}	$(dv/dt)_c$	10	—	—	$\text{V}/\mu\text{s}$	$T_j = 125^\circ\text{C}$
		1	—	—	$\text{V}/\mu\text{s}$	$T_j = 150^\circ\text{C}$

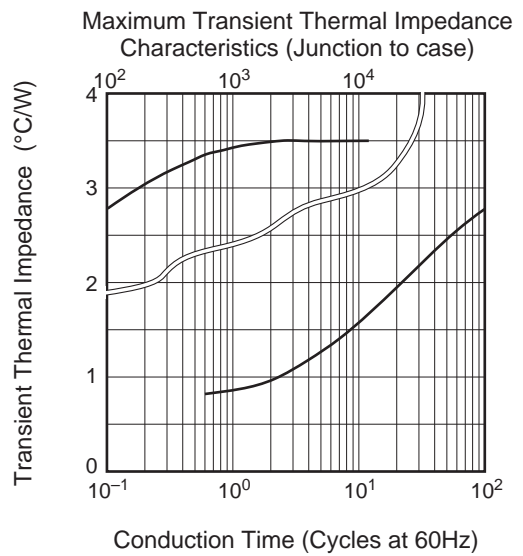
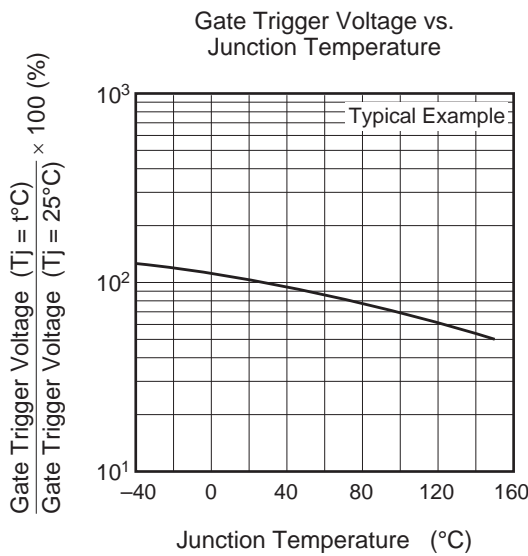
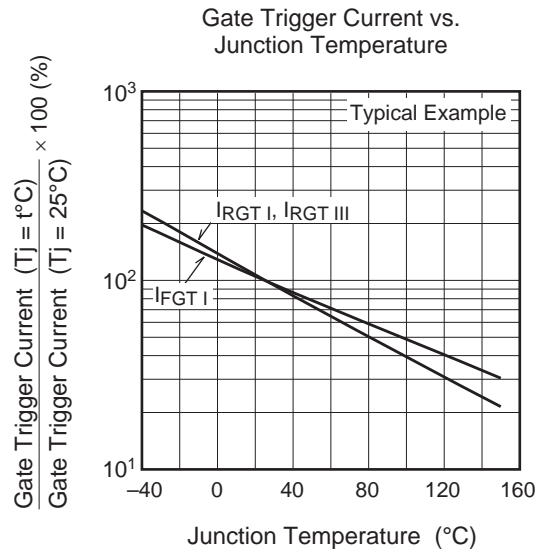
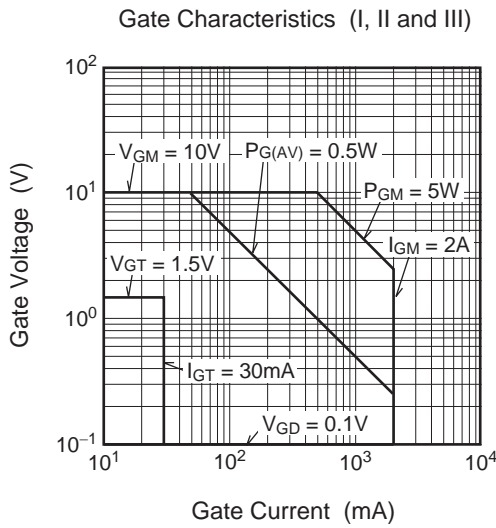
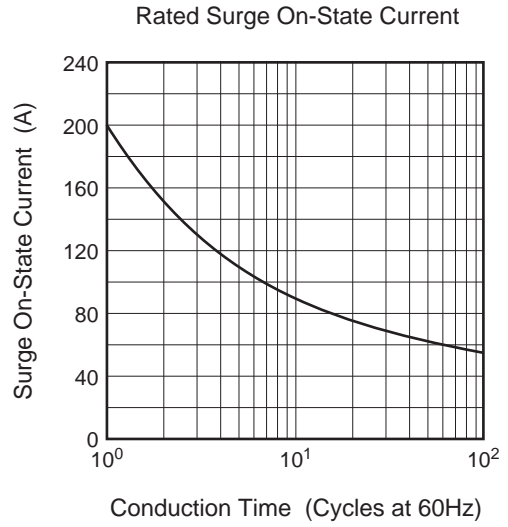
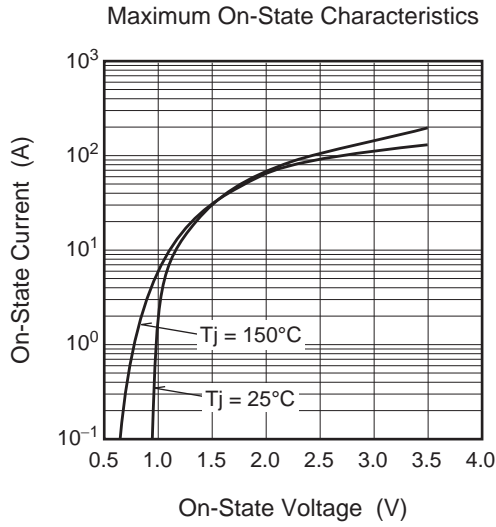
Notes: 2. Measurement using the gate trigger characteristics measurement circuit.

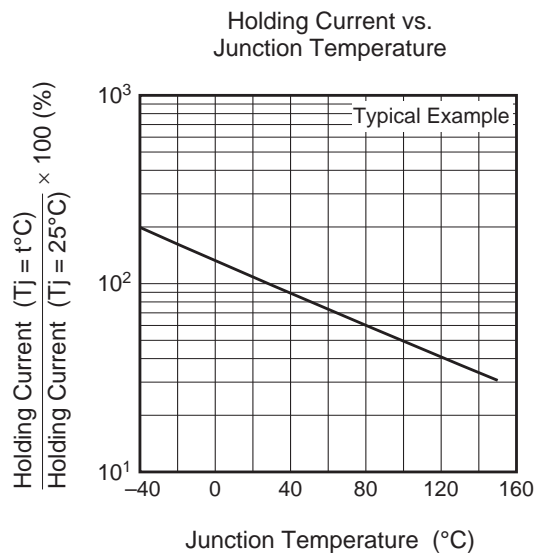
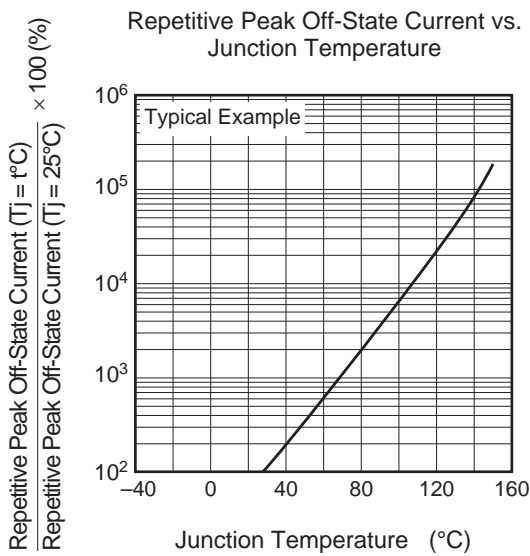
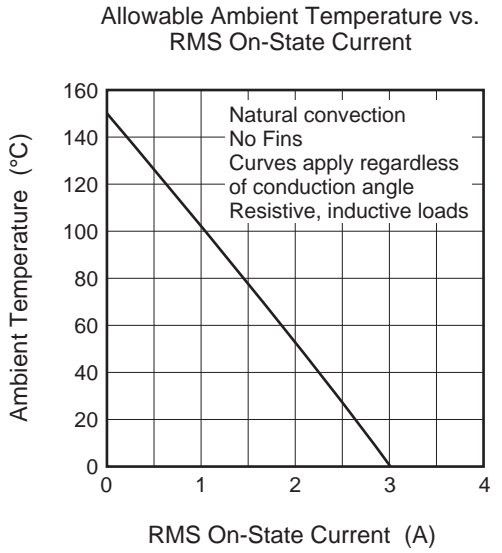
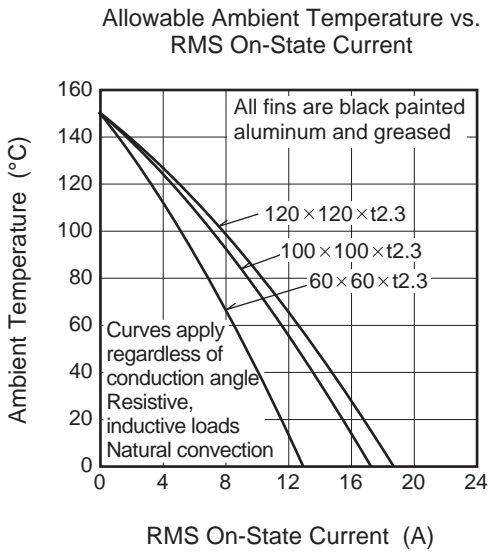
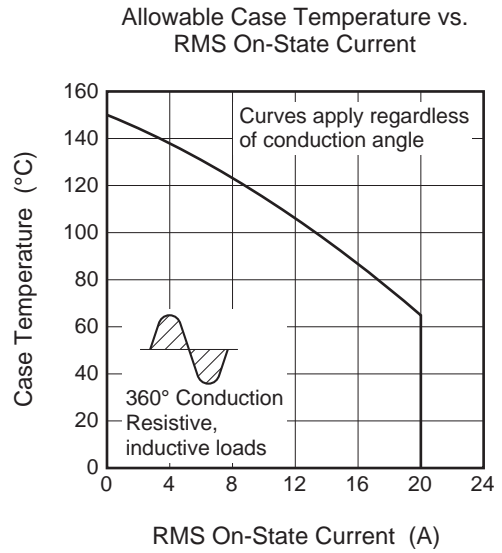
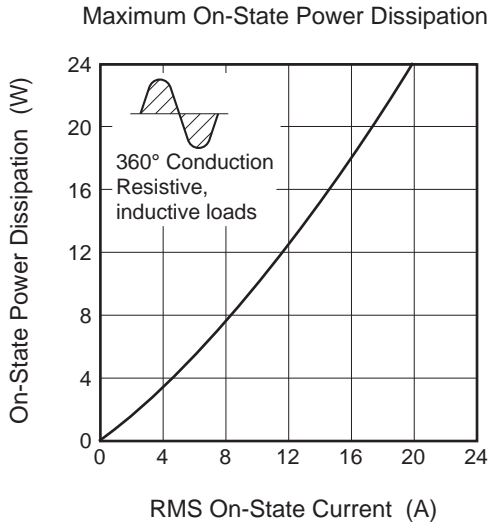
3. The contact thermal resistance $R_{th(c-f)}$ in case of greasing is 0.5°C/W .

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

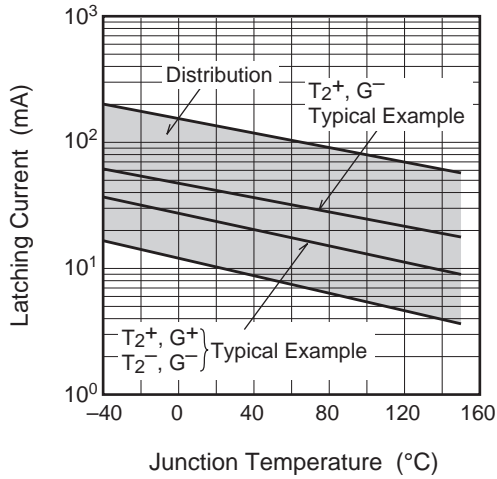
Test conditions	Commutating voltage and current waveforms (inductive load)
1. Junction temperature $T_j = 125^\circ\text{C}/150^\circ\text{C}$ 2. Rate of decay of on-state commutating current $(di/dt)_c = -10\text{ A/ms}$ 3. Peak off-state voltage $V_D = 400\text{ V}$	

Performance Curves

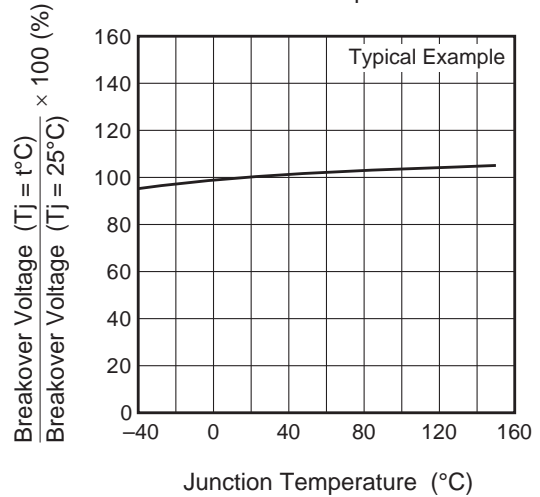




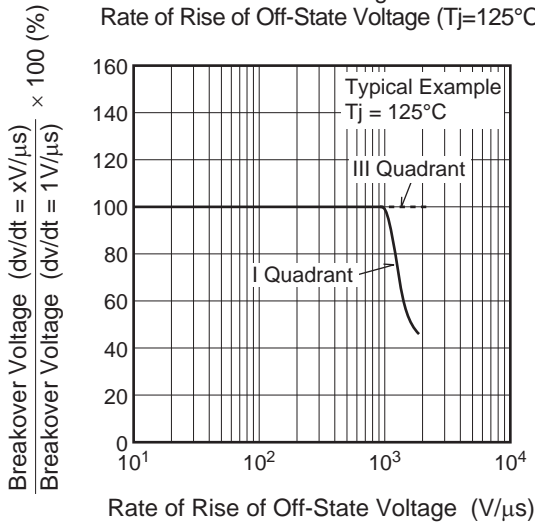
Latching Current vs. Junction Temperature



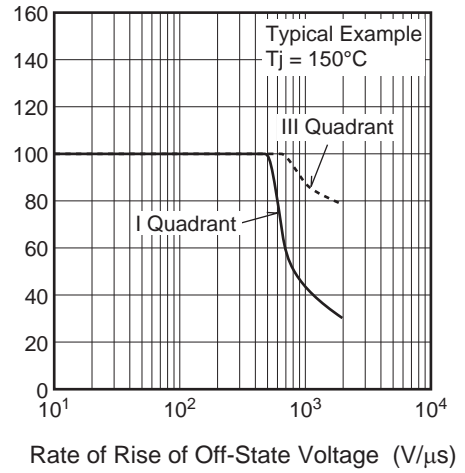
Breakover Voltage vs. Junction Temperature



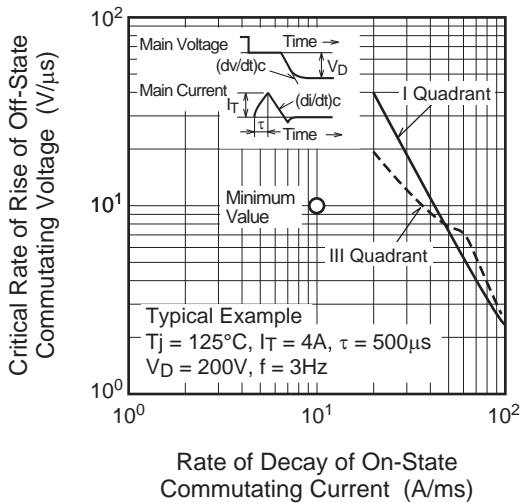
Breakover Voltage vs. Rate of Rise of Off-State Voltage (Tj=125°C)



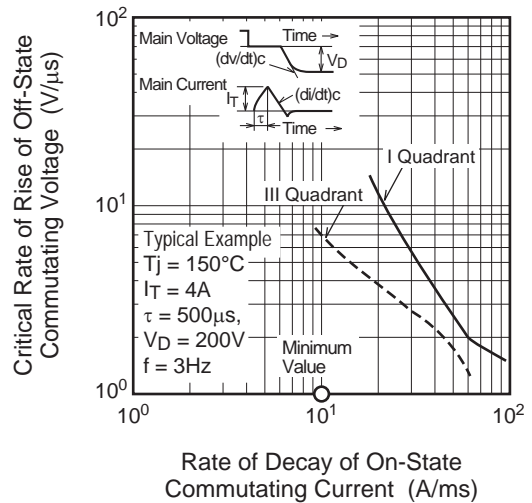
Breakover Voltage vs. Rate of Rise of Off-State Voltage (Tj=150°C)



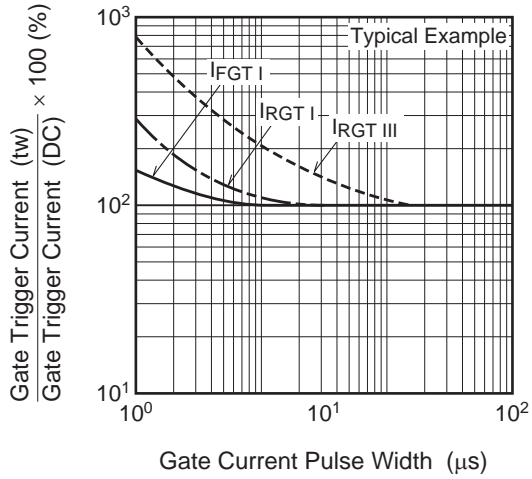
Commutation Characteristics (Tj=125°C)



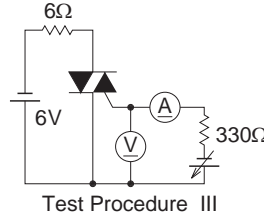
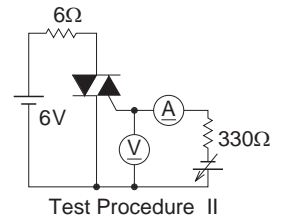
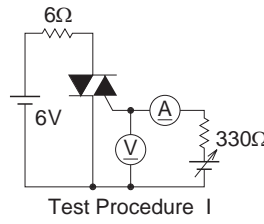
Commutation Characteristics (Tj=150°C)



Gate Trigger Current vs. Gate Current Pulse Width



Gate Trigger Characteristics Test Circuits



Package Dimensions

Package Name	JEITA Package Code	RENESAS Code	Previous Code	MASS[Typ.]
TO-220FL	—	PRSS0003AF-A	TO-220FL	1.5g

Unit: mm

The technical drawing illustrates the package dimensions for the BCR20LM-16LB. It includes three views: a top view, a side view, and a detail view of the lead. The top view shows a rectangular body with a width of 10.0 ± 0.3 mm and a height of 15.0 ± 0.3 mm. The distance between the center of the lead holes is 3.0 ± 0.3 mm. The distance from the top edge to the center of the lead holes is 6.5 ± 0.3 mm. The distance from the bottom edge to the center of the lead holes is 3.2 ± 0.2 mm. The side view shows a total height of 12.5 ± 0.5 mm, with a lead height of 3.6 ± 0.3 mm. The lead width is 1.15 ± 0.2 mm, and the lead thickness is 0.75 ± 0.15 mm. The distance between the center of the lead holes is 2.54 ± 0.25 mm. The detail view shows a lead length of 4.5 ± 0.2 mm and a lead thickness of 2.6 ± 0.2 mm. The distance from the top edge to the center of the lead holes is 2.8 ± 0.2 mm, and the distance from the bottom edge to the center of the lead holes is 0.40 ± 0.15 mm.

Ordering Information

Orderable Part Number	Packing	Quantity	Remark
BCR20LM-16LB#B00	Tube	50 pcs.	Straight type
BCR20LM-16LBA8#B00	Tube	50 pcs.	A8 Lead form

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

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