

BCR25KM-12LB

Triac

Medium Power Use

REJ03G1676-0100

Rev.1.00

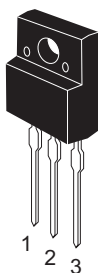
Jun 05, 2008

Features

- $I_{T(RMS)}$: 25 A
- V_{DRM} : 600 V
- I_{FGT} , I_{RGT} , I_{RGTIII} : 50 mA
- V_{iso} : 2000 V
- Insulated Type
- Planar Type

Outline

RENESAS Package code: PRSS0003AB-A
(Package name: TO-220FN)



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

Applications

Contactless AC switch, electric heater control, light dimmer, on/off and speed control of small induction motor, on/off control of copier lamp

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

Notes: 1. Gate open.

Parameter	Symbol	Ratings	Unit	Conditions
RMS on-state current	$I_T (RMS)$	25	A	Commercial frequency, sine full wave 360° conduction, $T_c = 62^\circ\text{C}$
Surge on-state current	I_{TSM}	250	A	50 Hz sinewave 1 full cycle, peak value, non-repetitive
I^2t for fusion	I^2t	313	A^2s	Value corresponding to 1 cycle of half wave 50Hz, 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	—	2.0	g	Typical value
Isolation voltage	V_{iso}	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	Min.	Typ.	Max.	Unit	Test conditions
Repetitive peak off-state current	I_{DRM}	—	—	3.0/5.0	mA	$T_j = 125/150^\circ\text{C}$, V_{DRM} applied
On-state voltage	V_{TM}	—	—	1.5	V	$T_c = 25^\circ\text{C}$, $I_{TM} = 40\text{ A}$, instantaneous measurement
Gate trigger voltage ^{Note2}	I	V_{FGTI}	—	—	2.0	$T_j = 25^\circ\text{C}$, $V_D = 6\text{ V}$, $R_L = 6\ \Omega$, $R_G = 330\ \Omega$
	II	V_{RGTI}	—	—	2.0	
	III	V_{RGTIII}	—	—	2.0	
Gate trigger current ^{Note2}	I	I_{FGTI}	—	—	50	$T_j = 25^\circ\text{C}$, $V_D = 6\text{ V}$, $R_L = 6\ \Omega$, $R_G = 330\ \Omega$
	II	I_{RGTI}	—	—	50	
	III	I_{RGTIII}	—	—	50	
Gate non-trigger voltage	V_{GD}	0.2/0.1	—	—	V	$T_j = 125/150^\circ\text{C}$, $V_D = 1/2 V_{DRM}$
Thermal resistance	$R_{th(j-c)}$	—	—	2.8	$^\circ\text{C/W}$	Junction to case ^{Note3}
Critical-rate of rise of off-state commutation voltage ^{Note4}	$(dv/dt)_c$	10/1	—	—	$\text{V}/\mu\text{s}$	$T_j = 125/150^\circ\text{C}$

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

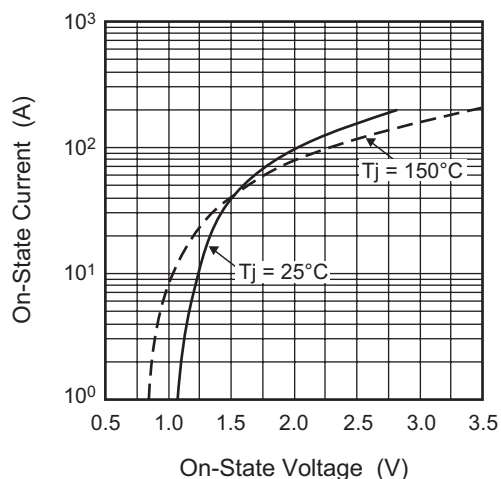
3. The contact thermal resistance $R_{th(c-f)}$ in case of greasing is 0.5°C/W .

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

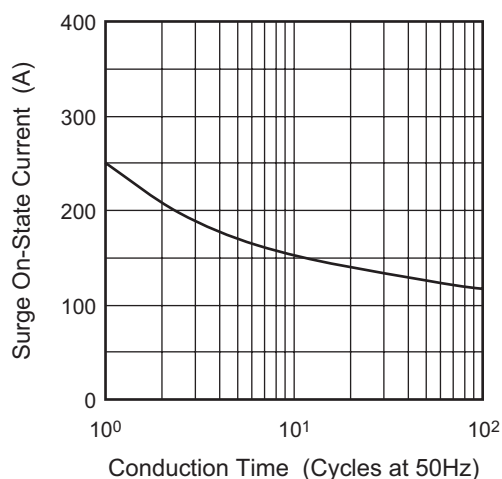
Test conditions	Commutating voltage and current waveforms (inductive load)
1. Junction temperature $T_j = 125/150^\circ\text{C}$ 2. Rate of decay of on-state commutating current $(di/dt)_c = -13\text{ A/ms}$ 3. Peak off-state voltage $V_D = 400\text{ V}$	

Performance Curves

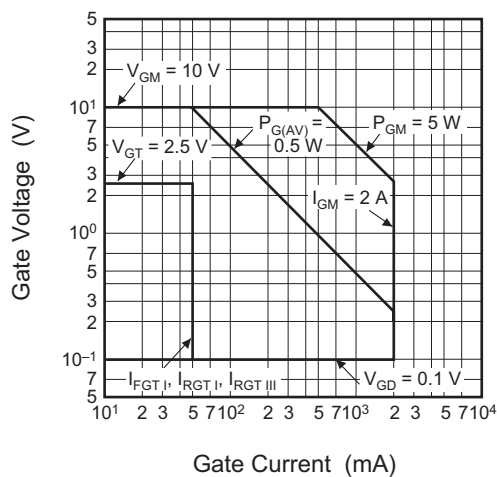
Maximum On-State Characteristics



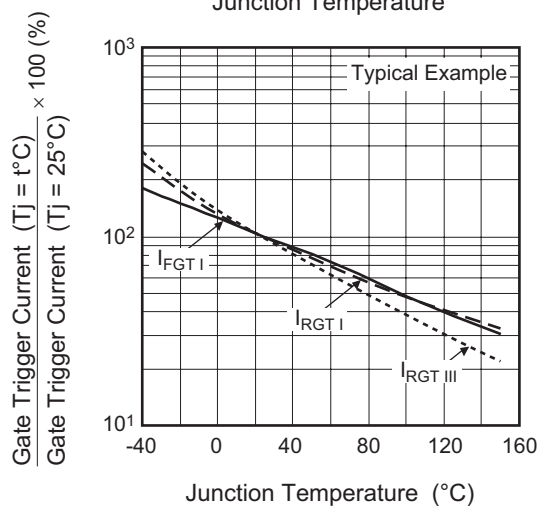
Rated Surge On-State Current



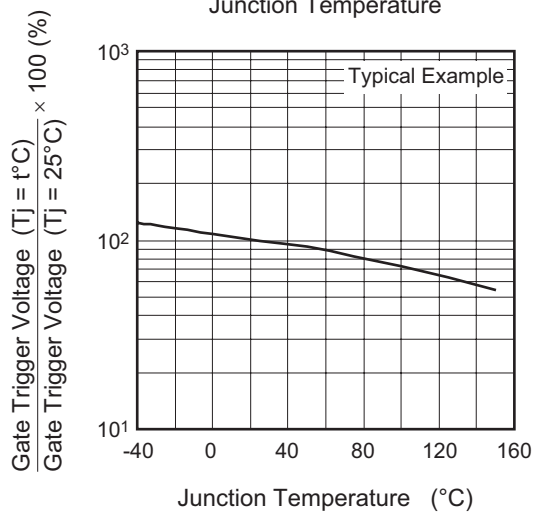
Gate Characteristics (I, II and III)



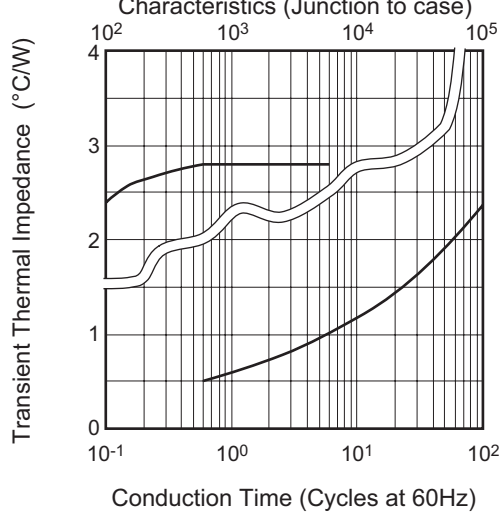
Gate Trigger Current vs. Junction Temperature

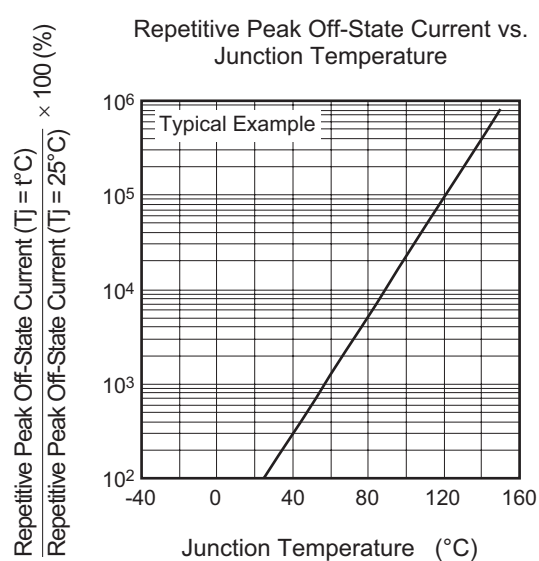
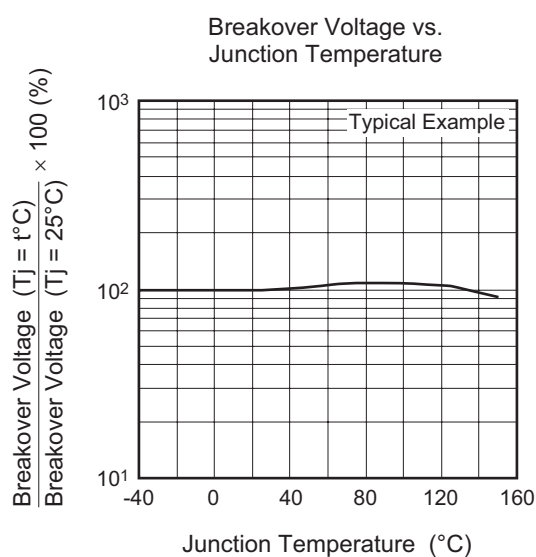
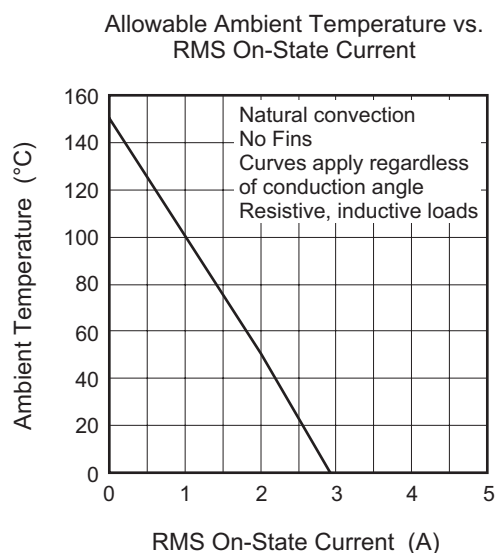
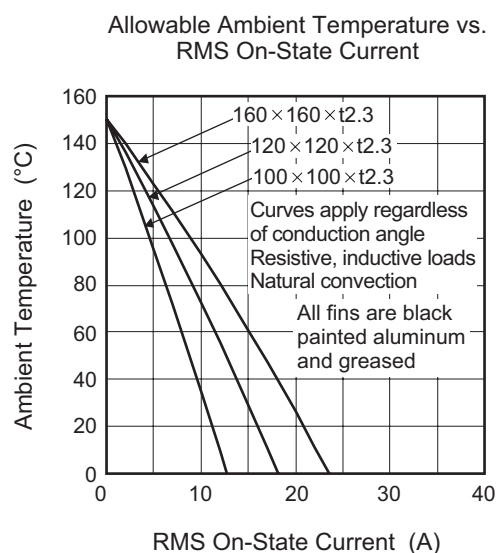
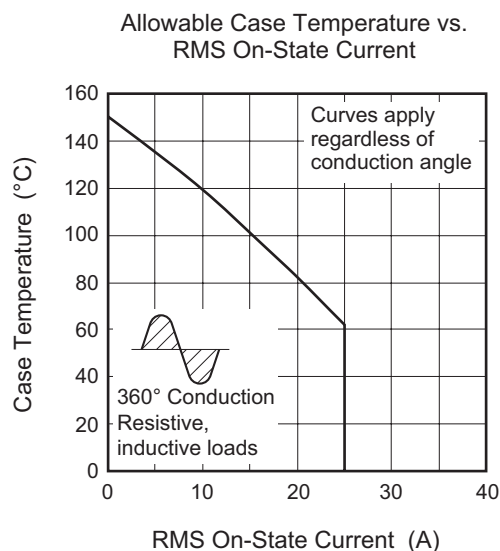
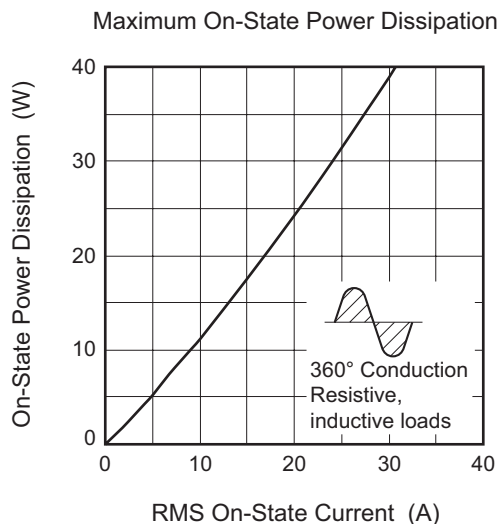


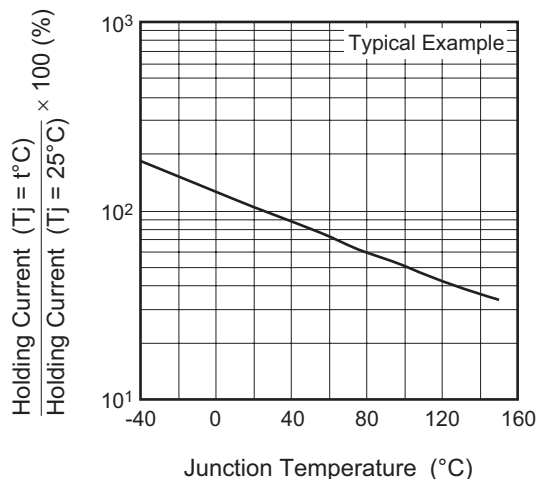
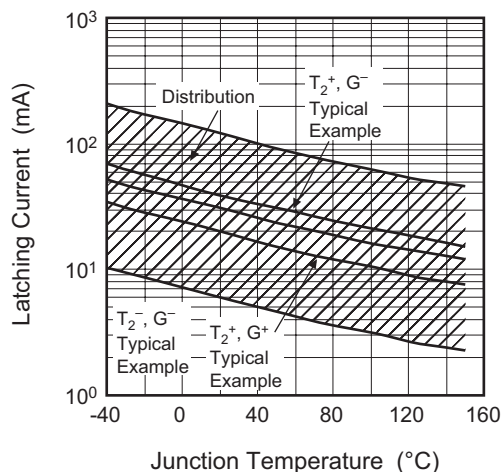
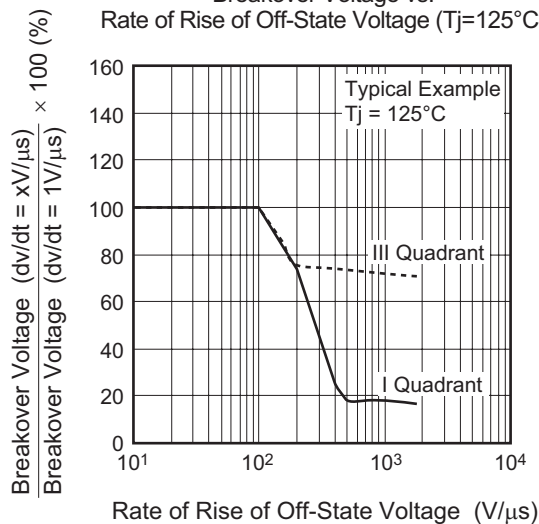
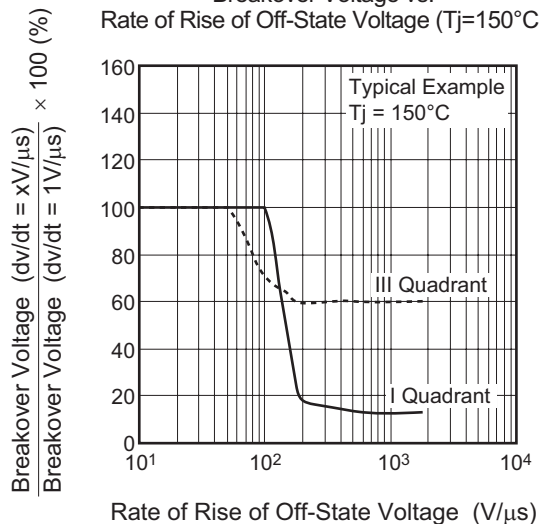
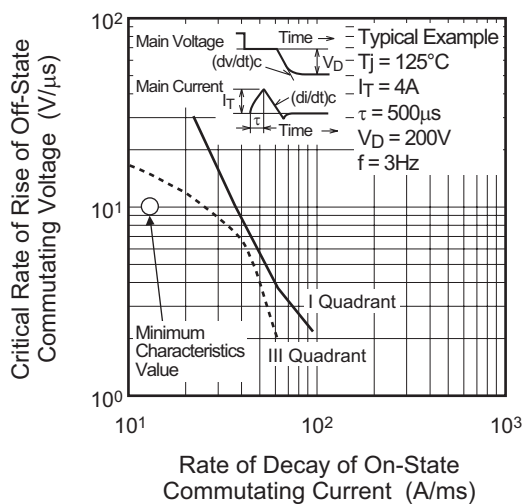
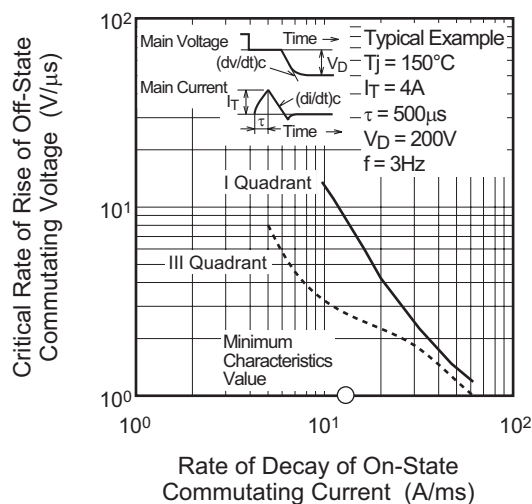
Gate Trigger Voltage vs. Junction Temperature

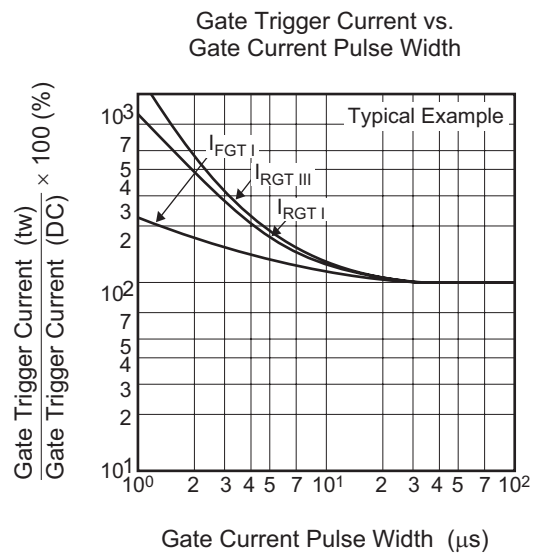


Maximum Transient Thermal Impedance Characteristics (Junction to case)

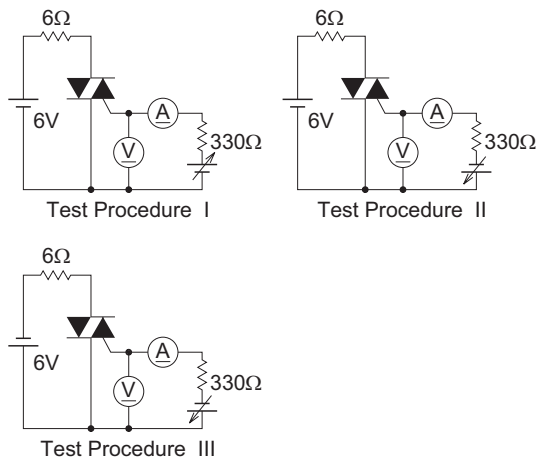




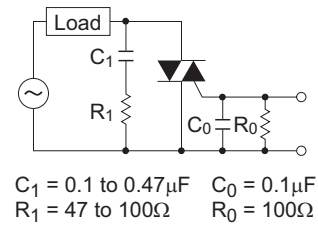
Holding Current vs.
Junction TemperatureLatching Current vs.
Junction TemperatureBreakover Voltage vs.
Rate of Rise of Off-State Voltage ($T_J = 125^\circ\text{C}$)Breakover Voltage vs.
Rate of Rise of Off-State Voltage ($T_J = 150^\circ\text{C}$)Commutation Characteristics ($T_J = 125^\circ\text{C}$)Commutation Characteristics ($T_J = 150^\circ\text{C}$)



Gate Trigger Characteristics Test Circuits



Recommended Circuit Values Around The Triac



Package Dimensions

Package Name	JEITA Package Code	RENESAS Code	Previous Code	MASS[Typ.]
TO-220FN	—	PRSS0003AB-A	—	2.0g

Unit: mm

The technical drawing illustrates the dimensions of the BCR25KM-12LB TO-220FN package. The top view shows a rectangular body with a width of 10 ± 0.3 mm and a height of 15 ± 0.3 mm. The mounting holes are spaced 3 ± 0.3 mm from the top edge and 6.5 ± 0.3 mm from the side edge. The hole diameter is $\phi 3.2 \pm 0.2$ mm. The side view shows a total height of 14 ± 0.5 mm, with a mounting tab height of 3.6 ± 0.3 mm. The lead height is 1.1 ± 0.2 mm, and the lead thickness is 0.75 ± 0.15 mm. The lead pitch is 2.54 ± 0.25 mm. The lead length is 2.8 ± 0.2 mm. The bottom view shows a base width of 2.6 ± 0.2 mm and a base height of 4.5 ± 0.2 mm.

Order Code

Lead form	Standard packing	Quantity	Standard order code	Standard order code example
Straight type	Plastic Magazine (Tube)	50	Type name	BCR25KM-12LB
Lead form	Plastic Magazine (Tube)	50	Type name – Lead forming code	BCR25KM-12LB -A8

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

Notes:

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