

BCR25KM-12LB

Triac

Medium Power Use

REJ03G1676-0100

Rev.1.00

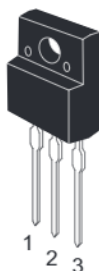
Jun 05, 2008

Features

- $I_{T(RMS)}$: 25 A
- V_{DRM} : 600 V
- I_{FGTI} , I_{RGTI} , I_{RGTHI} : 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, $T_1 \cdot T_2 \cdot G$ 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.

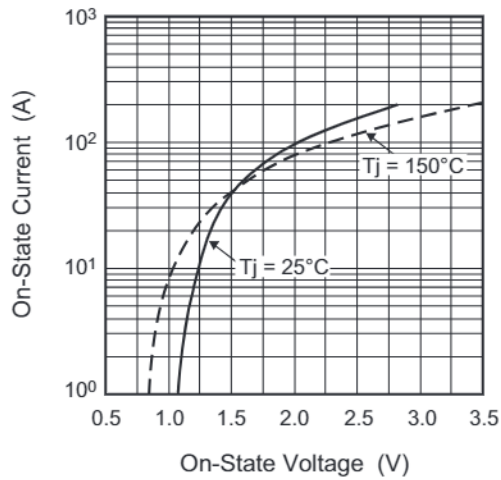
3. The contact thermal resistance $R_{th(c-f)}$ in case of greasing is 0.5°C/W .

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

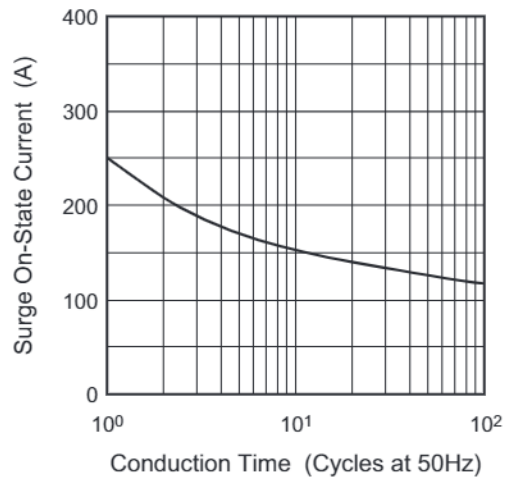
Test conditions	Commutating voltage and current waveforms (inductive load)
1. Junction temperature $T_j = 125/150^\circ\text{C}$ 2. Rate of decay of on-state commutating current $(di/dt)_c = -13\text{ A/ms}$ 3. Peak off-state voltage $V_D = 400\text{ V}$	

Performance Curves

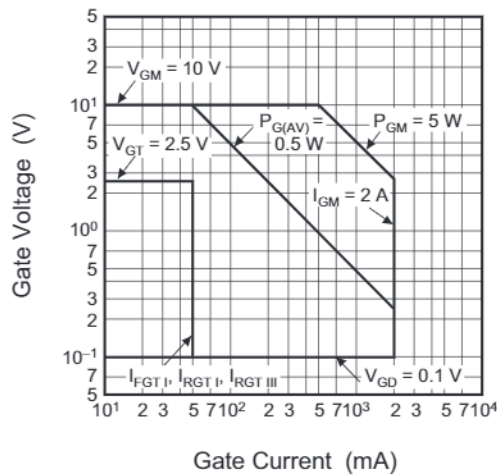
Maximum On-State Characteristics



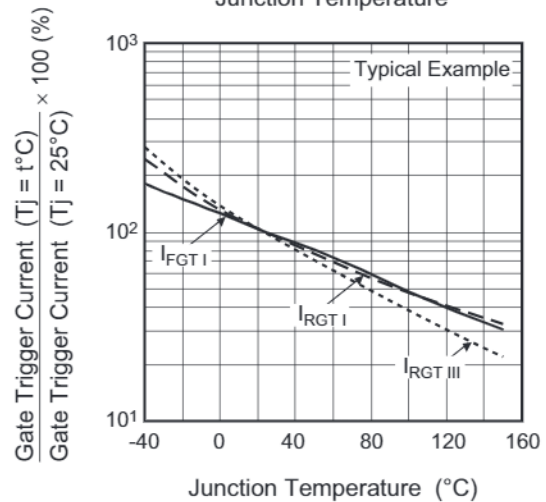
Rated Surge On-State Current



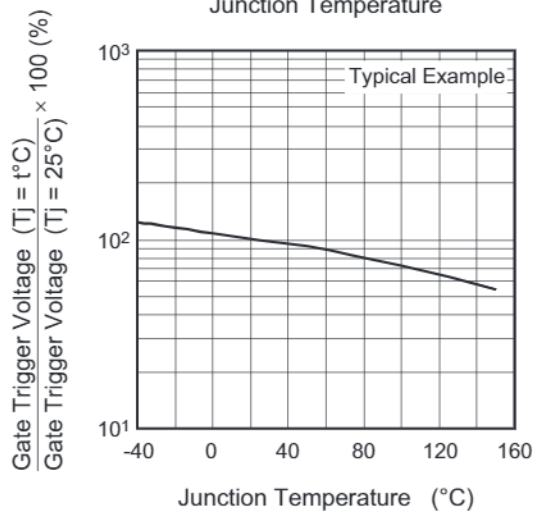
Gate Characteristics (I, II and III)



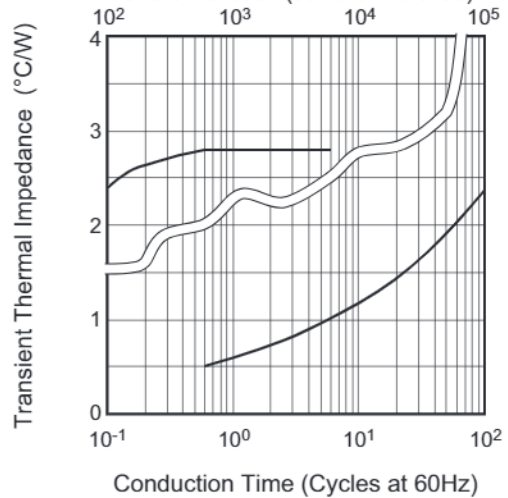
Gate Trigger Current vs. Junction Temperature

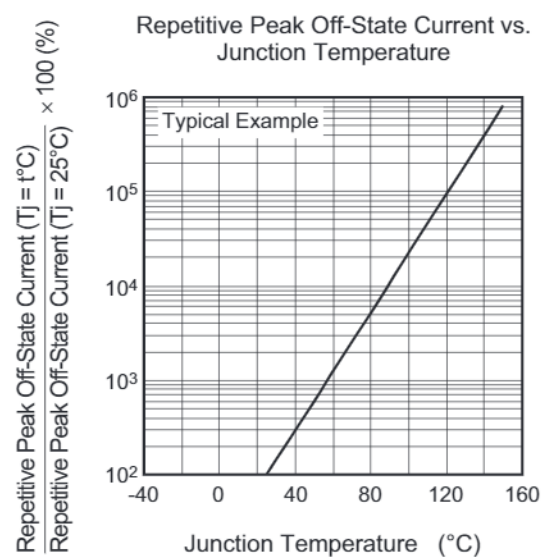
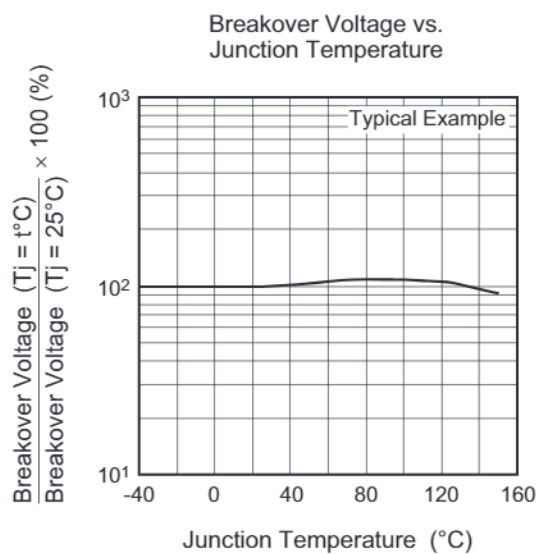
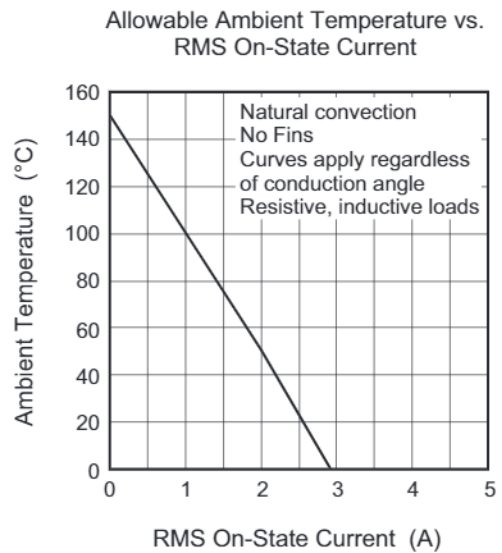
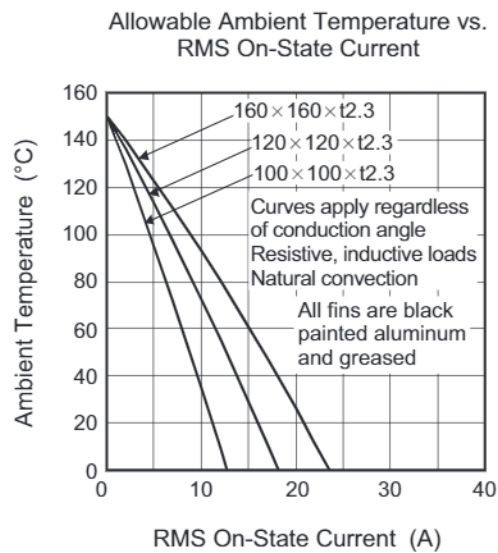
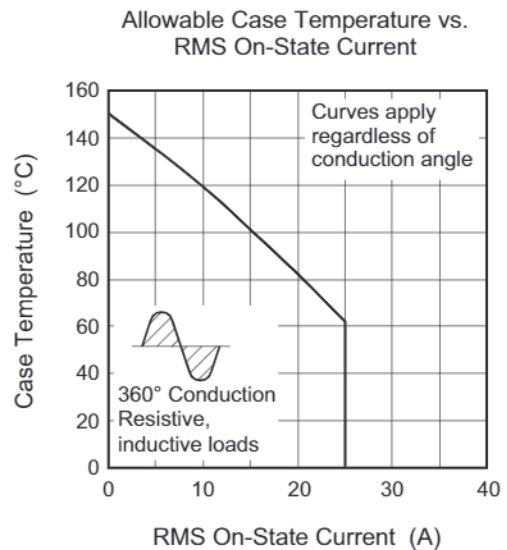
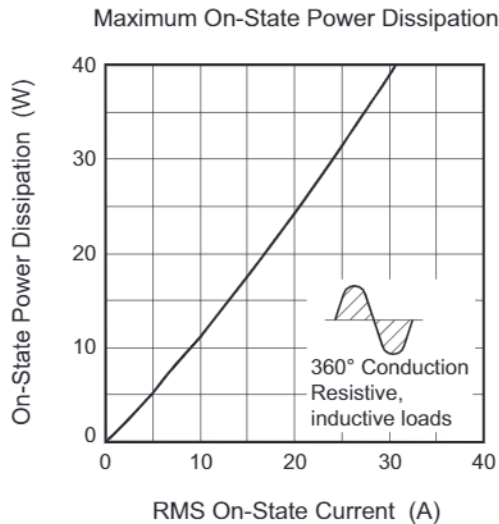


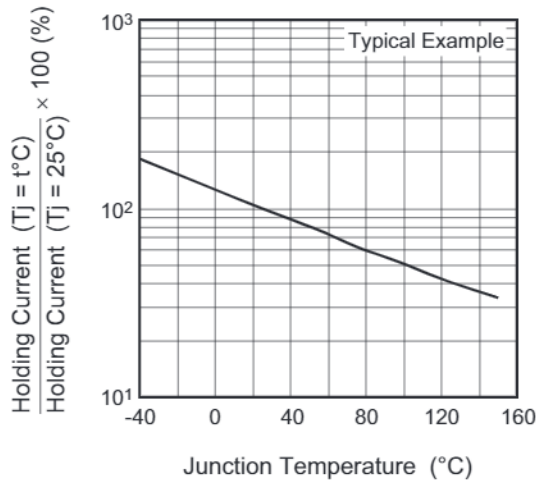
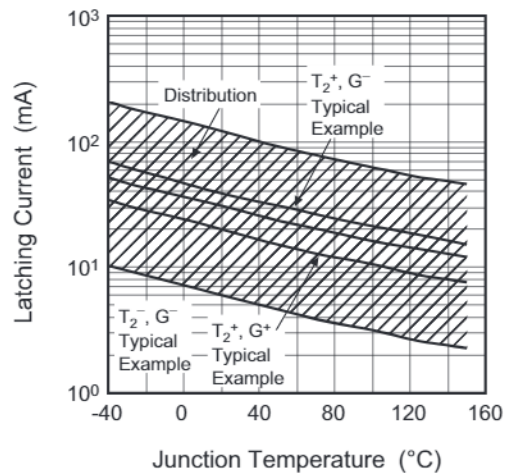
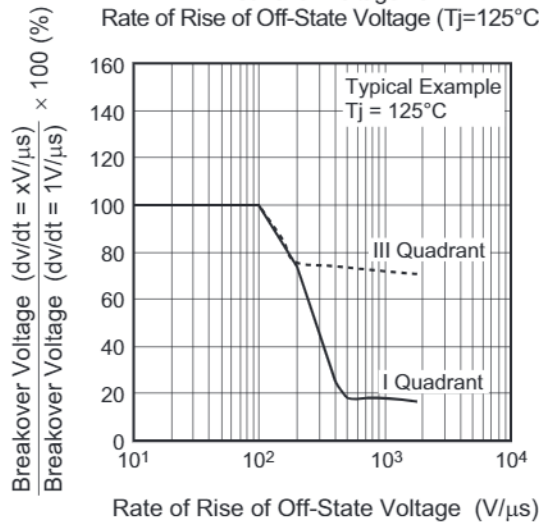
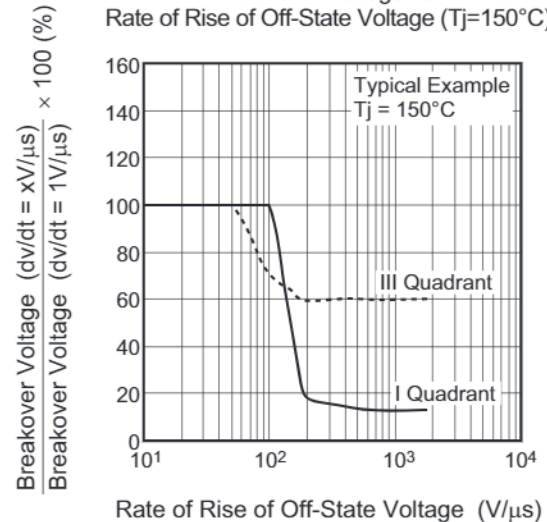
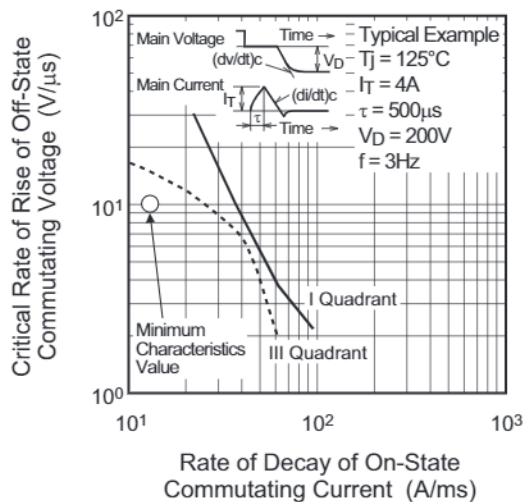
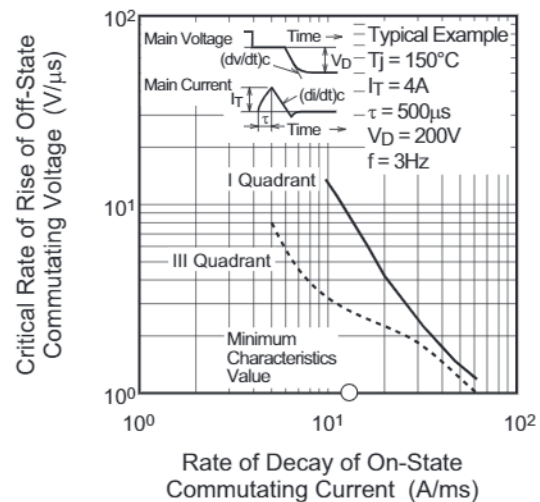
Gate Trigger Voltage vs. Junction Temperature

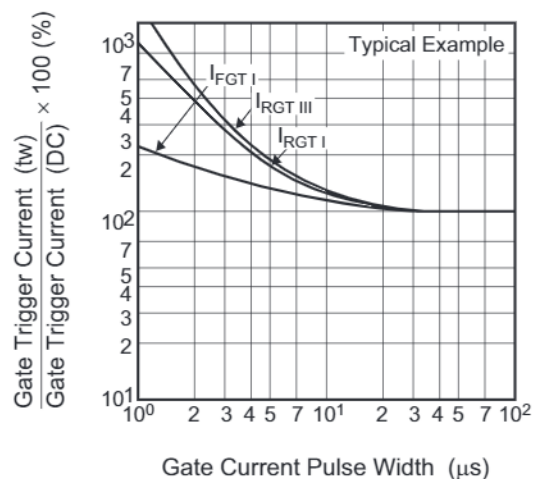


Maximum Transient Thermal Impedance Characteristics (Junction to case)

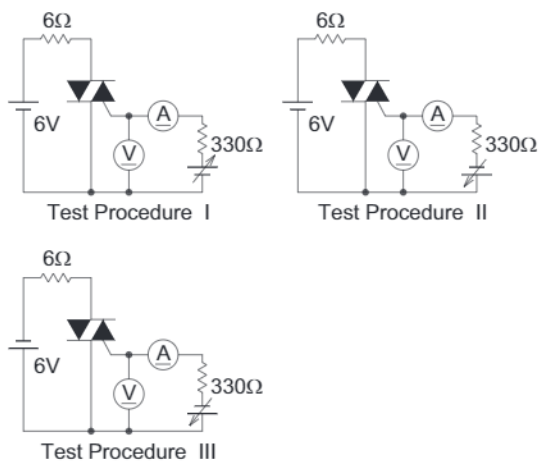




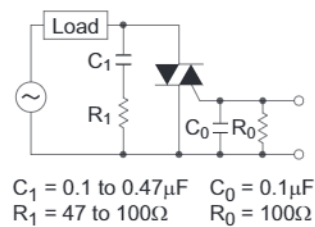
Holding Current vs.
Junction TemperatureLatching Current vs.
Junction TemperatureBreakover Voltage vs.
Rate of Rise of Off-State Voltage ($T_J = 125^\circ\text{C}$)Breakover Voltage vs.
Rate of Rise of Off-State Voltage ($T_J = 150^\circ\text{C}$)Commutation Characteristics ($T_J = 125^\circ\text{C}$)Commutation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

Gate Trigger Current vs.
Gate Current Pulse Width

Gate Trigger Characteristics Test Circuits



Recommended Circuit Values Around The Triac



Package Dimensions

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

Technical drawing of the BCR25KM-12LB TO-220FN package showing dimensions in mm:

- Top View:**
 - Overall width: 10 ± 0.3
 - Overall height: 15 ± 0.3
 - Distance from top edge to mounting hole center: 3 ± 0.3
 - Mounting hole diameter: $\phi 3.2 \pm 0.2$
 - Distance from mounting hole center to lead center: 6.5 ± 0.3
 - Lead width: 1.1 ± 0.2
 - Lead pitch: 1.1 ± 0.2
 - Lead thickness: 0.75 ± 0.15
 - Distance from lead center to package edge: 2.54 ± 0.25
- Side View:**
 - Package height: 2.8 ± 0.2
 - Lead height: 0.75 ± 0.15
- Lead View:**
 - Lead width: 2.6 ± 0.2
 - Lead thickness: 4.5 ± 0.2

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.

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