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CRD5AS-12B

Reverse Conducting Thyristor
Medium Power Use

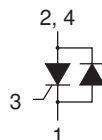
R07DS0503EJ0100
Rev.1.00
Jul 07, 2011

Features

- $I_{T(AV)}$: 5 A
- V_{DRM} : 600 V
- I_{GT} : 100 μ A
- The Product guaranteed maximum junction temperature 150°C
- Built-in reverse conducting diode
- Planar Type

Outline

RENESAS Package code: PRSS0004ZG-A
(Package name: MP-3A)



1. Cathode
2. Anode
3. Gate
4. Anode

Applications

Switching mode power supply, Regulator for motorcycle

Maximum Ratings

Parameter	Symbol	Voltage class	Unit
		12	
Repetitive peak off-state voltage ^{Note1}	V_{DRM}	600	V

Notes: 1. With gate to cathode resistance $R_{GK}=220\Omega$

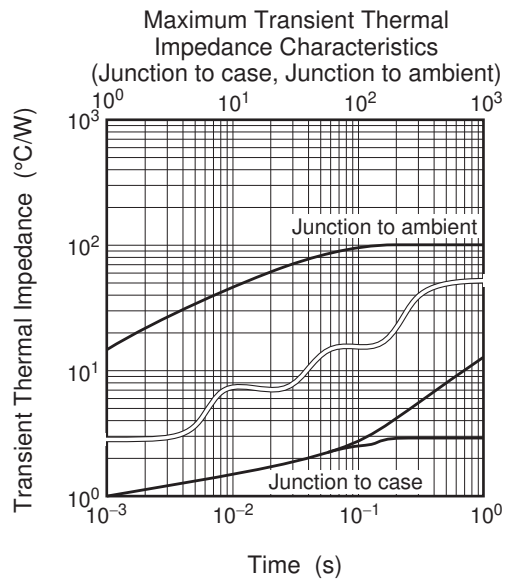
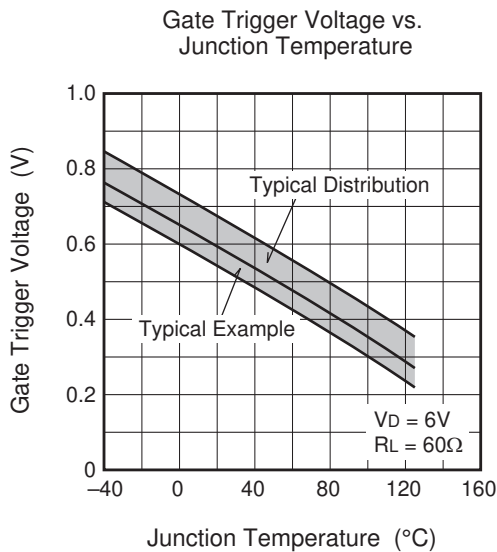
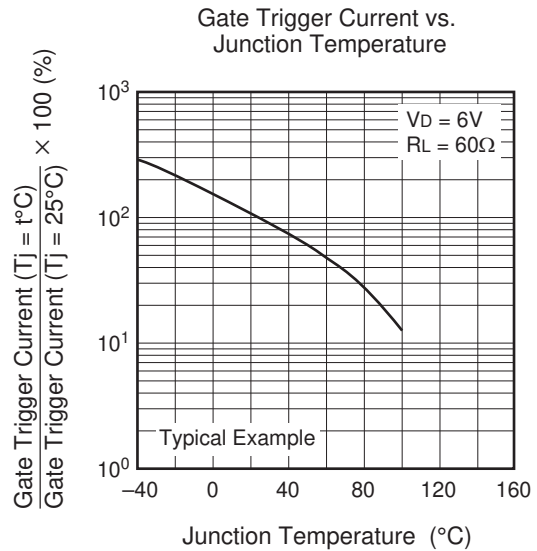
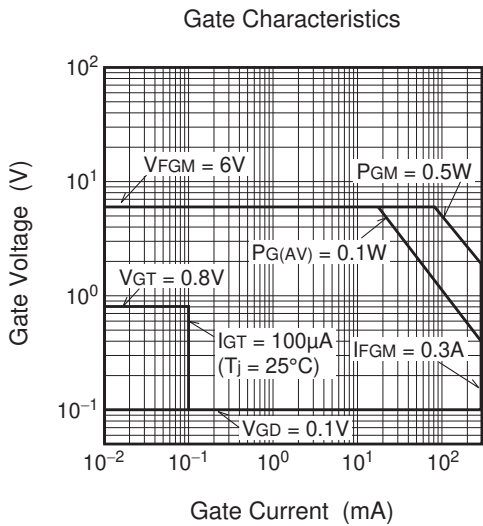
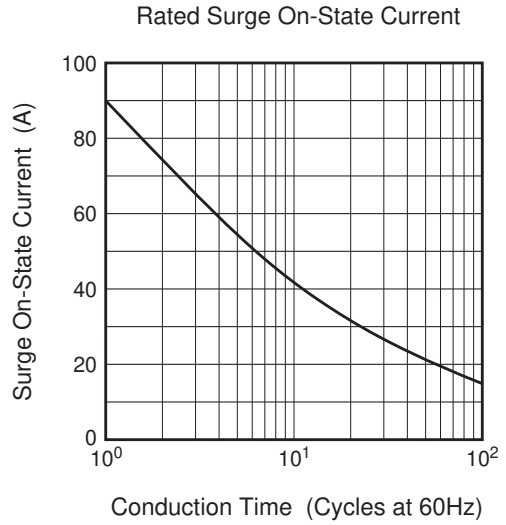
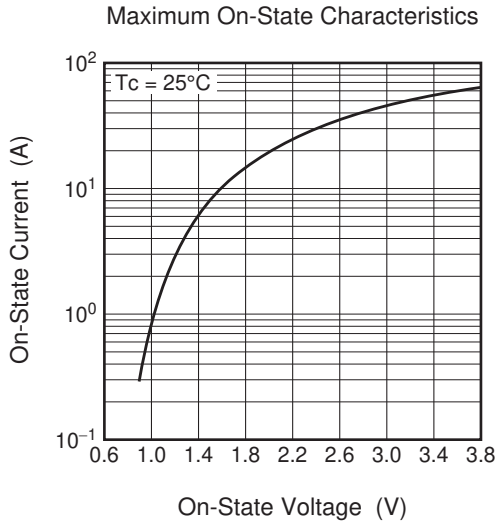
Parameter	Symbol	Ratings	Unit	Conditions
RMS on-state current	$I_{T(RMS)}$	7.8	A	
Average on-state current	$I_{T(AV)}$	5	A	Commercial frequency, sine half wave 180° conduction, $T_c=113^\circ\text{C}$
Surge on-state current	I_{TSM}	90	A	60Hz sine half wave, 1full cycle, peak value, non-repetitive
I^2t for fusing	I^2t	33	A^2s	Value corresponding to 1cycle of half wave 60Hz, surge on-state current
Surge reverse-conducting current	I_{RCSM}	3	A	sine half wave, pulse width 10ms peak value, non-repetitive, $R_{GK}=0\Omega$
Peak gate power dissipation	P_{GM}	0.5	W	
Average gate power dissipation	$P_{G(AV)}$	0.1	W	
Peak gate forward voltage	V_{FGM}	6	V	
Peak gate reverse voltage	V_{RGM}	6	V	
Peak gate forward current	I_{FGM}	0.3	A	
Junction temperature	T_j	- 40 to +150	$^\circ\text{C}$	
Storage temperature	T_{stg}	- 40 to +150	$^\circ\text{C}$	
Mass	—	0.26	g	Typical value

Electrical Characteristics

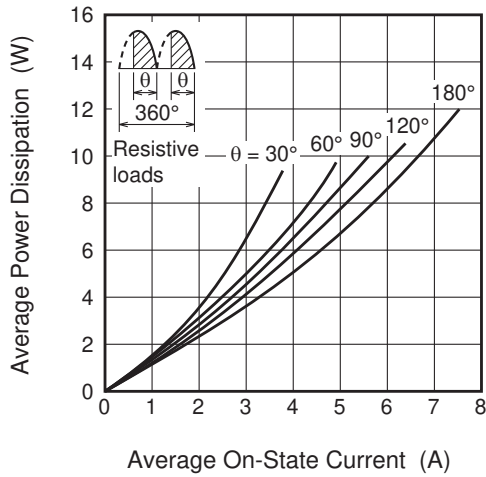
Parameter	Symbol	Min.	Typ.	Max.	Unit	Test conditions
Repetitive peak off-state current	I_{DRM}	—	—	2.0	mA	$T_j = 150^\circ\text{C}$, V_{DRM} applied $R_{\text{GK}}=220\Omega$
On-state voltage	V_{TM}	—	—	1.8	V	$T_j = 25^\circ\text{C}$, $I_{\text{TM}} = 15\text{ A}$ instantaneous value
Gate trigger voltage	V_{GT}	—	—	0.8	V	$T_j = 25^\circ\text{C}$, $V_{\text{D}} = 6\text{ V}$, $I_{\text{T}} = 0.1\text{ A}$
Gate non-trigger voltage	V_{GD}	0.1	—	—	V	$T_j = 150^\circ\text{C}$, $V_{\text{D}} = 1/2 V_{\text{DRM}}$ $R_{\text{GK}}=220\Omega$
Gate trigger current	I_{GT}	1	—	100	μA	$T_j = 25^\circ\text{C}$, $V_{\text{D}} = 6\text{ V}$, $I_{\text{T}} = 0.1\text{ A}$
Holding current	I_{H}	—	3	—	mA	$T_j = 25^\circ\text{C}$, $V_{\text{D}} = 12\text{ V}$ $R_{\text{GK}}=220\Omega$
Thermal resistance	$R_{\text{th(j-c)}}$	—	—	3.0	$^\circ\text{C/W}$	Junction to case ^{Note2}

Notes: 2. The measurement point for case temperature is at anode tab.

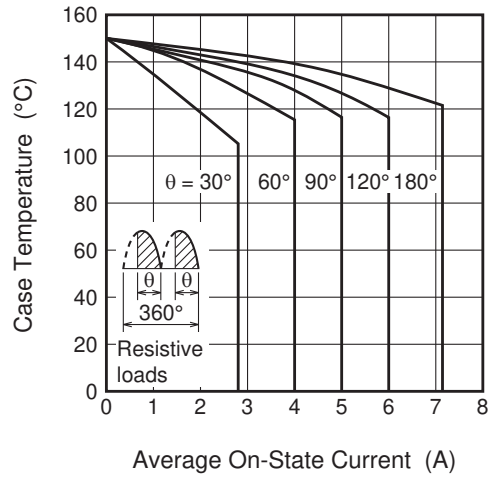
Performance Curves



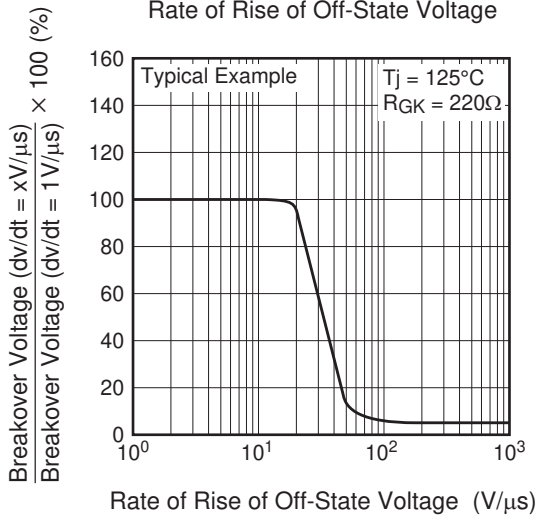
Maximum Average Power Dissipation
(Single-Phase Full Wave)



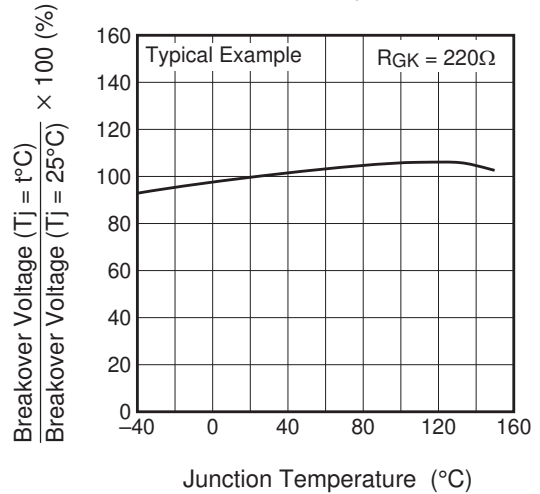
Allowable Case Temperature vs.
Average On-State Current
(Single-Phase Full Wave)



Breakover Voltage vs.
Rate of Rise of Off-State Voltage



Breakover Voltage vs.
Junction Temperature



Package dimensions

Package Name	JEITA Package Code	RENESAS Code	Previous Code	MASS[Typ.]	Unit: mm
MP-3A	SC-63	PRSS0004ZG-A	TMP3	0.32g	

The drawing shows three views of the package:

- Top View:** Overall width is 6.6 mm. The main body width is 5.3 ± 0.2 mm. The distance between the two leads is 2.3 ± 0.2 mm. The lead width is 0.76 ± 0.2 mm. The lead thickness is 1 mm. The lead length is 1 ± 0.2 mm. The total height from the base to the top of the package is 10.4Max mm. The distance from the base to the top of the main body is 6.1 ± 0.2 mm. The distance from the base to the top of the lead is 2.5Min mm. The distance from the base to the top of the lead is 1Max mm.
- Side View:** The package height is 2.3 mm. The distance from the base to the top of the package is 0.5 ± 0.2 mm. The distance from the base to the top of the package is 0.1 ± 0.1 mm. The distance from the base to the top of the package is 1.4 ± 0.2 mm. The distance from the base to the top of the package is 0.5 ± 0.2 mm.
- Bottom View:** The package width is 2.3 mm. The distance between the two leads is 2.3 ± 0.2 mm. The lead width is 0.76 ± 0.2 mm. The lead thickness is 1 mm.

Ordering Information

Orderable Part Number	Packing	Quantity	Remark
CRD5AS-12B#B00	Tube	75 pcs.	—
CRD5AS-12B-T13#B00	Embossed Tape	3000 pcs.	Taping direction "T1"

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

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