

# CRD5AS-12B

## Reverse Conducting Thyristor

Medium Power Use

R07DS0503EJ0101

Rev.1.01

May. 10, 2019

### Features

- $I_T(AV)$  : 5 A
- $V_{DRM}$  : 600 V
- $I_{GT}$ : 100  $\mu$ A
- $T_j$  : 150°C
- Built-in reverse conducting diode
- Planar Passivation Type
- RoHS Compliant

### Outline

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

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

### Application

Switching mode power supply, etc.

### Maximum Ratings

Parameter	Symbol	Voltage class	
		12	600
Repetitive peak off-state voltage <sup>Note1</sup>	$V_{DRM}$	600	V

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

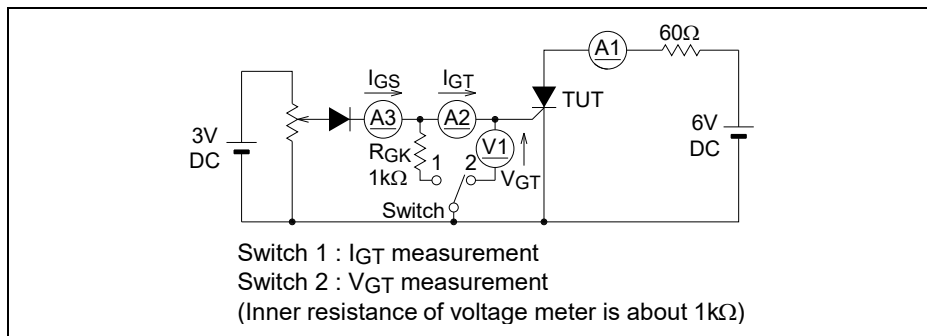
Parameter	Symbol	Ratings	Unit	Conditions
RMS on-state current	$I_T(RMS)$	7.8	A	
Average on-state current	$I_T(AV)$	5	A	Commercial frequency, sine half wave 180°conduction, $T_c = 113^\circ\text{C}$ <sup>Note2</sup>
Surge on-state current	$I_{TSM}$	90	A	60 Hz sine half wave 1 full cycle, peak value, non-repetitive
$I^2t$ for fusing	$I^2t$	33	$\text{A}^2\text{s}$	Value corresponding to 1 cycle of half wave 60 Hz, surge on-state current
Surge reverse-conducting current	$I_{RCSM}$	3	A	Sine half wave, pulse width 10 ms, 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	°C	
Storage temperature	$T_{stg}$	-40 to +150	°C	

## Electrical Characteristics

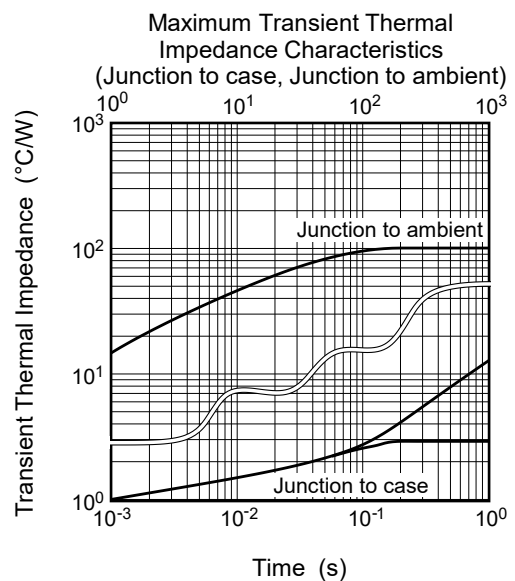
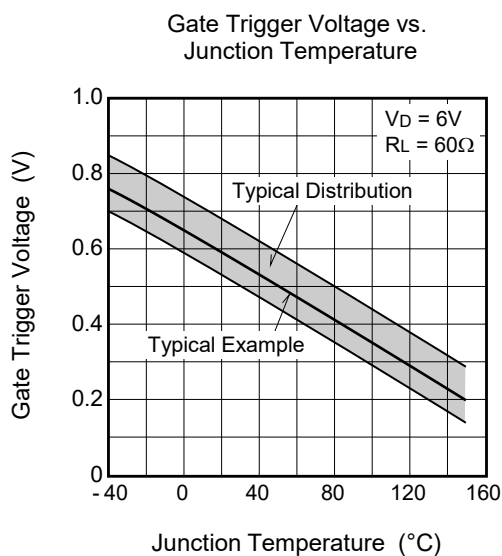
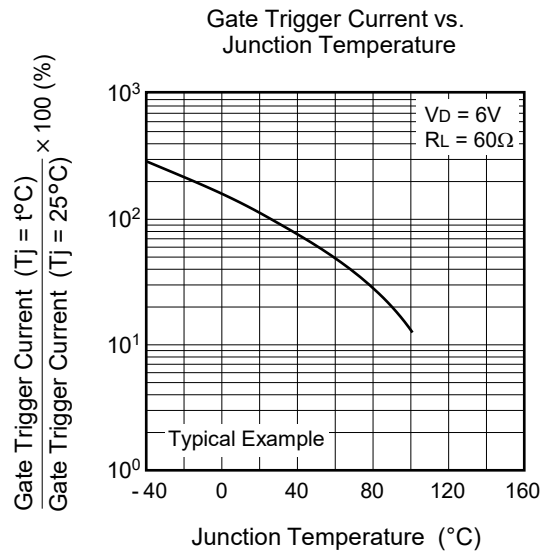
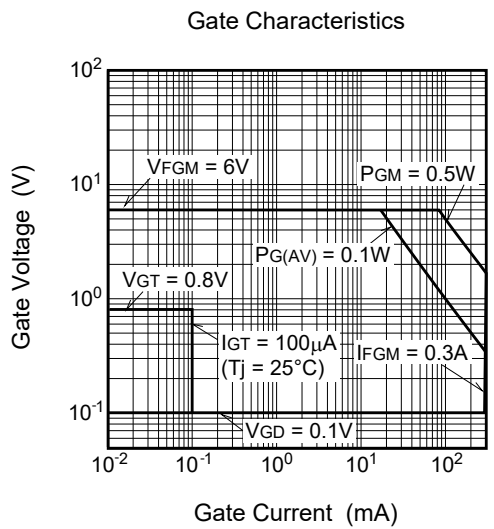
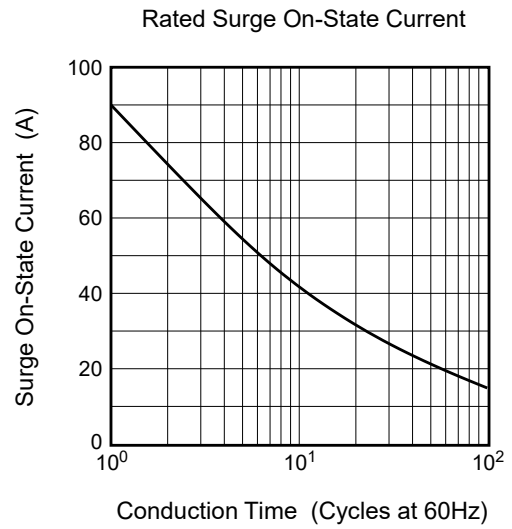
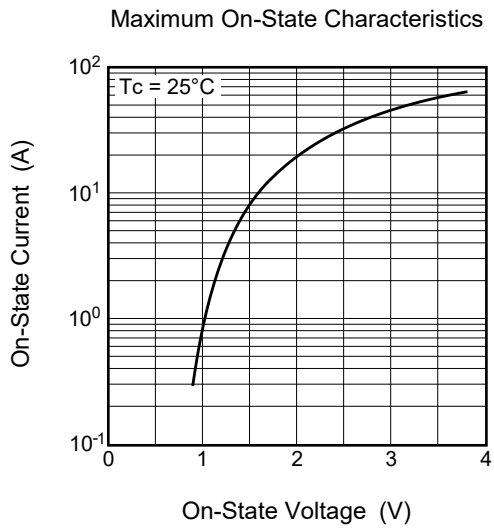
Parameter	Symbol	Min.	Typ.	Max.	Unit	Test conditions
Repetitive peak off-state current	$I_{DRM}$	—	—	2.0	mA	$T_j = 150^\circ\text{C}$ , $V_{DRM}$ applied, $R_{GK} = 220\ \Omega$
On-state voltage	$V_{TM}$	—	—	1.8	V	$T_c = 25^\circ\text{C}$ , $I_{TM} = 15\ \text{A}$ , instantaneous value
Gate trigger voltage	$V_{GT}$	—	—	0.8	V	$T_j = 25^\circ\text{C}$ , $V_D = 6\ \text{V}$ , $I_T = 0.1\ \text{A}$ <sup>Note3</sup>
Gate non-trigger voltage	$V_{GD}$	0.1	—	—	V	$T_j = 150^\circ\text{C}$ , $V_D = 1/2 V_{DRM}$ , $R_{GK} = 220\ \Omega$
Gate trigger current	$I_{GT}$	1	—	100	$\mu\text{A}$	$T_j = 25^\circ\text{C}$ , $V_D = 6\ \text{V}$ , $I_T = 0.1\ \text{A}$ <sup>Note3</sup>
Holding current	$I_H$	—	3	—	mA	$T_j = 25^\circ\text{C}$ , $V_D = 12\ \text{V}$ , $R_{GK} = 220\ \Omega$
Thermal resistance	$R_{th(j-c)}$	—	—	3.0	$^\circ\text{C/W}$	Junction to case <sup>Note2</sup>

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

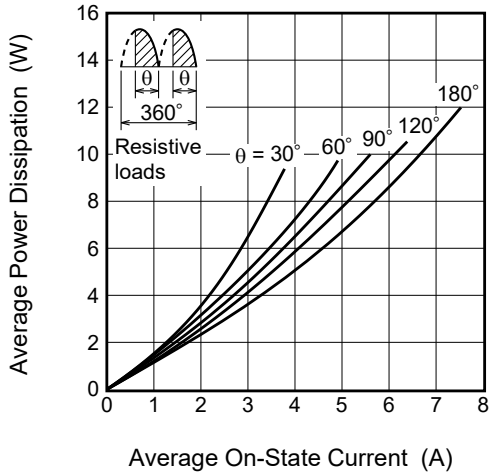
3.  $I_{GT}$ ,  $V_{GT}$  measurement circuit.



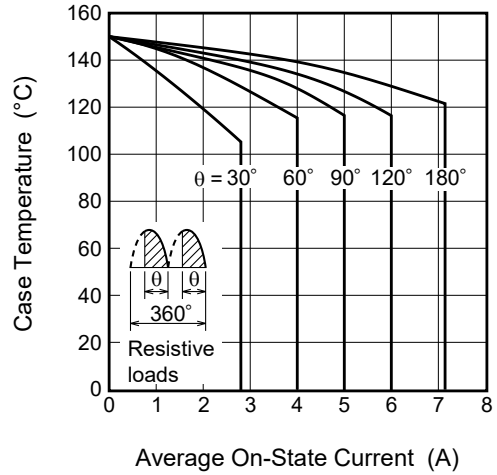
Performance Curves



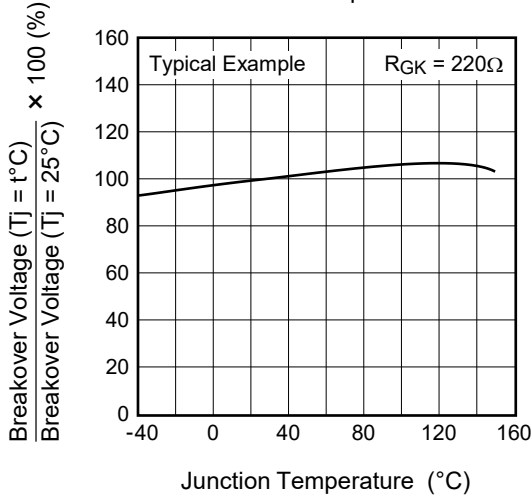
Maximum Average Power Dissipation (Single-Phase Full Wave)



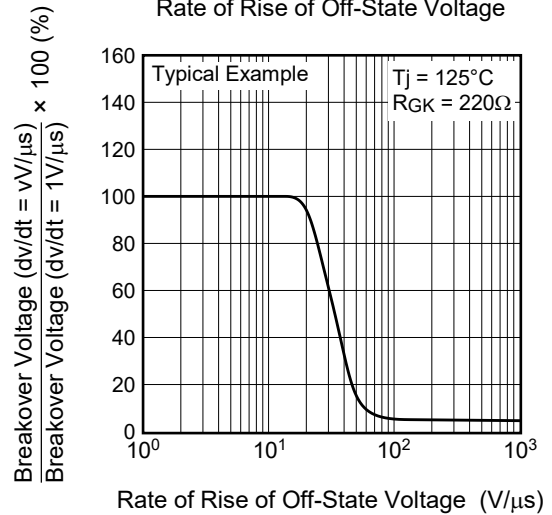
Allowable Case Temperature vs. Average On-State Current (Single-Phase Full Wave)



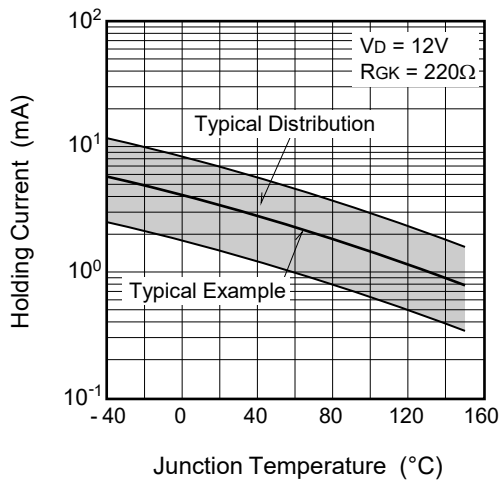
Breakover Voltage vs. Junction Temperature



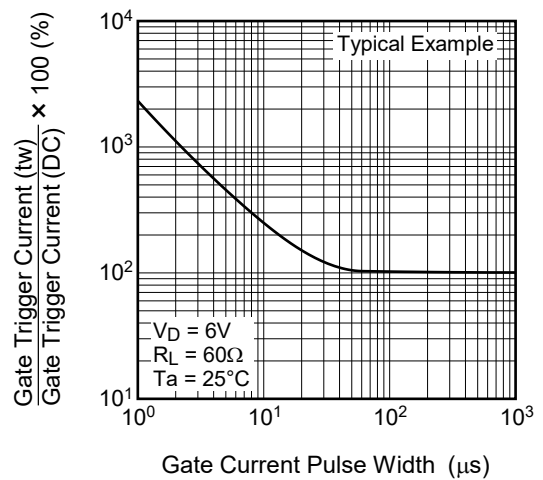
Breakover Voltage vs. Rate of Rise of Off-State Voltage



Holding Current vs. Junction Temperature

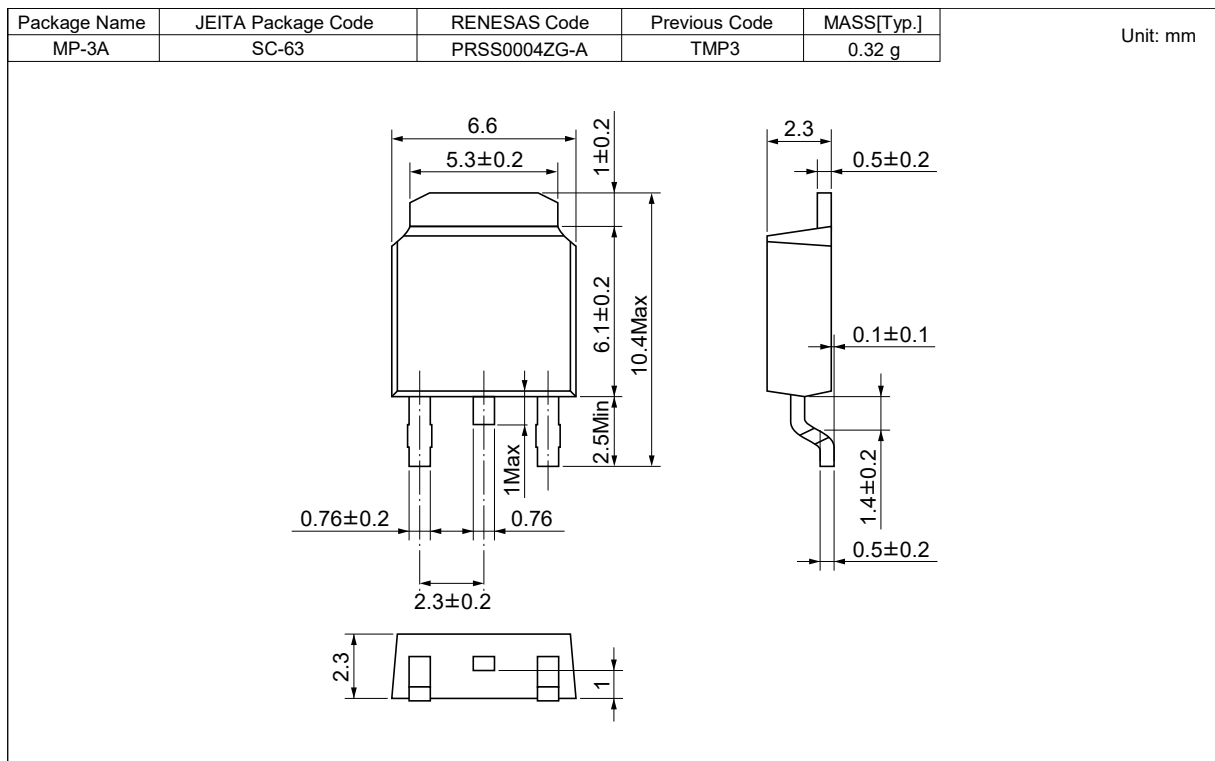


Gate Trigger Current vs. Gate Current Pulse Width



## Package Dimensions

Package Name: MP-3A



## Ordering Information

Orderable Part Number	Package	Packing <sup>Note4</sup>	Quantity	Remark
CRD5AS-12B-T13#B00	MP-3A	Embossed tape	3000 pcs.	
CRD5AS-12B#B00	MP-3A	Tube	75 pcs.	Tube packing is to be abolished.

Note: 4. Please confirm the specification about the shipping in detail.

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(Rev.4.0-1 November 2017)



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