

CRD5AS-12B

Reverse Conducting Thyristor

Medium Power Use

R07DS0503EJ0101

Rev.1.01

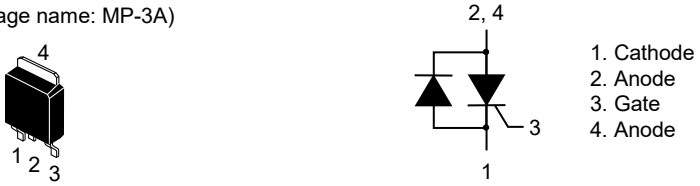
May. 10, 2019

Features

- $I_{T(AV)}$: 5 A
- V_{DRM} : 600 V
- I_{GT} : 100 μ 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 ^{Note1}	V_{DRM}	600	V

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

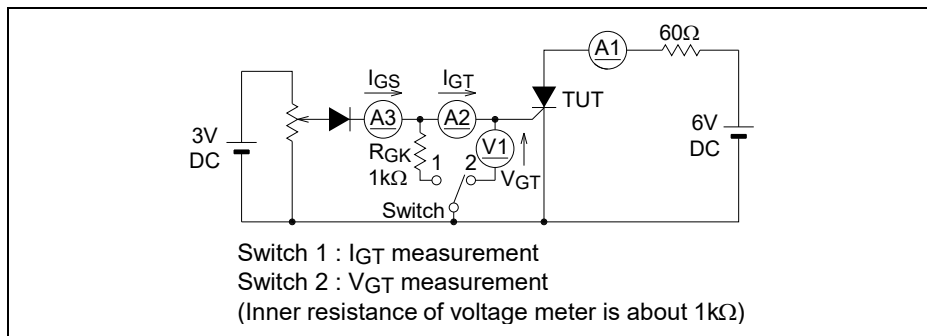
Parameter	Symbol	Ratings	Unit	Conditions
RMS on-state current	$I_{T(RMS)}$	7.8	A	
Average on-state current	$I_{T(AV)}$	5	A	Commercial frequency, sine half wave 180°conduction, $T_c = 113^\circ\text{C}$ ^{Note2}
Surge on-state current	I_{TSM}	90	A	60 Hz sine half wave 1 full cycle, peak value, non-repetitive
I^2t for fusing	I^2t	33	A^2s	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

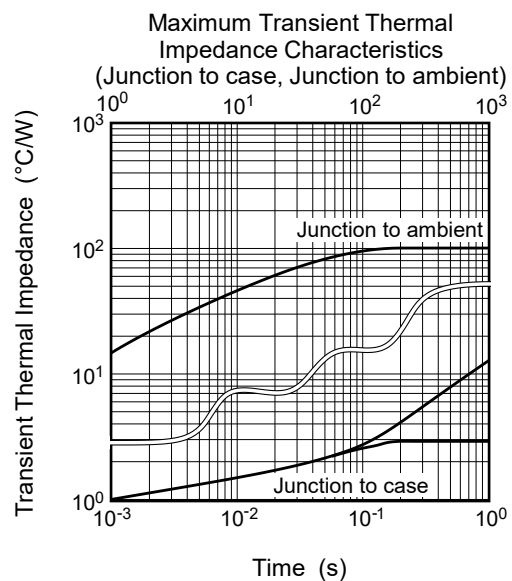
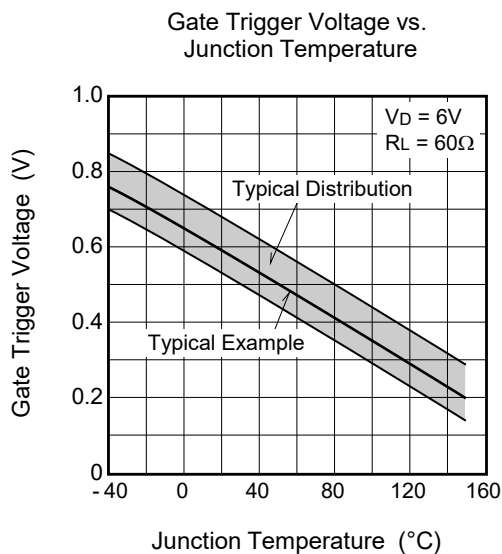
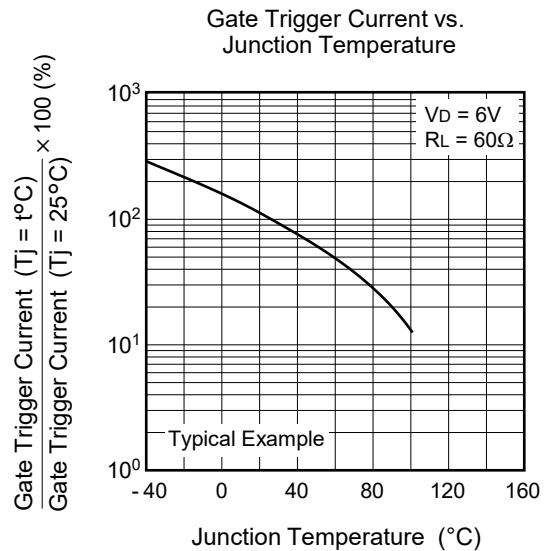
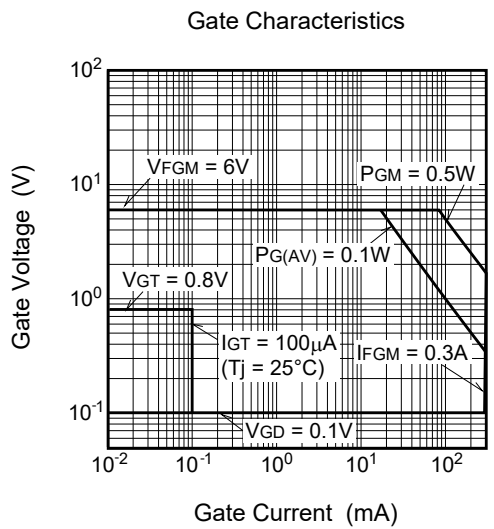
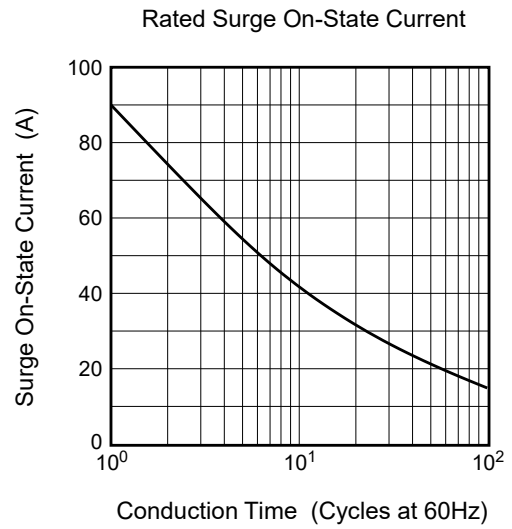
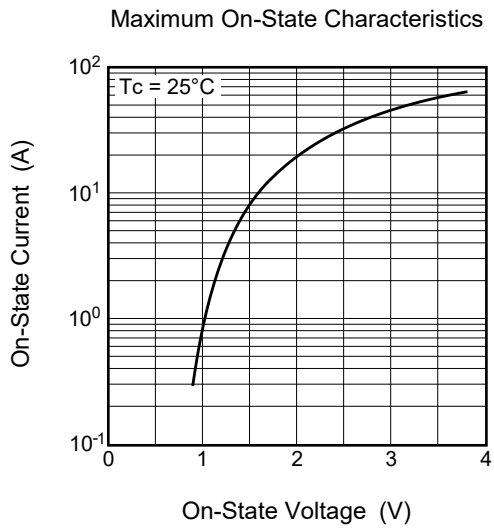
Parameter	Symbol	Min.	Typ.	Max.	Unit	Test conditions
Repetitive peak off-state current	I_{DRM}	—	—	2.0	mA	$T_j = 150^\circ\text{C}$, V_{DRM} applied, $R_{GK} = 220\ \Omega$
On-state voltage	V_{TM}	—	—	1.8	V	$T_c = 25^\circ\text{C}$, $I_{TM} = 15\ \text{A}$, instantaneous value
Gate trigger voltage	V_{GT}	—	—	0.8	V	$T_j = 25^\circ\text{C}$, $V_D = 6\ \text{V}$, $I_T = 0.1\ \text{A}$ ^{Note3}
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	μA	$T_j = 25^\circ\text{C}$, $V_D = 6\ \text{V}$, $I_T = 0.1\ \text{A}$ ^{Note3}
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 ^{Note2}

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

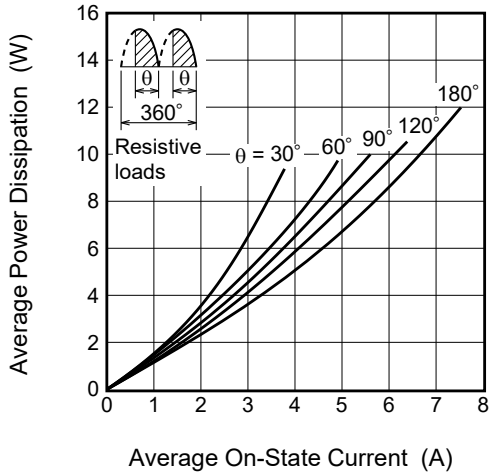
3. I_{GT} , V_{GT} measurement circuit.



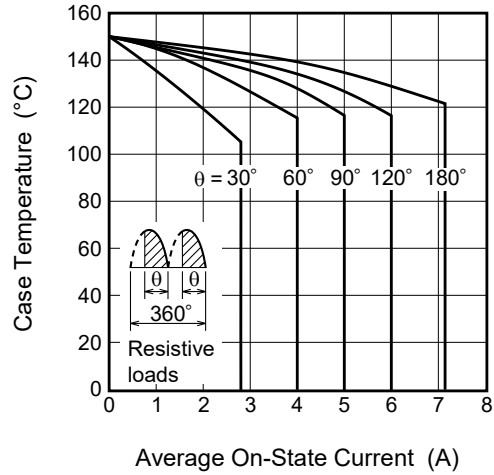
Performance Curves



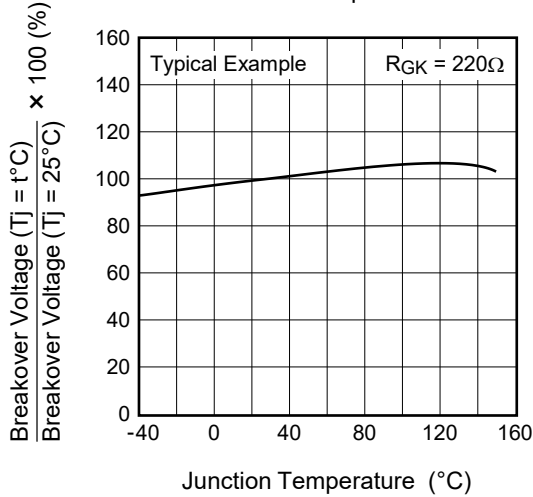
Maximum Average Power Dissipation (Single-Phase Full Wave)



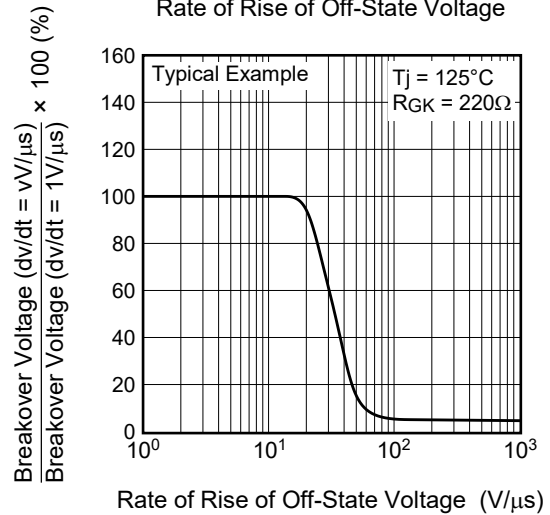
Allowable Case Temperature vs. Average On-State Current (Single-Phase Full Wave)



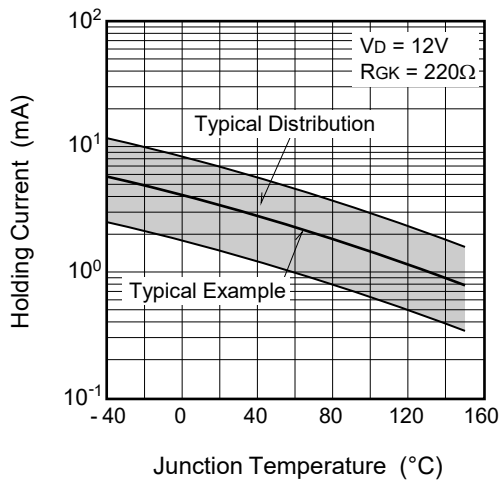
Breakover Voltage vs. Junction Temperature



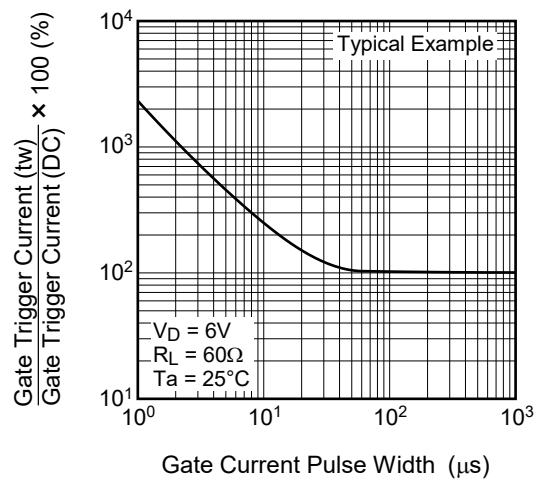
Breakover Voltage vs. Rate of Rise of Off-State Voltage



Holding Current vs. Junction Temperature

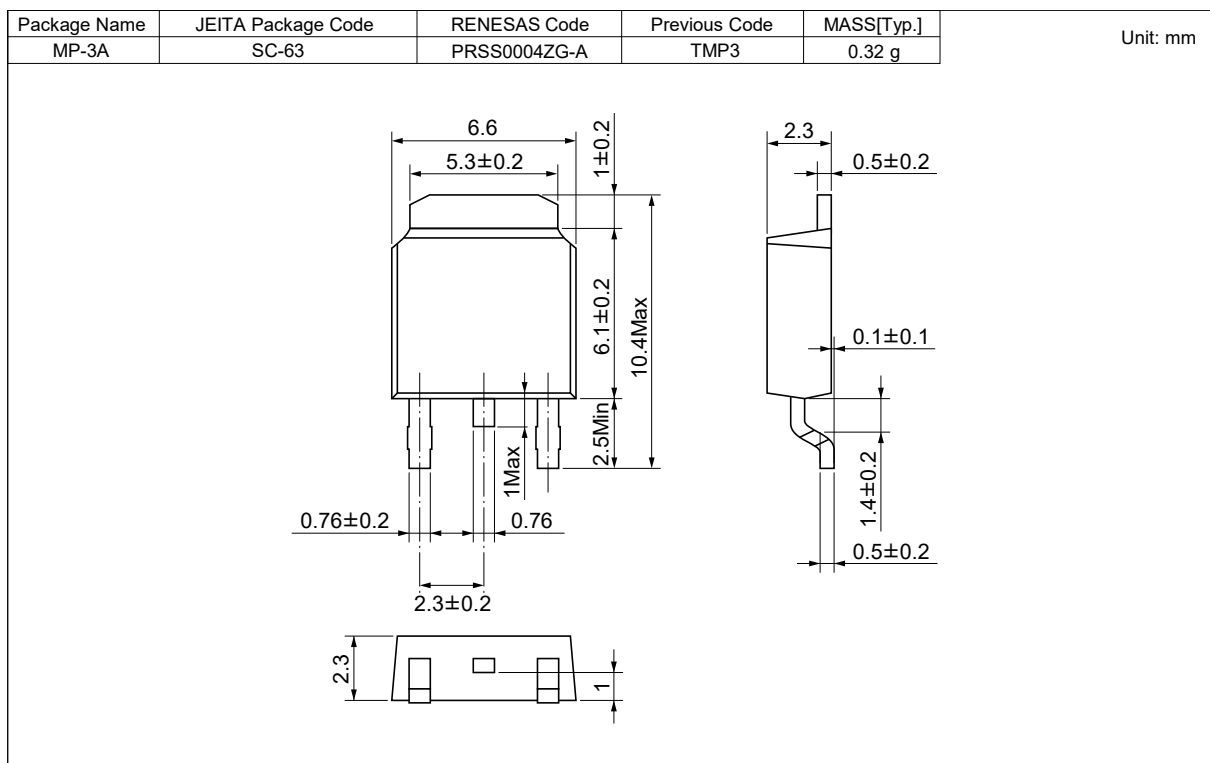


Gate Trigger Current vs. Gate Current Pulse Width



Package Dimensions

Package Name: MP-3A



Ordering Information

Orderable Part Number	Package	Packing ^{Note4}	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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