CRD5AS-12B

Reverse Conducting Thyristor

Medium Power Use

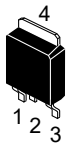
R07DS0503EJ0101
Rev.1.01
May. 10, 2019

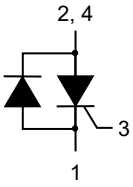
Features

- $I_{T\,(AV)}$: 5 A
- V_{DRM} : 600 V
- I_{GT}: 100 μA
- Tj : 150ºC
- 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	Unit
		12	
Repetitive peak off-state voltage Note1	V_{DRM}	600	V

Notes: 1. With gate to cathode resistance R_{GK} = 220 Ω

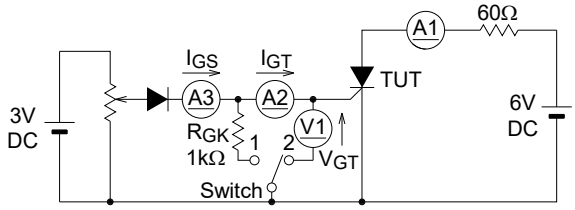
Parameter	Symbol	Ratings	Unit	Conditions
RMS on-state current	$I_{T\,(RMS)}$	7.8	A	
Average on-state current	$I_{T\,(AV)}$	5	A	Commercial frequency, sine half wave 180°conduction, Tc = 113°C Note2
Surge on-state current	I_{TSM}	90	A	60 Hz sine half wave 1 full cycle, peak value, non-repetitive
I^2t for 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 Ω
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	Tj	–40 to +150	°C	
Storage temperature	Tstg	–40 to +150	°C	

Electrical Characteristics

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

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

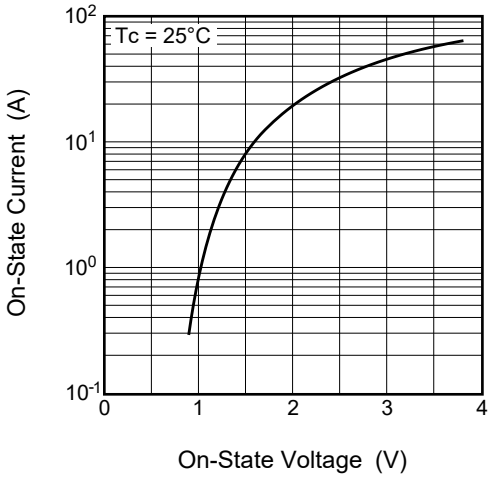
3. I_{GT}, V_{GT} measurement circuit.



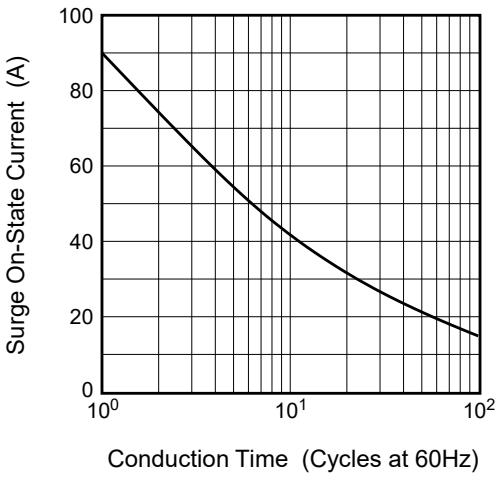
Switch 1 : I_{GT} measurement
Switch 2 : V_{GT} measurement
(Inner resistance of voltage meter is about 1kΩ)

Performance Curves

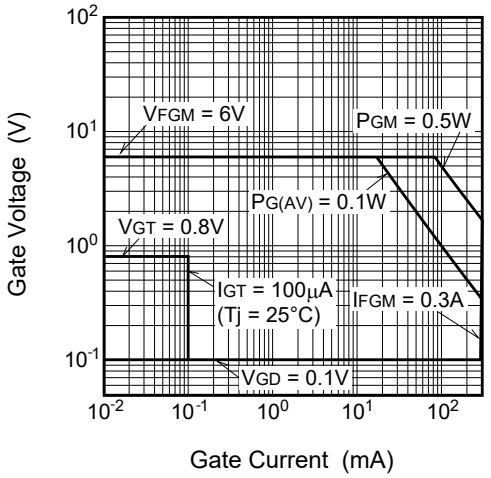
Maximum On-State Characteristics



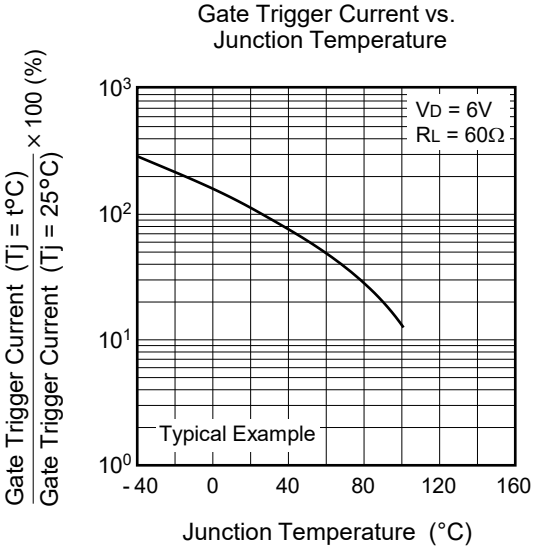
Rated Surge On-State Current



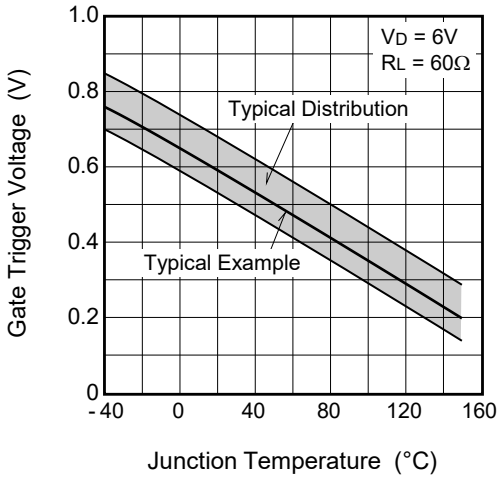
Gate Characteristics



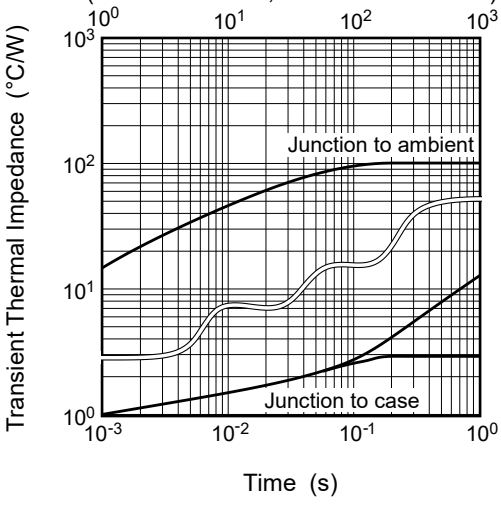
Gate Trigger Current vs. Junction Temperature



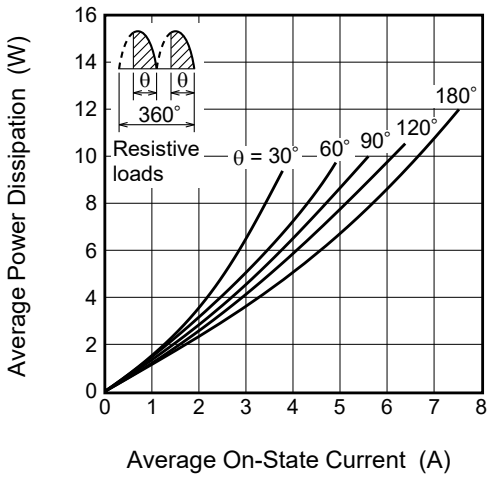
Gate Trigger Voltage vs. Junction Temperature



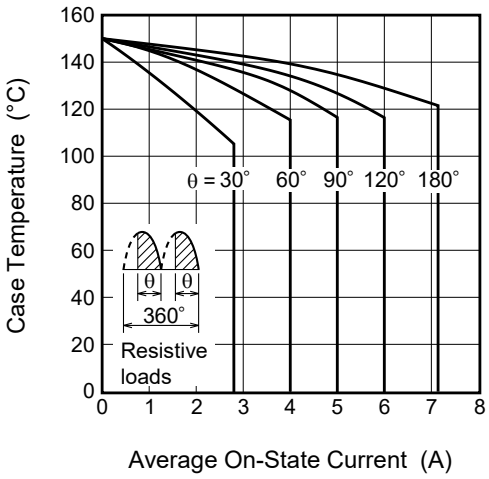
Maximum Transient Thermal Impedance Characteristics (Junction to case, Junction to ambient)



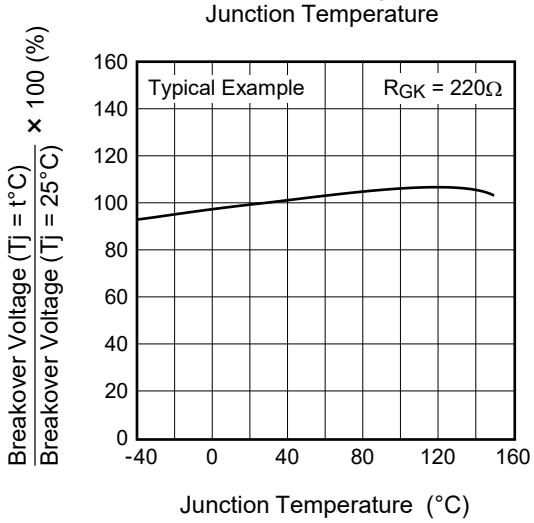
Maximum Average Power Dissipation (Single-Phase Full Wave)



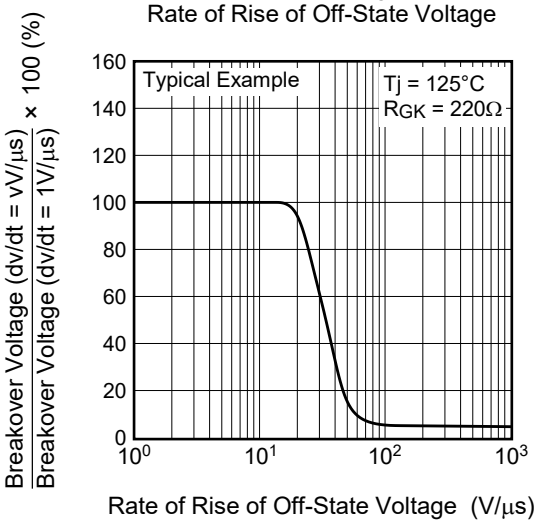
Allowable Case Temperature vs. Average On-State Current (Single-Phase Full Wave)



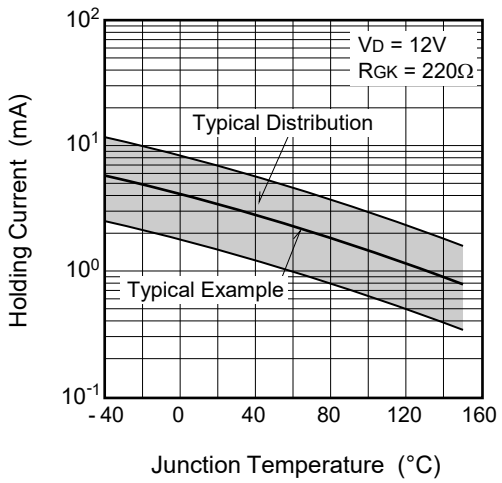
Breakover Voltage vs. Junction Temperature



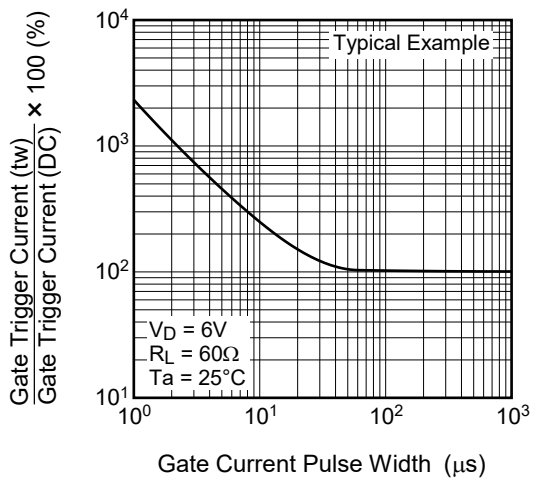
Breakover Voltage vs. Rate of Rise of Off-State Voltage



Holding Current vs. Junction Temperature



Gate Trigger Current vs. Gate Current Pulse Width

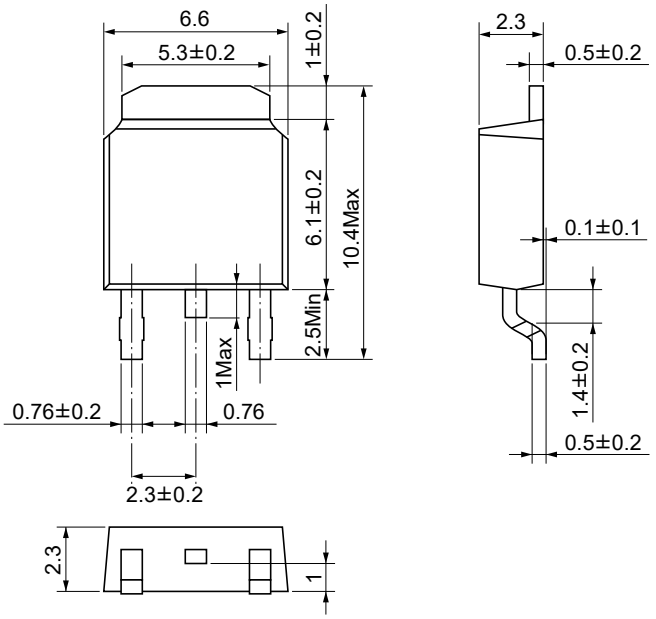


Package Dimensions

Package Name: MP-3A

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

Unit: mm



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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