

# CR12PM-12A

## Thyristor

Medium Power Use

REJ03G1677-0100

Rev.1.00

Jun 04, 2008

### Features

- $I_{T(AV)}$  : 12 A
- $V_{DRM}$  : 600 V
- $I_{GT}$  : 30 mA
- Viso : 2000 V
- Insulated Type
- Planar Passivation Type

### Outline

RENESAS Package code: PRSS0003AA-A  
(Package name: TO-220F )



1. Cathode
2. Anode
3. Gate

### Applications

Switching mode power supply, motor control, heater control, and other general purpose control applications

### Maximum Ratings

Parameter	Symbol	Voltage class	Unit
		12	
Repetitive peak reverse voltage	$V_{RRM}$	600	V
Non-repetitive peak reverse voltage	$V_{RSM}$	720	V
DC reverse voltage	$V_{R(DC)}$	480	V
Repetitive peak off-state voltage	$V_{DRM}$	600	V
DC off-state voltage	$V_{D(DC)}$	480	V

Parameter	Symbol	Ratings	Unit	Conditions
RMS on-state current	$I_T (RMS)$	18.8	A	
Average on-state current	$I_T (AV)$	12	A	Commercial frequency, sine half wave 180° conduction, $T_c = 56^\circ\text{C}$
Surge on-state current	$I_{TSM}$	330	A	50Hz sine half wave 1 full cycle, peak value, non-repetitive
$I^2t$ for fusing	$I^2t$	544	$\text{A}^2\text{s}$	Value corresponding to 1 cycle of half wave 60Hz, surge on-state current
Peak gate power dissipation	$P_{GM}$	5	W	
Average gate power dissipation	$P_G (AV)$	0.5	W	
Peak gate forward voltage	$V_{FGM}$	6	V	
Peak gate reverse voltage	$V_{RGM}$	10	V	
Peak gate forward current	$I_{FGM}$	2	A	
Junction temperature	$T_j$	- 40 to +125	$^\circ\text{C}$	
Storage temperature	$T_{stg}$	- 40 to +125	$^\circ\text{C}$	
Mass	—	2.0	g	Typical value
Isolation voltage	$V_{iso}$	2000	V	$T_a = 25^\circ\text{C}$ , AC 1 minute, each terminal to case

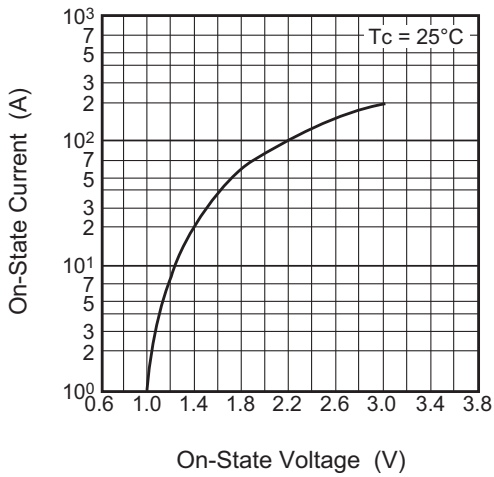
## Electrical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test conditions
Repetitive peak reverse current	$I_{RRM}$	—	—	2.0	mA	$T_j = 125^\circ\text{C}$ , $V_{RRM}$ applied
Repetitive peak off-state current	$I_{DRM}$	—	—	2.0	mA	$T_j = 125^\circ\text{C}$ , $V_{DRM}$ applied
On-state voltage	$V_{TM}$	—	—	1.6	V	$T_c = 25^\circ\text{C}$ , $I_{TM} = 40\text{ A}$ , instantaneous value
Gate trigger voltage	$V_{GT}$	—	—	1.5	V	$T_j = 25^\circ\text{C}$ , $V_D = 6\text{ V}$ , $I_T = 1\text{ A}$
Gate non-trigger voltage	$V_{GD}$	0.2	—	—	V	$T_j = 125^\circ\text{C}$ , $V_D = 1/2 V_{DRM}$
Gate trigger current	$I_{GT}$	—	—	30	mA	$T_j = 25^\circ\text{C}$ , $V_D = 6\text{ V}$ , $I_T = 1\text{ A}$
Holding current	$I_H$	—	15	—	mA	$T_j = 25^\circ\text{C}$ , $V_D = 12\text{ V}$
Thermal resistance	$R_{th (j-c)}$	—	—	3.2	$^\circ\text{C/W}$	Junction to case <sup>Note1</sup>

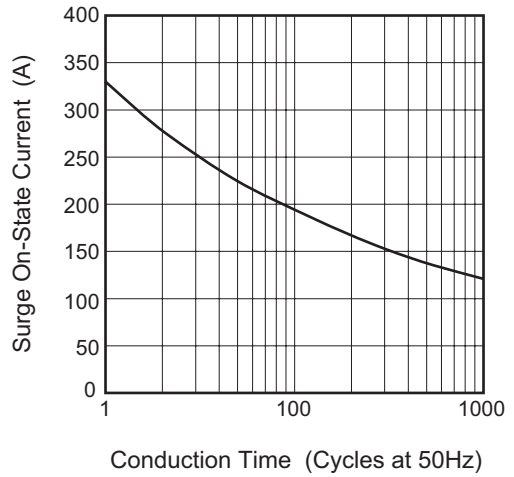
Notes: 1. The contact thermal resistance  $R_{th (c-f)}$  in case of greasing is  $0.5^\circ\text{C/W}$ .

Performance Curves

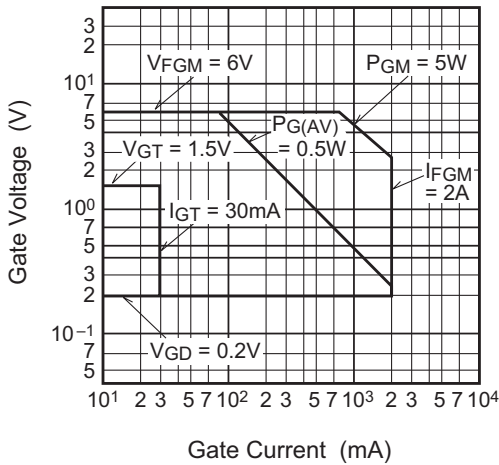
Maximum On-State Characteristics



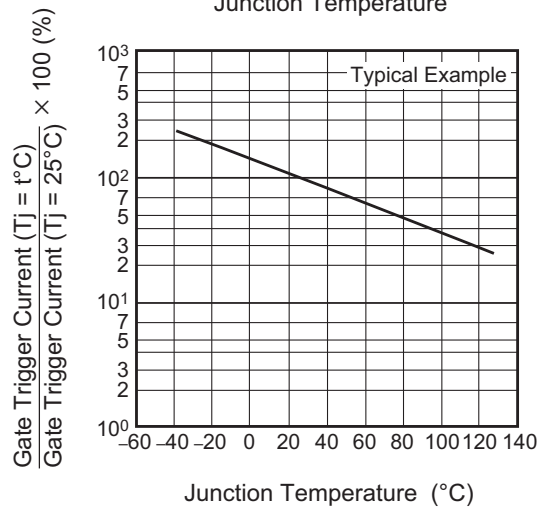
Rated Surge On-State Current



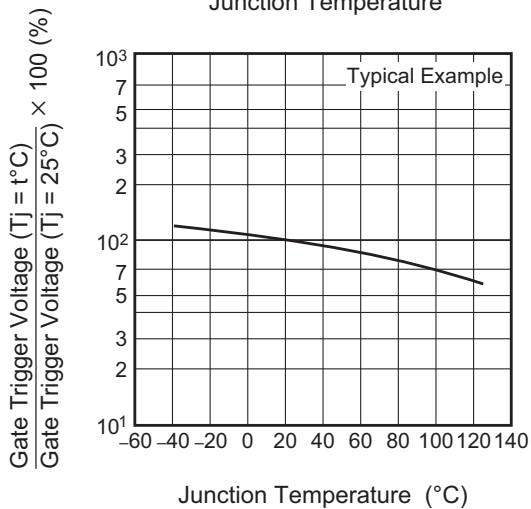
Gate Characteristics



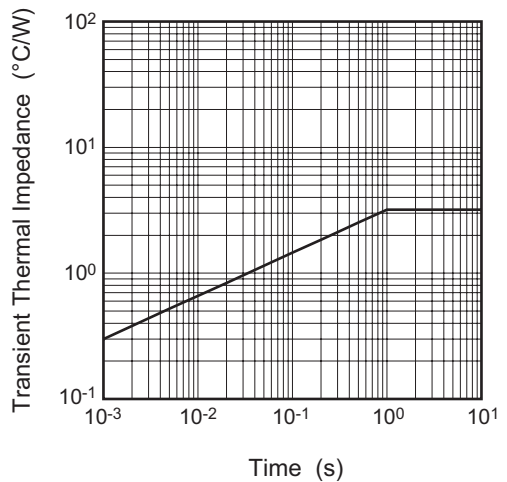
Gate Trigger Current vs. Junction Temperature

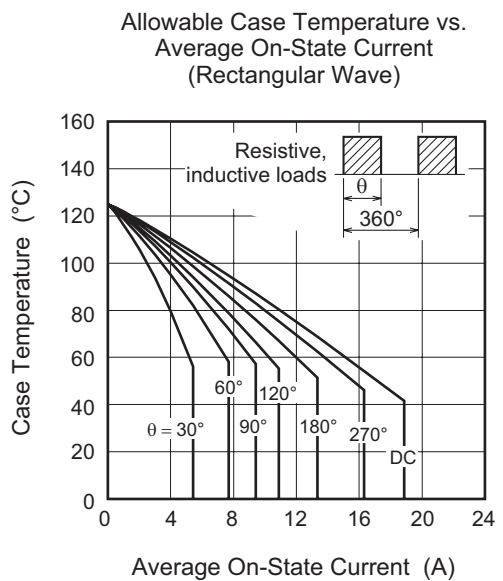
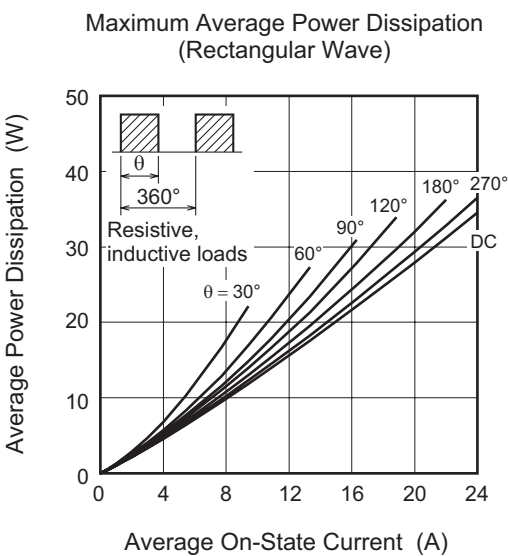
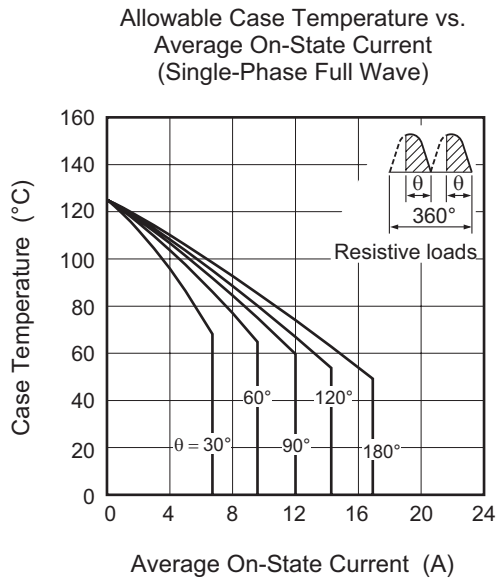
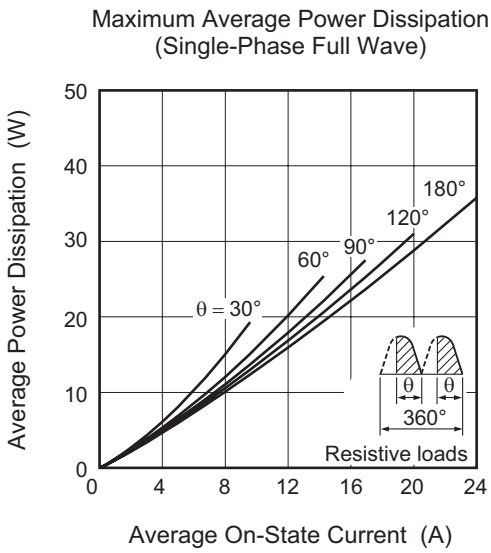
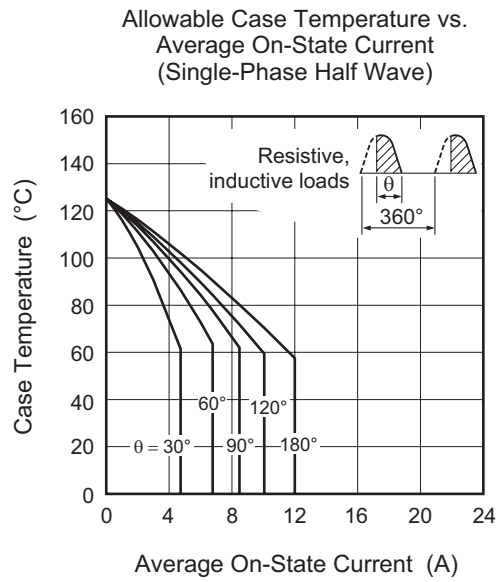
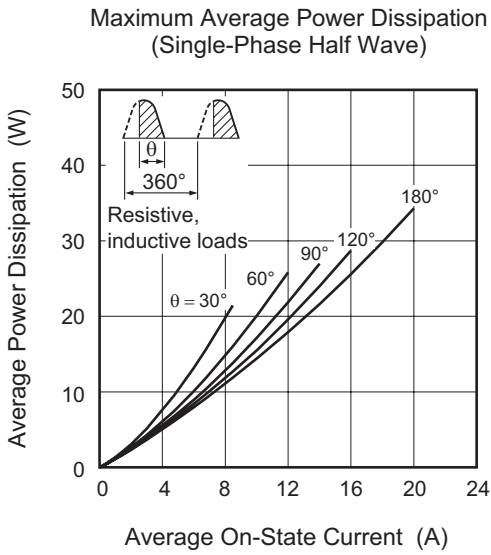


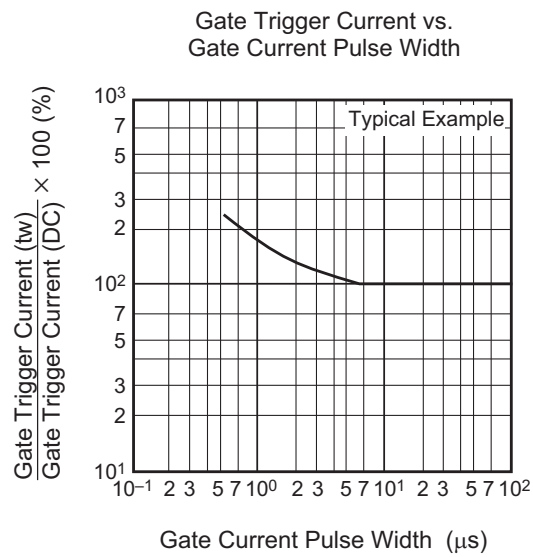
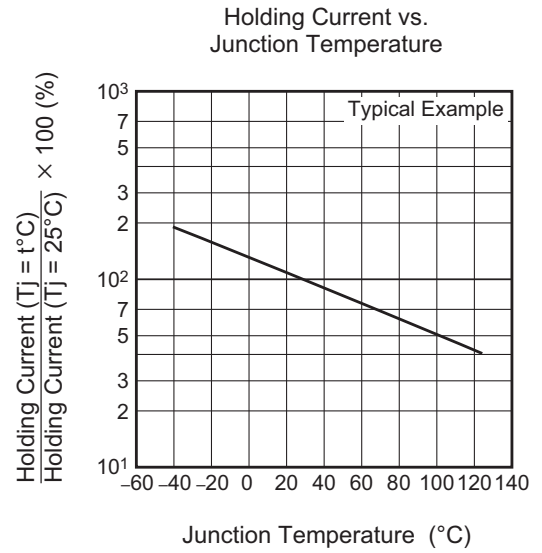
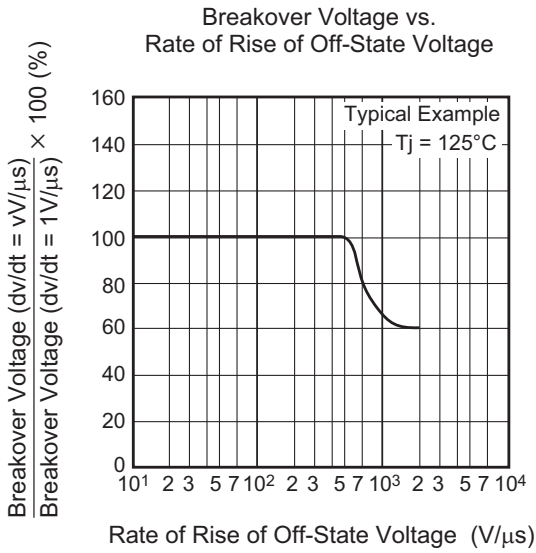
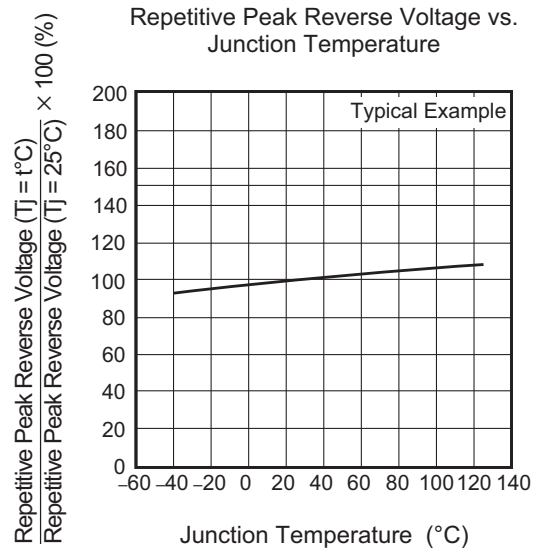
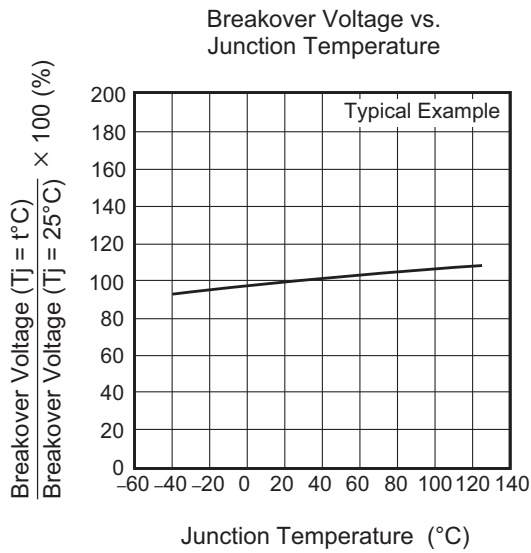
Gate Trigger Voltage vs. Junction Temperature



Maximum Transient Thermal Impedance Characteristics (Junction to case)







## Package Dimensions

Package Name	JEITA Package Code	RENESAS Code	Previous Code	MASS[Typ.]
TO-220F	SC-67	PRSS0003AA-A	—	2.0g

Unit: mm

The technical drawing illustrates the CR12PM-12A package dimensions. The top view shows a rectangular body with a width of 10.5Max and a length of 17. The body has a diameter of  $\phi 3.2 \pm 0.2$  and a height of 8.5. The lead length is 13.5Min, with a lead diameter of 0.8 and a lead spacing of 2.54. The lead height is 1.3Max. The side view shows a total height of 2.8 and a lead diameter of 0.5. A detail view shows a width of 4.5.

## Order Code

Lead form	Standard packing	Quantity	Standard order code	Standard order code example
Straight type	Vinyl sack	100	Type name	CR12PM-12A
Lead form	Plastic Magazine (Tube)	50	Type name – Lead forming code	CR12PM-12A-A8

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

Notes:

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