

# CR3PM-12G

Thyristor  
Low Power Use

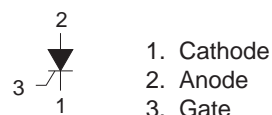
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Jan 30, 2012

## Features

- $I_{T(AV)}$  : 3 A
- $V_{DRM}$  : 600 V
- $I_{GT}$ : 100  $\mu$ A
- $V_{iso}$  : 2000 V
- Insulated Type
- Planar Type
- UL Recognized : File No. E223904

## Outline

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



## Applications

TV sets, control of household equipment such as electric blanket, 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 <sup>Note1</sup>	$V_{DRM}$	600	V
DC off-state voltage <sup>Note1</sup>	$V_{D(DC)}$	480	V

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

Parameter	Symbol	Ratings	Unit	Conditions
RMS on-state current	$I_{T(RMS)}$	4.7	A	
Average on-state current	$I_{T(AV)}$	3.0	A	Commercial frequency, sine half wave 180° conduction, $T_c = 103^\circ\text{C}$
Surge on-state current	$I_{TSM}$	70	A	60Hz sine half wave, 1full cycle, peak value, non-repetitive
$I^2t$ for fusing	$I^2t$	24.5	$\text{A}^2\text{s}$	Value corresponding to 1cycle of half wave 60Hz, surge on-state current
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 +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

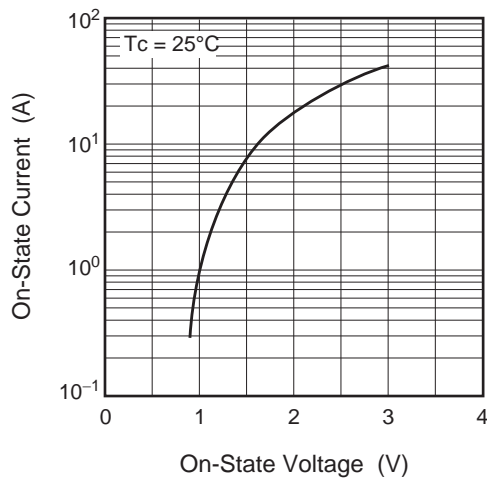
## Electrical Characteristics

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 $R_{GK} = 220\ \Omega$
Repetitive peak off-state current	$I_{DRM}$	—	—	2.0	mA	$T_j = 125^\circ\text{C}$ , $V_{DRM}$ applied $R_{GK} = 220\ \Omega$
On-state voltage	$V_{TM}$	—	—	1.6	V	$T_j = 25^\circ\text{C}$ , $I_{TM} = 10\ \text{A}$ instantaneous value
Gate trigger voltage	$V_{GT}$	—	—	0.8	V	$T_j = 25^\circ\text{C}$ , $V_D = 6\ \text{V}$ , $I_T = 0.1\ \text{A}$
Gate non-trigger voltage	$V_{GD}$	0.1	—	—	V	$T_j = 125^\circ\text{C}$ , $V_D = 1/2\ V_{DRM}$ $R_{GK} = 220\ \Omega$
Gate trigger current	$I_{GT}$	1	—	100	$\mu\text{A}$	$T_j = 25^\circ\text{C}$ , $V_D = 6\ \text{V}$ , $I_T = 0.1\ \text{A}$
Thermal resistance	$R_{th(j-c)}$	—	—	4.1	$^\circ\text{C/W}$	Junction to case <sup>Note2</sup>

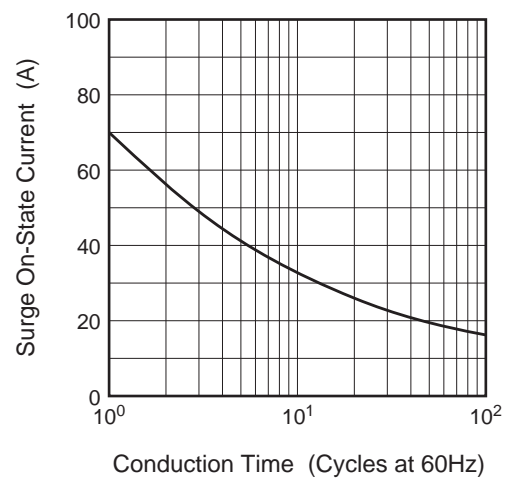
Notes: 2. The contact thermal resistance  $R_{th(c-f)}$  in case of greasing is  $0.5^\circ\text{C/W}$ .

## Performance Curves

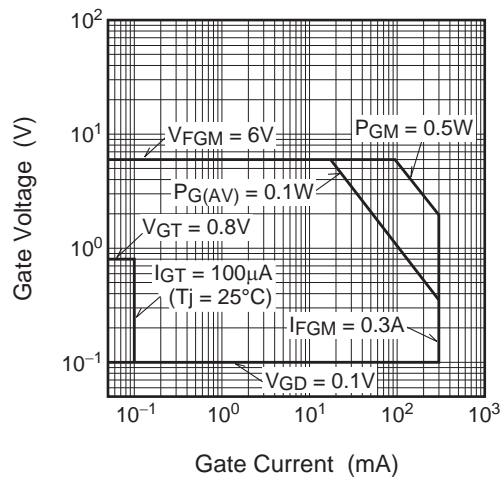
Maximum On-State Characteristics



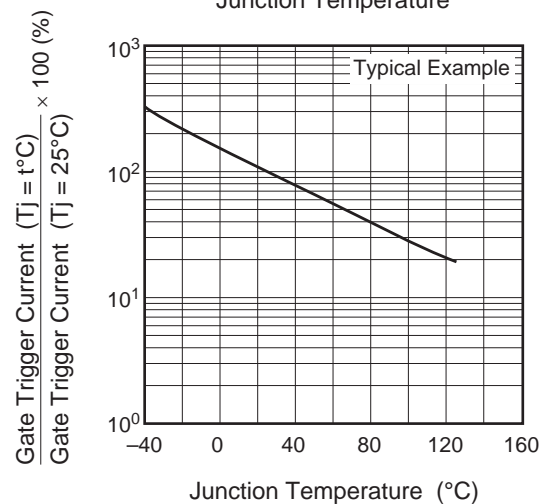
Rated Surge On-State Current



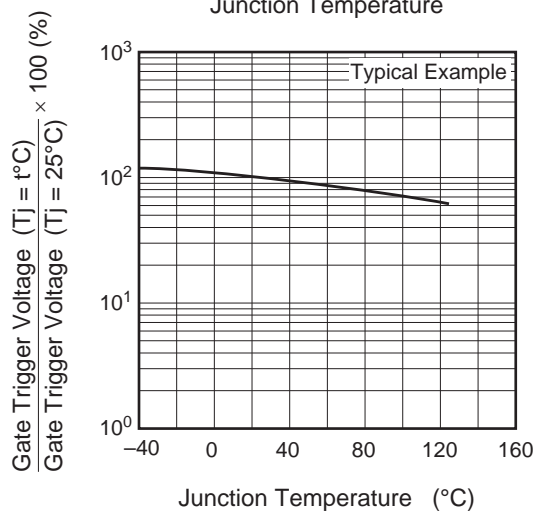
Gate Characteristics



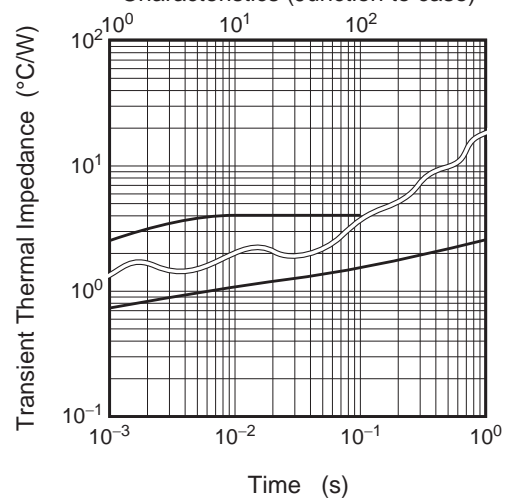
Gate Trigger Current vs. Junction Temperature

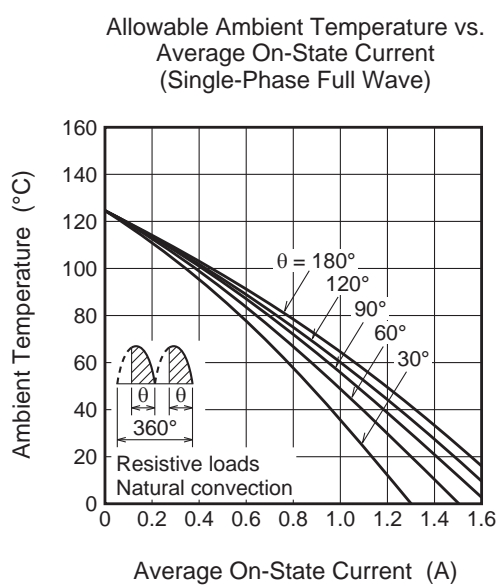
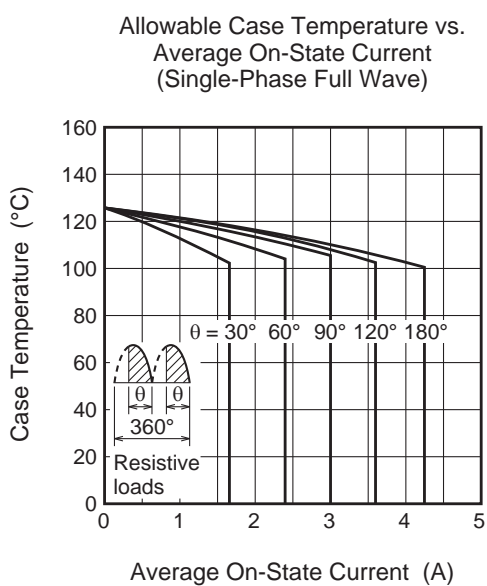
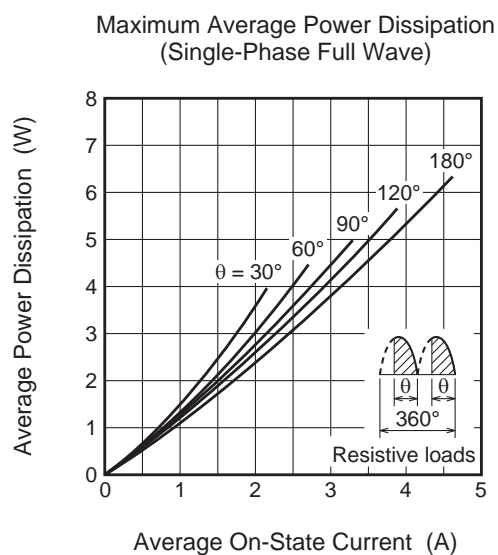
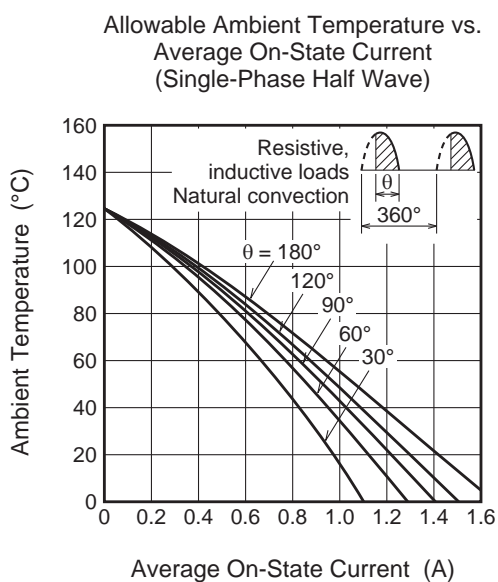
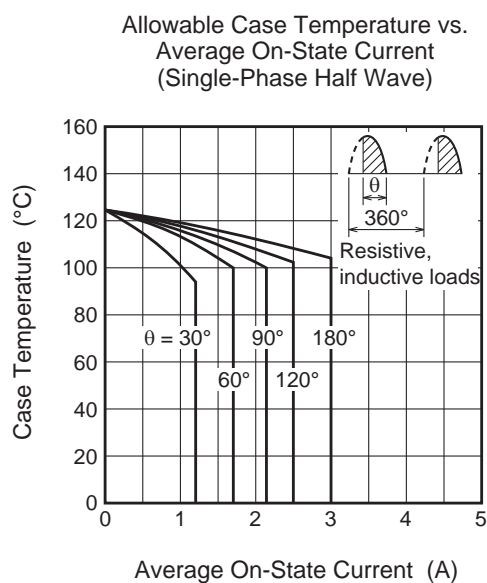
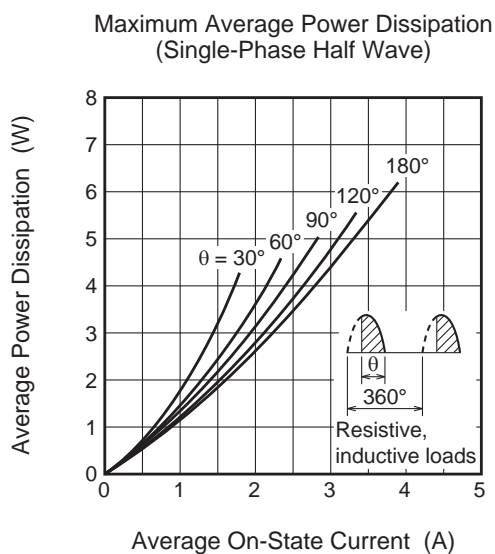


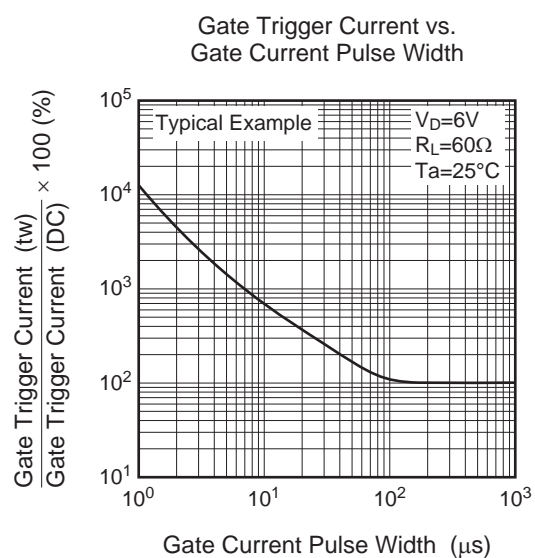
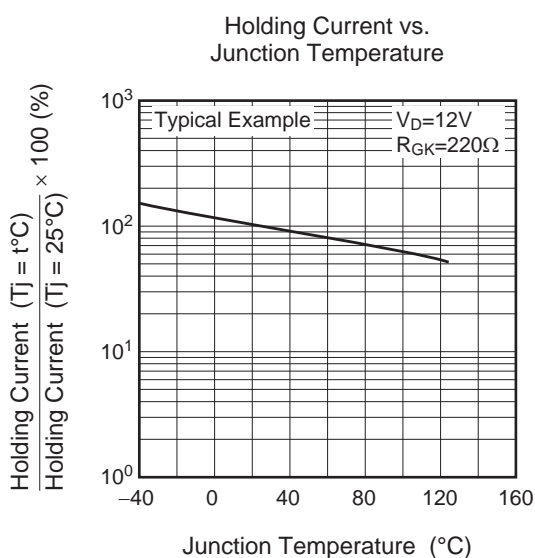
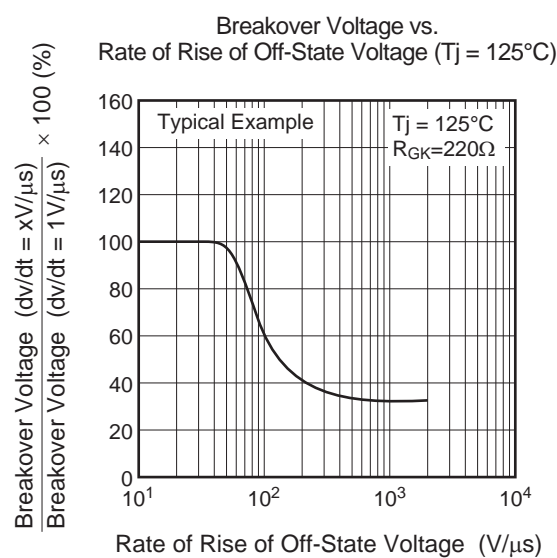
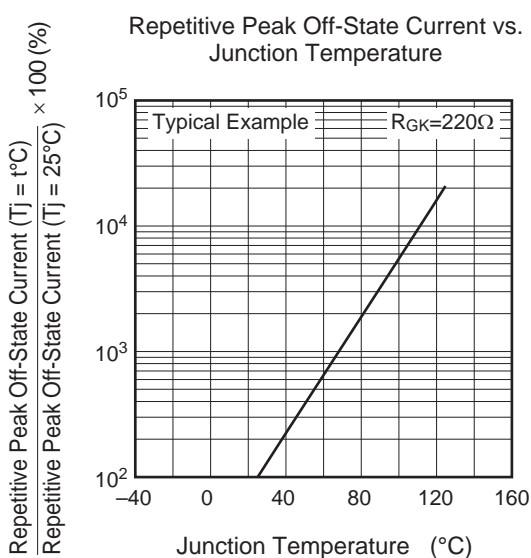
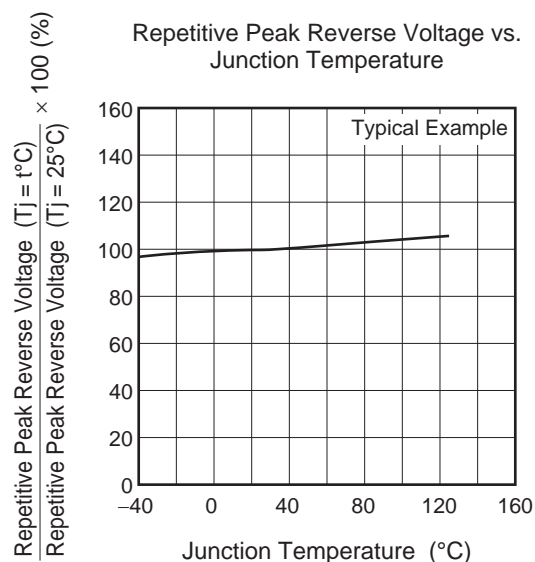
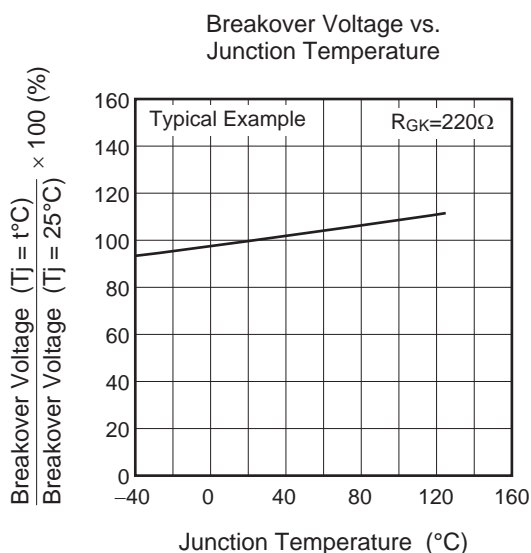
Gate Trigger Voltage vs. Junction Temperature



Maximum Transient Thermal Impedance Characteristics (Junction to case)







## Package dimensions

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

The drawing shows the mechanical dimensions of the CR3PM-12G package. The top view shows a square body with a central circular feature. Dimensions include a maximum width of 10.5mm, a body width of 5.2mm, a body height of 1.2mm, a total height of 17mm, a mounting tab width of 5.0mm, a central hole diameter of  $\phi 3.2 \pm 0.2$ , a mounting tab height of 8.5mm, a lead width of 1.3mm, a lead height of 0.8mm, and a lead length of 13.5mm minimum. The side view shows a lead height of 2.8mm and a lead width of 0.5mm. The bottom view shows a square body with a central circular feature and a width of 4.5mm. The lead width is 2.54mm and the lead length is 2.6mm.

## Ordering Information

Orderable Part Number	Packing	Quantity	Remark
CR3PM-12G#B00	Bag	100 pcs.	Straight type
CR3PM-12G-A8#B00	Tube	50 pcs.	A8 Lead form

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

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