

To our customers,

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## Old Company Name in Catalogs and Other Documents

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April 1<sup>st</sup>, 2010  
Renesas Electronics Corporation

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# CR25RM-12D

## Thyristor

Medium Power Use

REJ03G1716-0100

Rev.1.00

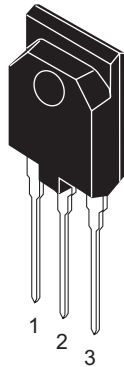
Jul 08, 2008

### Features

- $I_{T(AV)}$  : 25 A
- $V_{DRM}$  : 600 V
- $I_{GT}$  : 30 mA
- $V_{ISO}$  : 2000 V
- Insulated Type
- Planar Passivation Type
- The product guaranteed maximum junction temperature of 150°C

### Outline

RENESAS Package code: PRSS0003ZA-A  
(Package name: TO-3PFM)



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	$I_{T(RMS)}$	39.3	A	
Average on-state current	$I_{T(AV)}$	25	A	Commercial frequency, sine half wave 180° conduction, $T_c = 61^\circ\text{C}$
Surge on-state current	$I_{TSM}$	360	A	50 Hz sine half wave 1 full cycle, peak value, non-repetitive
$I^2t$ for fusing	$I^2t$	648	$\text{A}^2\text{s}$	Value corresponding to 1 cycle of half wave 50 Hz, 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 +150	$^\circ\text{C}$	
Storage temperature	$T_{stg}$	- 40 to +150	$^\circ\text{C}$	
Mass	—	5.2	g	Typical value
Isolation voltage	Viso	2000	V	$T_a = 25^\circ\text{C}$ , AC 1 minute, each terminal to case

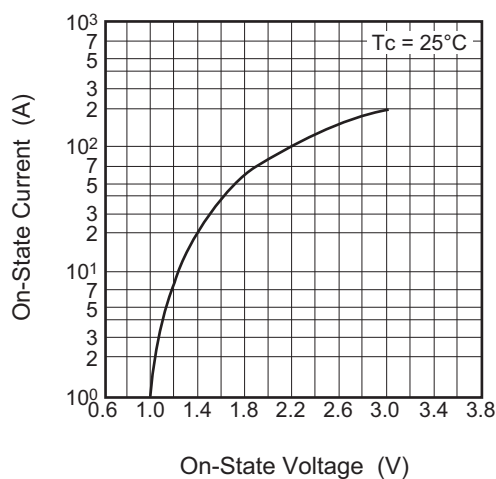
## Electrical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test conditions
Repetitive peak reverse current	$I_{RRM}$	—	—	2.0/5.0	mA	$T_j = 125^\circ\text{C}/150^\circ\text{C}$ , $V_{RRM}$ applied
Repetitive peak off-state current	$I_{DRM}$	—	—	2.0/5.0	mA	$T_j = 125^\circ\text{C}/150^\circ\text{C}$ , $V_{DRM}$ 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	$V_{GD}$	0.2/0.1	—	—	V	$T_j = 125^\circ\text{C}/150^\circ\text{C}$ , $V_D = 1/2 V_{DRM}$
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	$R_{th(j-c)}$	—	—	1.6	$^\circ\text{C}/\text{W}$	Junction to case <sup>Note1</sup>

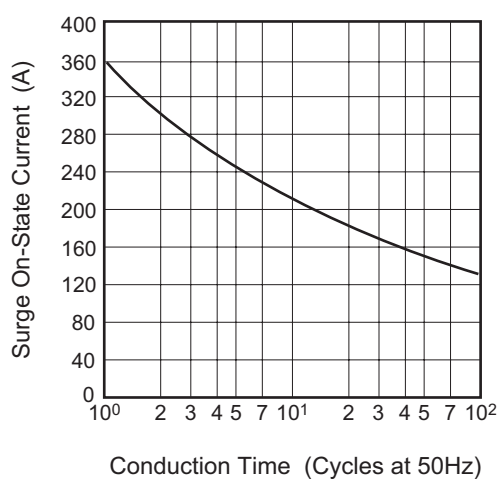
Notes: 1. The contact thermal resistance  $R_{th(c-f)}$  in case of greasing is  $0.5^\circ\text{C}/\text{W}$ .

## Performance Curves

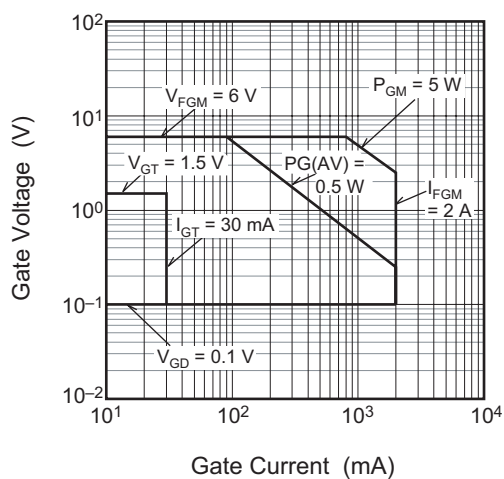
Maximum On-State Characteristics



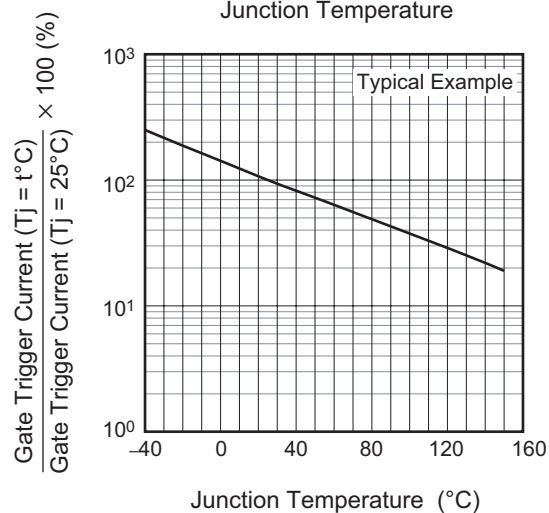
Rated Surge On-State Current



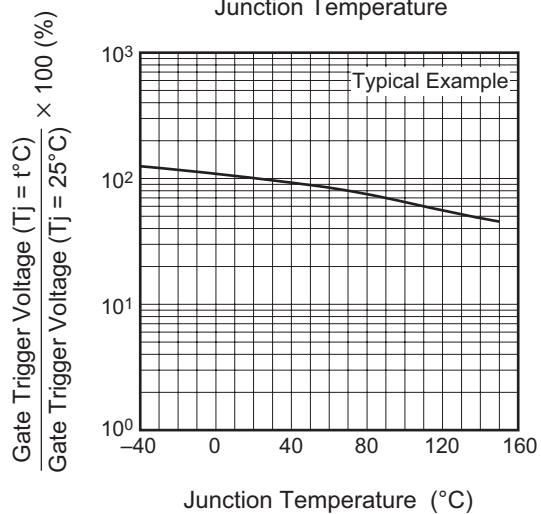
Gate Characteristics



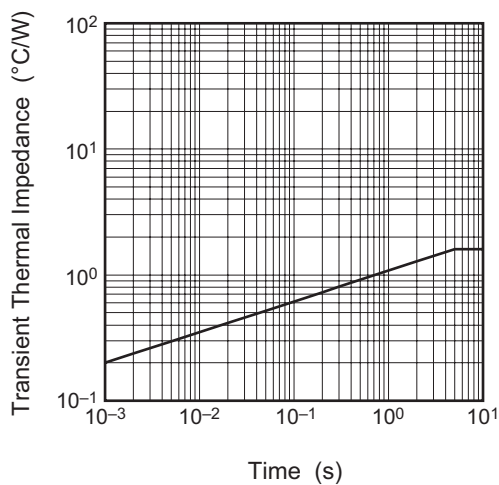
Gate Trigger Current vs. Junction Temperature

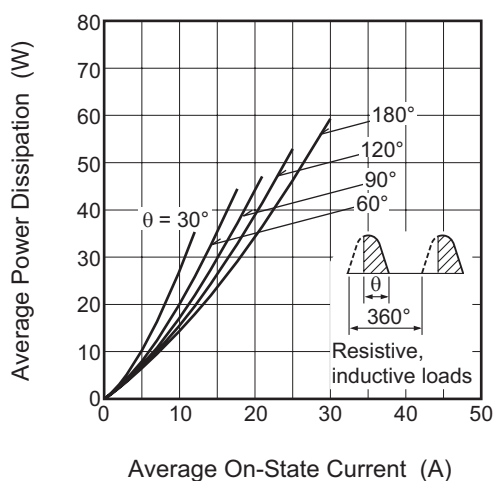
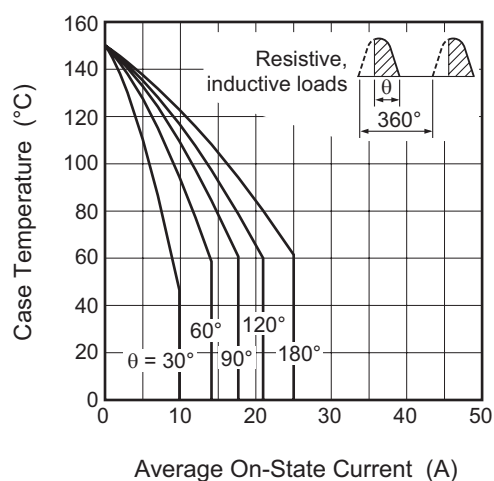
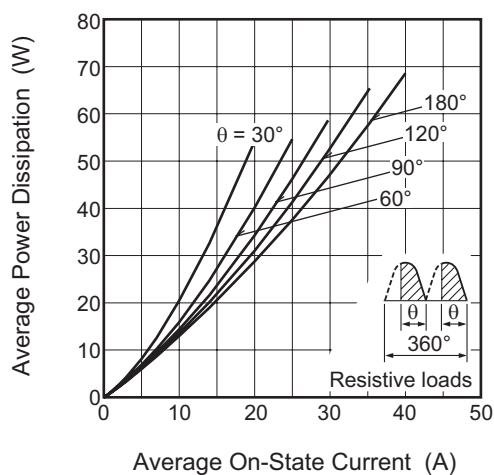
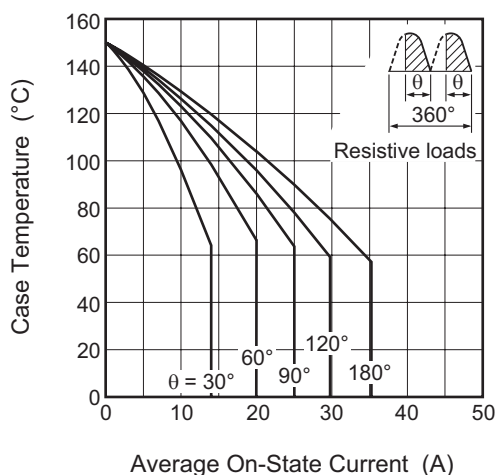
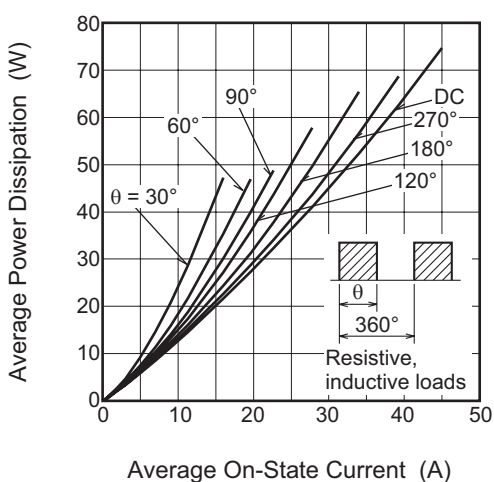
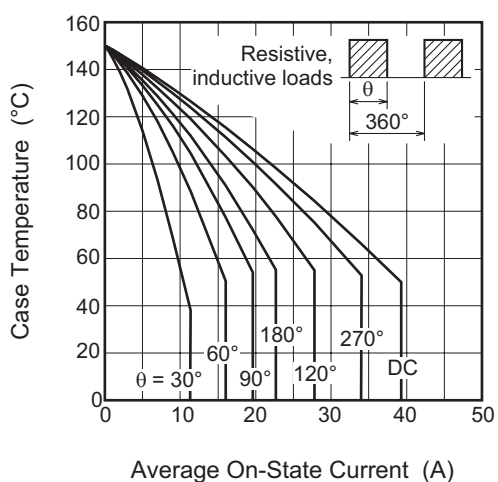


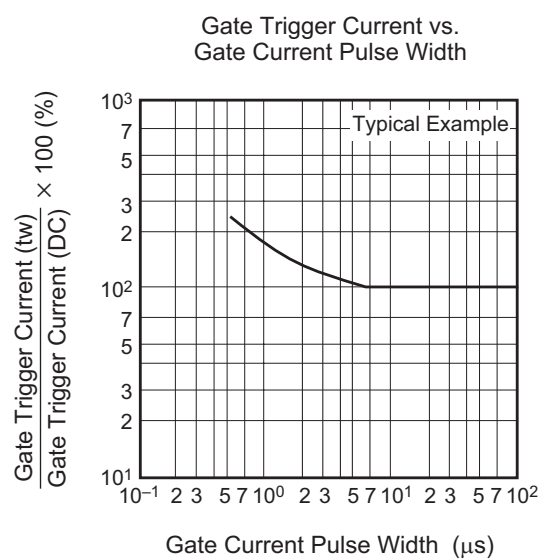
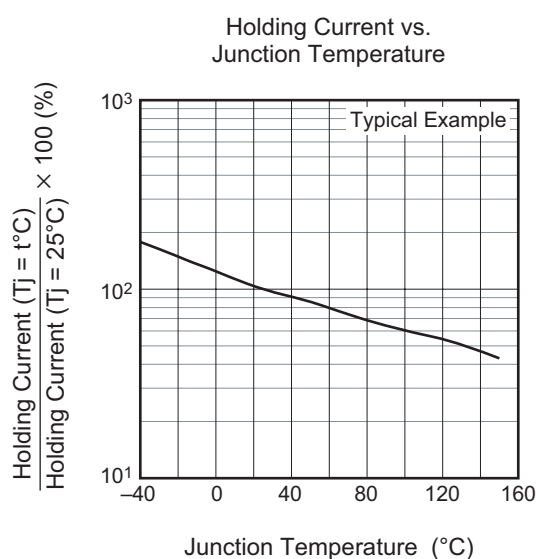
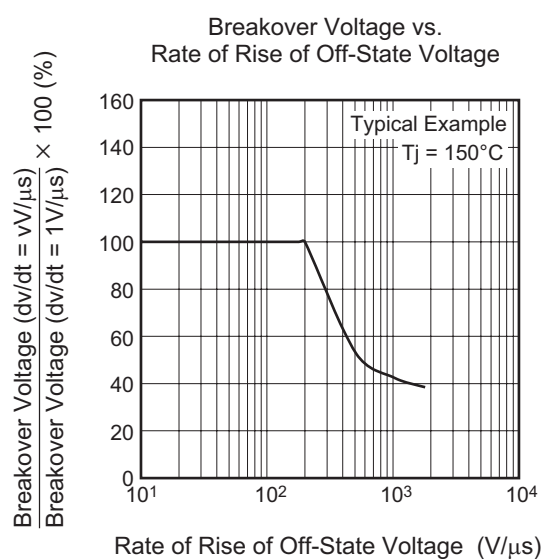
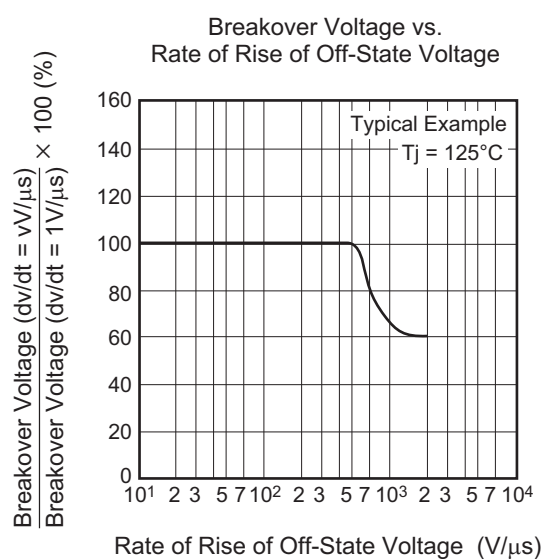
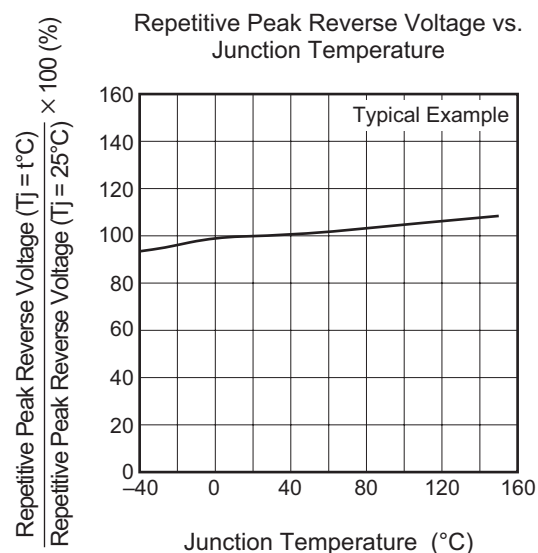
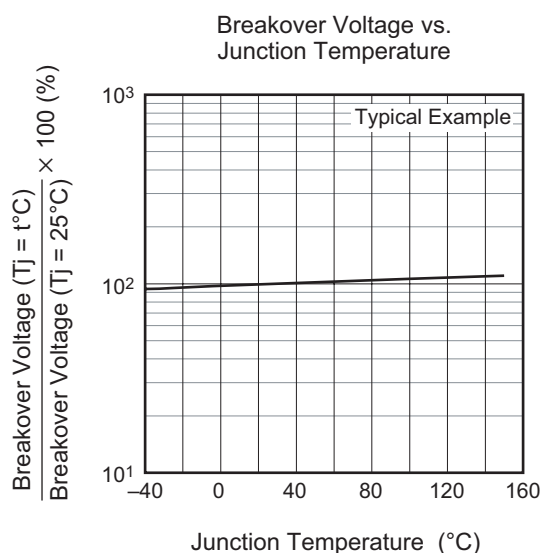
Gate Trigger Voltage vs. Junction Temperature



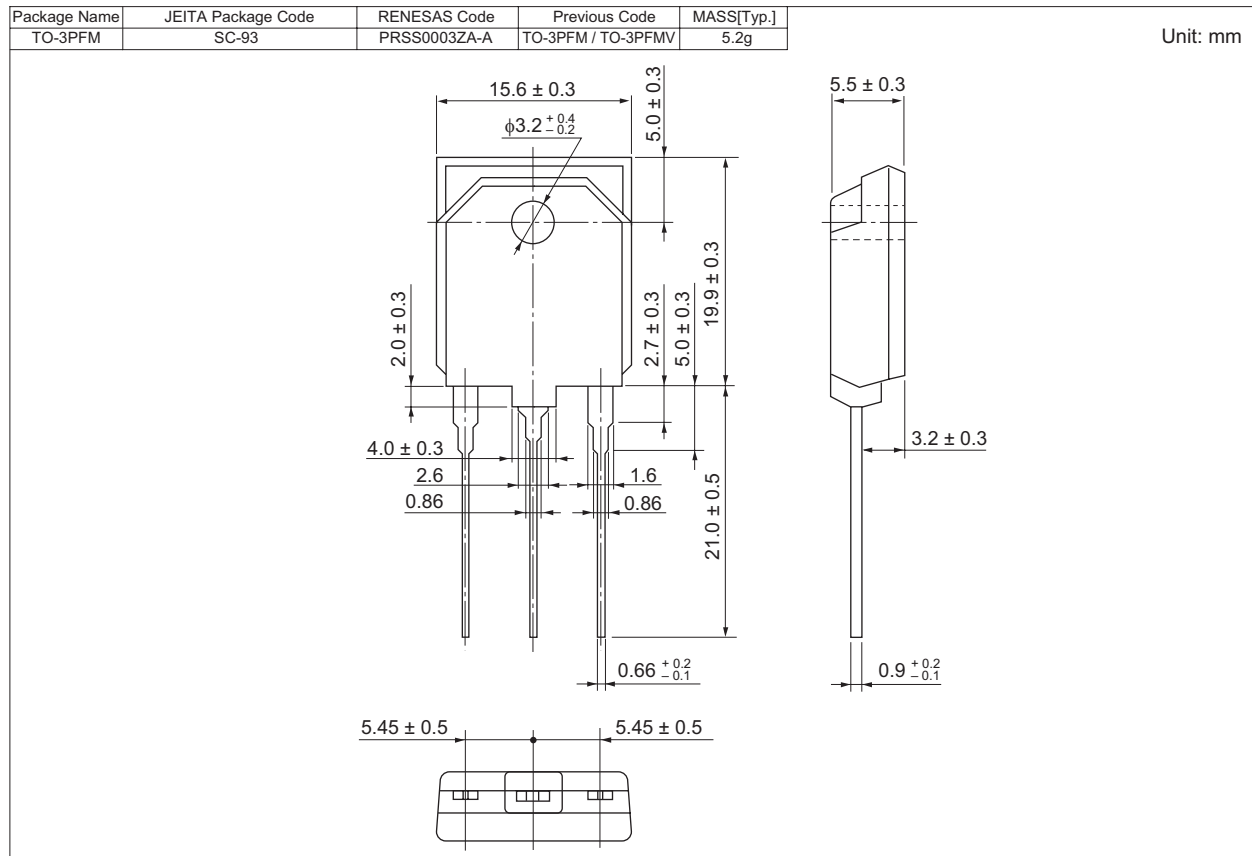
Maximum Transient Thermal Impedance Characteristics (Junction to case)



Maximum Average Power Dissipation  
(Single-Phase Half Wave)Allowable Case Temperature vs.  
Average On-State Current  
(Single-Phase Half Wave)Maximum Average Power Dissipation  
(Single-Phase Full Wave)Allowable Case Temperature vs.  
Average On-State Current  
(Single-Phase Full Wave)Maximum Average Power Dissipation  
(Rectangular Wave)Allowable Case Temperature vs.  
Average On-State Current  
(Rectangular Wave)



## Package Dimensions



## Order Code

Lead form	Standard packing	Quantity	Standard order code	Standard order code example
Straight type	Magazine (Tube)	30	Type name	CR25RM-12D

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



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