

# CR12CM-12B

600V - 12A - Thyristor

Medium Power Use

R07DS0232EJ0300

Rev.3.00

Jul 30, 2013

## Features

- $I_{T(AV)}$  : 12 A
- $V_{DRM}$  : 600 V
- $I_{GT}$  : 30 mA
- The product guaranteed maximum junction temperature of 150°C
- Non-Insulated Type
- Planar Passivation Type

## Outline

RENESAS Package code: PRSS0004AG-A  
(Package name: TO-220AB)



RENESAS Package code: PRSS0004AA-A  
(Package name: TO-220)



## Applications

Switching mode power supply, regulator for autcycle, 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, $T_c = 116^\circ\text{C}$ <sup>Note2</sup>
Surge on-state current	$I_{TSM}$	360	A	60Hz 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 +150	$^\circ\text{C}$	
Storage temperature	$T_{stg}$	- 40 to +150	$^\circ\text{C}$	
Mass	—	2.1	g	Typical value

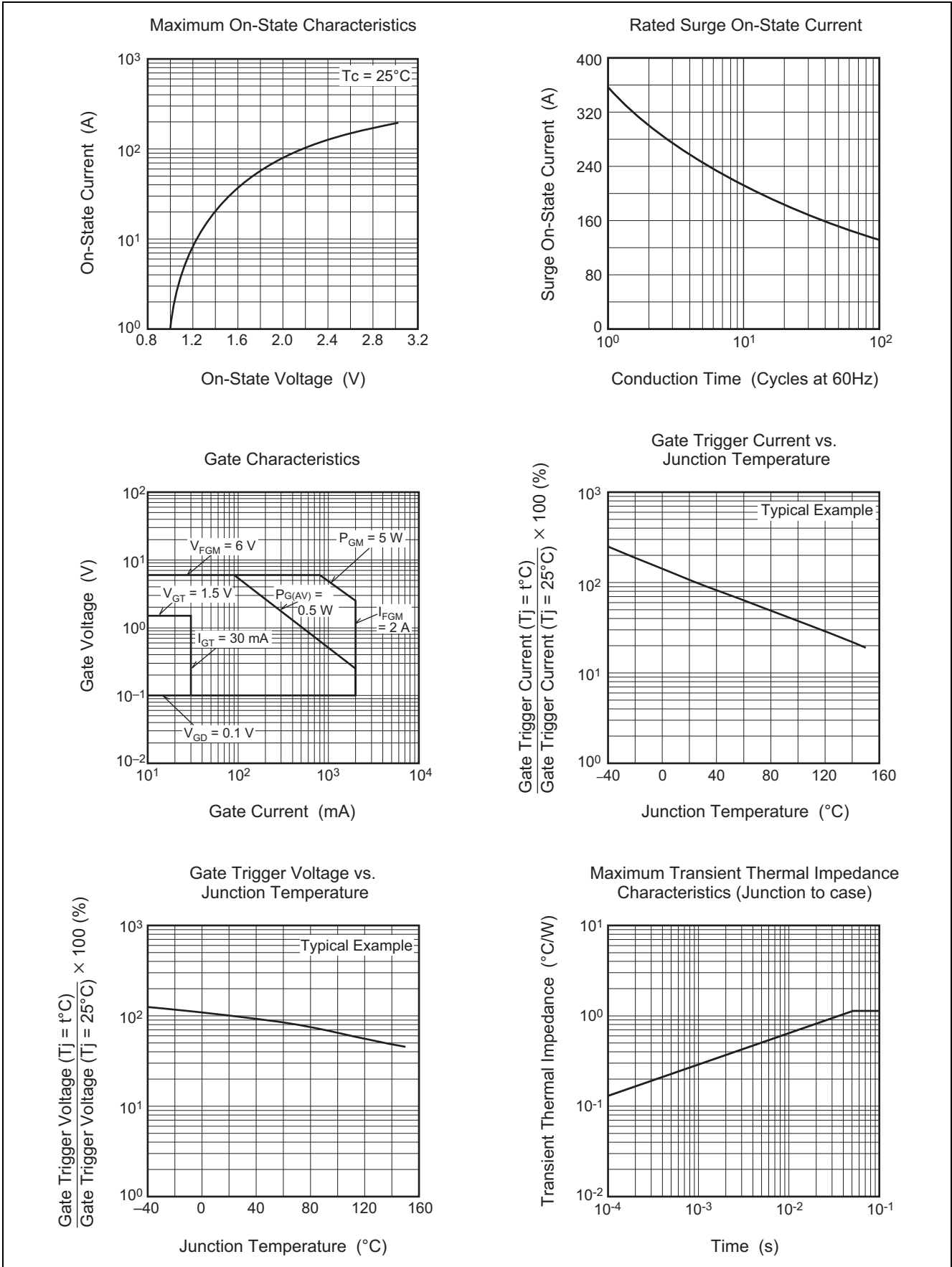
## Electrical Characteristics

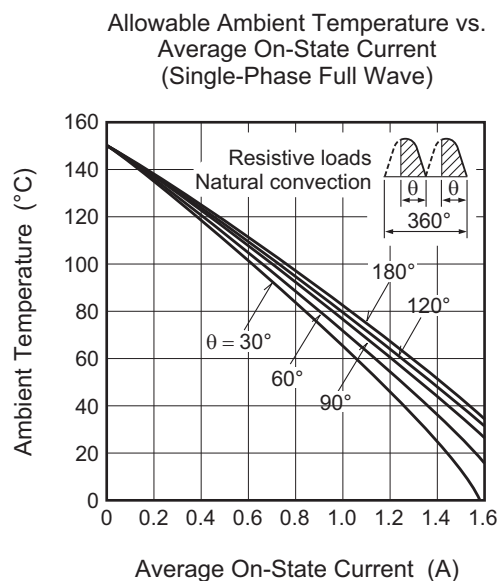
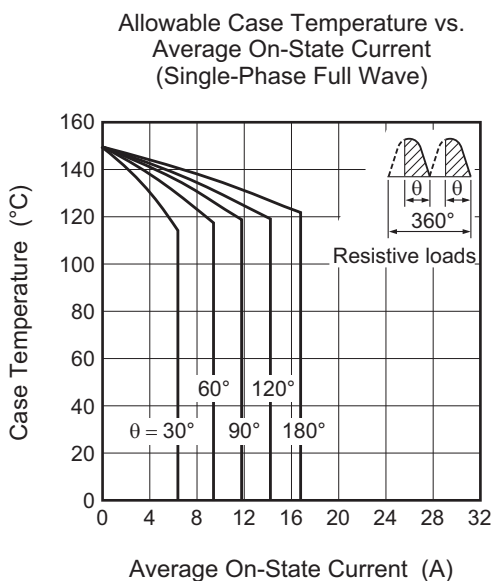
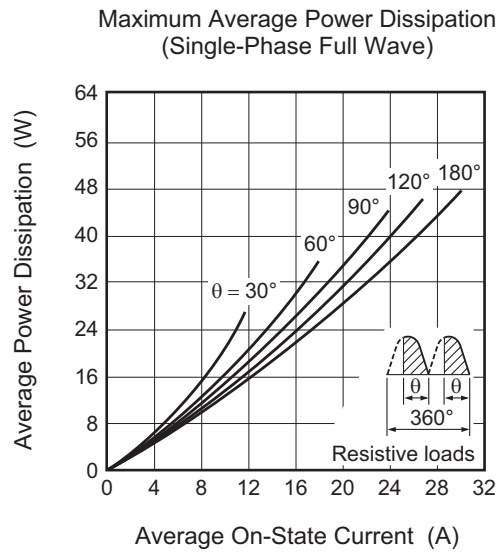
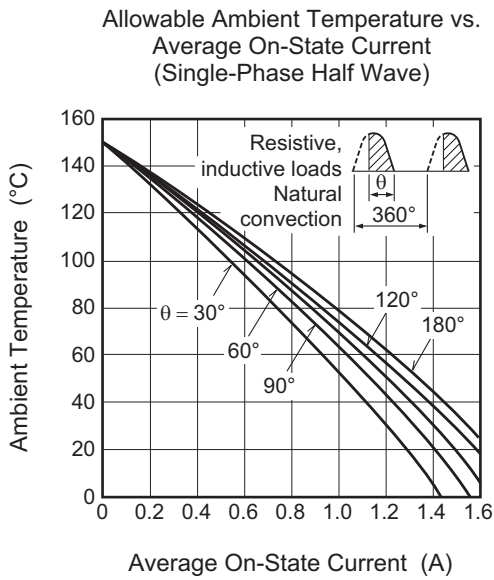
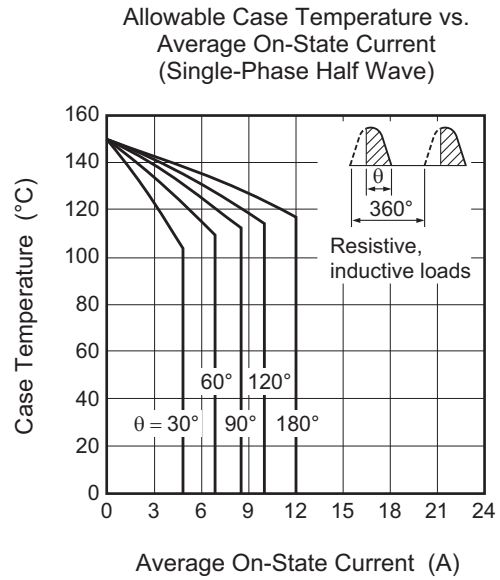
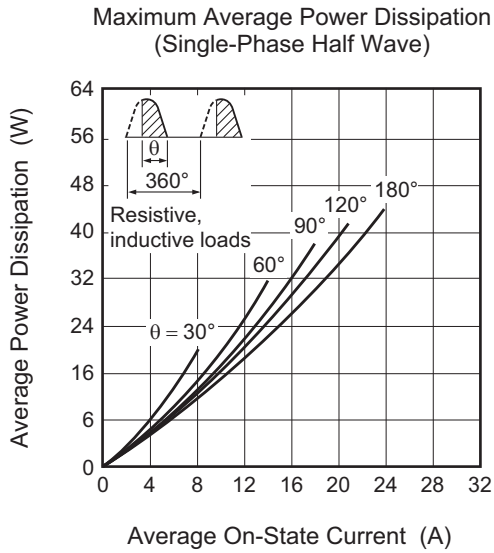
Parameter	Symbol	Min.	Typ.	Max.	Unit	Test conditions
Repetitive peak reverse current	$I_{RRM}$	—	—	2.0/5.0	mA	$T_j = 125^\circ\text{C}/150^\circ\text{C}$ , $V_{RRM}$ applied
Repetitive peak off-state current	$I_{DRM}$	—	—	2.0/5.0	mA	$T_j = 125^\circ\text{C}/150^\circ\text{C}$ , $V_{DRM}$ applied
On-state 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	$R_{th(j-c)}$	—	—	1.2	$^\circ\text{C}/\text{W}$	Junction to case <sup>Note1 Note2</sup>

Notes: 1. The contact thermal resistance  $R_{th(c-f)}$  in case of greasing is  $1.0^\circ\text{C}/\text{W}$ .

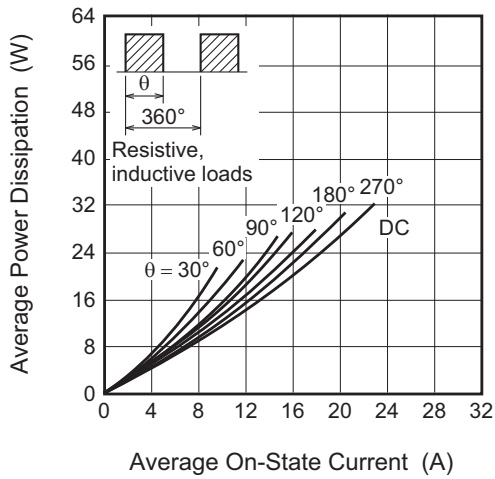
2. Case temperature is measured at anode tab 1.5 mm away from the molded case.

Performance Curves

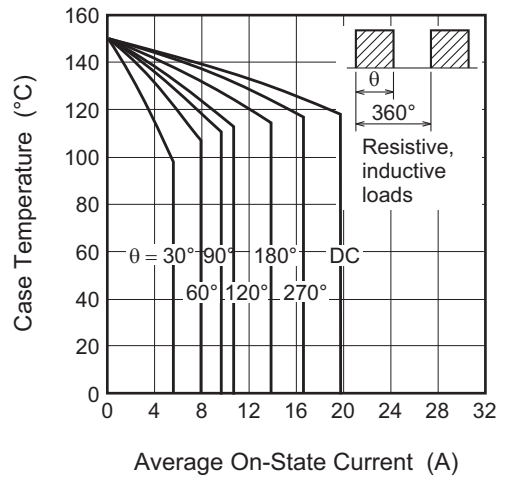




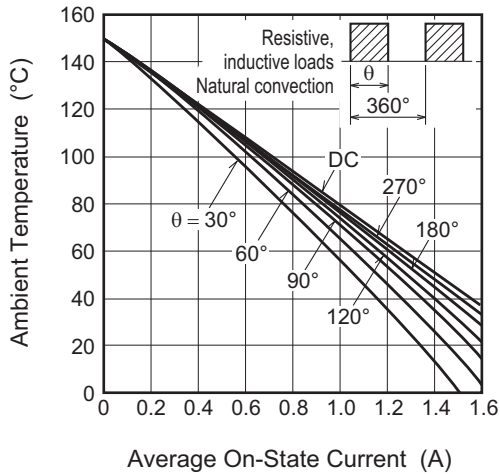
Maximum Average Power Dissipation (Rectangular Wave)



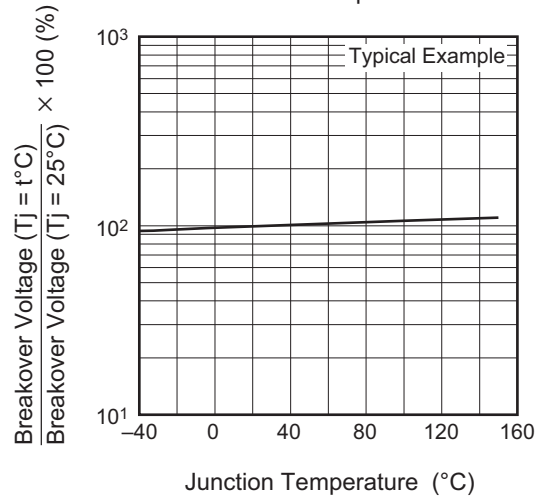
Allowable Case Temperature vs. Average On-State Current (Rectangular Wave)



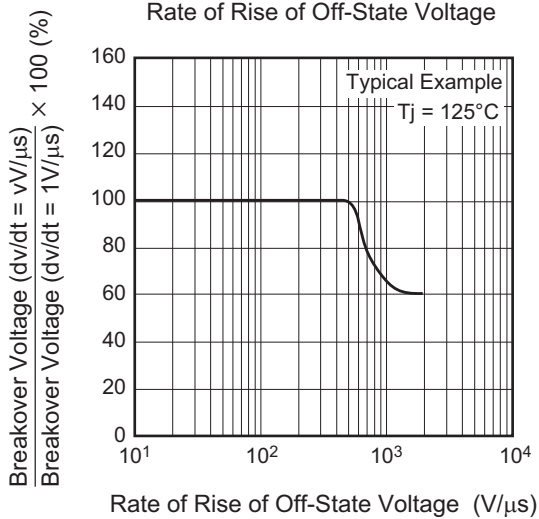
Allowable Ambient Temperature vs. Average On-State Current (Rectangular Wave)



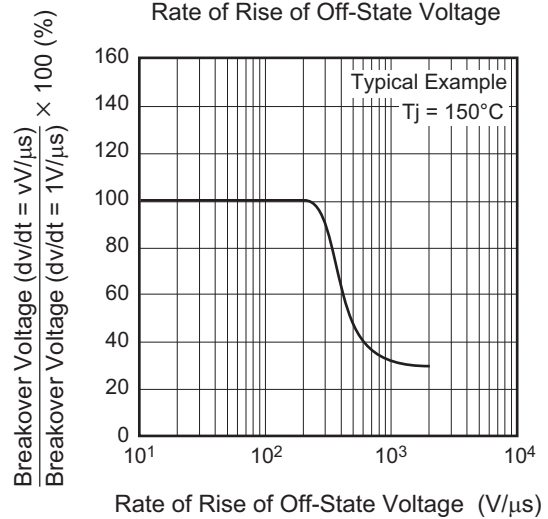
Breakover Voltage vs. Junction Temperature

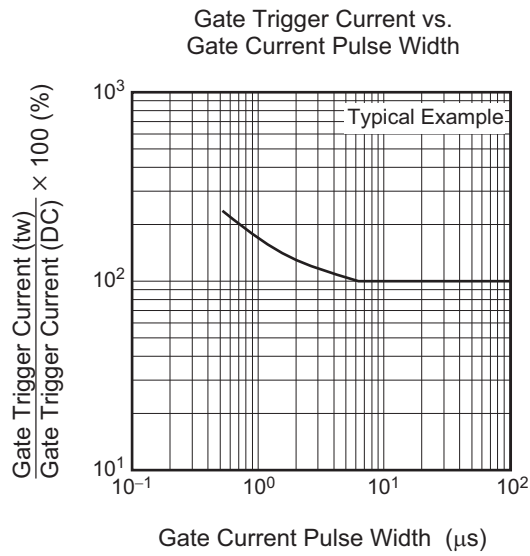
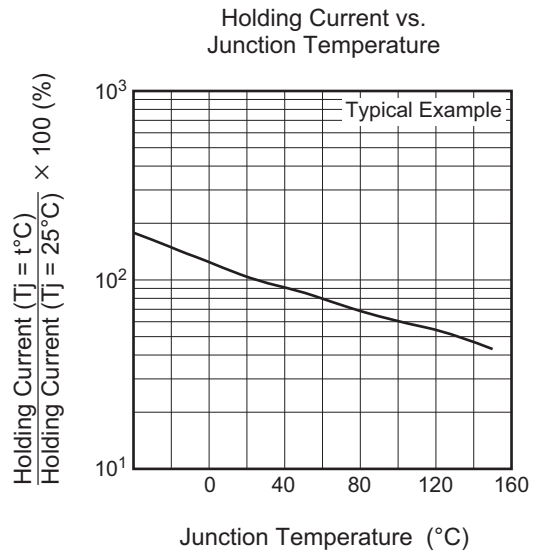
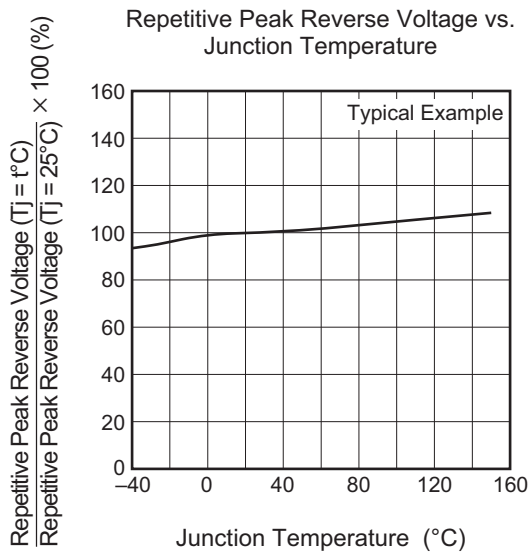


Breakover Voltage vs. Rate of Rise of Off-State Voltage



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

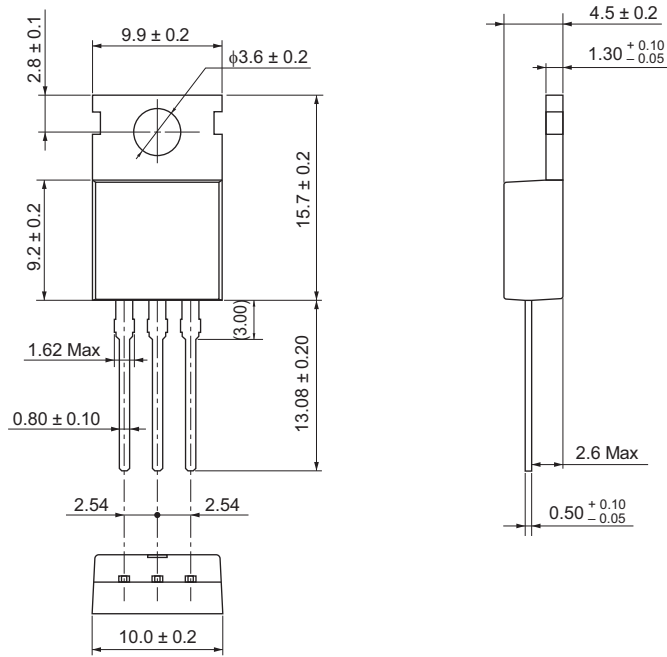




Package Dimensions

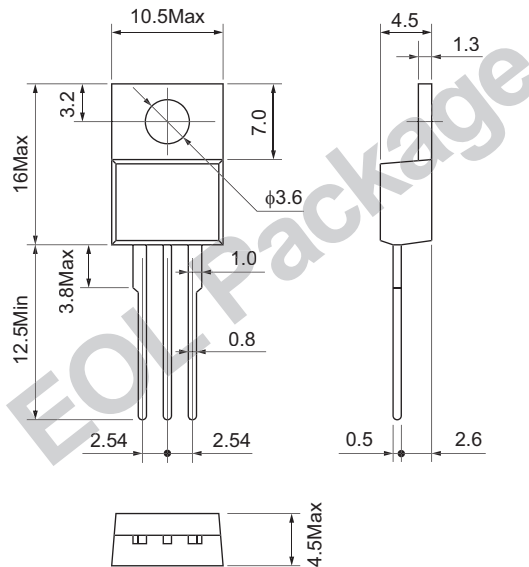
Package Name	JEITA Package Code	RENESAS Code	Previous Code	MASS[Typ.]
TO-220AB	SC-46	PRSS0004AG-A	TO-220ABS	2.1g

Unit: mm



Package Name	JEITA Package Code	RENESAS Code	Previous Code	MASS[Typ.]
TO-220	SC-46	PRSS0004AA-A	—	2.0g

Unit: mm



### Ordering Information

Orderable Part Number	Packing	Quantity	Remark
CR12CM-12B#BB0	Tube	50 pcs.	Straight type
CR12CM-12B-A8#BB0	Tube	50 pcs.	A8 Lead form

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



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