

CR3PM-12

Thyristor

Low Power Use

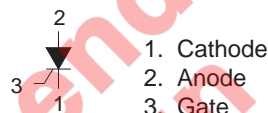
R07DS0113EJ0300
 (Previous: REJ03G0357-0200)
 Rev.3.00
 Sep 13, 2010

Features

- $I_{T(AV)}$: 3 A
- V_{DRM} : 600 V
- I_{GT} : 100 μ A
- V_{iso} : 2000 V
- Insulated Type
- Glass Passivation Type
- UL Recognized : Yellow Card 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 ^{Note1}	V_{DRM}	600	V
DC off-state voltage ^{Note1}	$V_{D(DC)}$	480	V

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 1 full cycle, peak value, non-repetitive
I^2t for fusing	I^2t	24.5	A^2s	Value corresponding to 1 cycle 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	Viso	2000	V	$T_a = 25^\circ\text{C}$, AC 1 minute, each terminal to case

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

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	$T_c = 25^\circ\text{C}$, $I_{TM} = 10 \text{ A}$, 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 ^{Note3}	μA	$T_j = 25^\circ\text{C}$, $V_D = 6 \text{ V}$, $I_T = 0.1 \text{ A}$
Thermal resistance	$R_{th(j-c)}$	—	—	4.1	$^\circ\text{C}/\text{W}$	Junction to case ^{Note2}

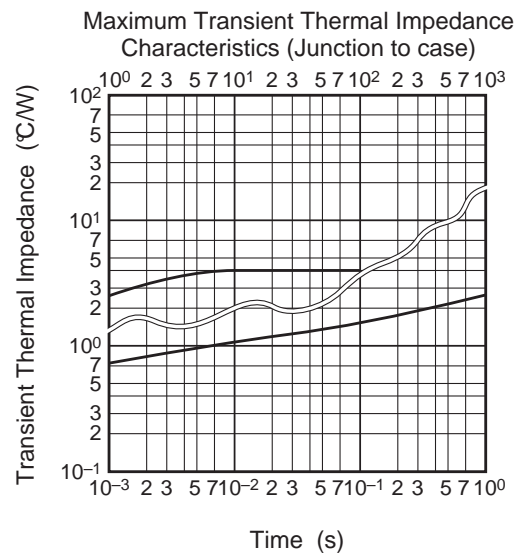
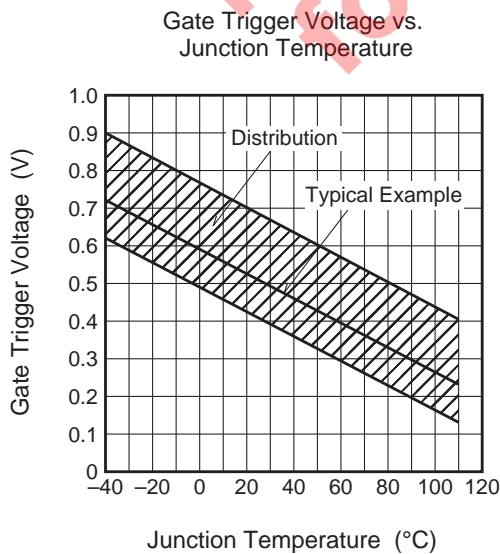
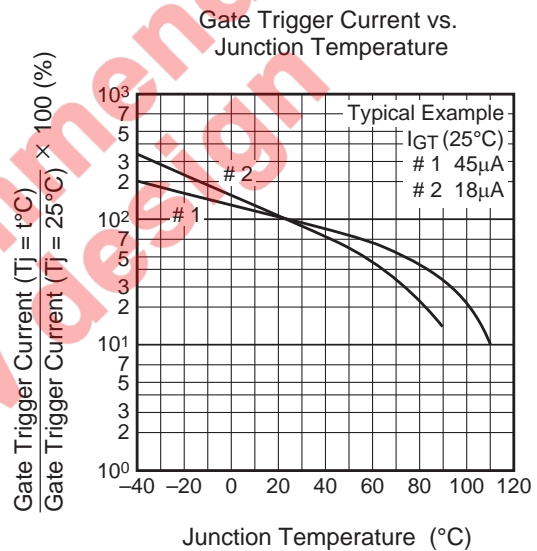
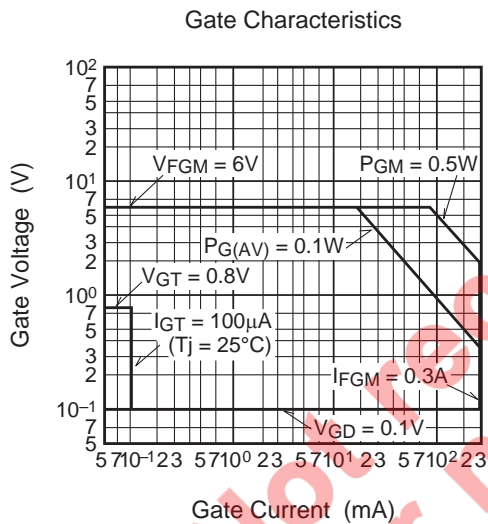
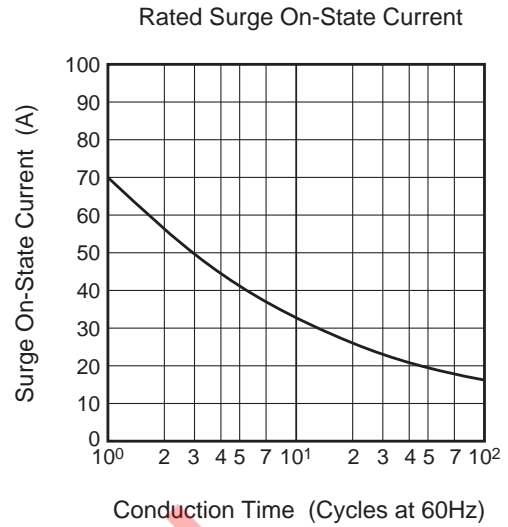
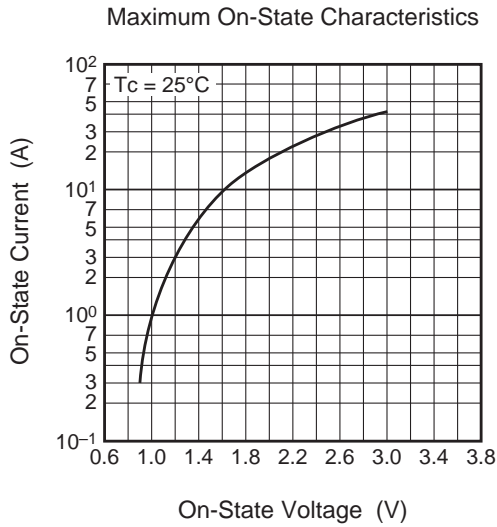
Notes: 2. The contact thermal resistance $R_{th(c-f)}$ in case of greasing is $0.5^\circ\text{C}/\text{W}$.

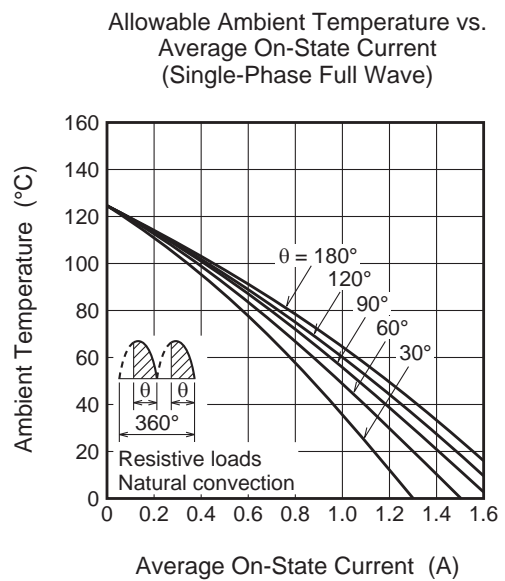
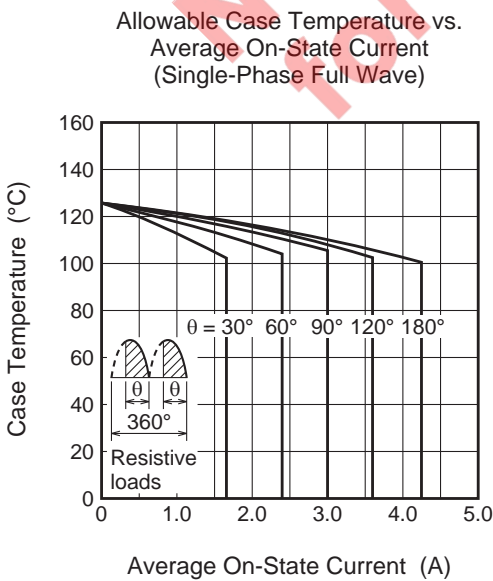
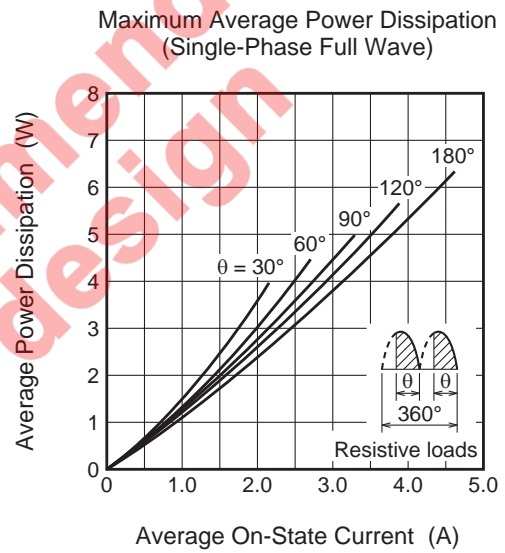
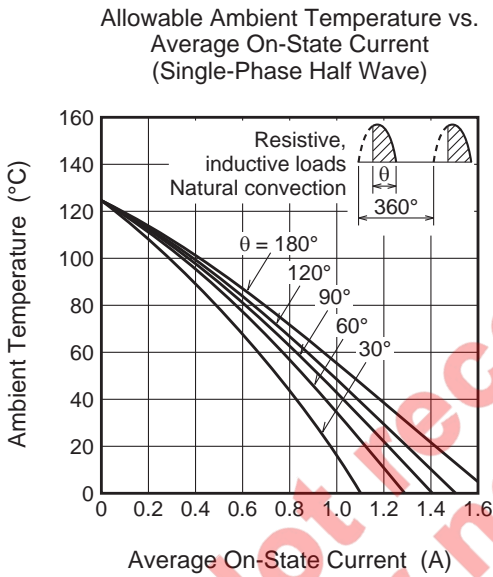
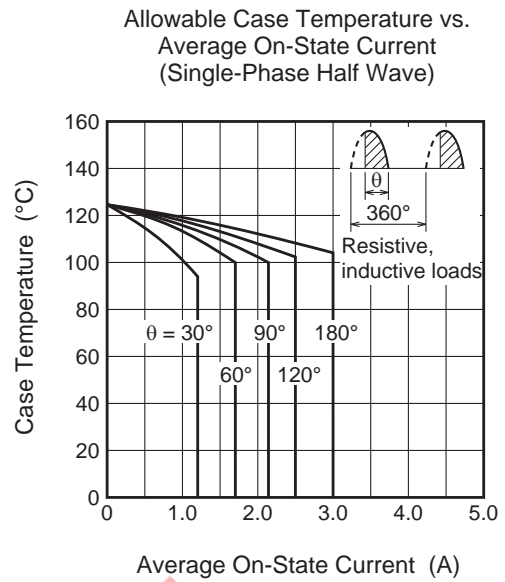
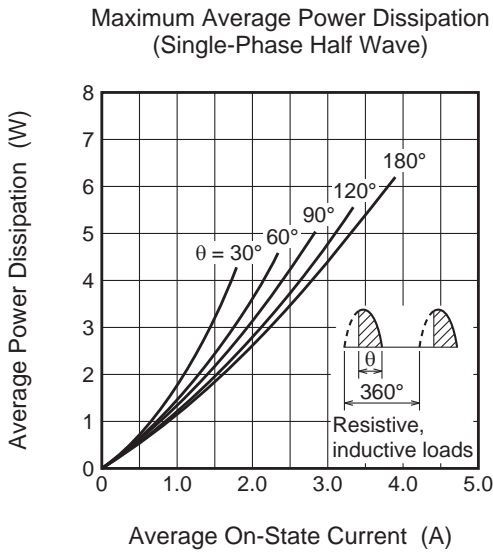
3. If special values of I_{GT} are required, choose item D or E from those listed in the table below if possible.

Item	A	B	C	D	E
$I_{GT} (\mu\text{A})$	1 to 30	20 to 50	40 to 100	1 to 50	20 to 100

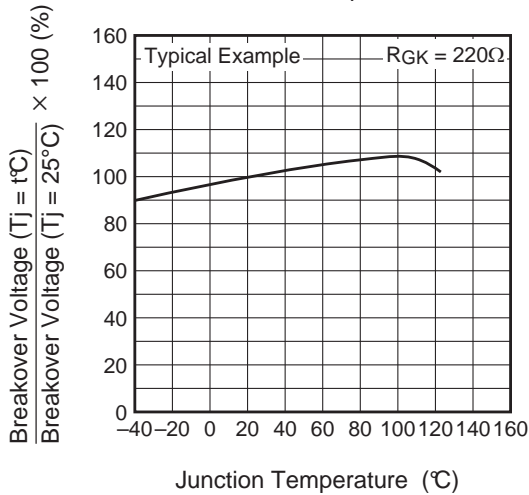
The above values do not include the current flowing through the 220Ω resistance between the gate and cathode.

Performance Curves

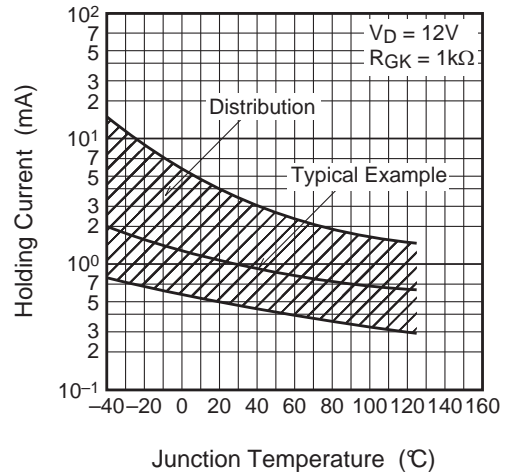




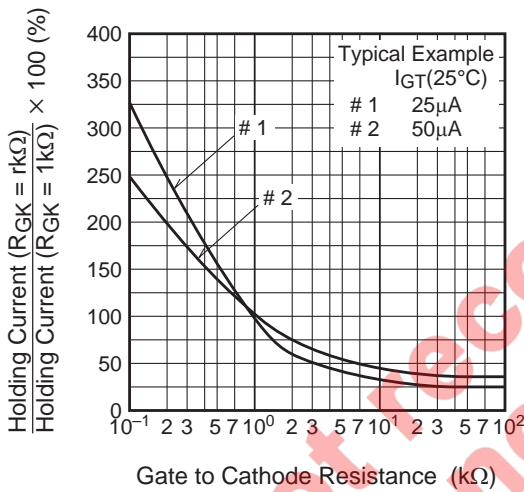
Breakover Voltage vs. Junction Temperature



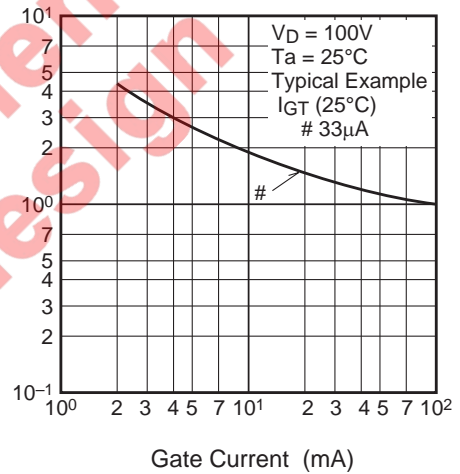
Holding Current vs. Junction Temperature



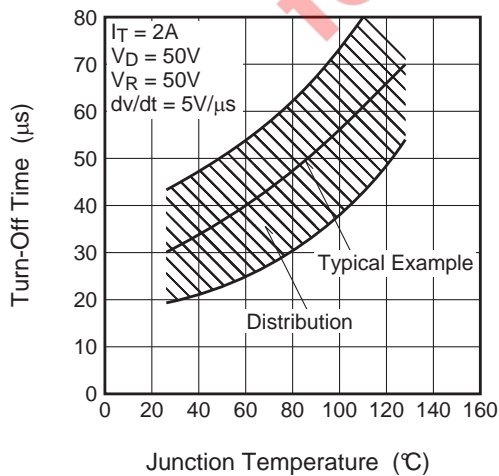
Holding Current vs. Gate to Cathode Resistance



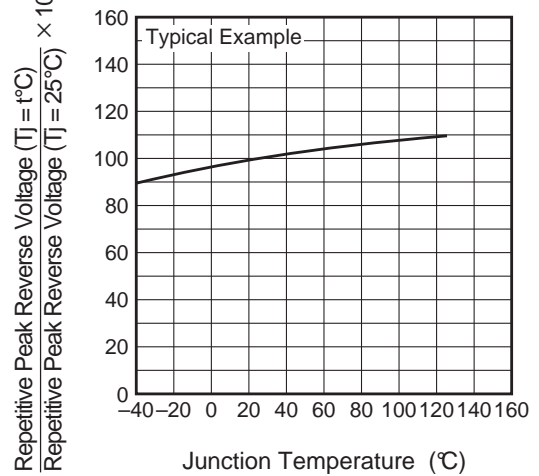
Turn-On Time vs. Gate Current

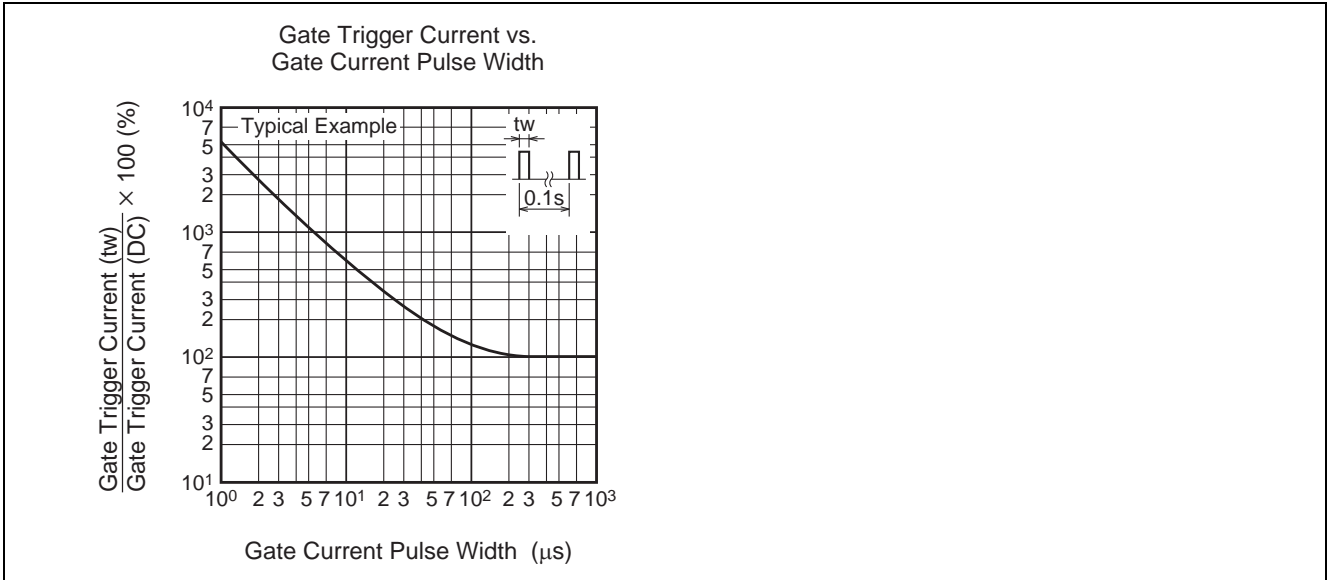


Turn-Off Time vs. Junction Temperature



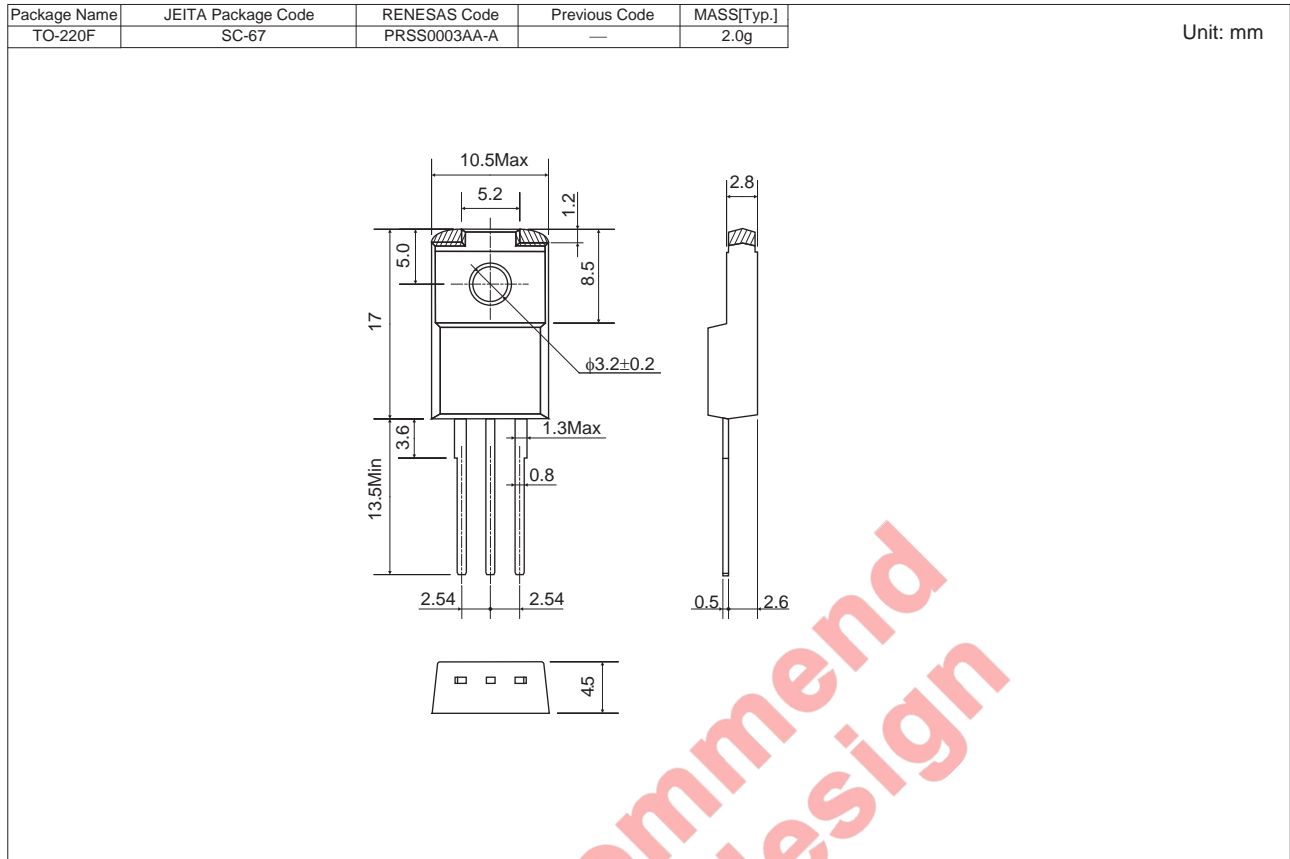
Repetitive Peak Reverse Voltage vs. Junction Temperature





Not recommend
for new design

Package Dimensions



Order Code

Lead form	Standard packing	Quantity	Standard order code	Standard order code example
Straight type	Vinyl sack	100	Type name	CR3PM-12
Lead form	Tube	50	Type name – Lead forming code	CR3PM-12-A8

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

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