

CR12CM-12A

600V - 12A - Thyristor

Medium Power Use

R07DS1035EJ0400

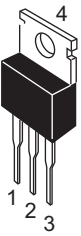

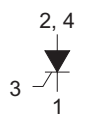
Rev.4.00

Jul 30, 2013

Features

- $I_{T(AV)}$: 12 A
- V_{DRM} : 600 V
- I_{GT} : 30 mA
- 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)
	
	
1. Cathode 2. Anode 3. Gate 4. Anode	

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, $T_c = 91^\circ\text{C}$ ^{Note2}
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	A^2s	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	—	2.1	g	Typical value

Electrical Characteristics

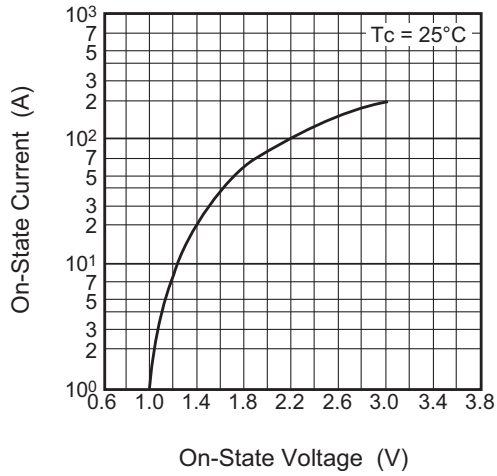
Parameter	Symbol	Min.	Typ.	Max.	Unit	Test conditions
Repetitive peak reverse current	I_{RRM}	—	—	2.0	mA	$T_j = 125^\circ\text{C}$, V_{RRM} applied
Repetitive peak off-state current	I_{DRM}	—	—	2.0	mA	$T_j = 125^\circ\text{C}$, V_{DRM} applied
On-state voltage	V_{TM}	—	—	1.6	V	$T_c = 25^\circ\text{C}$, $I_{TM} = 40\text{ A}$, 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	$R_{th(j-c)}$	—	—	1.2	$^\circ\text{C/W}$	Junction to case ^{Note1 Note2}

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

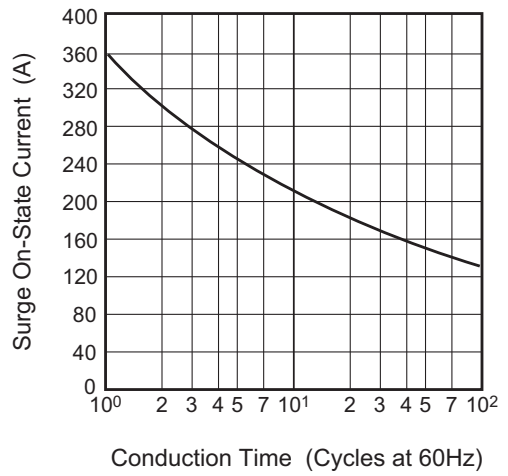
2. Case temperature is measured at anode tab 1.5 mm away from the molded case.

Performance Curves

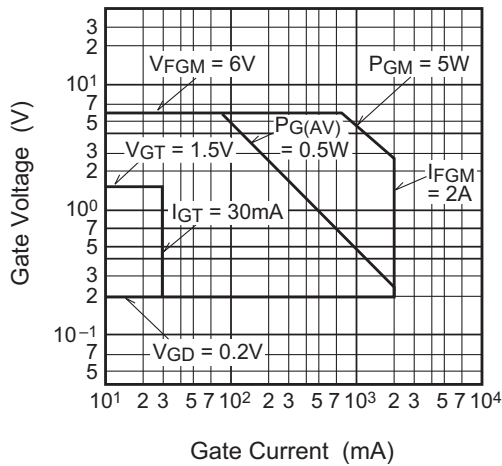
Maximum On-State Characteristics



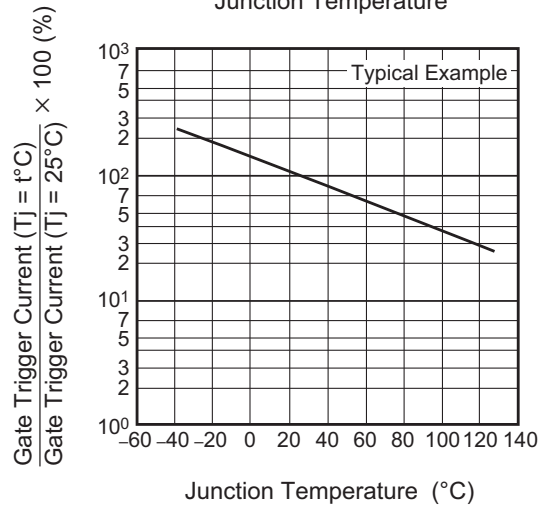
Rated Surge On-State Current



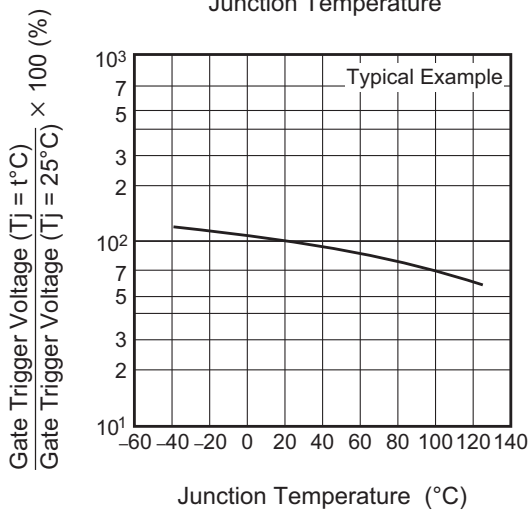
Gate Characteristics



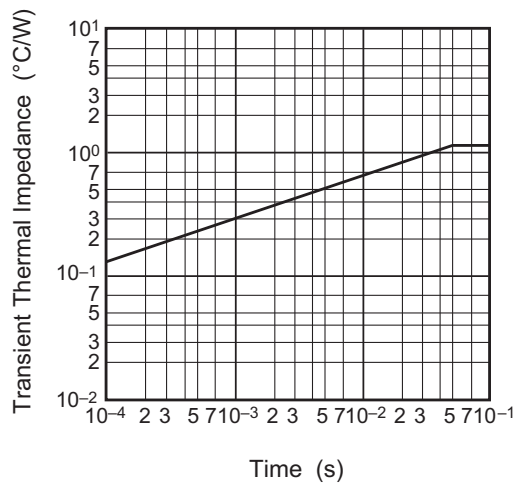
Gate Trigger Current vs. Junction Temperature



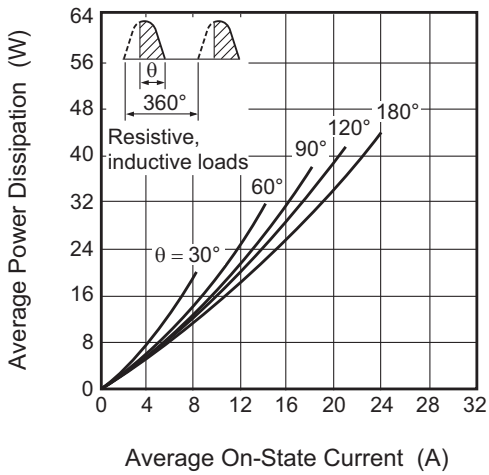
Gate Trigger Voltage vs. Junction Temperature



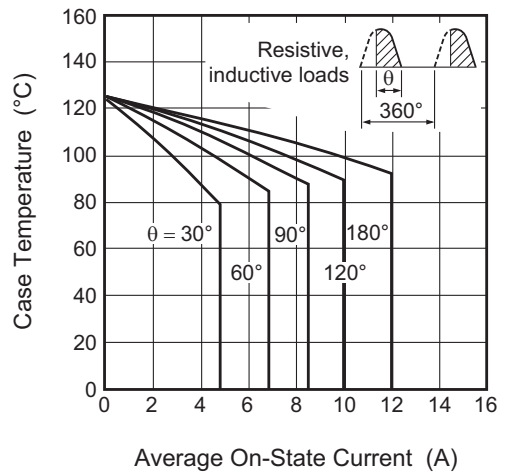
Maximum Transient Thermal Impedance Characteristics (Junction to case)



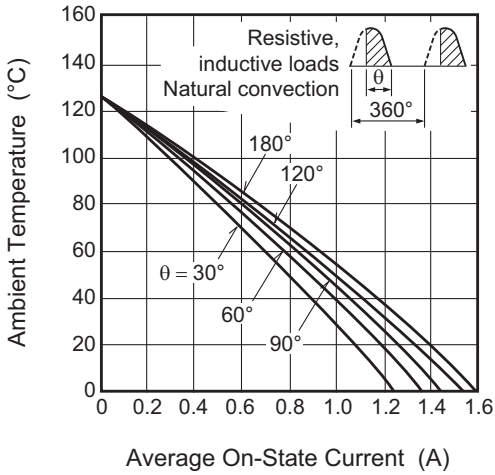
Maximum Average Power Dissipation (Single-Phase Half Wave)



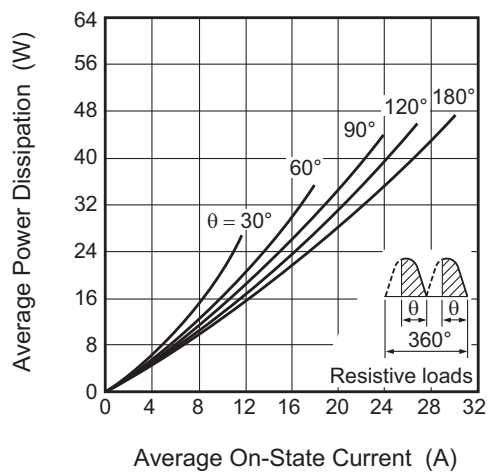
Allowable Case Temperature vs. Average On-State Current (Single-Phase Half Wave)



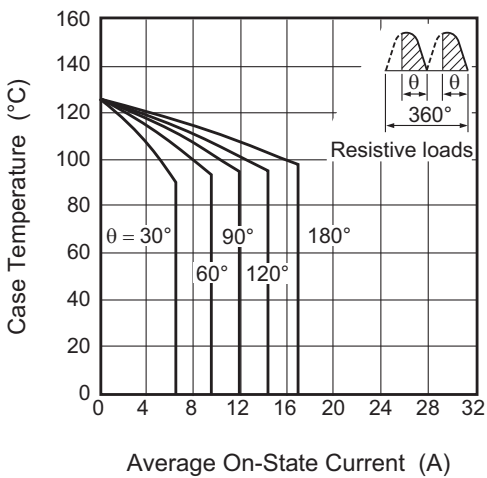
Allowable Ambient Temperature vs. Average On-State Current (Single-Phase Half Wave)



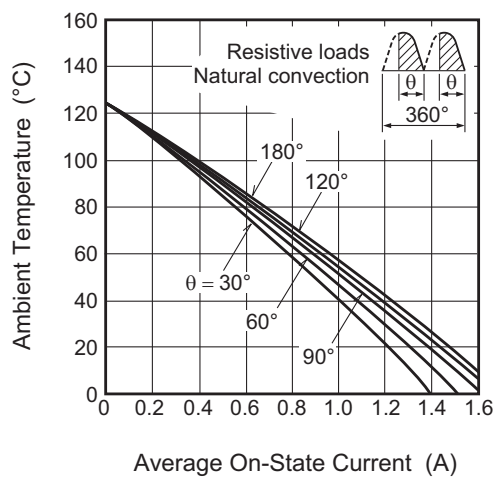
Maximum Average Power Dissipation (Single-Phase Full Wave)



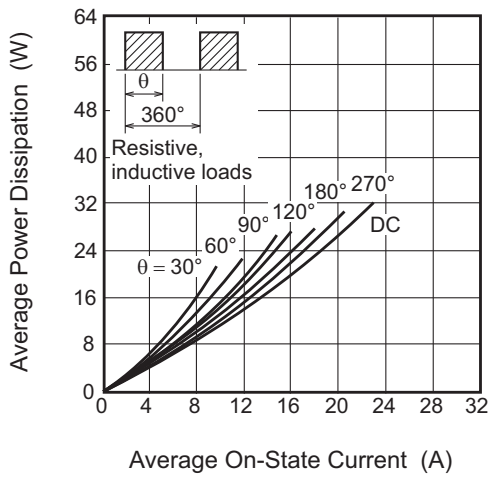
Allowable Case Temperature vs. Average On-State Current (Single-Phase Full Wave)



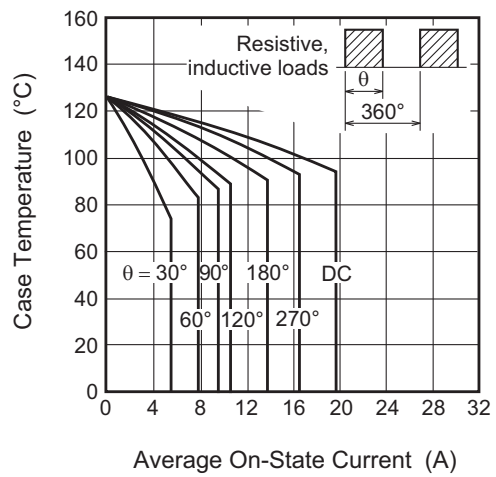
Allowable Ambient Temperature vs. Average On-State Current (Single-Phase Full Wave)



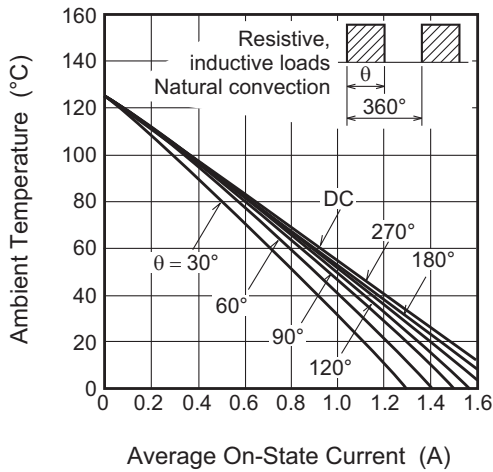
Maximum Average Power Dissipation (Rectangular Wave)



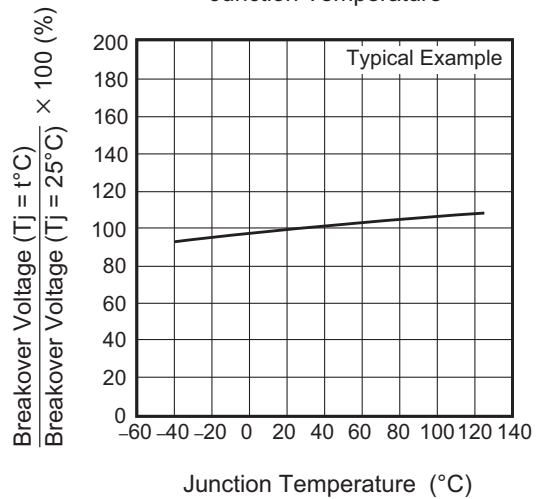
Allowable Case Temperature vs. Average On-State Current (Rectangular Wave)



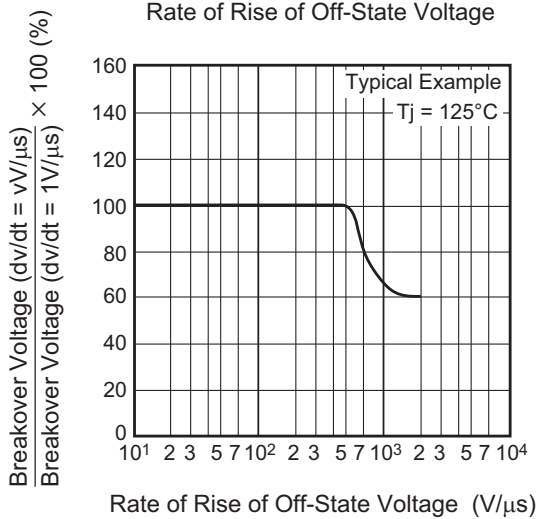
Allowable Ambient Temperature vs. Average On-State Current (Rectangular Wave)



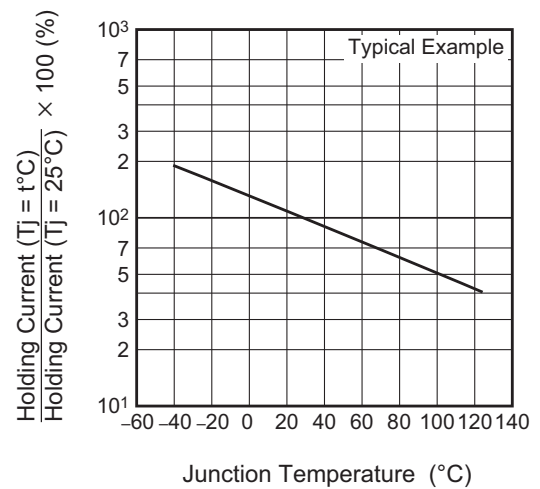
Breakover Voltage vs. Junction Temperature

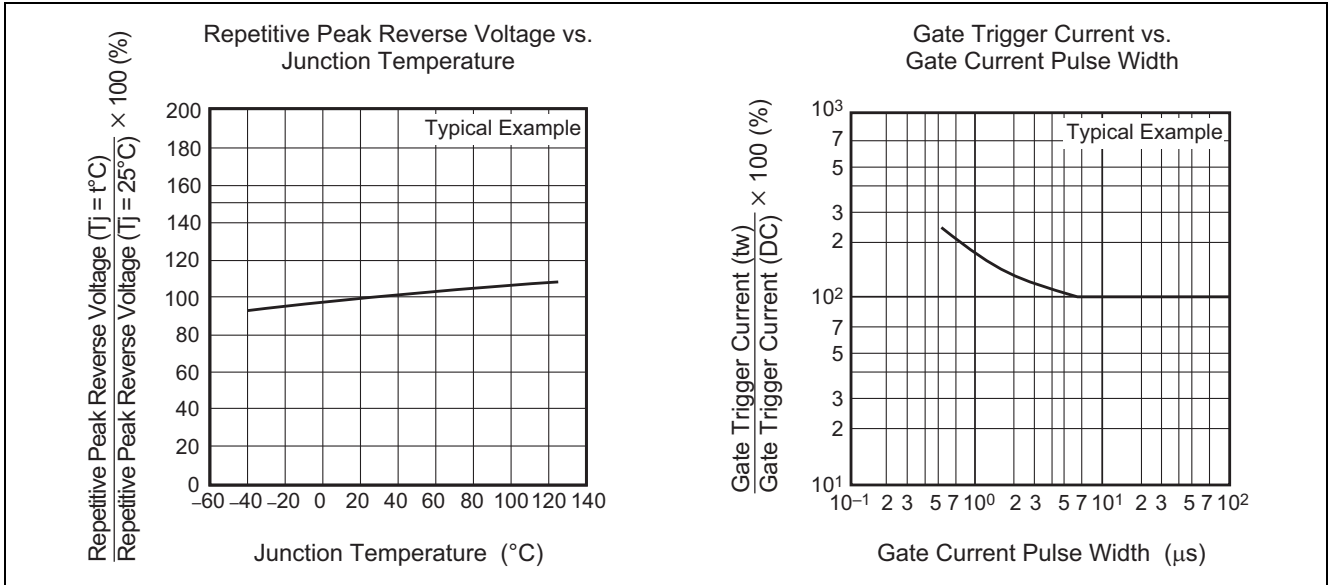


Breakover Voltage vs. Rate of Rise of Off-State Voltage

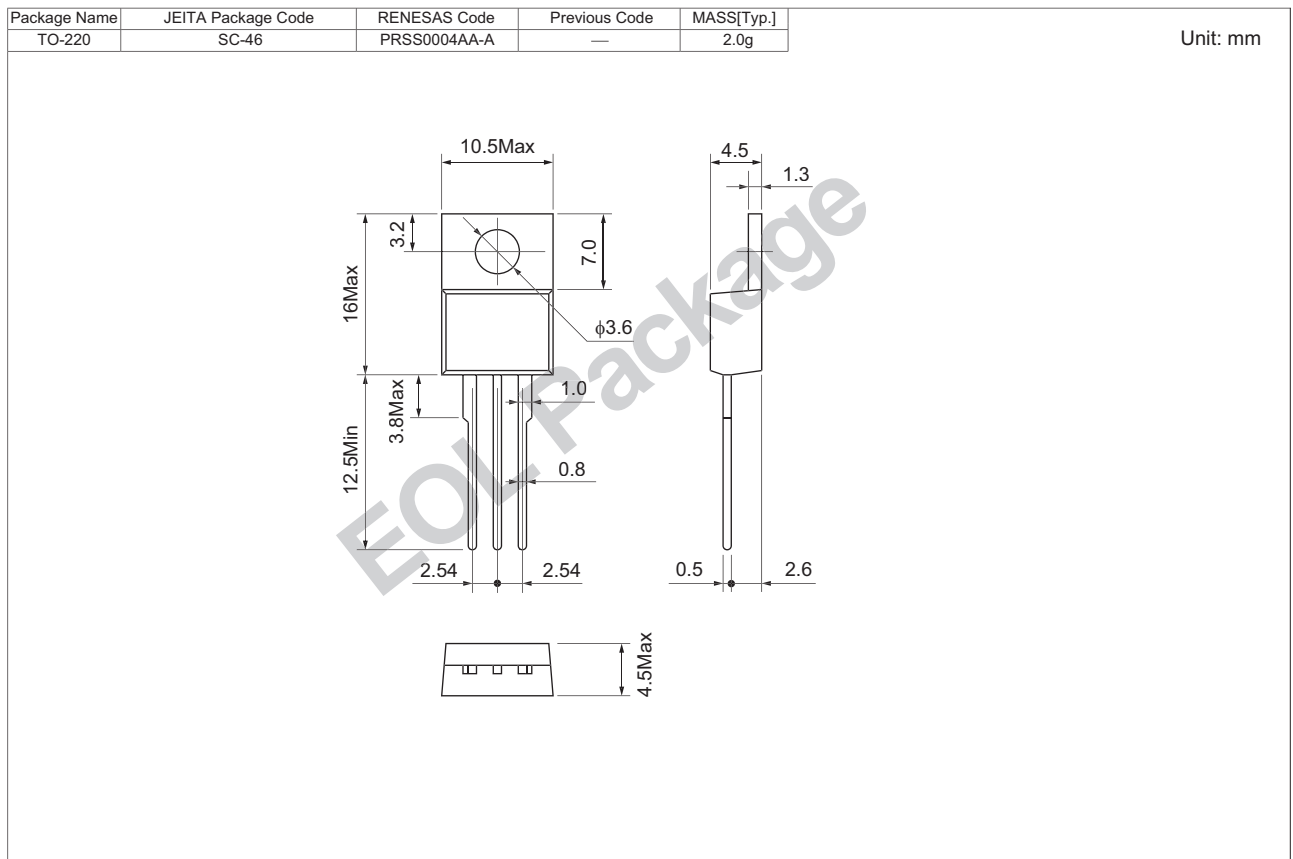
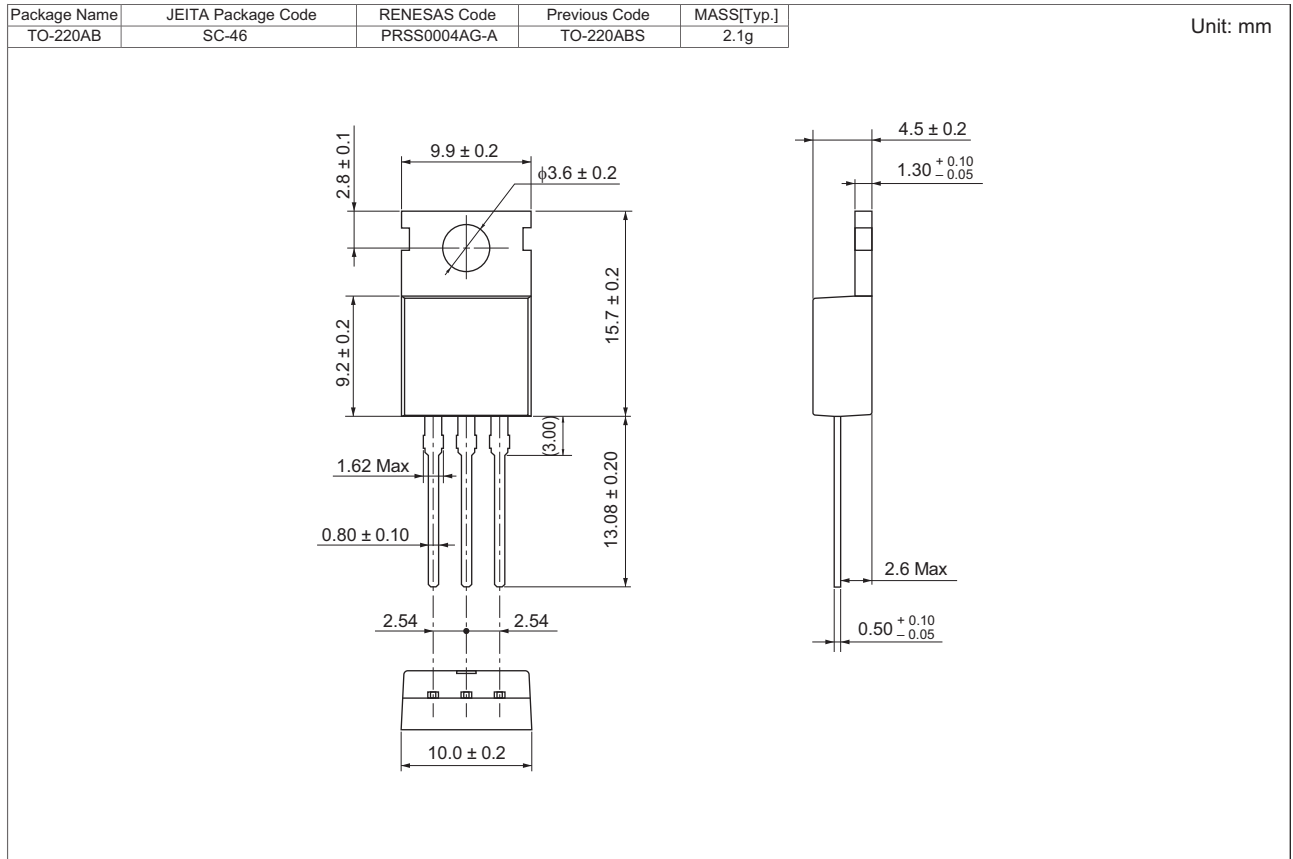


Holding Current vs. Junction Temperature





Package Dimensions



Ordering Information

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

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

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