

CR12CM-12B

600V - 12A - Thyristor

Medium Power Use

R07DS0232EJ0400

Rev.4.00


Jul. 11, 2018

Features

- $I_T(AV)$: 12 A
- V_{DRM} : 600 V
- I_{GT} : 30 mA
- T_j : 150°C
- Non-insulated Type
- Planar Passivation Type

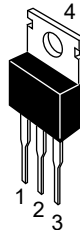
Outline

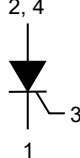
RENESAS Package code: PRSS0004AG-A
(Package name: TO-220AB)



To be EOLed PKG

RENESAS Package code: PRSS0004AT-A
(Package name: TO-220ABA)





1. Cathode
2. Anode
3. Gate
4. Anode

Application

Power supply, motor control, heater control and other general purpose 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, $T_c = 116^\circ C$ ^{Note1}
Surge on-state current	I_{TSM}	360	A	60 Hz sinewave 1 full cycle, peak value, non-repetitive
I^2t for fusing	I^2t	544	A ² s	Value corresponding to 1 cycle of half wave 60 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	°C	
Storage temperature	T_{stg}	-40 to +150	°C	

Electrical Characteristics

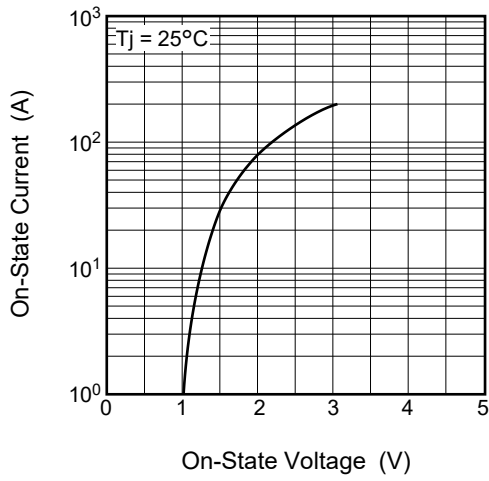
Parameter	Symbol	Min.	Typ.	Max.	Unit	Test conditions
Repetitive peak reverse current	I _{RRM}	—	—	2.0	mA	T _j = 125°C, V _{RRM} applied
		—	—	5.0	mA	T _j = 150°C, V _{RRM} applied
Repetitive peak off-state current	I _{DRM}	—	—	2.0	mA	T _j = 125°C, V _{DRM} applied
		—	—	5.0	mA	T _j = 150°C, V _{DRM} applied
On-state voltage	V _{TM}	—	—	1.6	V	T _c = 25°C, I _{TM} = 40 A, instantaneous value
Gate trigger voltage	V _{GT}	—	—	1.5	V	T _j = 25°C, V _D = 6 V, I _T = 1 A
Gate non-trigger voltage	V _{GD}	0.2	—	—	V	T _j = 125°C, V _D = 1/2 V _{DRM}
		0.1	—	—	V	T _j = 150°C, V _D = 1/2 V _{DRM}
Gate trigger current	I _{GT}	—	—	30	mA	T _j = 25°C, V _D = 6 V, I _T = 1 A
Holding current	I _H	—	30	—	mA	T _j = 25°C, V _D = 12 V
Thermal resistance	R _{th(j-c)}	—	—	1.2	°C/W	Junction to case ^{Note1} ^{Note2}

Notes: 1. Case temperature is measured at anode tab 1.5 mm away from the molded case.

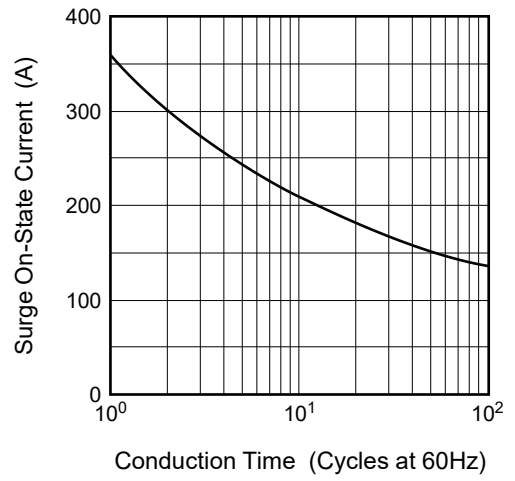
2. The contact thermal resistance R_{th(c-f)} in case of greasing is 1.0°C/W.

Performance Curves

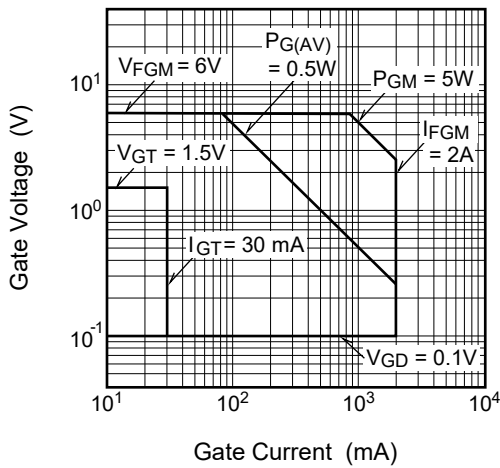
Maximum On-State Characteristics



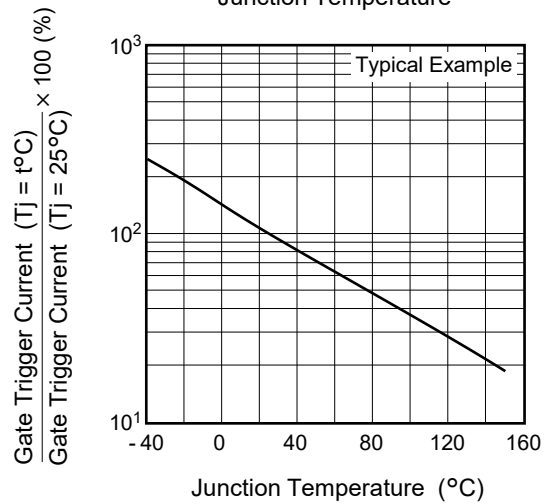
Rated Surge On-State Current



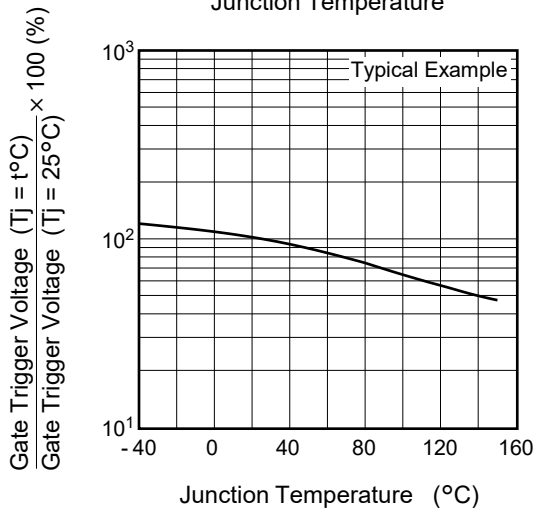
Gate Characteristics



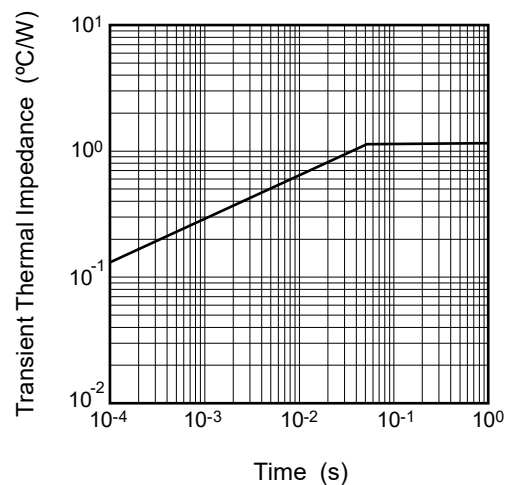
Gate Trigger Current vs. Junction Temperature



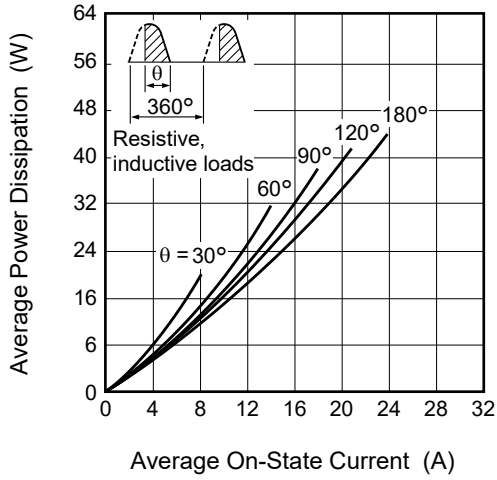
Gate Trigger Voltage vs. Junction Temperature



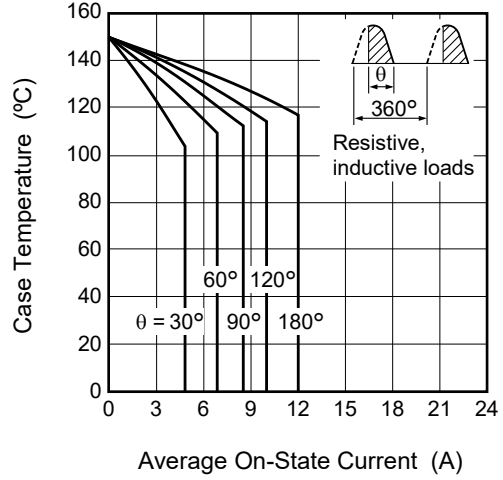
Maximum Transient Thermal Impedance Characteristics (Junction to case)



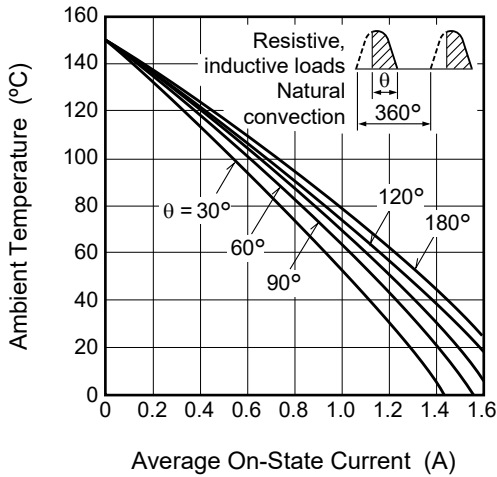
Maximum Average Power Dissipation (Single-Phase Half Wave)



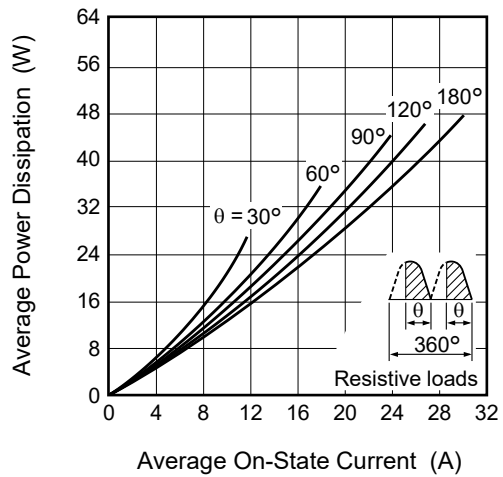
Allowable Case Temperature vs. Average On-State Current (Single-Phase Half Wave)



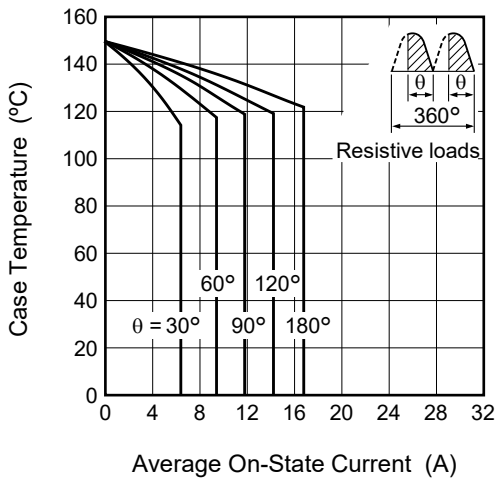
Allowable Ambient Temperature vs Average On-State Current (Single-Phase Half Wave)



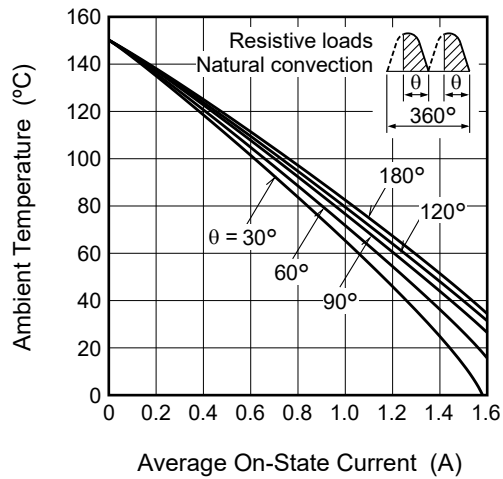
Maximum Average Power Dissipation (Single-Phase Full Wave)



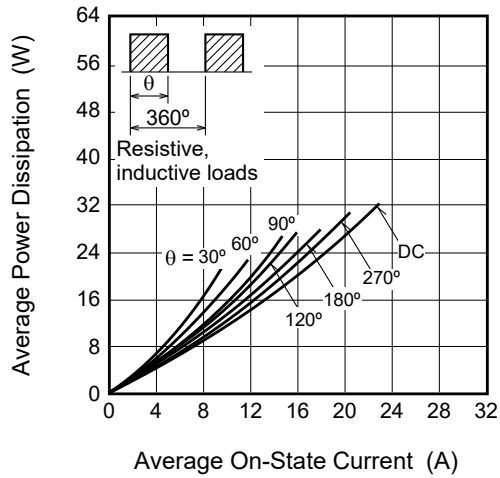
Allowable Case Temperature vs. Average On-State Current (Single-Phase Full Wave)



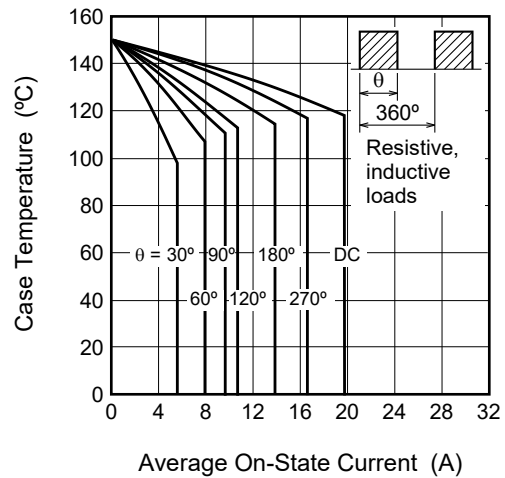
Allowable Ambient Temperature vs. Average On-State Current (Single-Phase Full Wave)



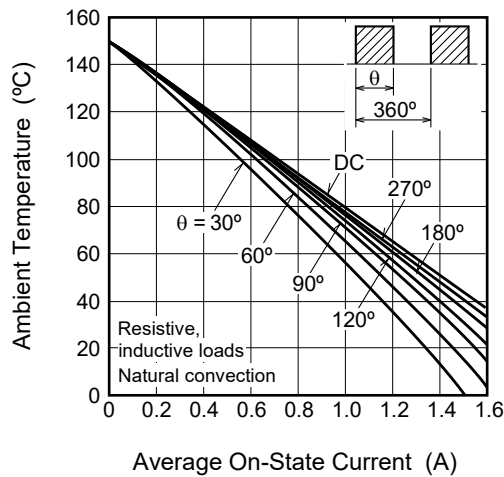
Maximum Average Power Dissipation (Rectangular Wave)



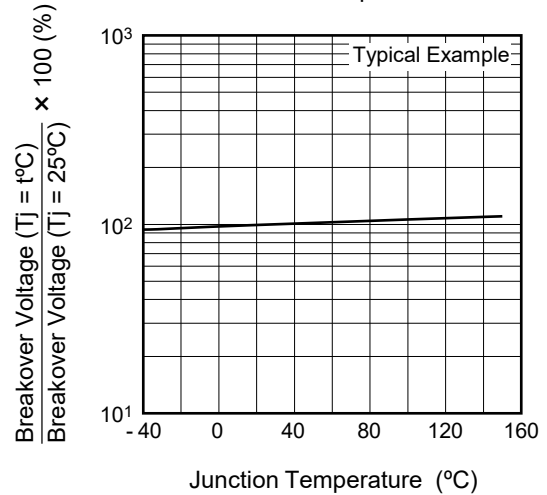
Allowable Case Temperature vs. Average On-State Current (Rectangular Wave)



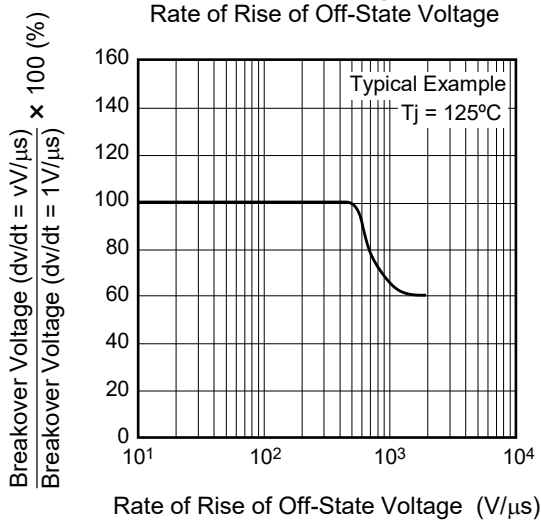
Allowable Ambient Temperature vs. Average On-State Current (Rectangular Wave)



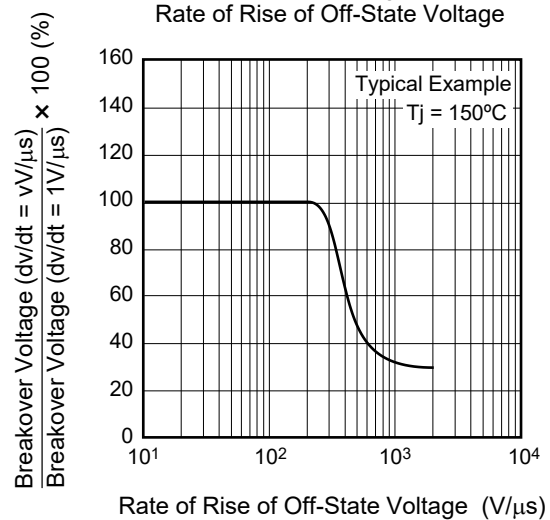
Breakover Voltage vs. Junction Temperature

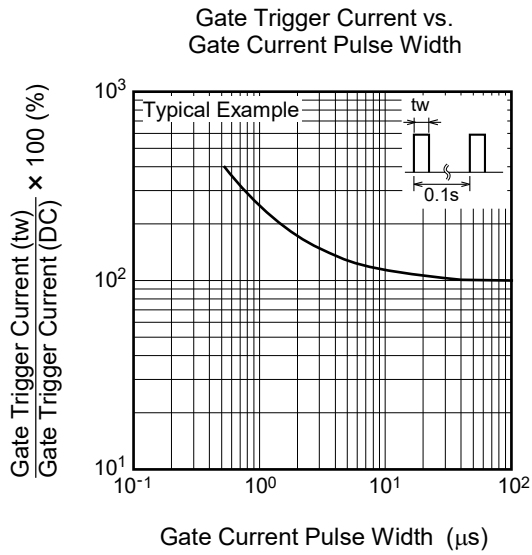
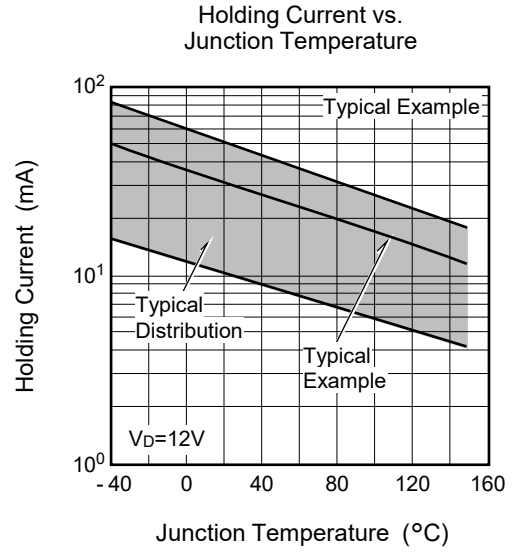
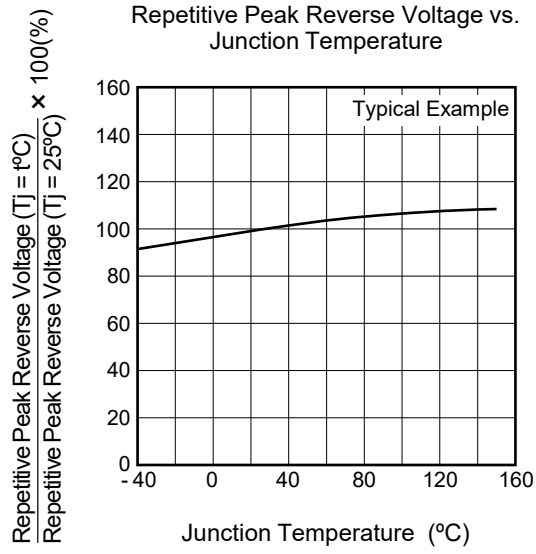


Breakover Voltage vs. Rate of Rise of Off-State Voltage



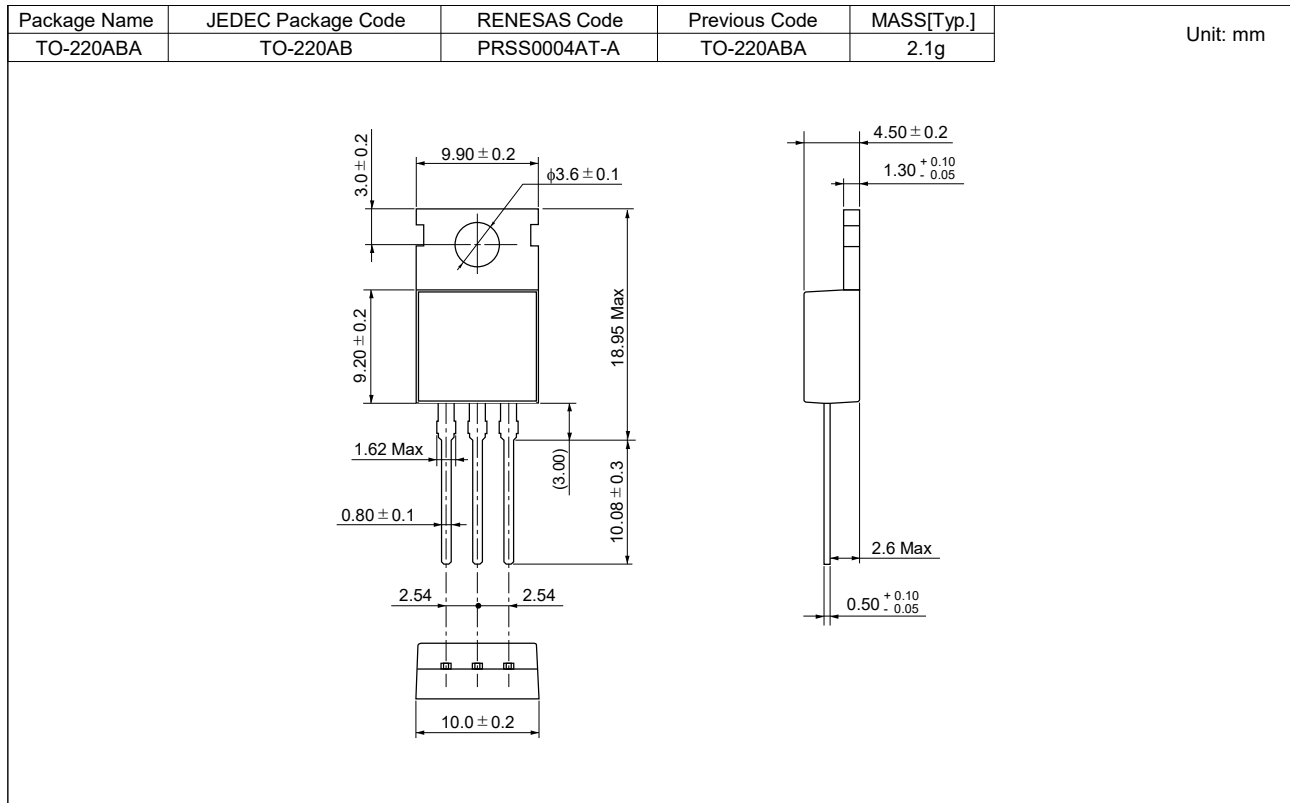
Breakover Voltage vs. Rate of Rise of Off-State Voltage



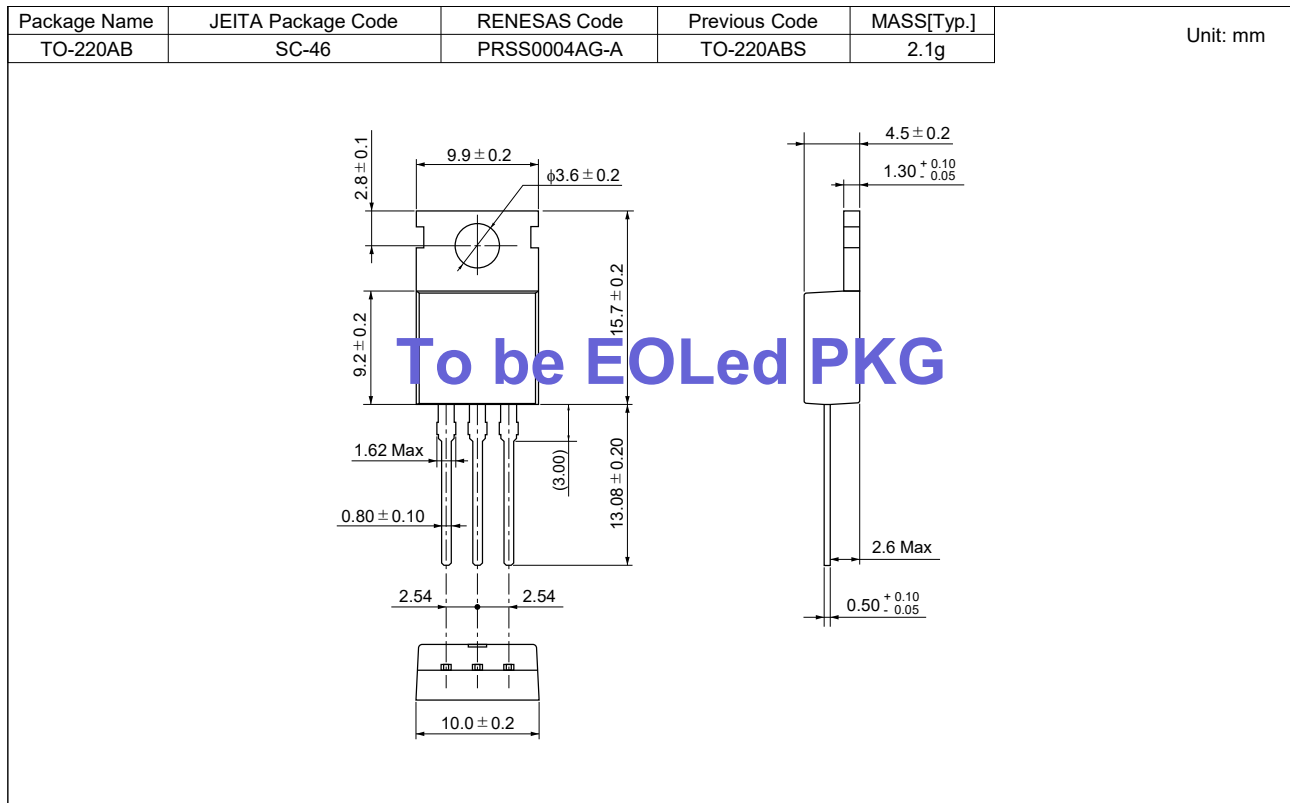


Package Dimensions

Ordering code: #BH0



Ordering code: #BB0



Ordering Information

Orderable Part Number	Package	Quantity ^{Note3}	Remark	Status
CR12CM-12B#BH0	TO-220ABA	50 pcs./ tube	Straight type	Mass Production
CR12CM-12B#BB0	TO-220ABS	50 pcs./ tube	Straight type	EOL Candidate

Notes: 3. Please confirm the specification about the shipping in detail.

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(Rev.3.0-1 November 2016)



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