

CR12CM-12B

600V - 12A - Thyristor

Medium Power Use

R07DS0232EJ0400

Rev.4.00

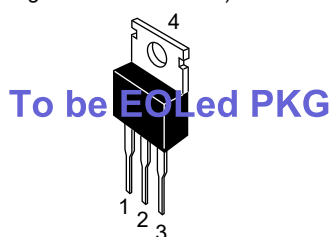
Jul. 11, 2018

Features

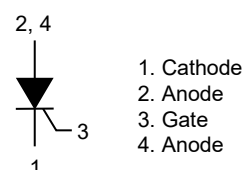
- $I_T(AV)$: 12 A
- V_{DRM} : 600 V
- I_{GT} : 30 mA
- T_j : 150°C
- Non-insulated Type
- Planar Passivation Type

Outline

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



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



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

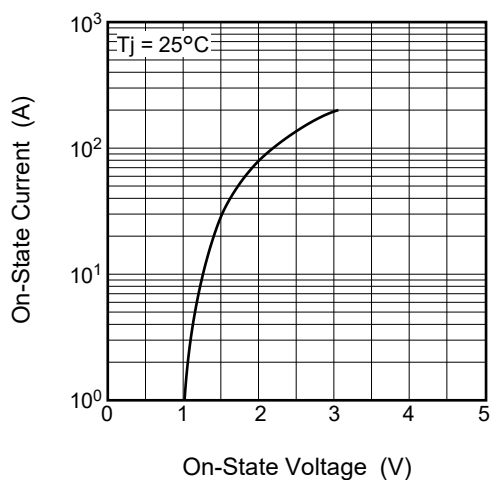
Parameter	Symbol	Min.	Typ.	Max.	Unit	Test conditions
Repetitive peak reverse current	I_{RRM}	—	—	2.0	mA	$T_J = 125^{\circ}\text{C}$, V_{RRM} applied
		—	—	5.0	mA	$T_J = 150^{\circ}\text{C}$, V_{RRM} applied
Repetitive peak off-state current	I_{DRM}	—	—	2.0	mA	$T_J = 125^{\circ}\text{C}$, V_{DRM} applied
		—	—	5.0	mA	$T_J = 150^{\circ}\text{C}$, 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	—	—	V	$T_J = 125^{\circ}\text{C}$, $V_D = 1/2 V_{DRM}$
		0.1	—	—	V	$T_J = 150^{\circ}\text{C}$, $V_D = 1/2 V_{DRM}$
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	—	30	—	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. Case temperature is measured at anode tab 1.5 mm away from the molded case.

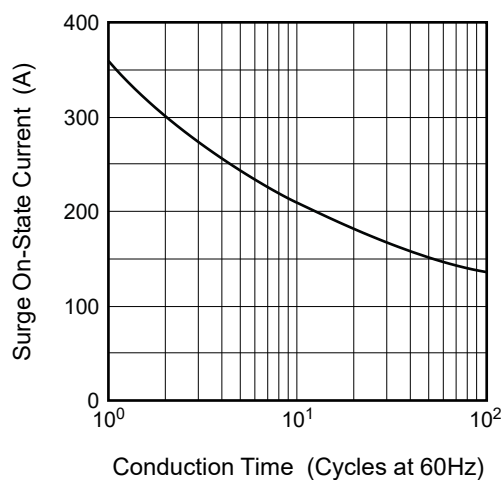
2. The contact thermal resistance $R_{th(c-f)}$ in case of greasing is 1.0°C/W .

Performance Curves

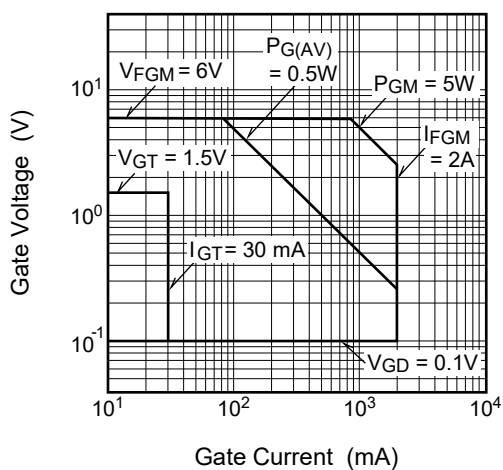
Maximum On-State Characteristics



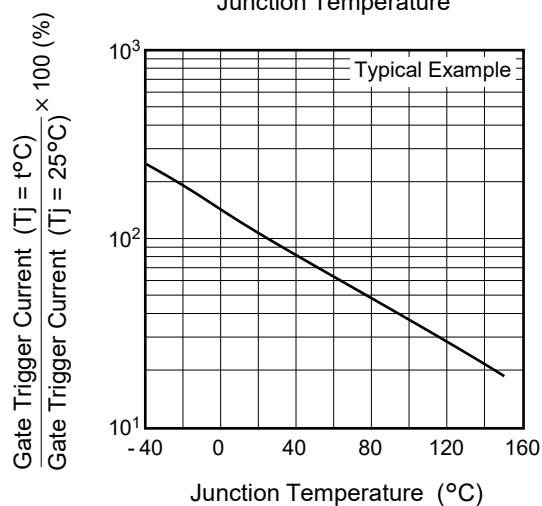
Rated Surge On-State Current



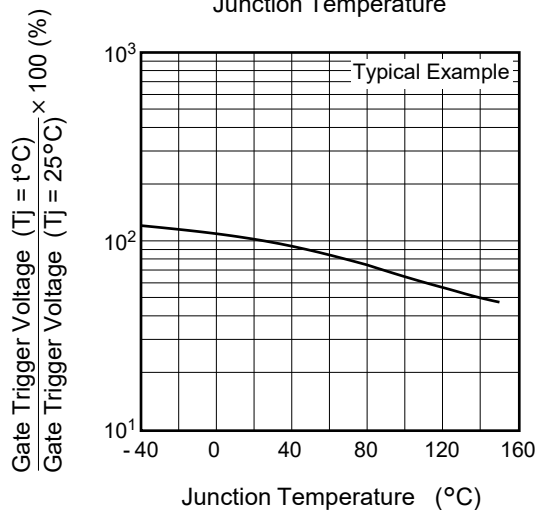
Gate Characteristics



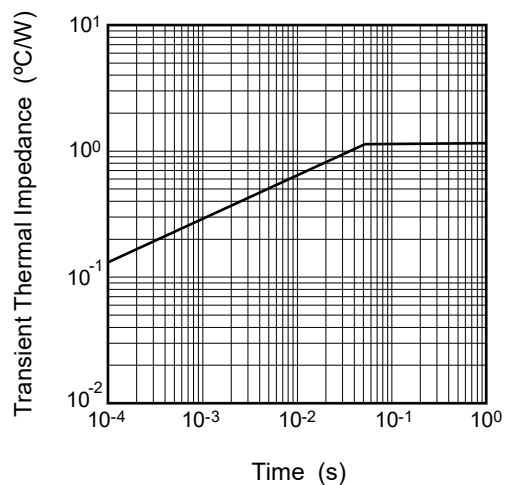
Gate Trigger Current vs. Junction Temperature



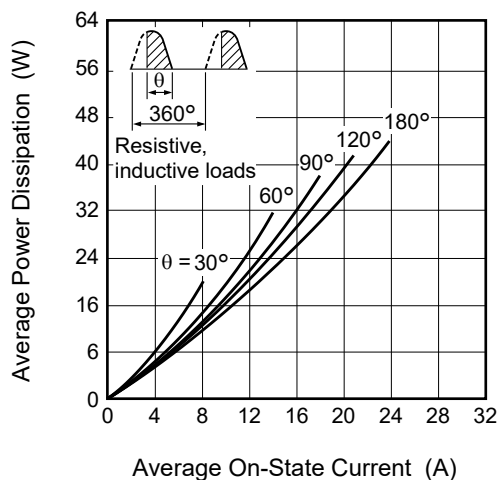
Gate Trigger Voltage vs. Junction Temperature



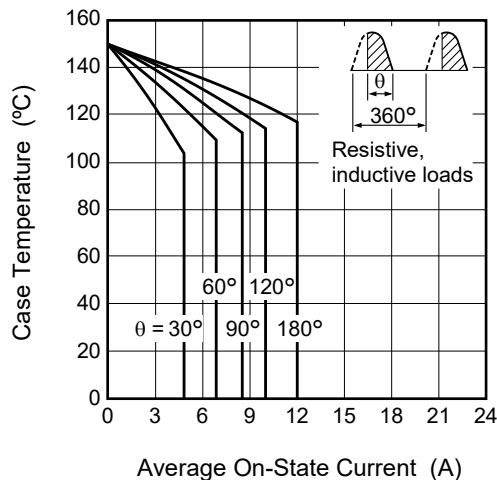
Maximum Transient Thermal Impedance Characteristics (Junction to case)



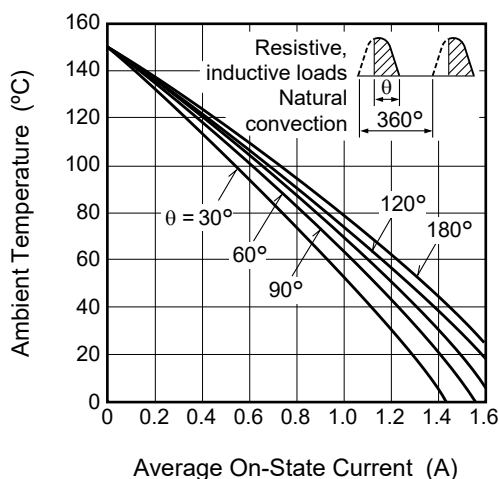
Maximum Average Power Dissipation
(Single-Phase Half Wave)



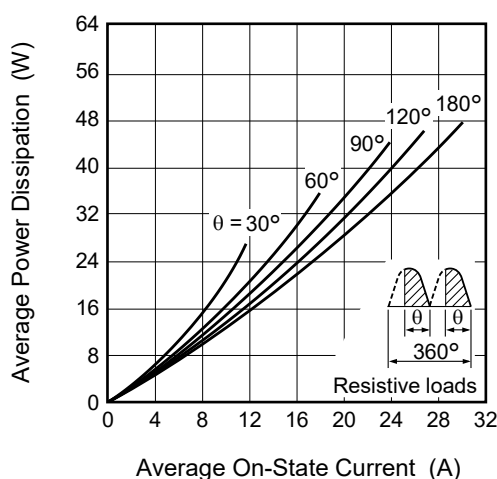
Allowable Case Temperature vs.
Average On-State Current
(Single-Phase Half Wave)



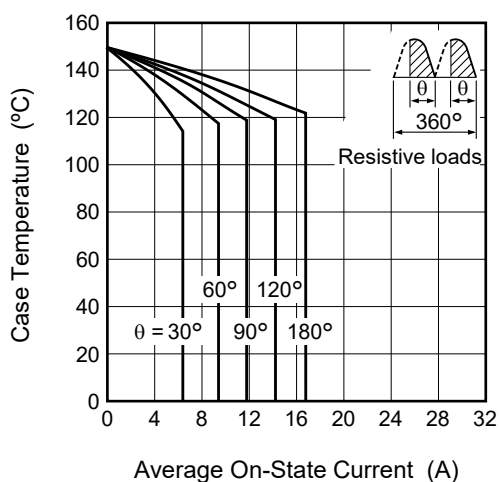
Allowable Ambient Temperature vs.
Average On-State Current
(Single-Phase Half Wave)



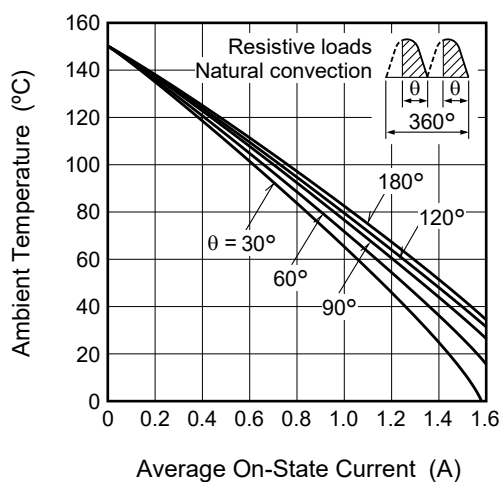
Maximum Average Power Dissipation
(Single-Phase Full Wave)

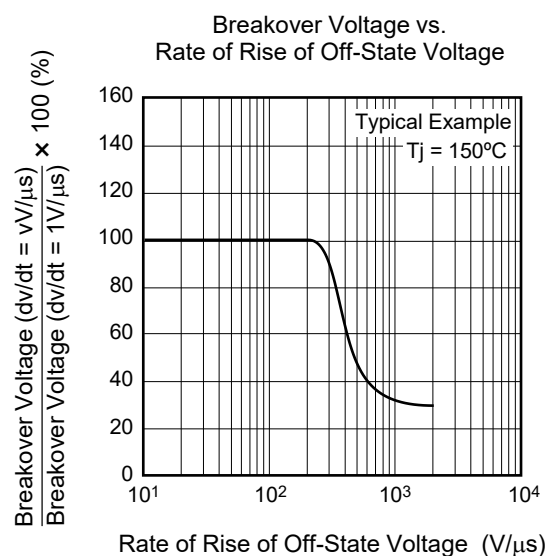
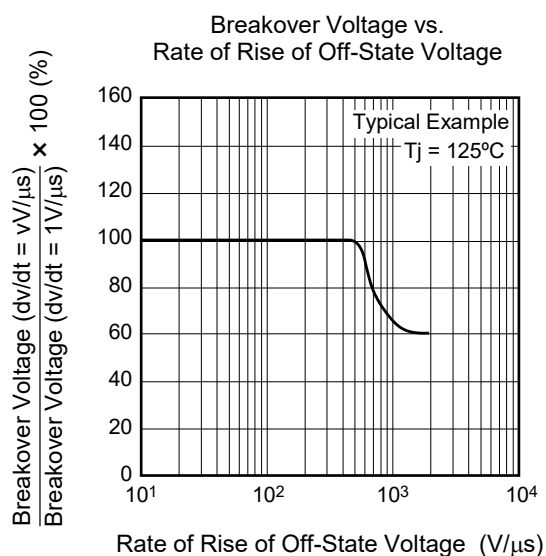
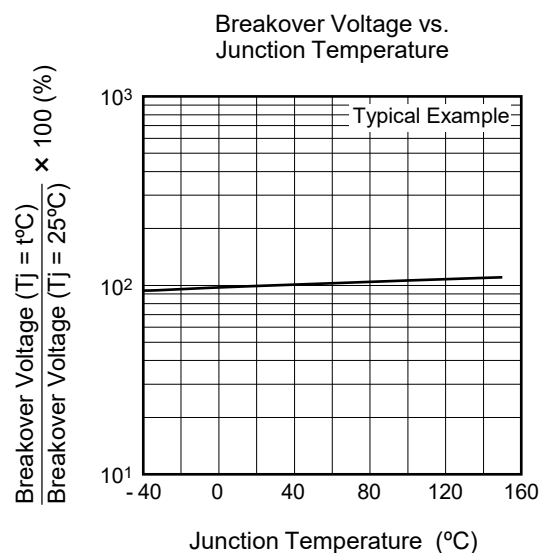
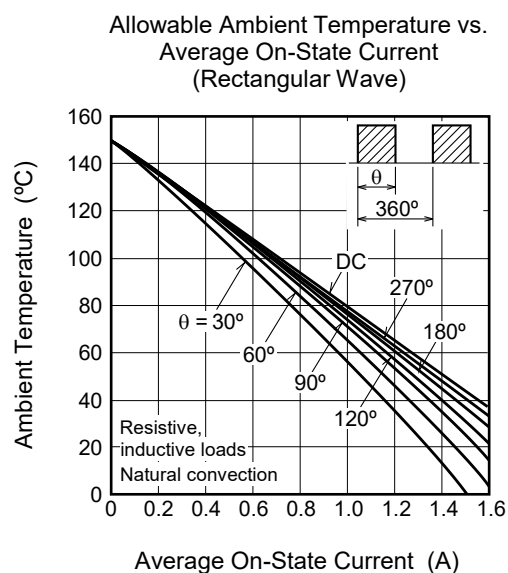
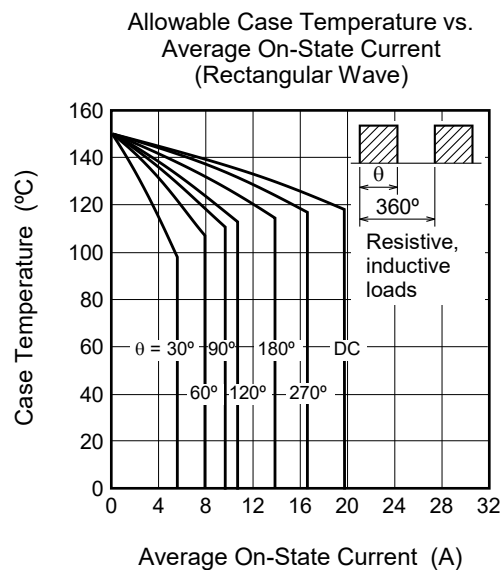
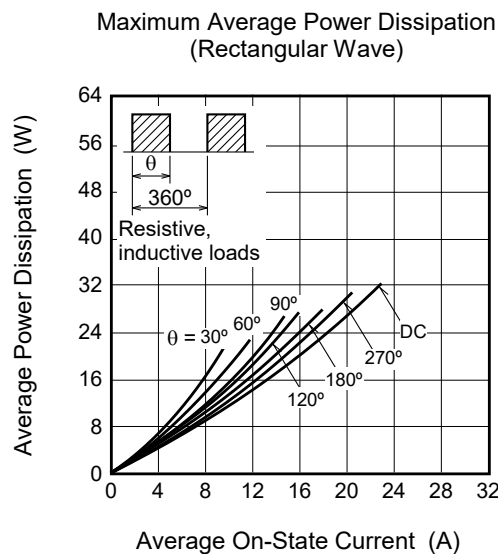


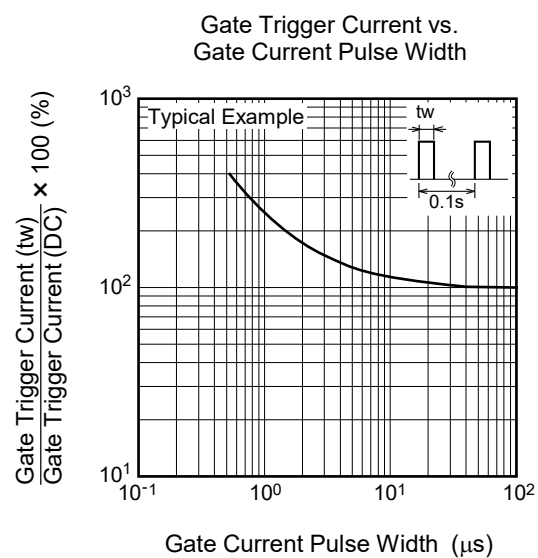
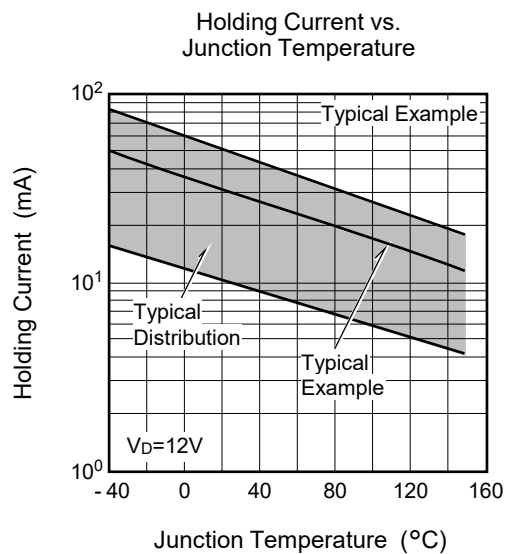
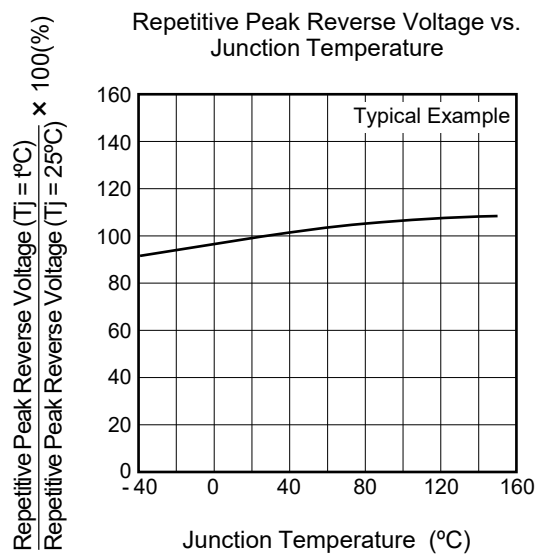
Allowable Case Temperature vs.
Average On-State Current
(Single-Phase Full Wave)



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

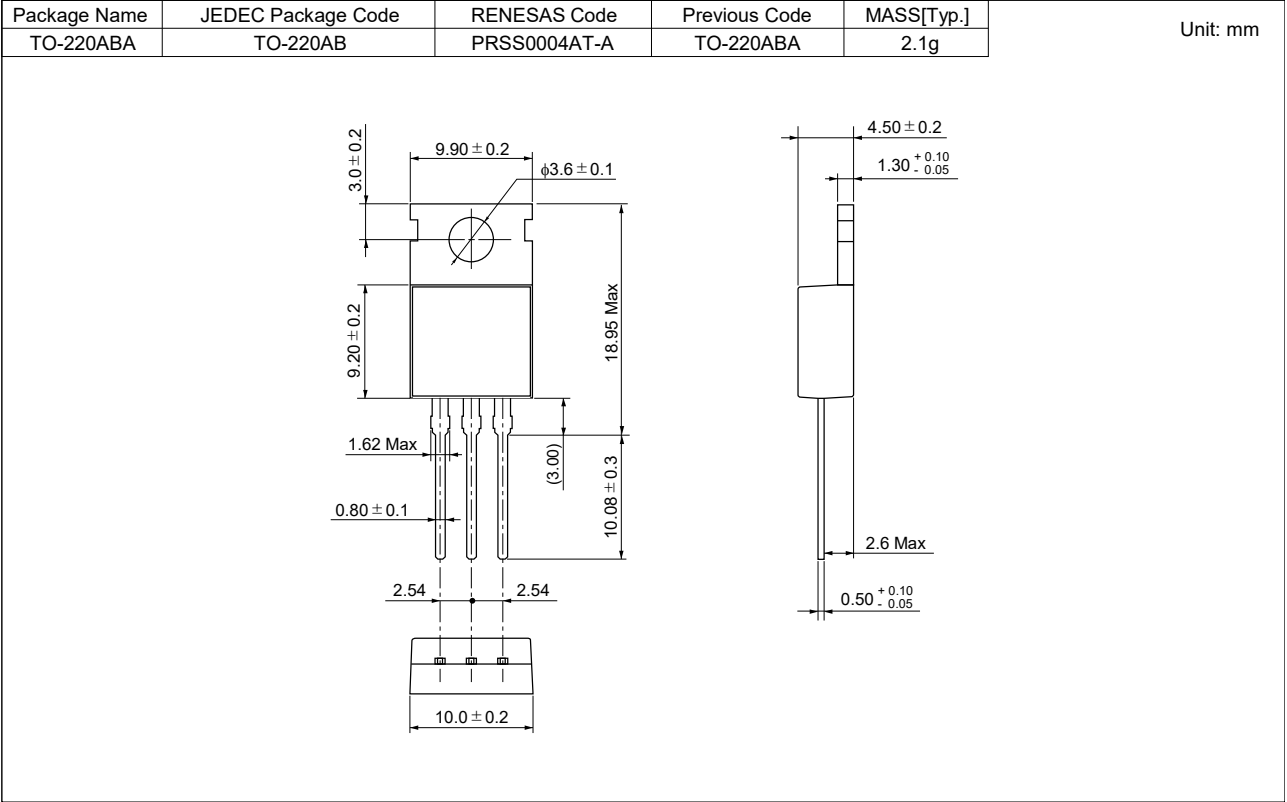




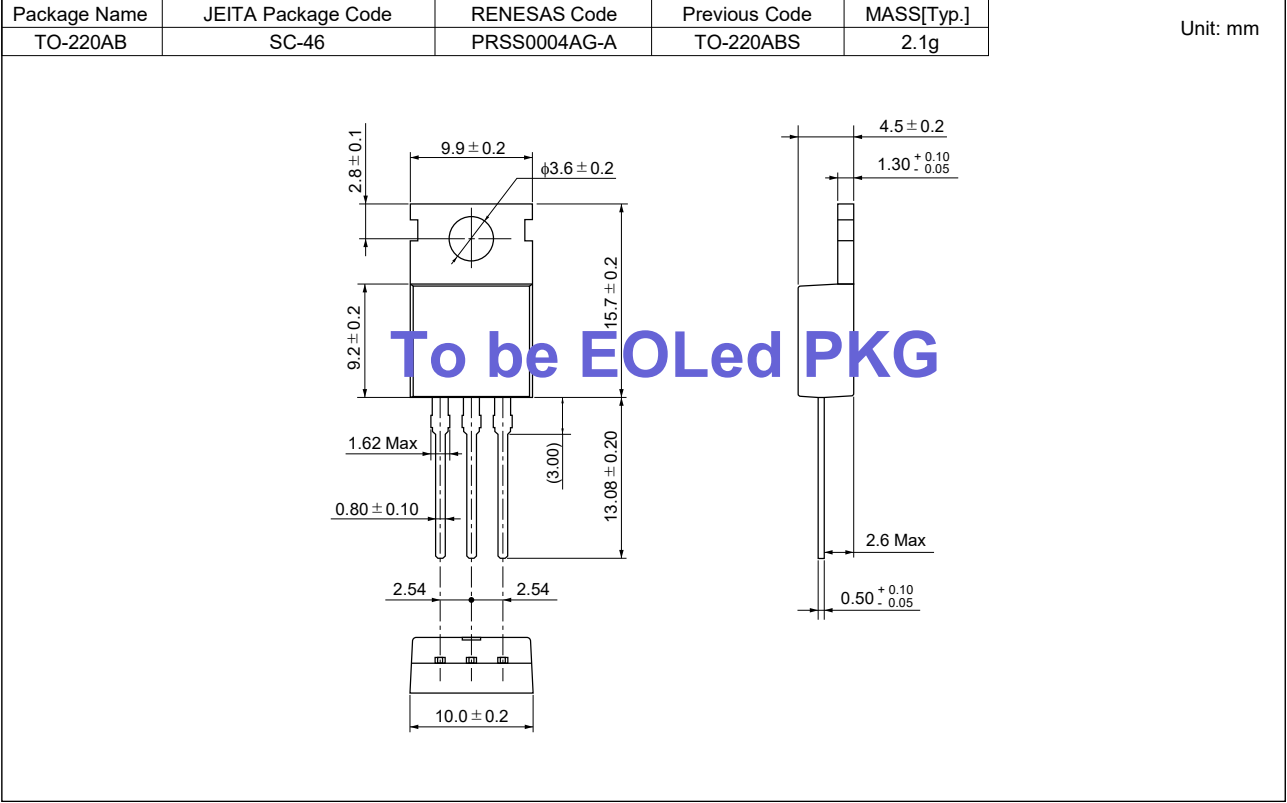


Package Dimensions

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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