

CR12AM

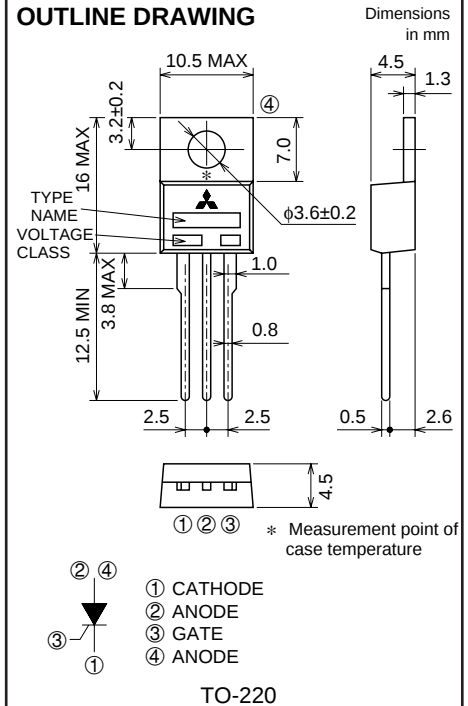
MEDIUM POWER USE
NON-INSULATED TYPE, GLASS PASSIVATION TYPE

CR12AM



- I_T (AV) 12A
- V_{DRM} 400V/600V
- I_{GT} 30mA

OUTLINE DRAWING



APPLICATION

Switching mode power supply, ECR, motor control

MAXIMUM RATINGS

Symbol	Parameter	Voltage class		Unit
		8	12	
V_{RRM}	Repetitive peak reverse voltage	400	600	V
V_{RSM}	Non-repetitive peak reverse voltage	500	720	V
V_R (DC)	DC reverse voltage	320	480	V
V_{DRM}	Repetitive peak off-state voltage	400	600	V
V_D (DC)	DC off-state	320	480	V

Symbol	Parameter	Conditions	Ratings	Unit
I_T (RMS)	RMS on-state current		18.8	A
I_T (AV)	Average on-state current	Commercial frequency, sine half wave, 180° conduction, $T_c=91^\circ\text{C}$	12.0	A
I_{TSM}	Surge on-state current	60Hz sine half wave 1 full cycle, peak value, non-repetitive	360	A
I^2_t	I^2_t for fusing	Value corresponding to 1 cycle of half wave 60Hz, surge on-state current	544	A ² s
PGM	Peak gate power dissipation		5	W
PG (AV)	Average gate power dissipation		0.5	W
V_{FGM}	Peak gate forward voltage		6	V
V_{RGM}	Peak gate reverse voltage		10	V
I_{FGM}	Peak gate forward current		2	A
T_j	Junction temperature		-40 ~ +125	°C
T_{stg}	Storage temperature		-40 ~ +125	°C
—	Weight	Typical value	2.0	g

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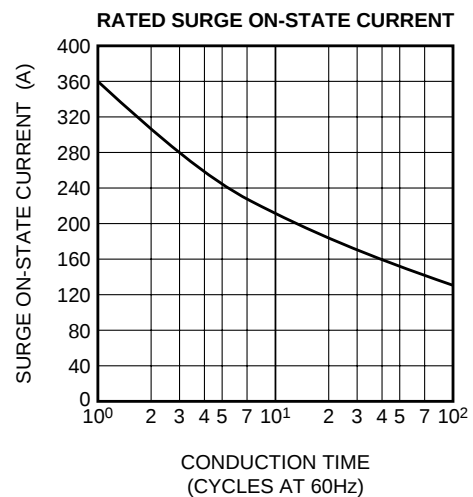
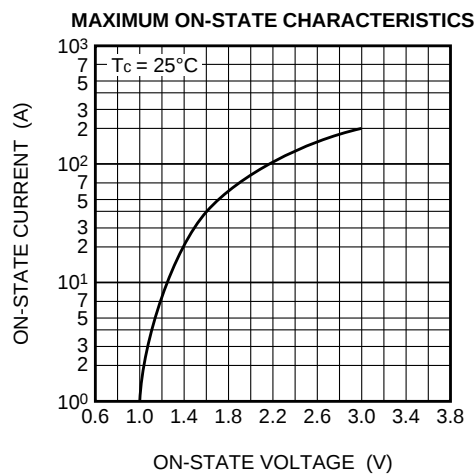
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ELECTRICAL CHARACTERISTICS

Symbol	Parameter	Test conditions	Limits			Unit
			Min.	Typ.	Max.	
IRRM	Repetitive peak reverse current	$T_J=125^{\circ}\text{C}$, V_{RRM} applied	—	—	2.0	mA
IDRM	Repetitive peak off-state current	$T_J=125^{\circ}\text{C}$, V_{DRM} applied	—	—	2.0	mA
V_{TM}	On-state voltage	$T_c=25^{\circ}\text{C}$, $I_{TM}=40\text{A}$,	—	—	1.6	V
V_{GT}	Gate trigger voltage	$T_J=25^{\circ}\text{C}$, $V_D=6\text{V}$, $I_T=1\text{A}$	—	—	1.5	V
V_{GD}	Gate non-trigger voltage	$T_J=125^{\circ}\text{C}$, $V_D=1/2V_{DRM}$	0.2	—	—	V
I_{GT}	Gate trigger current	$T_J=25^{\circ}\text{C}$, $V_D=6\text{V}$, $I_T=1\text{A}$	—	—	30	mA
I_H	Holding current	$T_J=25^{\circ}\text{C}$, $V_D=12\text{V}$	—	15	—	mA
$R_{th(j-c)}$	Thermal resistance	Junction to case *1	—	—	1.2	$^{\circ}\text{C/W}$

*1. The contact thermal resistance $R_{th(j-c)}$ is 1.0°C/W with greased.

PERFORMANCE CURVES

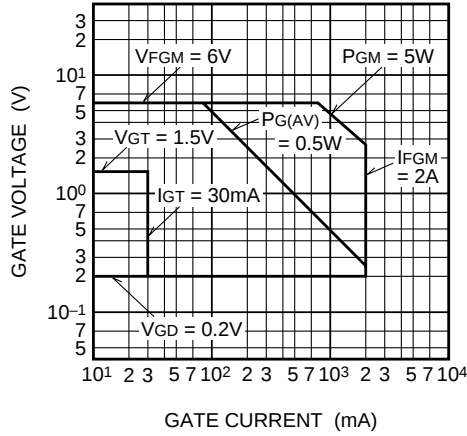


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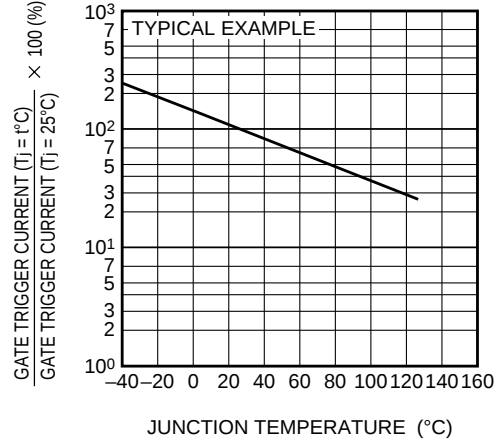
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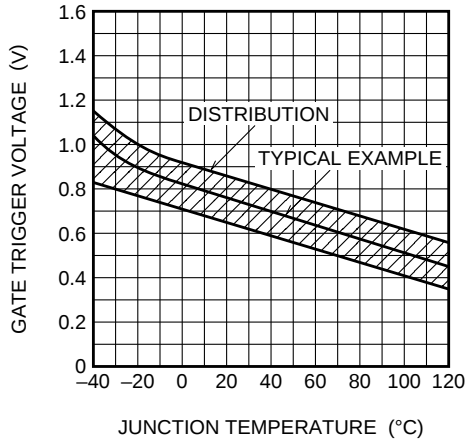
GATE CHARACTERISTICS



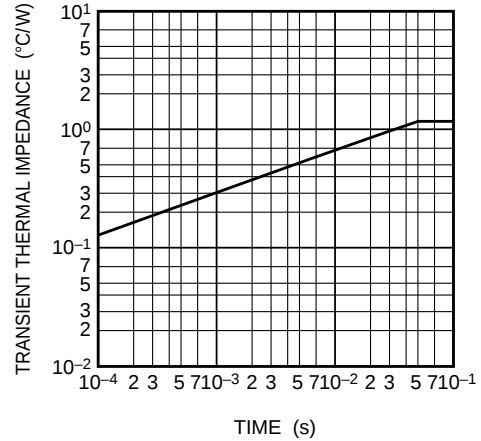
GATE TRIGGER CURRENT VS. JUNCTION TEMPERATURE



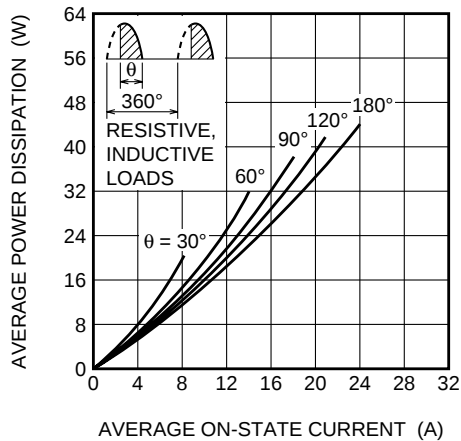
GATE TRIGGER VOLTAGE VS. JUNCTION TEMPERATURE



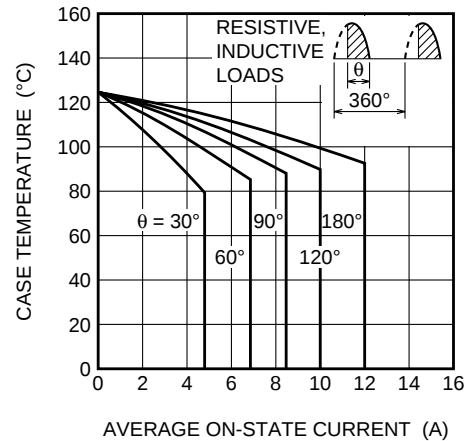
MAXIMUM TRANSIENT THERMAL IMPEDANCE CHARACTERISTICS (JUNCTION TO CASE)



MAXIMUM AVERAGE POWER DISSIPATION (SINGLE-PHASE HALF WAVE)



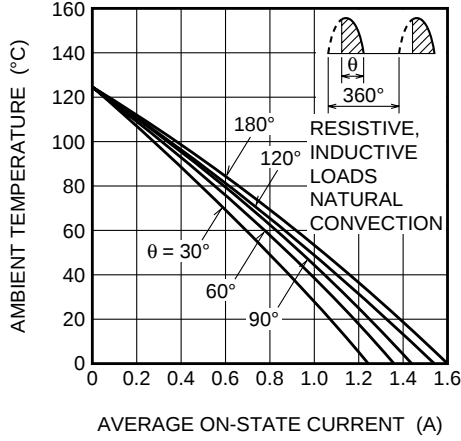
ALLOWABLE CASE TEMPERATURE VS. AVERAGE ON-STATE CURRENT (SINGLE-PHASE HALF WAVE)



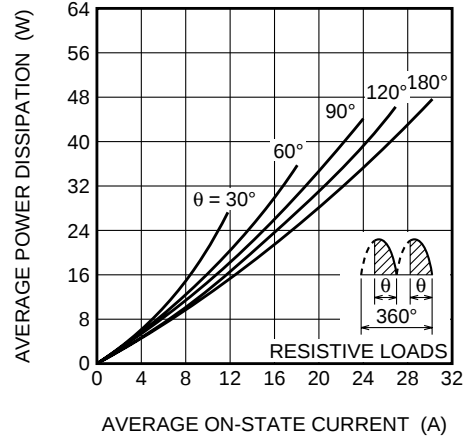
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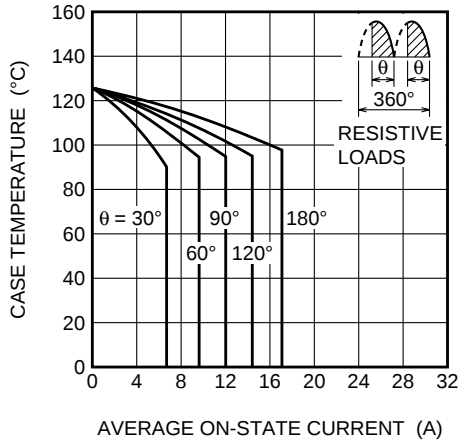
ALLOWABLE AMBIENT TEMPERATURE VS.
AVERAGE ON-STATE CURRENT
(SINGLE-PHASE HALF WAVE)



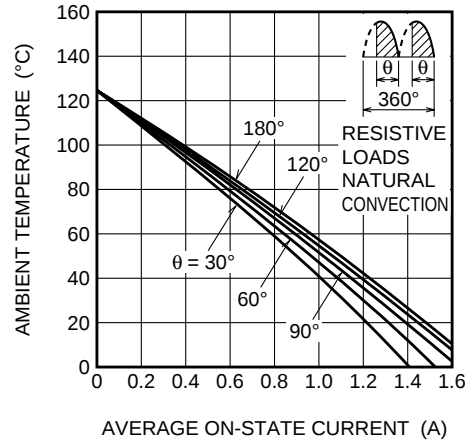
MAXIMUM AVERAGE POWER DISSIPATION
(SINGLE-PHASE FULL WAVE)



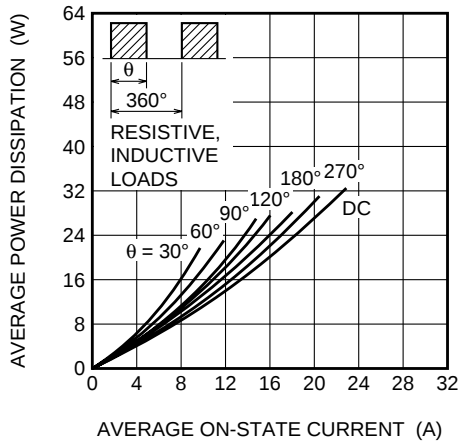
ALLOWABLE CASE TEMPERATURE VS.
AVERAGE ON-STATE CURRENT
(SINGLE-PHASE FULL WAVE)



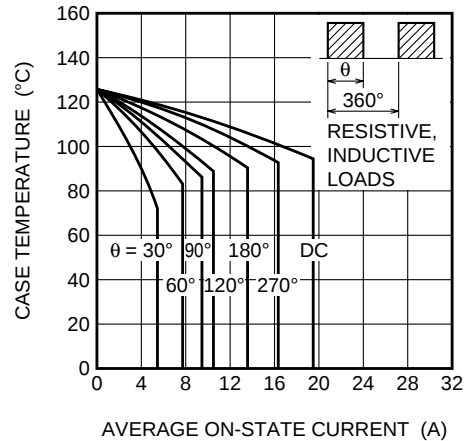
ALLOWABLE AMBIENT TEMPERATURE VS.
AVERAGE ON-STATE CURRENT
(SINGLE-PHASE FULL WAVE)



MAXIMUM AVERAGE POWER DISSIPATION
(RECTANGULAR WAVE)



ALLOWABLE CASE TEMPERATURE VS.
AVERAGE ON-STATE CURRENT
(RECTANGULAR WAVE)

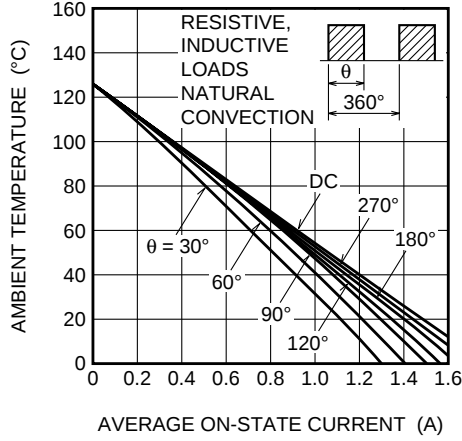


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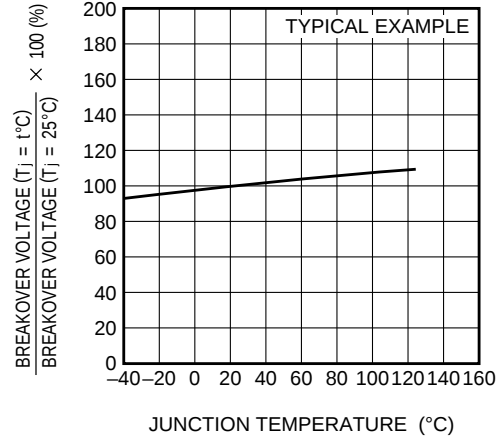
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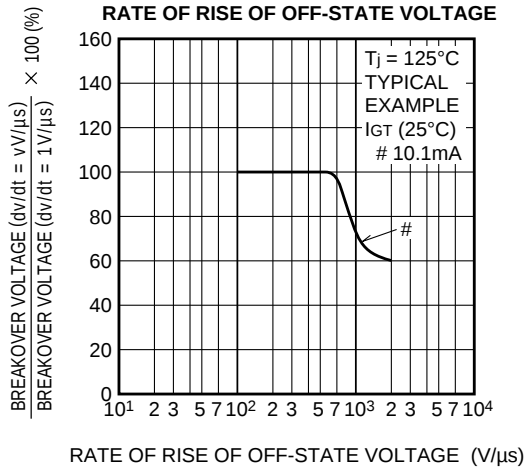
**ALLOWABLE AMBIENT TEMPERATURE VS.
AVERAGE ON-STATE CURRENT
(RECTANGULAR WAVE)**



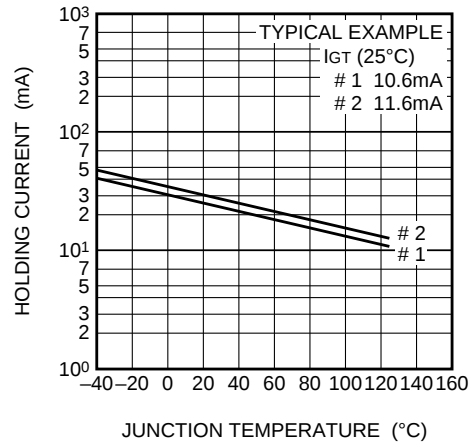
**BREAKOVER VOLTAGE VS.
JUNCTION TEMPERATURE**



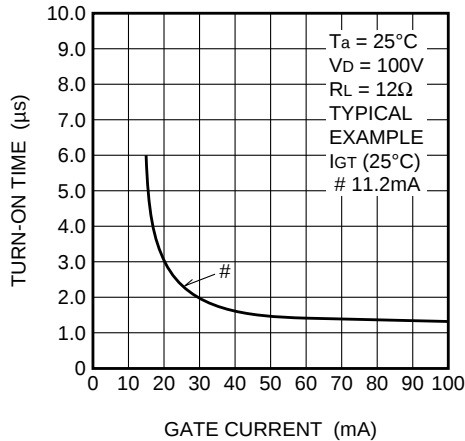
**BREAKOVER VOLTAGE VS.
RATE OF RISE OF OFF-STATE VOLTAGE**



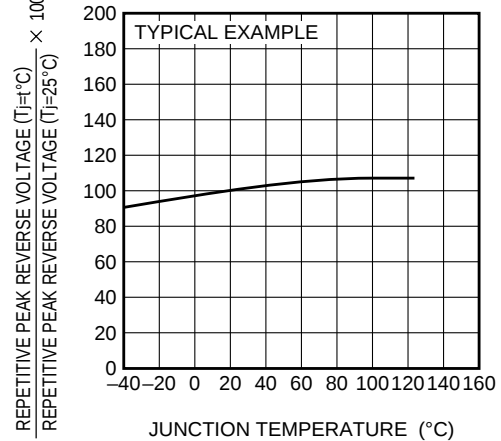
**HOLDING CURRENT VS.
JUNCTION TEMPERATURE**



TURN-ON TIME VS. GATE CURRENT



**REPETITIVE PEAK REVERSE VOLTAGE VS.
JUNCTION TEMPERATURE**



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