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MITSUBISHI SEMICONDUCTOR (THYRISTOR)

CR10C

MEDIUM POWER USE

NON-INSULATED TYPE, GLASS PASSIVATION TYPE

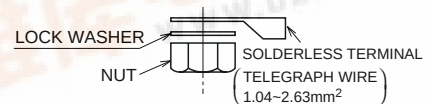
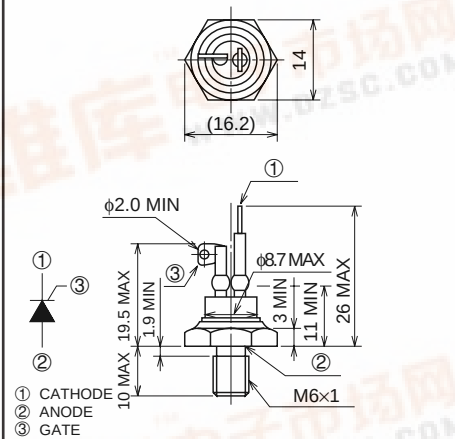
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- I_T (AV) 10A
- V_{DRM} 400V/600V/800V
- I_{GT} 30mA

OUTLINE DRAWING

Dimensions
in mm



Note: Mica washer and spacer are provided only upon request.

APPLICATION

DC motor control, electric furnace control, static switches, DC supply

MAXIMUM RATINGS

Symbol	Parameter	Voltage class			Unit
		8	12	16	
VRRM	Repetitive peak reverse voltage	400	600	800	V
VRSM	Non-repetitive peak reverse voltage	500	720	960	V
VDRM	Repetitive peak off-state voltage	400	600	800	V

Symbol	Parameter	Conditions	Ratings	Unit
I_T (RMS)	RMS on-state current		15.5	A
I_T (AV)	Average on-state current	Commercial frequency, sine half wave, 180° conduction, $T_c=84^\circ\text{C}$	10	A
I_{TSM}	Surge on-state current	60Hz sine half wave 1 full cycle, peak value, non-repetitive	200	A
I^2_t	I^2_t for fusing	Value corresponding to 1 cycle of half wave 60Hz, surge on-state current	165	A ² s
di/dt	Critical rate of rise of on-state current	$V_D=1/2V_{DRM}$, $I_{TM}=30\text{A}$, $I_G=0.1\text{A}$, $T_j=25^\circ\text{C}$, $f=60\text{Hz}$	100	A/ μs
PGM	Peak gate power dissipation		5.0	W
PG (AV)	Average gate power dissipation		0.5	W
VFGM	Peak gate forward voltage		10	V
VRGM	Peak gate reverse voltage		5	V
IFGM	Peak gate forward current		2	A
T_j	Junction temperature		-30 ~ +125	°C
T_{stg}	Storage temperature		-30 ~ +125	°C
—	Mounting torque		30	kg·cm
—	Weight	Typical value	2.94	N·cm
—			8.8	g

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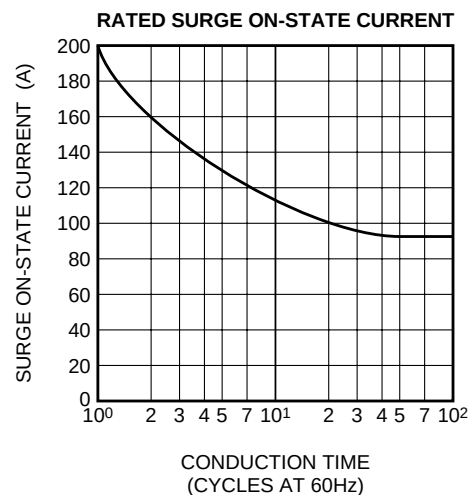
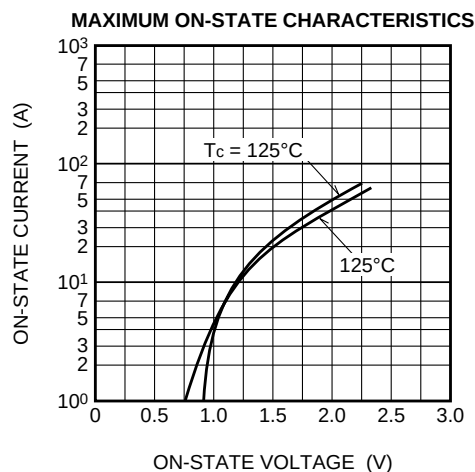
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ELECTRICAL CHARACTERISTICS

Symbol	Parameter	Test conditions	Limits			Unit
			Min.	Typ.	Max.	
I_{RRM}	Repetitive peak reverse current	$T_J=125^{\circ}\text{C}$, V_{RRM} applied	—	—	3.0	mA
I_{DRM}	Repetitive peak off-state current	$T_J=125^{\circ}\text{C}$, V_{DRM} applied	—	—	3.0	mA
V_{TM}	On-state voltage	$T_c=25^{\circ}\text{C}$, $I_{TM}=30\text{A}$, Instantaneous value	—	—	1.6	V
dv/dt	Critical-rate of rise of off-state voltage	$T_J=125^{\circ}\text{C}$, $V_D=2/3V_{DRM}$	20	—	—	V/ μs
V_{GT}	Gate trigger voltage	$T_J=25^{\circ}\text{C}$, $V_D=6\text{V}$, $I_T=0.5\text{A}$	—	—	2.5	V
V_{GD}	Gate non-trigger voltage	$T_J=125^{\circ}\text{C}$, $V_D=1/2V_{DRM}$	0.25	—	—	V
I_{GT}	Gate trigger current	$T_J=25^{\circ}\text{C}$, $V_D=6\text{V}$, $I_T=0.5\text{A}$	—	—	30	mA
t_{gt}	Turn-on time	$T_c=25^{\circ}\text{C}$, $V_D=100\text{V}$, $I_T=10\text{A}$, $I_G=0.1\text{A}$	—	—	10	μs
$R_{th(j-c)}$	Thermal resistance	Junction to case	—	—	2.0	$^{\circ}\text{C}/\text{W}$
$R_{th(j-c)}$	Contact thermal resistance	Case to fin, greased	—	—	0.55	$^{\circ}\text{C}/\text{W}$

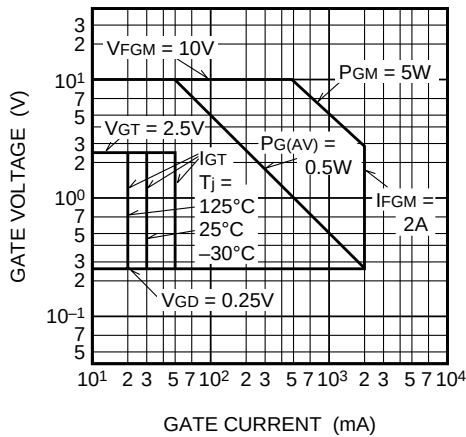
PERFORMANCE CURVES



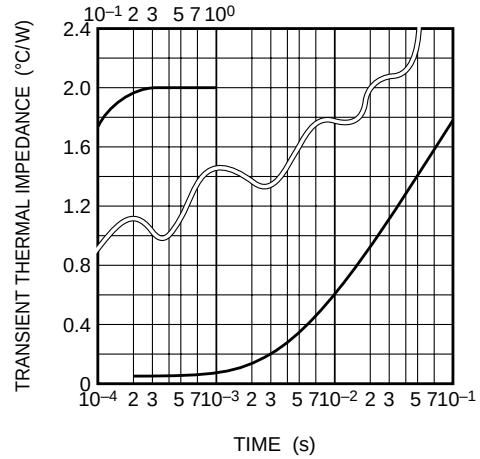
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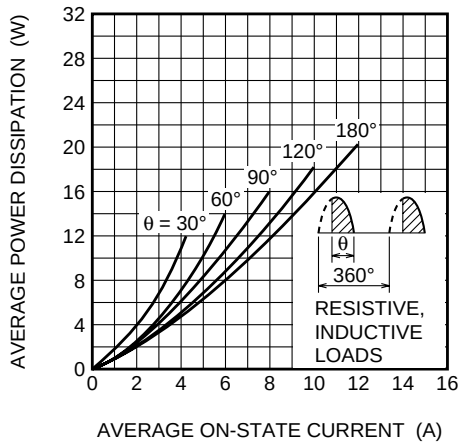
GATE CHARACTERISTICS



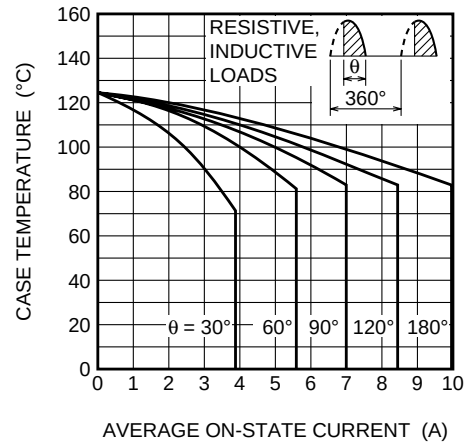
MAXIMUM TRANSIENT THERMAL IMPEDANCE CHARACTERISTICS (JUNCTION TO CASE)



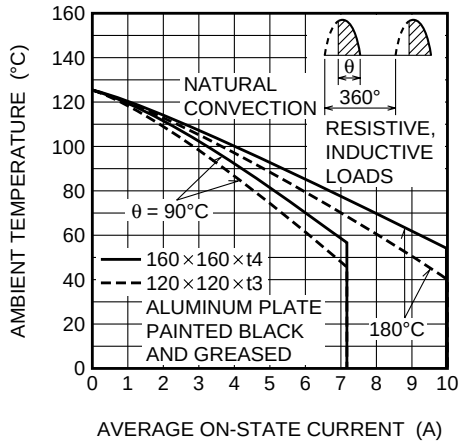
MAXIMUM AVERAGE POWER DISSIPATION (SINGLE-PHASE HALF WAVE)



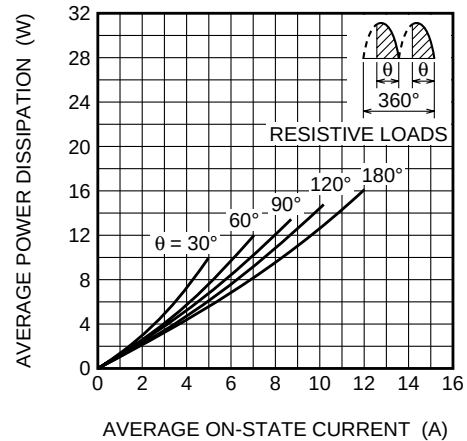
ALLOWABLE CASE TEMPERATURE VS. AVERAGE ON-STATE CURRENT (SINGLE-PHASE HALF WAVE)



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



MAXIMUM AVERAGE POWER DISSIPATION (SINGLE-PHASE FULL WAVE)

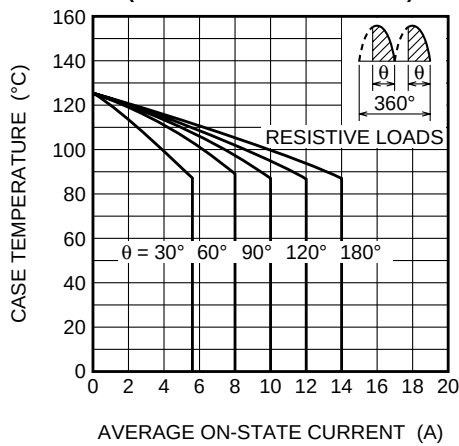


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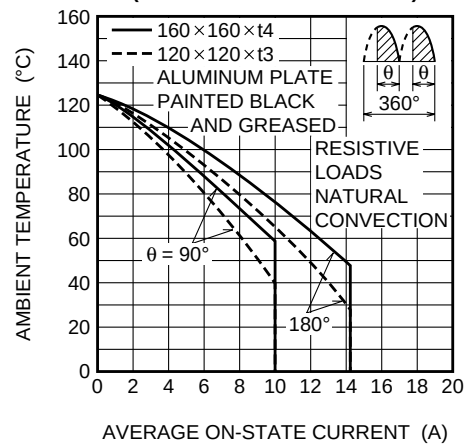
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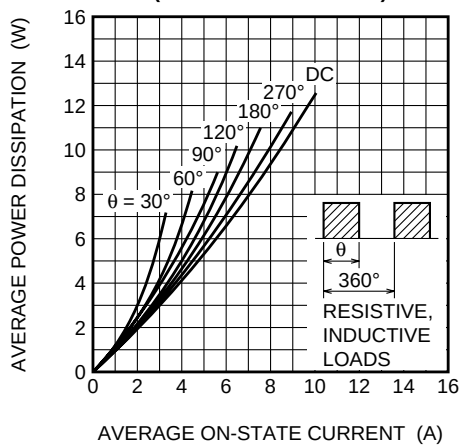
ALLOWABLE CASE TEMPERATURE VS.
AVERAGE ON-STATE CURRENT
(SINGLE-PHASE FULL WAVE)



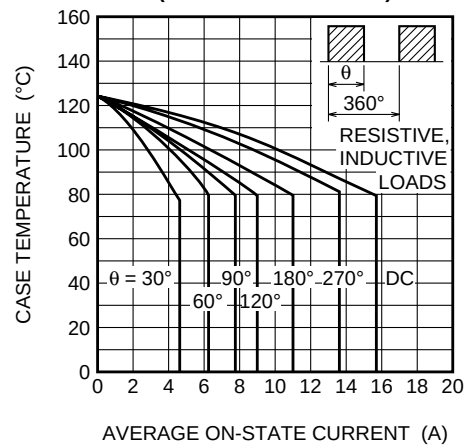
ALLOWABLE AMBIENT TEMPERATURE VS.
AVERAGE ON-STATE CURRENT
(SINGLE-PHASE FULL WAVE)



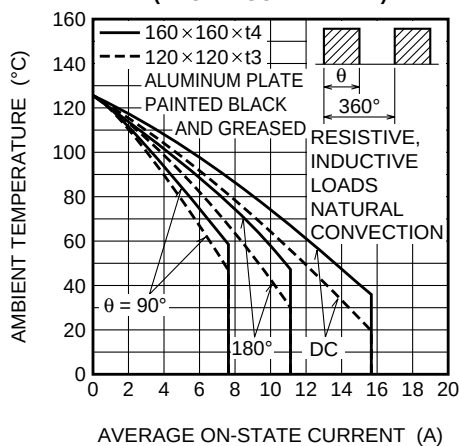
MAXIMUM AVERAGE POWER DISSIPATION
(RECTANGULAR WAVE)



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



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



GATE TRIGGER CURRENT VS.
GATE CURRENT PULSE WIDTH

