CR20F

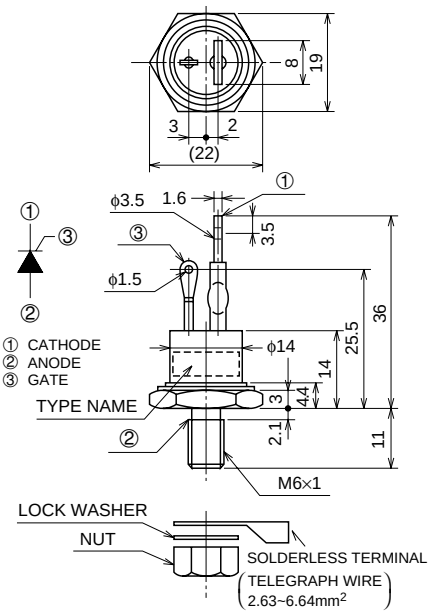
MEDIUM POWER USE

NON-INSULATED TYPE, GLASS PASSIVATION TYPE

CR20F

- **$I_{T\,(AV)}$ 20A**
- **V_{DRM} 400V/600V/800V/1000V/1200V**
- **I_{GT} 50mA**

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	20	24	
V_{RRM}	Repetitive peak reverse voltage	400	600	800	1000	1200	V
V_{RSM}	Non-repetitive peak reverse voltage	480	720	960	1200	1350	V
$V_{R\,(DC)}$	DC reverse voltage	320	480	640	800	960	V
V_{DRM}	Repetitive peak off-state voltage	400	600	800	1000	1200	V
V_{DSM}	Non-repetitive peak off-state voltage	480	720	980	1000	1200	V
$V_{D\,(DC)}$	DC off-state voltage	320	480	640	800	960	V

Symbol	Parameter	Conditions	Ratings	Unit
$I_{T\,(RMS)}$	RMS on-state current		31.5	A
$I_{T\,(AV)}$	Average on-state current	Commercial frequency, sine half wave, 180° conduction, T_C=86°C	20	A
I_{TSM}	Surge on-state current	60Hz sine half wave 1 full cycle, peak value, non-repetitive	300	A
I^2t	I^2t for fusing	Value corresponding to 1 cycle of half wave 60Hz, surge on-state current	380	A^2s
di/dt	Critical rate of rise of on-state current	V_D=1/2V_{DRM}, I_{TM}=60A, I_G=0.1A. T_j=25°C, f=60Hz	100	A/µs
P_{GM}	Peak gate power dissipation		5.0	W
$P_{G\,(AV)}$	Average gate power dissipation		0.5	W
V_{FGM}	Peak gate forward voltage		10	V
V_{RGM}	Peak gate reverse voltage		5	V
I_{FGM}	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
			2.94	N·m
—	Weight	Typical value	20	g

MITSUBISHI ELECTRIC

CR20F

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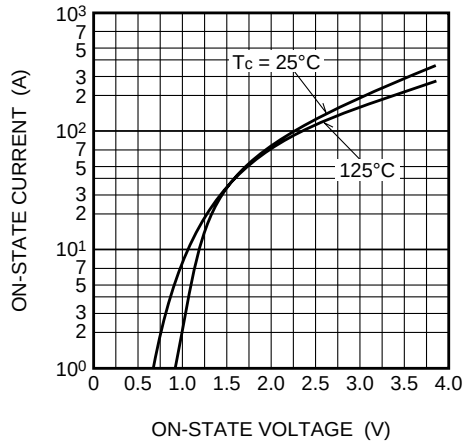
ELECTRICAL CHARACTERISTICS

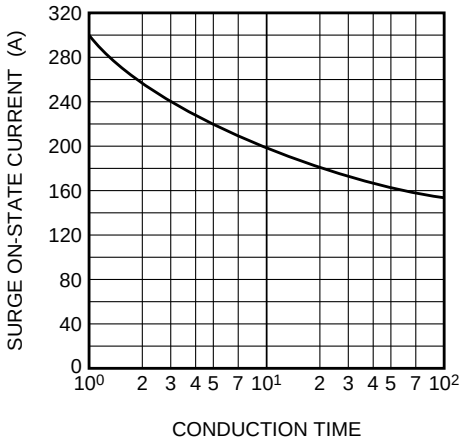
Symbol	Parameter	Test conditions	Limits			Unit
			Min.	Typ.	Max.	
I_{RRM}	Repetitive peak reverse current	T_j=125°C, V_{RRM} applied	—	—	4.0	mA
I_{DRM}	Repetitive peak off-state current	T_j=125°C, V_{DRM} applied	—	—	4.0	mA
V_{TM}	On-state voltage	T_C=25°C, I_{TM}=60A, Instantaneous value	—	—	1.8	V
dv/dt	Critical-rate of rise of off-state voltage	T_j=125°C, V_D=2/3V_{DRM}	50	—	—	V
V_{GT}	Gate trigger voltage	T_j=25°C, V_D=6V, I_T=0.5A	—	—	3.0	V
V_{GD}	Gate non-trigger voltage	T_j=125°C, V_D=1/2V_{DRM}	0.25	—	—	V
I_{GT}	Gate trigger current	T_j=25°C, V_D=6V, I_T=0.5A	—	—	50	mA
t_{gt}	Turn-on time	T_C=25°C, V_D=100V, I_T=15A, I_G=0.1A	—	—	10	µs
$R_{th\ (j-c)}$	Thermal resistance	Junction to case	—	—	1.0	°C/W
$R_{th\ (c-f)}$	Contact thermal resistance	Case to fin	—	—	0.4	°C/W

PERFORMANCE CURVES

MAXIMUM ON-STATE CHARACTERISTICS



RATED SURGE ON-STATE CURRENT

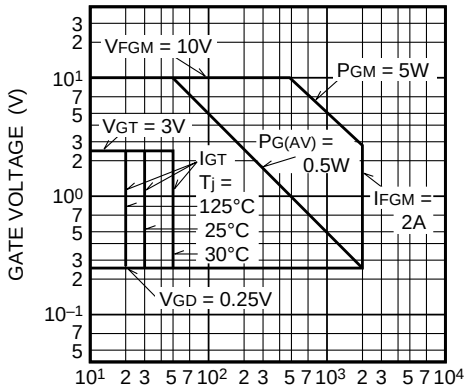


MITSUBISHI ELECTRIC

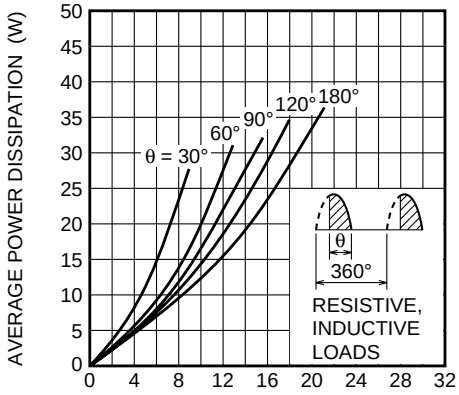
CR20F

MEDIUM POWER USE
NON-INSULATED TYPE, GLASS PASSIVATION TYPE

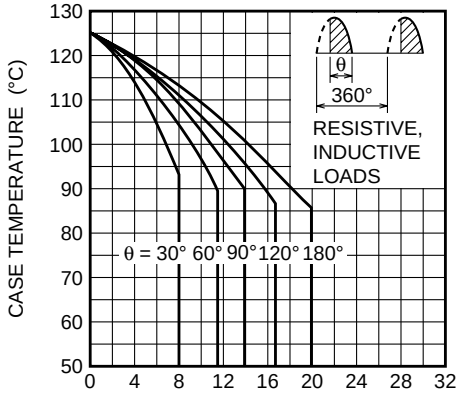
GATE CHARACTERISTICS



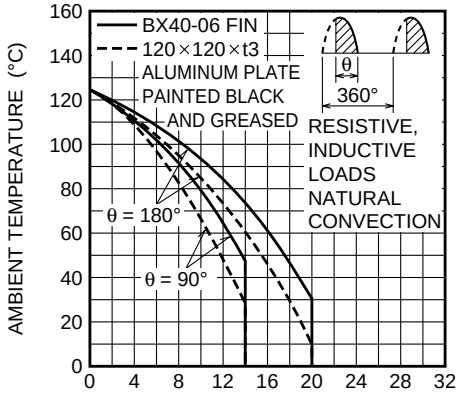
MAXIMUM AVERAGE POWER DISSIPATION (SINGLE-PHASE HALF WAVE)



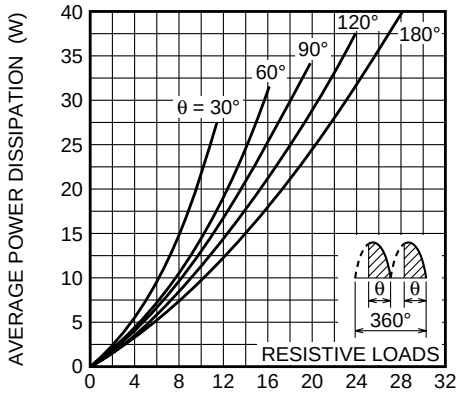
ALLOWABLE CASE TEMPERATURE VS. AVERAGE ON-STATE CURRENT (SINGLE-PHASE HALF WAVE)



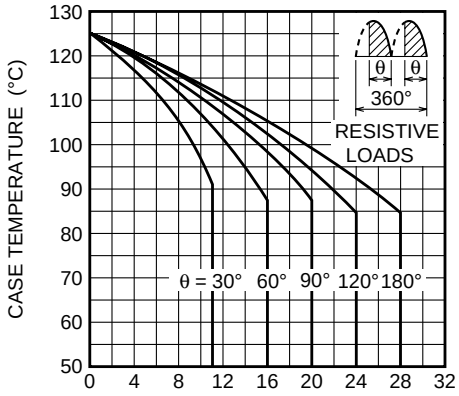
ALLOWABLE AMBIENT TEMPERATURE VS. AVERAGE ON-STATE CURRENT (SINGLE-PHASE HALF WAVE)



MAXIMUM AVERAGE POWER DISSIPATION (SINGLE-PHASE FULL WAVE)



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



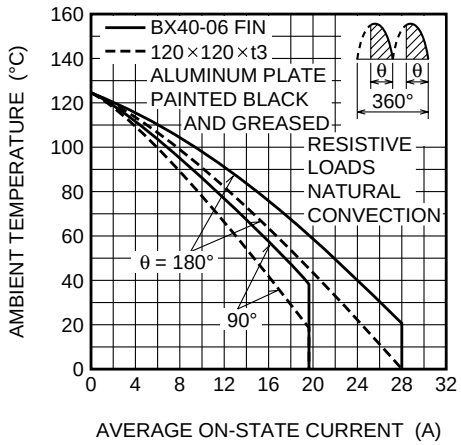
MITSUBISHI ELECTRIC

CR20F

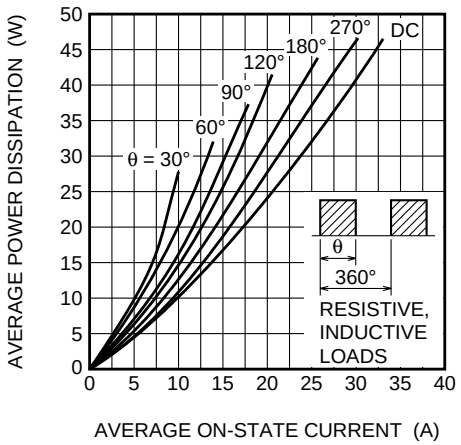
MEDIUM POWER USE

NON-INSULATED TYPE, GLASS PASSIVATION TYPE

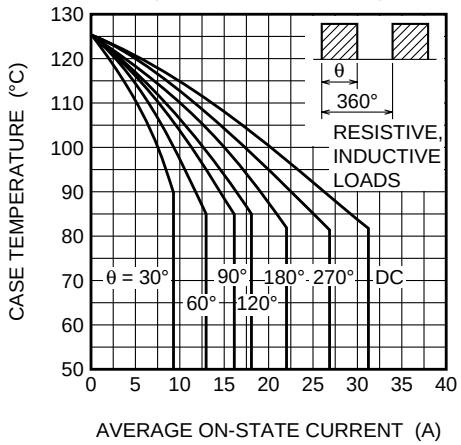
ALLOWABLE AMBIENT TEMPERATURE VS. AVERAGE ON-STATE CURRENT (SINGLE-PHASE FULL WAVE)



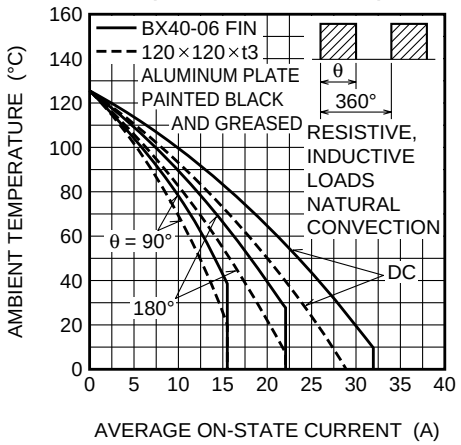
MAXIMUM AVERAGE POWER DISSIPATION (RECTANGULAR WAVE)



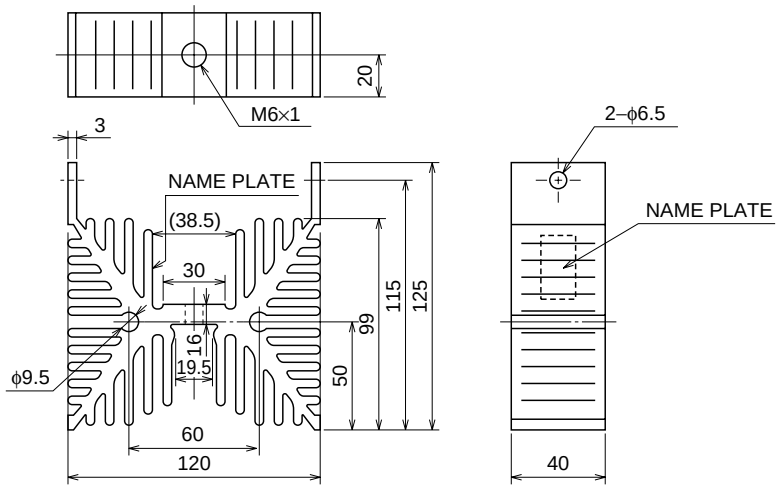
ALLOWABLE CASE TEMPERATURE VS. AVERAGE ON-STATE CURRENT (RECTANGULAR WAVE)



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



CR20F BLOCK FIN BX40-06 OUTLINE DRAWING (Unit: mm)



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