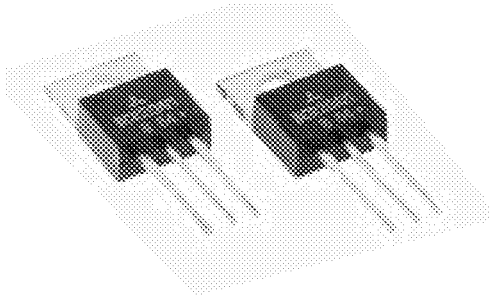


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MEDIUM POWER USE
NON-INSULATED TYPE, PLANAR PASSIVATION TYPE

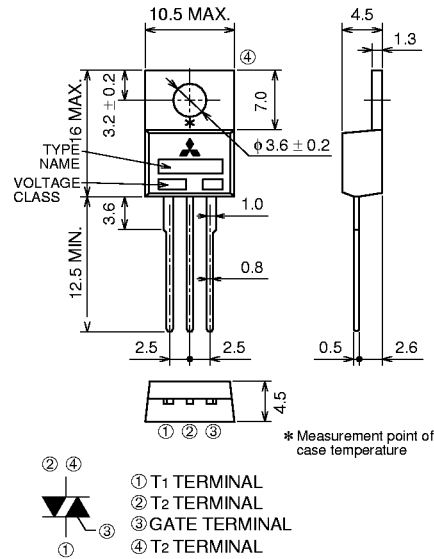
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- I_T (RMS) 20A
- V_{DRM} 400V / 600V
- I_{FGT} I, I_{RGT} I, I_{RGT} III 30mA (20mA) *5

OUTLINE DRAWING

Dimensions in mm



TO-220

APPLICATION

Vacuum cleaner, light dimmer, copying machine, other control of motor and heater

MAXIMUM RATINGS

Symbol	Parameter	Voltage class		Unit
		8	12	
V_{DRM}	Repetitive peak off-state voltage*1	400	600	V
V_{DSM}	Non-repetitive peak off-state voltage*1	500	720	V

Symbol	Parameter	Conditions	Ratings	Unit
I_T (RMS)	RMS on-state current	Commercial frequency, sine full wave, $T_c=105^\circ\text{C}$	20	A
I_{TSM}	Surge on-state current	60Hz sine wave 1 full cycle, peak value, non-repetitive	200	A
I^2t	I^2t for fusing	Value corresponding to 1 cycle of half wave 60Hz, surge on-state current	167	A^2s
P_{GM}	Peak gate power dissipation		5	W
P_G (AV)	Average gate power dissipation		0.5	W
V_{GM}	Peak gate voltage		10	V
I_{GM}	Peak gate current		2	A
T_j	Junction temperature		$-40 \sim +125$	$^\circ\text{C}$
T_{stg}	Storage temperature		$-40 \sim +125$	$^\circ\text{C}$
—	Weight	Typical value	2.0	g

*1. Gate open.

Feb.1999

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MEDIUM POWER USE

NON-INSULATED TYPE, PLANAR PASSIVATION TYPE

ELECTRICAL CHARACTERISTICS

Symbol	Parameter	Test conditions	Limits			Unit
			Min.	Typ.	Max.	
IDRM	Repetitive peak off-state current	T _j =125°C, V _{DRM} applied	—	—	2.0	mA
V _{TM}	On-state voltage	T _c =25°C, I _{TM} =30A, Instantaneous measurement	—	—	1.5	V
V _{FGT} I	Gate trigger voltage*2	T _j =25°C, V _D =6V, R _L =6Ω, R _G =330Ω *3	—	—	1.5	V
V _{RGT} I			—	—	1.5	V
V _{RGT} III			—	—	1.5	V
I _{FGT} I	Gate trigger current*2	T _j =25°C, V _D =6V, R _L =6Ω, R _G =330Ω *3	—	—	30 *5	mA
I _{RGT} I			—	—	30 *5	mA
I _{RGT} III			—	—	30 *5	mA
V _{GD}	Gate non-trigger voltage	T _j =125°C, V _D =1/2V _{DRM}	0.2	—	—	V
R _{th} (j-c)	Thermal resistance	Junction to case *4	—	—	0.8	°C/W
(dv/dt) _c	Critical-rate of rise of off-state commutating voltage		*3	—	—	V/μs

*2. Measurement using the gate trigger characteristics measurement circuit.

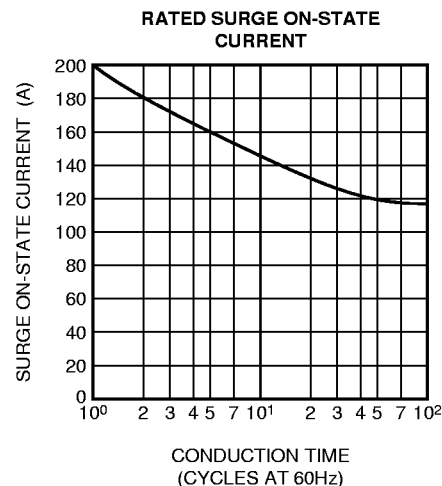
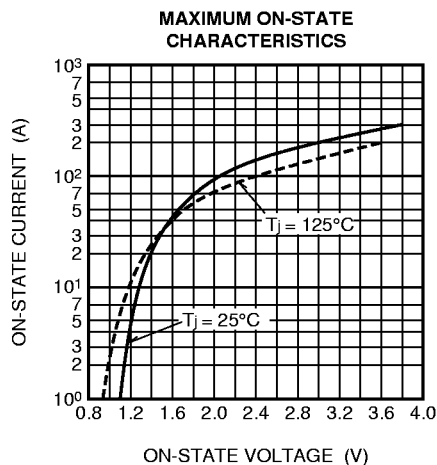
*3. The critical-rate of rise of the off-state commutating voltage is shown in the table below.

*4. The contact thermal resistance R_{th} (c-f) in case of greasing is 1°C/W.

*5. High sensitivity (I_{GT} ≤ 20mA) is also available. (I_{GT} time ①)

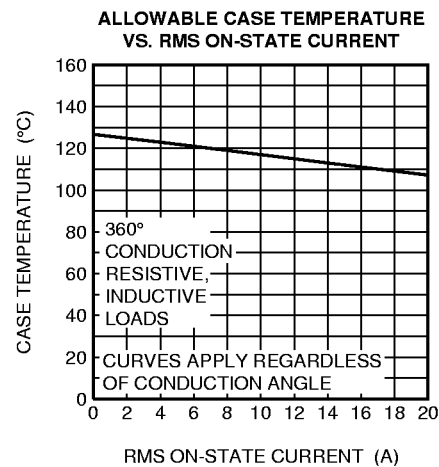
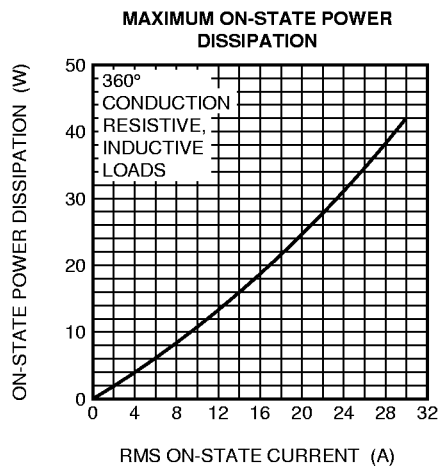
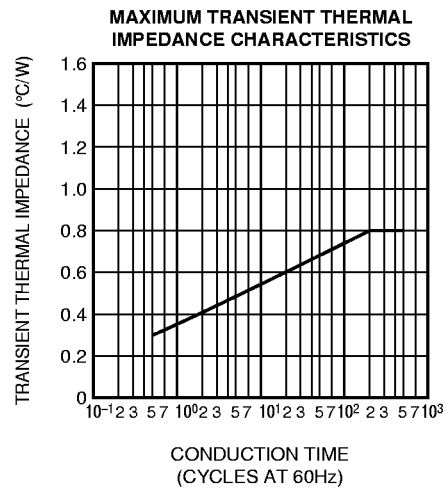
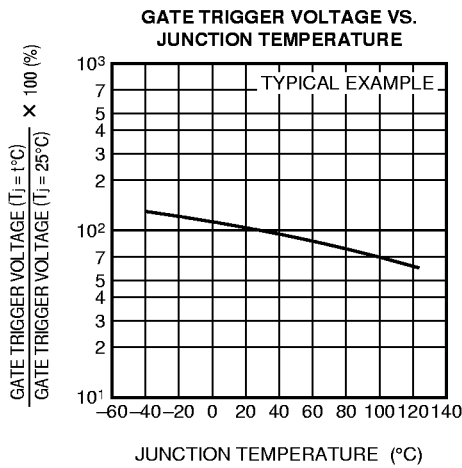
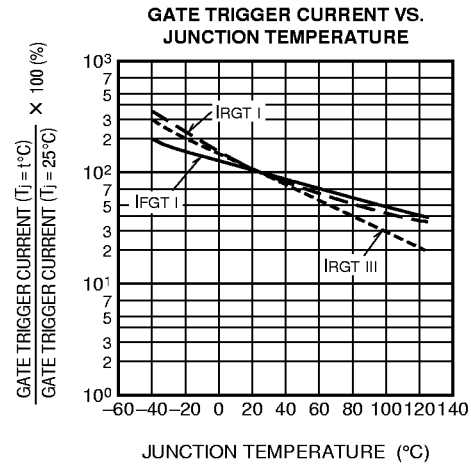
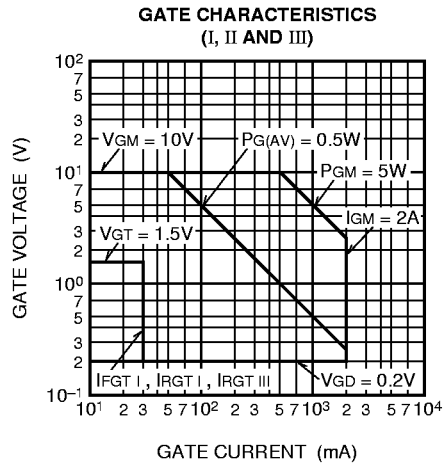
Voltage class	V _{DRM} (V)	(dv/dt) _c			Test conditions	Commutating voltage and current waveforms (inductive load)
		Symbol	Min.	Unit		
8	400	R	—	V/μs	1. Junction temperature T _j =125°C 2. Rate of decay of on-state commutating current (dv/dt) _c =-10A/ms 3. Peak off-state voltage V _D =400V	
		L	10			
12	600	R	—			
		L	10			

PERFORMANCE CURVES



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MEDIUM POWER USE
NON-INSULATED TYPE, PLANAR PASSIVATION TYPE

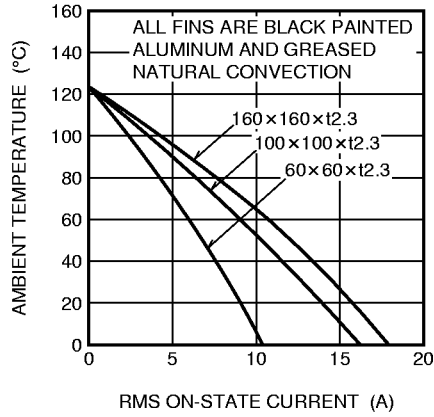


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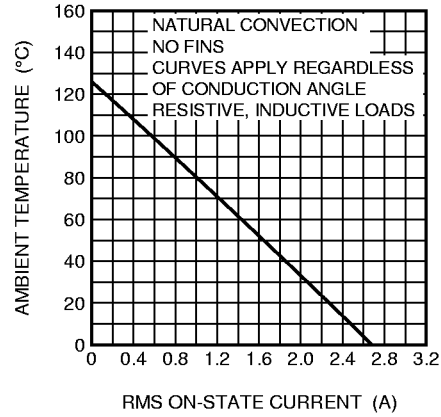
MEDIUM POWER USE

NON-INSULATED TYPE, PLANAR PASSIVATION TYPE

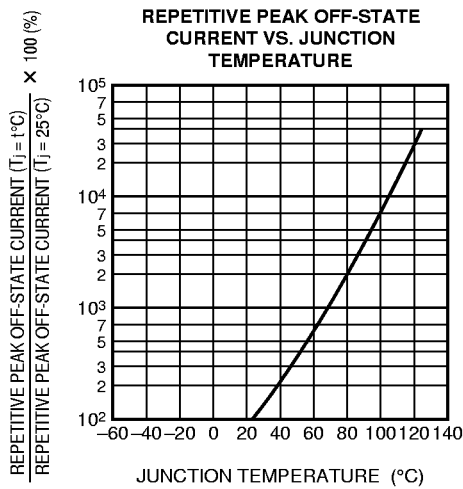
ALLOWABLE CASE TEMPERATURE
VS. RMS ON-STATE CURRENT



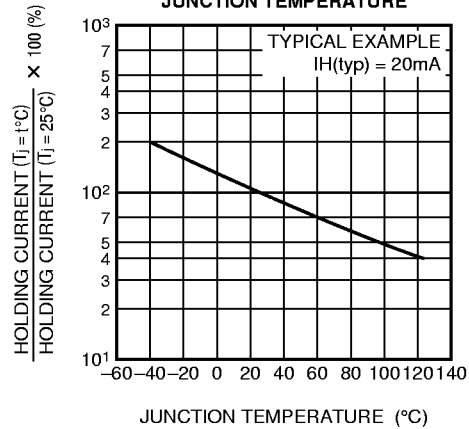
ALLOWABLE CASE TEMPERATURE
VS. RMS ON-STATE CURRENT



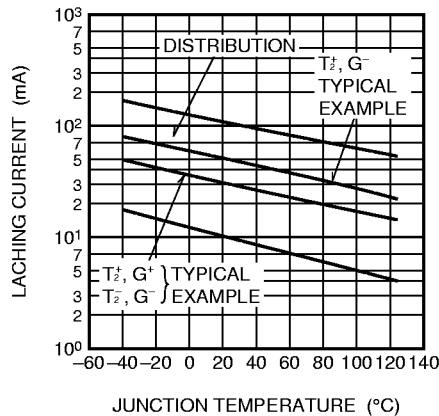
REPETITIVE PEAK OFF-STATE
CURRENT VS. JUNCTION
TEMPERATURE



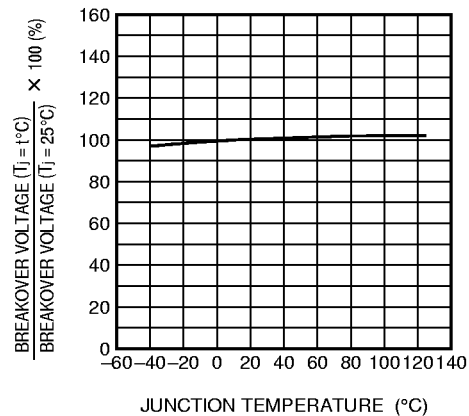
HOLDING CURRENT VS.
JUNCTION TEMPERATURE



LATCHING CURRENT VS.
JUNCTION TEMPERATURE



BREAKOVER VOLTAGE VS.
JUNCTION TEMPERATURE

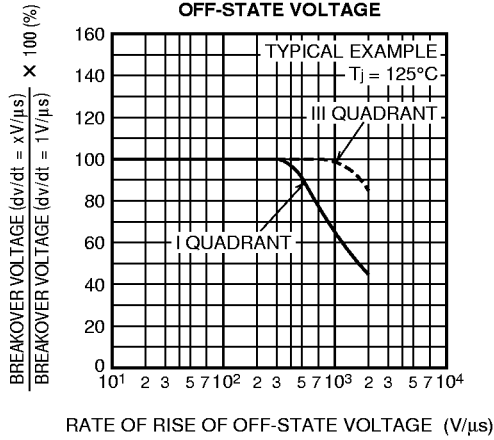


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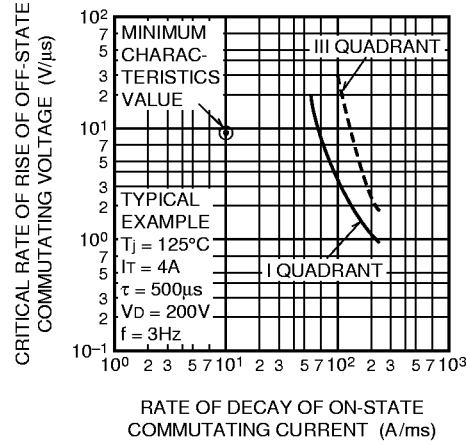
MEDIUM POWER USE

NON-INSULATED TYPE, PLANAR PASSIVATION TYPE

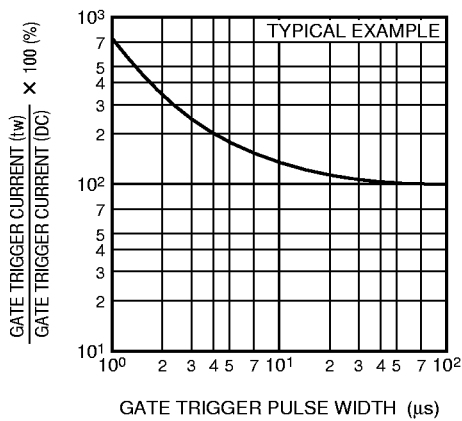
**BREAKEOVER VOLTAGE VS.
RATE OF RISE OF
OFF-STATE VOLTAGE**



COMMUTATION CHARACTERISTICS



**GATE TRIGGER CURRENT VS.
GATE CURRENT PULSE WIDTH**



GATE TRIGGER CHARACTERISTICS TEST CIRCUITS

