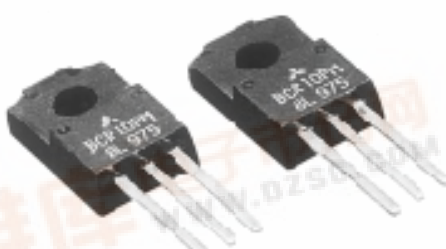


MITSUBISHI SEMICONDUCTOR (TRIAC)

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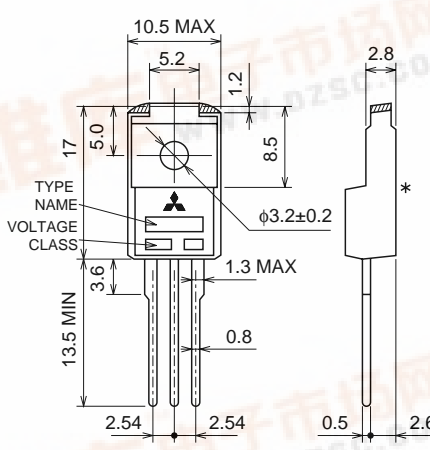
MEDIUM POWER USE
INSULATED TYPE, PLANAR PASSIVATION TYPE

BCR10PM



- **IT (RMS)** **10A**
- **VDRM** **400V/600V**
- **IFGT I, IRGT I, IRGT III** **30mA (20mA) *5**
- **Viso** **1500V**
- **UL Recognized: File No. E80276**

OUTLINE DRAWING Dimensions in mm



① T1 TERMINAL
② T2 TERMINAL
③ GATE TERMINAL

TO-220F

* Measurement point of case temperature

APPLICATION

Switching mode power supply, light dimmer, electric flasher unit, hair drier, control of household equipment such as TV sets · stereo · refrigerator · washing machine · infrared kotatsu · carpet, small motor control, copying machine, electric tool, solenoid drivers, other general purpose control applications

MAXIMUM RATINGS

Symbol	Parameter	Voltage class		Unit
		8	12	
VDRM	Repetitive peak off-state voltage *1	400	600	V
VDSM	Non-repetitive peak off-state voltage *1	500	720	V

Symbol	Parameter	Conditions	Ratings	Unit
IT (RMS)	RMS on-state current	Commercial power frequency, sine full wave 360° conduction, Tc=85°C	10	A
ITSM	Surge on-state current	60Hz sinewave 1 full cycle, peak value, non-repetitive	100	A
I ² _t	I ² _t for fusing	Value corresponding to 1 cycle of half wave 60Hz, surge on-state current	41.6	A ² s
PGM	Peak gate power dissipation		5	W
PG (AV)	Average gate power dissipation		0.5	W
VGM	Peak gate voltage		10	V
IGM	Peak gate current		2	A
T _j	Junction temperature		-40 ~ +125	°C
T _{stg}	Storage temperature		-40 ~ +125	°C
—	Weight	Typical value	2.0	g
Viso	Isolation voltage	Ta=25°C, AC 1 minute, T1 · T2 · G terminal to case	1500	V

*1 Gate open.



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MEDIUM POWER USE
INSULATED TYPE, PLANAR PASSIVATION TYPE

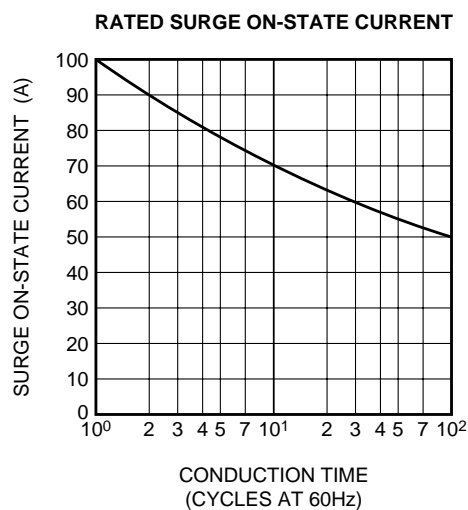
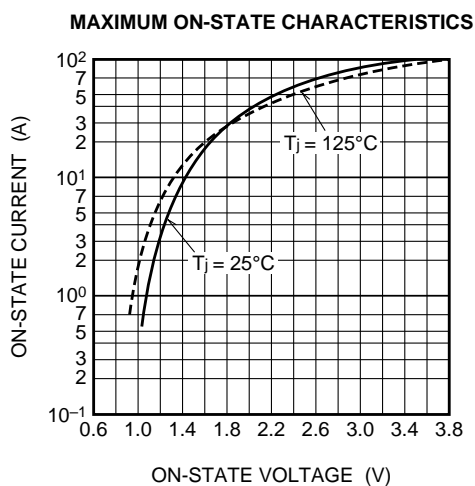
ELECTRICAL CHARACTERISTICS

Symbol	Parameter	Test conditions	Limits			Unit	
			Min.	Typ.	Max.		
IDRM	Repetitive peak off-state current	$T_j=125^\circ\text{C}$, V_{DRM} applied	—	—	2.0	mA	
V _{TM}	On-state voltage	$T_c=25^\circ\text{C}$, $I_{\text{TM}}=15\text{A}$, Instantaneous measurement	—	—	1.5	V	
V _{FGT I}	Gate trigger voltage *2	$T_j=25^\circ\text{C}$, $V_D=6\text{V}$, $R_L=6\Omega$, $R_G=330\Omega$	I	—	—	1.5	V
V _{RGT I}			II	—	—	1.5	V
V _{RGT III}			III	—	—	1.5	V
I _{FGT I}	Gate trigger current *2	$T_j=25^\circ\text{C}$, $V_D=6\text{V}$, $R_L=6\Omega$, $R_G=330\Omega$	I	—	—	30*5	mA
I _{RGT I}			II	—	—	30*5	mA
I _{RGT III}			III	—	—	30*5	mA
V _{GD}	Gate non-trigger voltage	$T_j=125^\circ\text{C}$, $V_D=1/2V_{\text{DRM}}$	0.2	—	—	V	
R _{th (j-c)}	Thermal resistance	Junction to case *4	—	—	3.5	$^\circ\text{C/W}$	
(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-j)} in case of greasing is 0.5 $^\circ\text{C/W}$.
 *5. High sensitivity (I_{GT}≤20mA) is also available. (I_{GT} item 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 $T_j=125^\circ\text{C}$ 2. Rate of decay of on-state commutating current $(di/dt)_c=-5.0\text{A/ms}$ 3. Peak off-state voltage $V_D=400\text{V}$	
		L	10			
12	600	R	—			
		L	10			

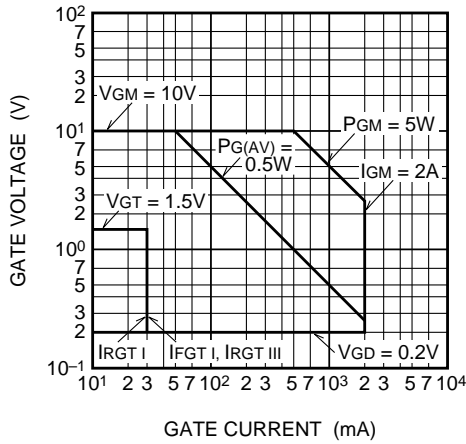
PERFORMANCE CURVES



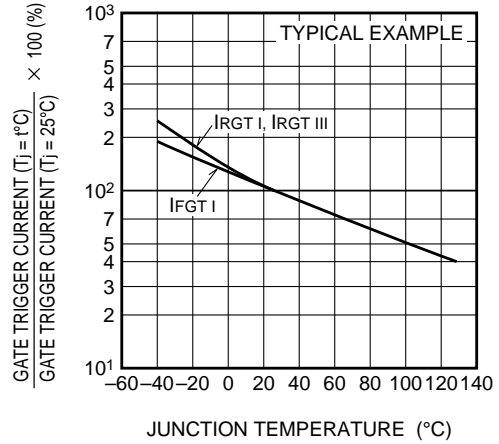
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MEDIUM POWER USE
INSULATED TYPE, PLANAR PASSIVATION TYPE

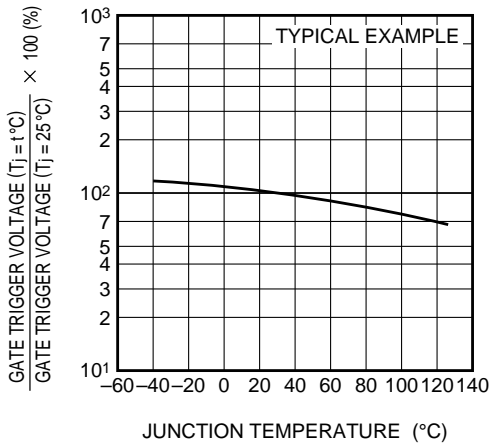
GATE CHARACTERISTICS



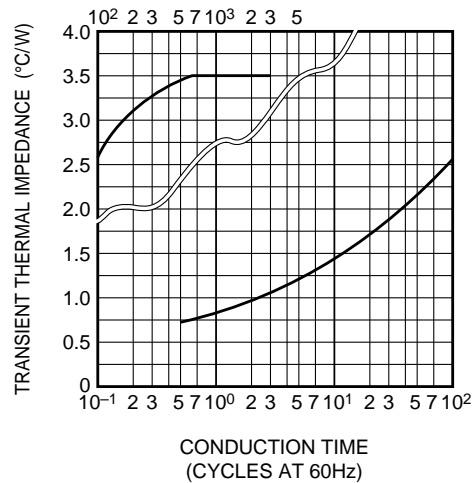
GATE TRIGGER CURRENT VS. JUNCTION TEMPERATURE



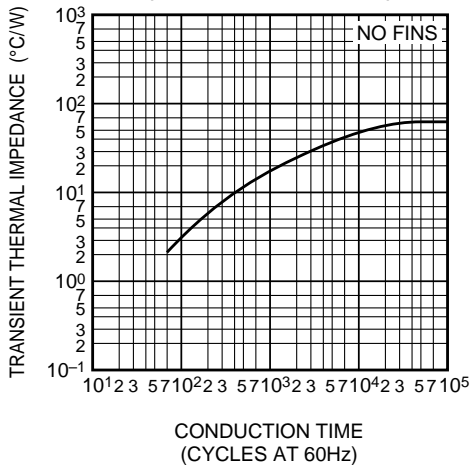
GATE TRIGGER VOLTAGE VS. JUNCTION TEMPERATURE



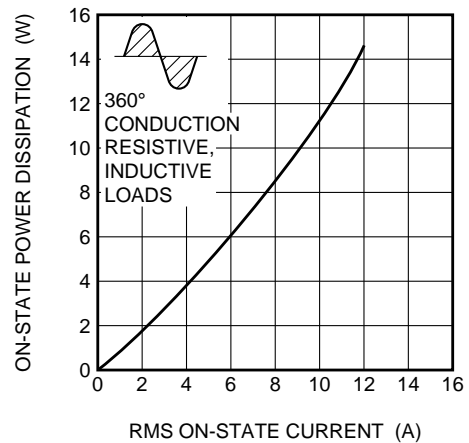
MAXIMUM TRANSIENT THERMAL IMPEDANCE CHARACTERISTICS (JUNCTION TO CASE)



MAXIMUM TRANSIENT THERMAL IMPEDANCE CHARACTERISTICS (JUNCTION TO AMBIENT)



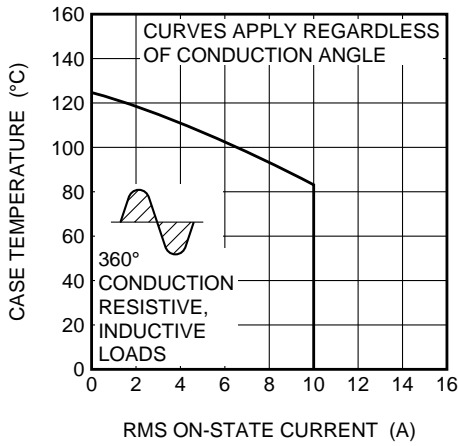
MAXIMUM ON-STATE POWER DISSIPATION



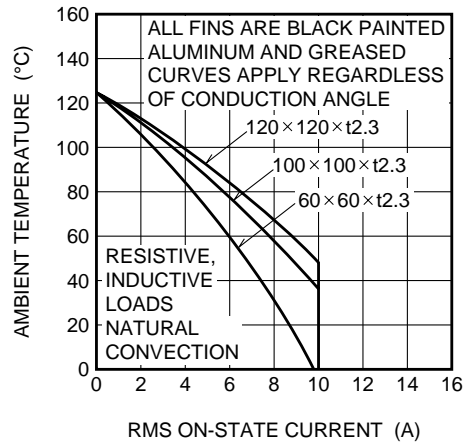
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MEDIUM POWER USE
INSULATED TYPE, PLANAR PASSIVATION TYPE

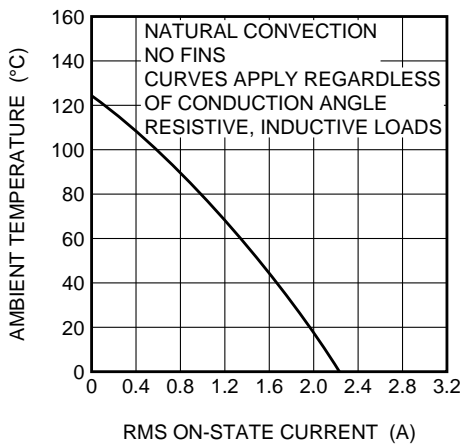
ALLOWABLE CASE TEMPERATURE VS. RMS ON-STATE CURRENT



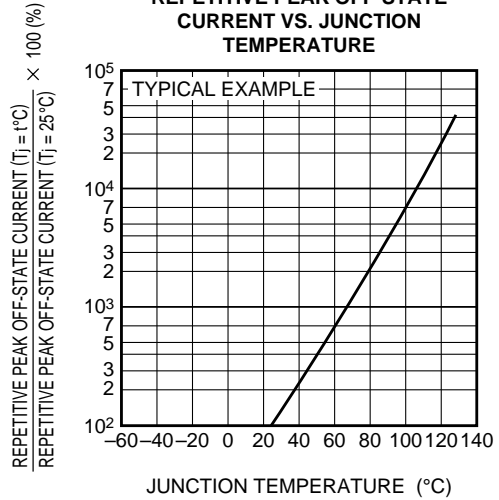
ALLOWABLE AMBIENT TEMPERATURE VS. RMS ON-STATE CURRENT



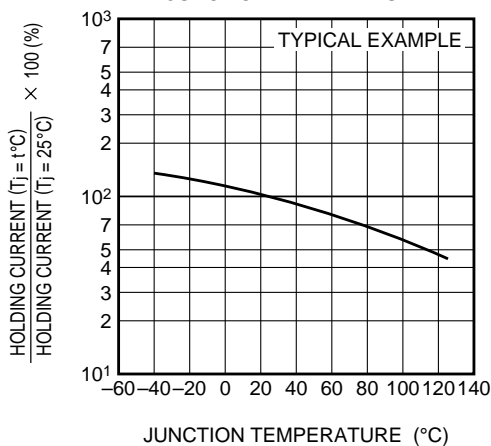
ALLOWABLE AMBIENT TEMPERATURE VS. RMS ON-STATE CURRENT



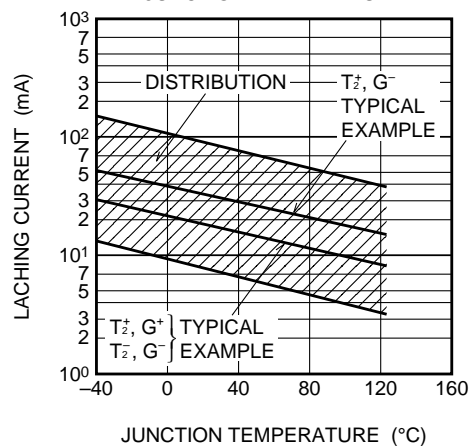
REPETITIVE PEAK OFF-STATE CURRENT VS. JUNCTION TEMPERATURE



HOLDING CURRENT VS. JUNCTION TEMPERATURE



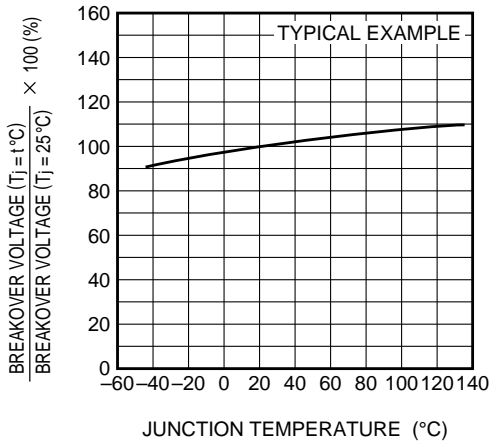
LACHING CURRENT VS. JUNCTION TEMPERATURE



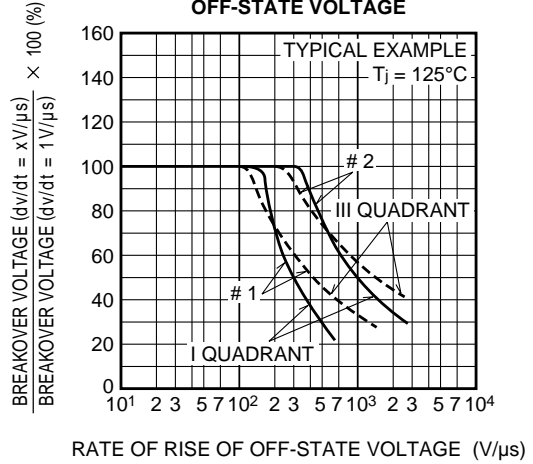
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MEDIUM POWER USE
INSULATED TYPE, PLANAR PASSIVATION TYPE

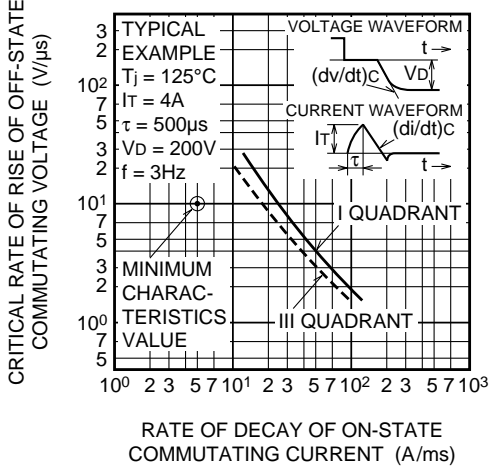
BREAKEOVER VOLTAGE VS. JUNCTION TEMPERATURE



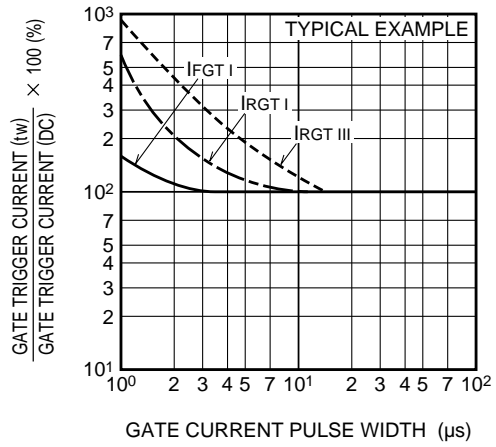
BREAKEOVER VOLTAGE VS. RATE OF RISE OF OFF-STATE VOLTAGE



COMMUTATION CHARACTERISTICS



GATE TRIGGER CURRENT VS. GATE CURRENT PULSE WIDTH



GATE TRIGGER CHARACTERISTICS TEST CIRCUITS

