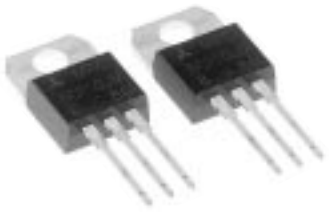
MITSUBISHI SEMICONDUCTOR 〈TRIAC〉

BCR10UM

MEDIUM POWER USE

INSULATED TYPE, GLASS PASSIVATION TYPE

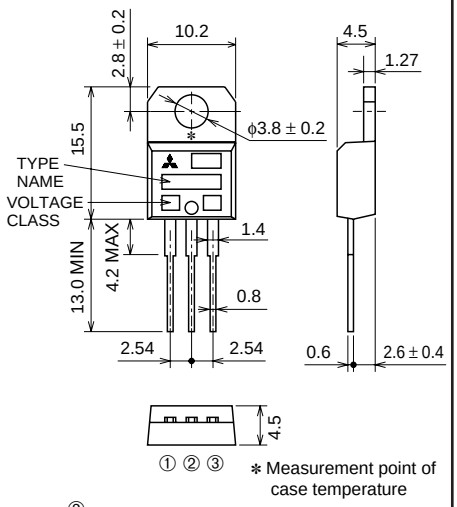
BCR10UM



- $I_{T\ (RMS)}$ 10A
- V_{DRM} 400V/600V
- $I_{FGT\ I}$, $I_{RGT\ I}$, $I_{RGT\ III}$ 15mA
- V_{iso} 1500V

OUTLINE DRAWING

Dimensions in mm



TO-220

APPLICATION

Light dimmer

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 360° conduction, T_c=93°C ∗3	10	A
I_{TSM}	Surge on-state current	60Hz sinewave 1 full cycle, peak value, non-repetitive	100	A
I^2t	I^2t for fusing	Value corresponding to 1 cycle of half wave 60Hz, surge on-state current	41.6	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 ~ +125	°C
T_{stg}	Storage temperature		–40 ~ +125	°C
—	Weight	Typical value	2.3	g
V_{iso}	Isolation voltage	T_a=25°C, AC 1 minute, T_1 · T_2 · G terminal to case	1500	V

∗1. Gate open.

MITSUBISHI ELECTRIC

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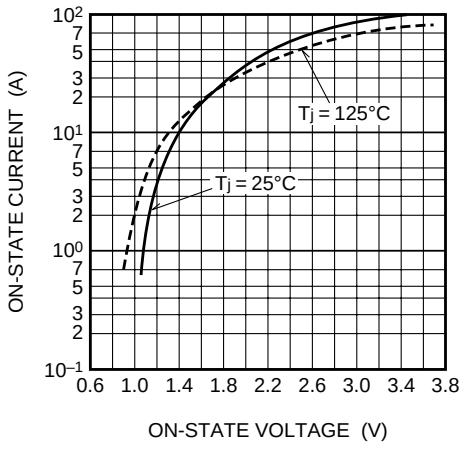
ELECTRICAL CHARACTERISTICS

Symbol	Parameter		Test conditions	Limits			Unit
				Min.	Typ.	Max.	
I_{DRM}	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}=15A, Instantaneous measurement	—	—	1.5	V
$V_{FGT\ I}$	Gate trigger voltage *2	I	T_j=25°C, V_D=6V, R_L=6Ω, R_G=330Ω	—	—	1.5	V
$V_{RGT\ I}$		II		—	—	1.5	V
$V_{RGT\ III}$		III		—	—	1.5	V
$I_{FGT\ I}$	Gate trigger current *2	I	T_j=25°C, V_D=6V, R_L=6Ω, R_G=330Ω	—	—	15	mA
$I_{RGT\ I}$		II		—	—	15	mA
$I_{RGT\ III}$		III		—	—	15	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 *3 *4	—	—	2.7	°C/W

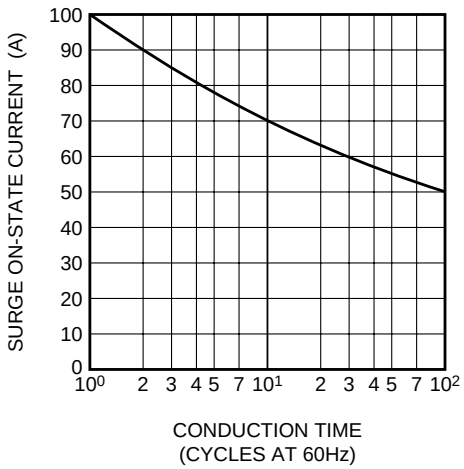
*2. Measurement using the gate trigger characteristics measurement circuit.
*3. Case temperature is measured at the T_2 terminal 1.5mm away from the molded case.
*4. The contact thermal resistance $R_{th\ (c-f)}$ in case of greasing is 1.0°C/W.

PERFORMANCE CURVES

MAXIMUM ON-STATE CHARACTERISTICS



RATED SURGE ON-STATE CURRENT



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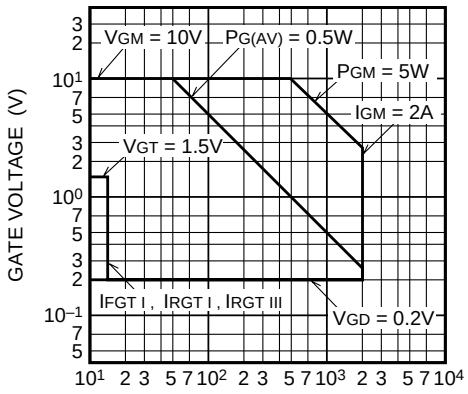
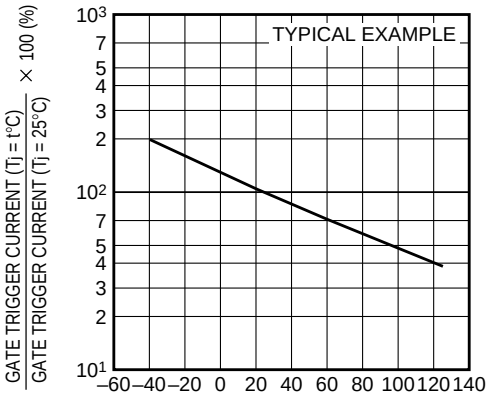
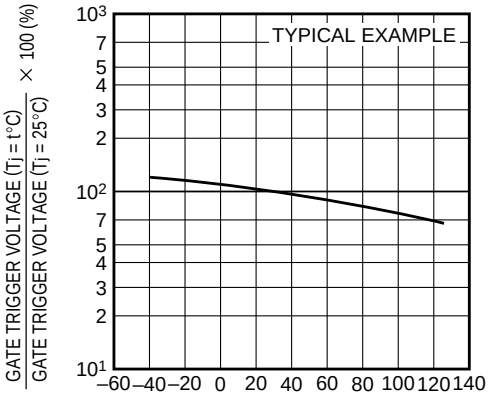
GATE CHARACTERISTICS



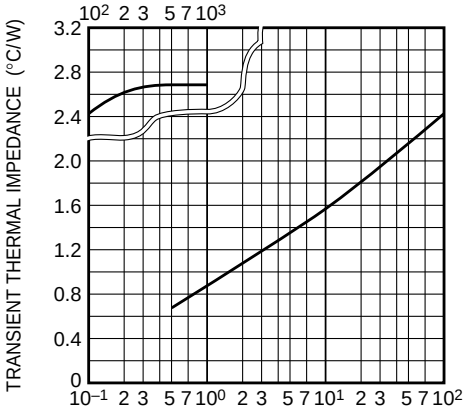
GATE TRIGGER CURRENT VS. JUNCTION TEMPERATURE



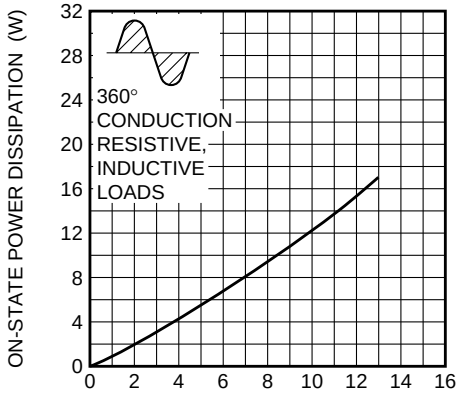
GATE TRIGGER VOLTAGE VS. JUNCTION TEMPERATURE



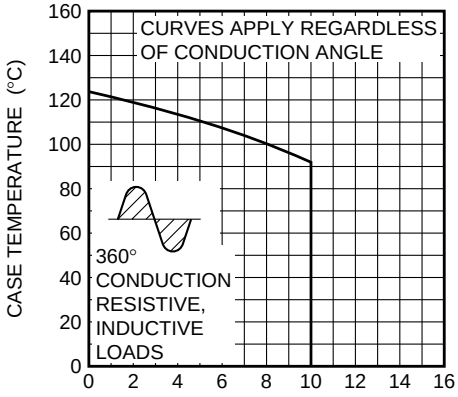
MAXIMUM TRANSIENT THERMAL IMPEDANCE CHARACTERISTICS (JUNCTION TO CASE)



MAXIMUM ON-STATE POWER DISSIPATION



ALLOWABLE CASE TEMPERATURE VS. RMS ON-STATE CURRENT



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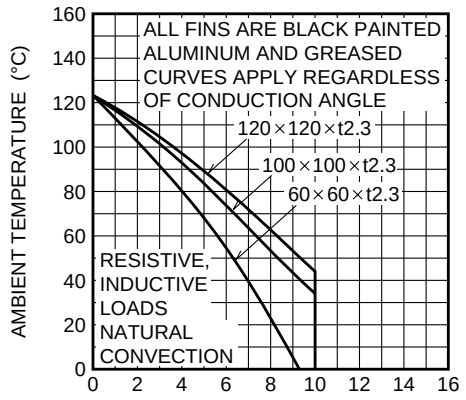
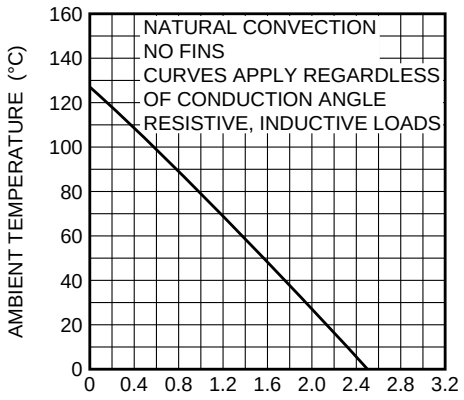
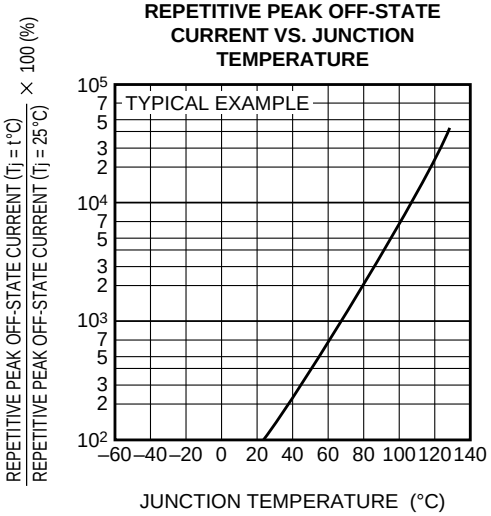
ALLOWABLE AMBIENT TEMPERATURE VS. RMS ON-STATE CURRENT



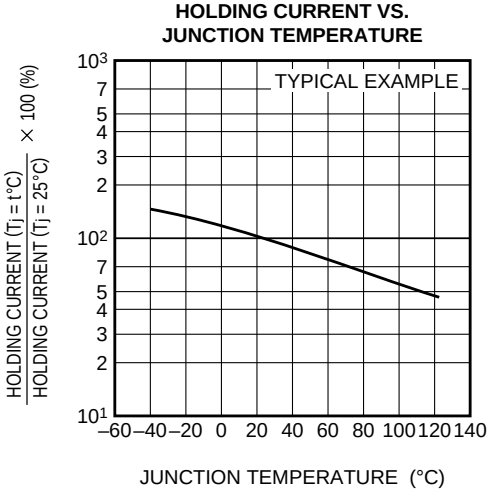
ALLOWABLE AMBIENT TEMPERATURE VS. RMS ON-STATE CURRENT



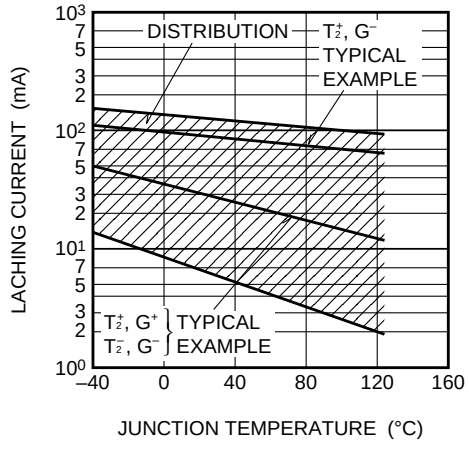
REPETITIVE PEAK OFF-STATE CURRENT VS. JUNCTION TEMPERATURE



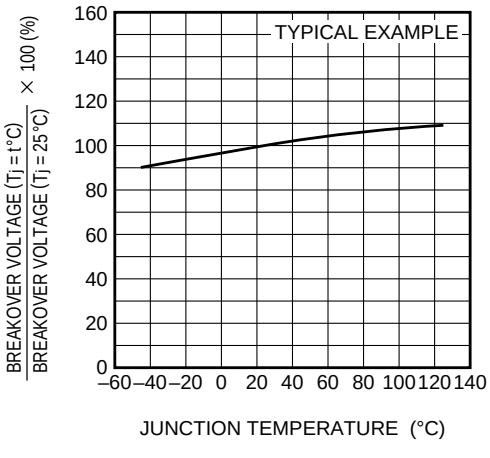
HOLDING CURRENT VS. JUNCTION TEMPERATURE



LACHING CURRENT VS. JUNCTION TEMPERATURE



BREAKOVER VOLTAGE VS. JUNCTION TEMPERATURE



BCR10UM

MEDIUM POWER USE
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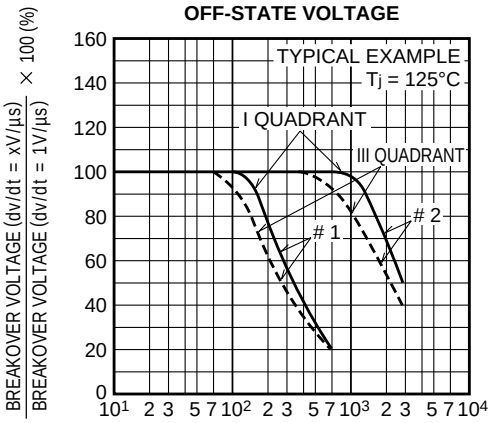
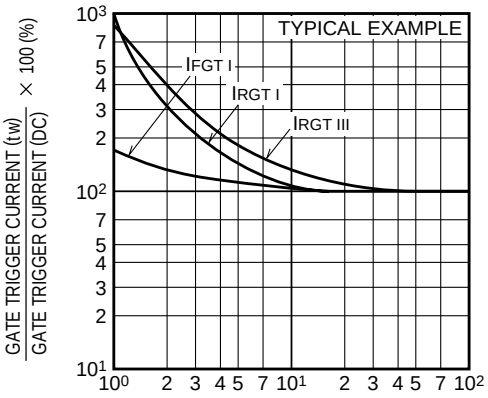
BREAKOVER VOLTAGE VS. RATE OF RISE OF OFF-STATE VOLTAGE



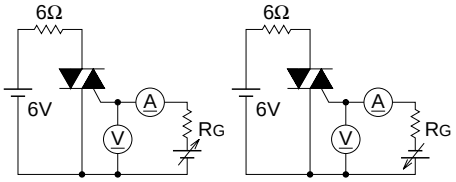
RATE OF RISE OF OFF-STATE VOLTAGE (V/µs)

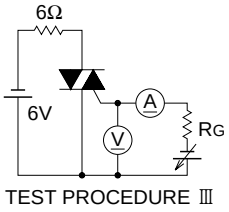
GATE TRIGGER CURRENT VS. GATE CURRENT PULSE WIDTH



GATE CURRENT PULSE WIDTH (µs)

GATE TRIGGER CHARACTERISTICS TEST CIRCUITS





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