BCR3AM

LOW POWER USE

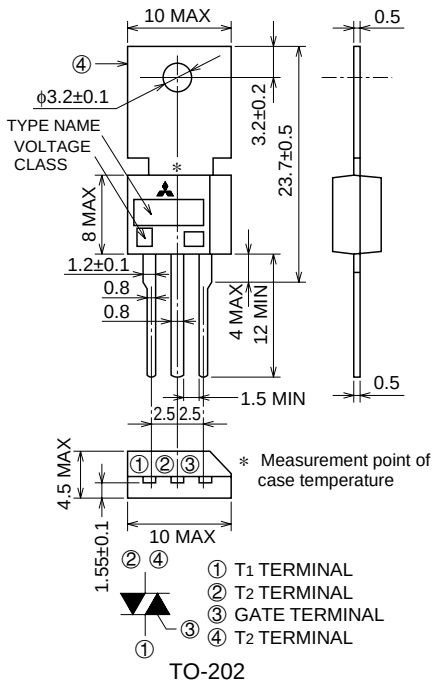
NON-INSULATED TYPE, PLANAR PASSIVATION TYPE

BCR3AM

- **$I_{T\ (RMS)}$ 3A**
- **V_{DRM} 400V/600V**
- **$I_{FGT\ I}$, $I_{RGT\ I}$, $I_{RGT\ III}$ 30mA (15mA) *6**

OUTLINE DRAWING

Dimensions in mm



TO-202

APPLICATION

Contactless AC switches, light dimmer, electric blankets, control of household equipment such as electric fan, solenoid drivers, small motor control, other general purpose control applications

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=86°C	3	A
I_{TSM}	Surge on-state current	60Hz sinewave 1 full cycle, peak value, non-repetitive	30	A
I^2t	I^2t for fusing	Value corresponding to 1 cycle of half wave 60Hz, surge on-state current	3.7	A^2s
P_{GM}	Peak gate power dissipation		3	W
$P_{G\ (AV)}$	Average gate power dissipation		0.3	W
V_{GM}	Peak gate voltage		6	V
I_{GM}	Peak gate current		0.5	A
T_j	Junction temperature		–40 ~ +125	°C
T_{stg}	Storage temperature		–40 ~ +125	°C
—	Weight	Typical value	1.6	g

*1. Gate open.

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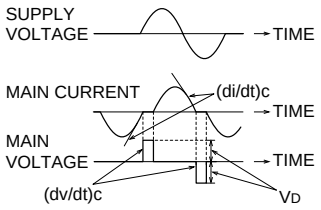
ELECTRICAL CHARACTERISTICS

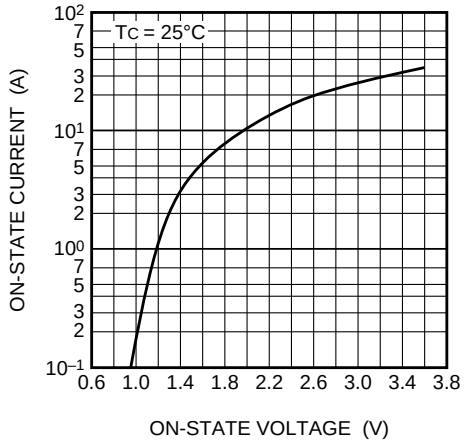
Symbol	Parameter		Test conditions	Limits			Unit
				Min.	Typ.	Max.	
I_{DRM}	Repetitive peak off-state current		T_j=125°C, V_{DRM} applied	—	—	2.0	mA
V_{TM}	On-state voltage		T_C=25°C, I_{TM}=4.5A, Instantaneous measurement	—	—	1.5	V
$V_{FGT\ I}$	Gate trigger voltage *2	Ⅰ	T_j=25°C, V_D=6V, R_L=6Ω, R_G=330Ω	—	—	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	—	—	30*6	mA
$I_{RGT\ I}$		Ⅱ		—	—	30*6	mA
$I_{RGT\ III}$		Ⅲ		—	—	30*6	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 *5	—	—	10	°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. Case temperature is measured at the T_2 terminal 1.5mm away from the molded case.
*5. The contact thermal resistance $R_{th\ (c-f)}$ in case of greasing is 3°C/W.
*6. High sensitivity (I_{GT}≤15mA) is also available. (I_{GT} item ①)

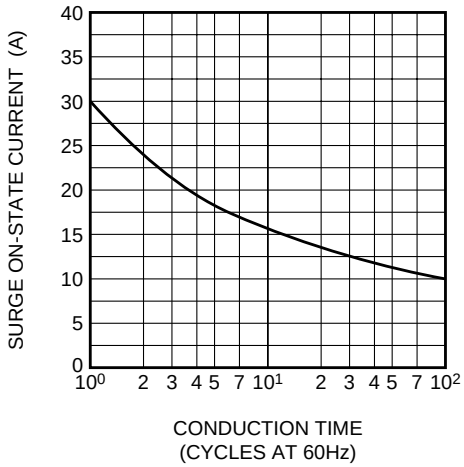
Voltage class	V_{DRM} (V)	$(dv/dt)_c$ Min.	$(dv/dt)_c$ Unit	Test conditions	Commutating voltage and current waveforms (inductive load)
8	400	5	V/μs	1. Junction temperature T_j=125°C 2. Rate of decay of on-state commutating current $(di/dt)_c$=–1.5A/ms 3. Peak off-state voltage V_D=400V	
12	600				

PERFORMANCE CURVES

MAXIMUM ON-STATE CHARACTERISTICS



RATED SURGE ON-STATE CURRENT



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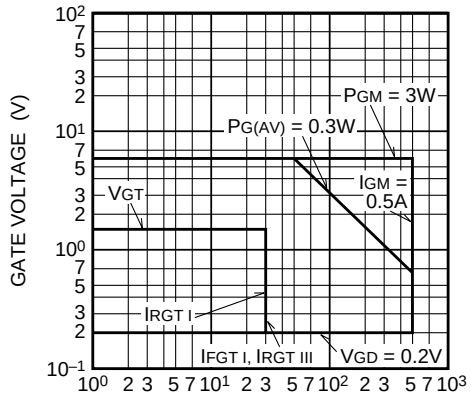
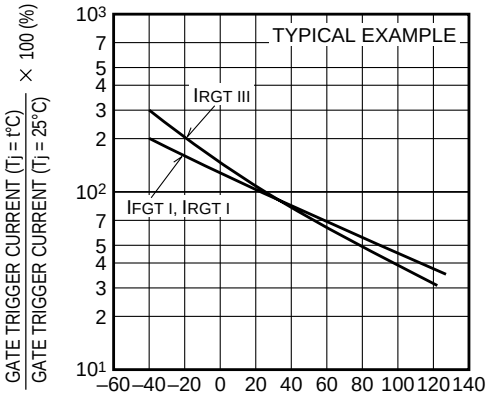
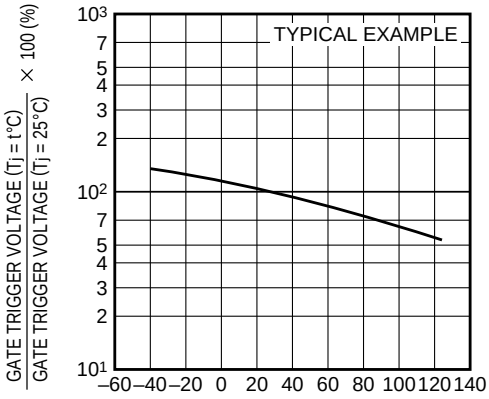
GATE CHARACTERISTICS



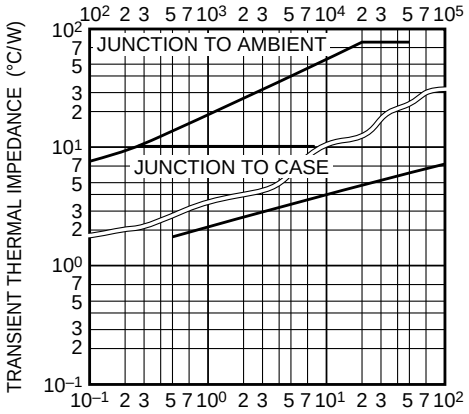
GATE TRIGGER CURRENT VS. JUNCTION TEMPERATURE



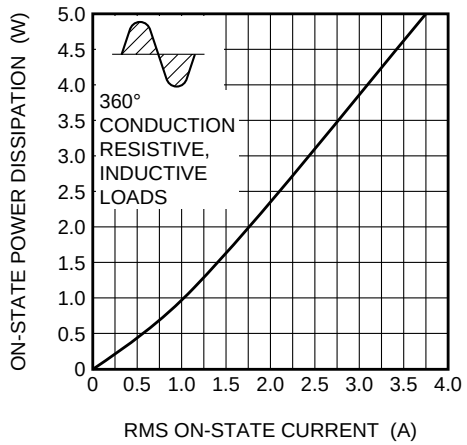
GATE TRIGGER VOLTAGE VS. JUNCTION TEMPERATURE



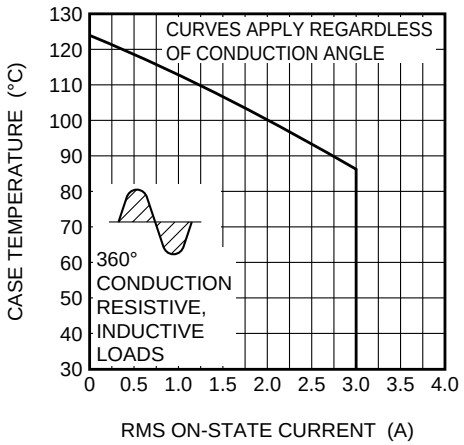
MAXIMUM TRANSIENT THERMAL IMPEDANCE CHARACTERISTICS



MAXIMUM ON-STATE POWER DISSIPATION



ALLOWABLE CASE TEMPERATURE VS. RMS ON-STATE CURRENT



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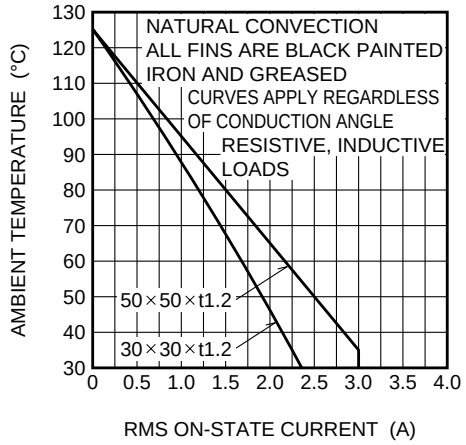
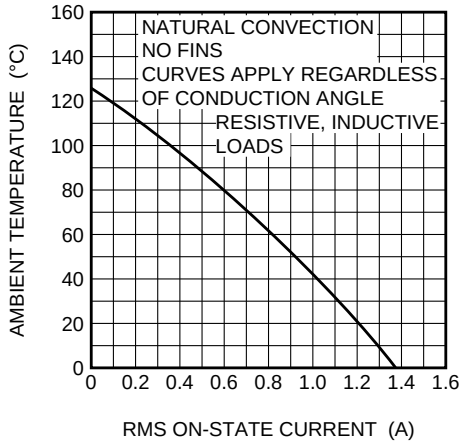
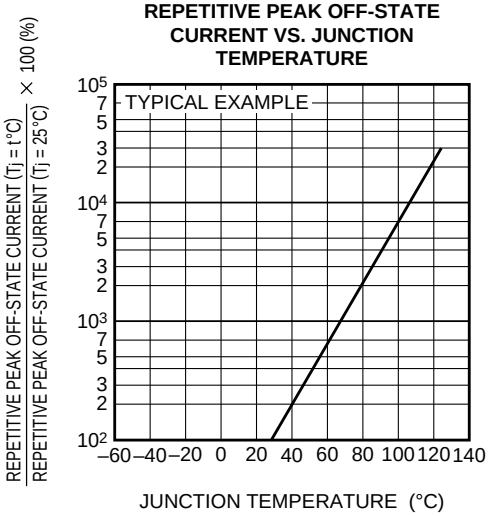
ALLOWABLE AMBIENT TEMPERATURE VS. RMS ON-STATE CURRENT



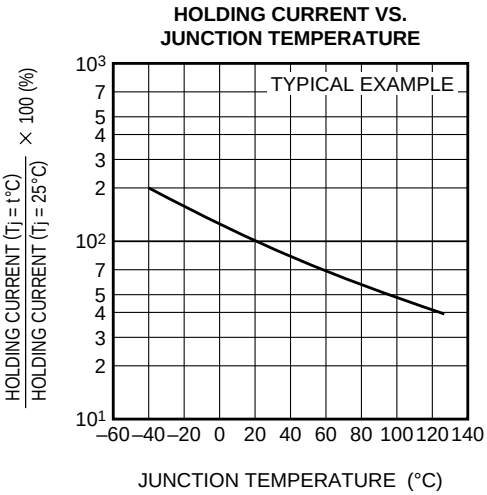
ALLOWABLE AMBIENT TEMPERATURE VS. RMS ON-STATE CURRENT



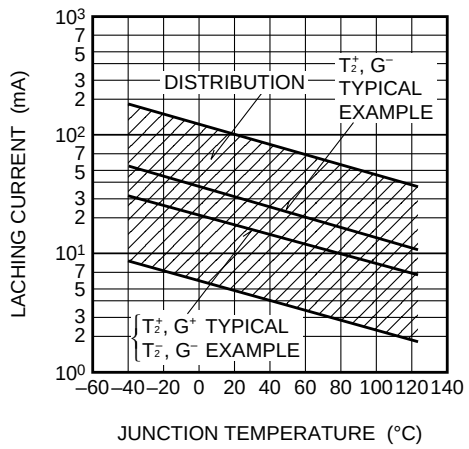
REPETITIVE PEAK OFF-STATE CURRENT VS. JUNCTION TEMPERATURE



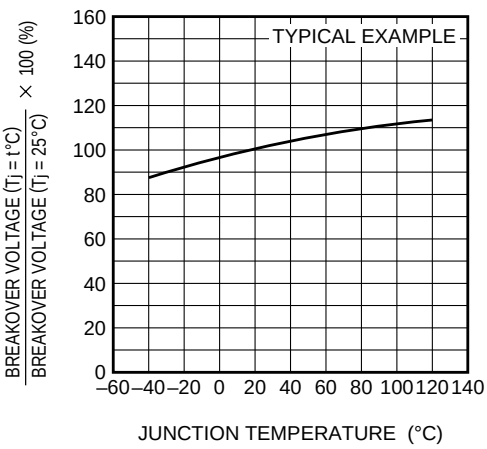
HOLDING CURRENT VS. JUNCTION TEMPERATURE



LACHING CURRENT VS. JUNCTION TEMPERATURE



BREAKOVER VOLTAGE VS. JUNCTION TEMPERATURE



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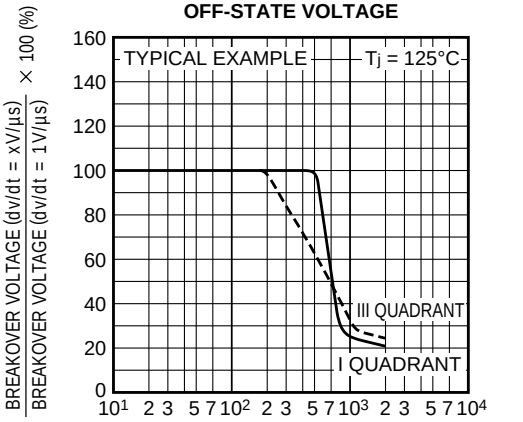
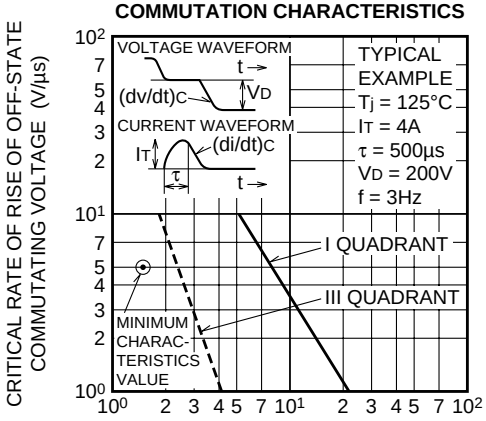
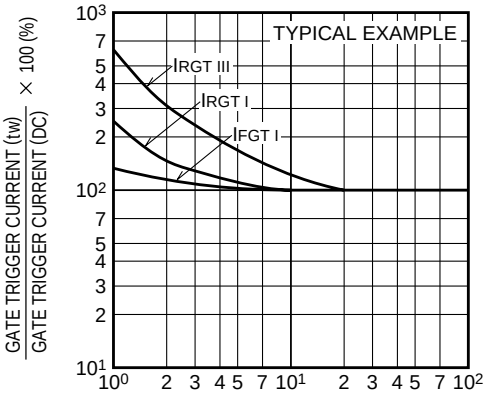
BREAKOVER VOLTAGE VS. RATE OF RISE OF OFF-STATE VOLTAGE



COMMUTATION CHARACTERISTICS



GATE TRIGGER CURRENT VS. GATE CURRENT PULSE WIDTH



GATE TRIGGER CHARACTERISTICS TEST CIRCUITS