BCR30GM

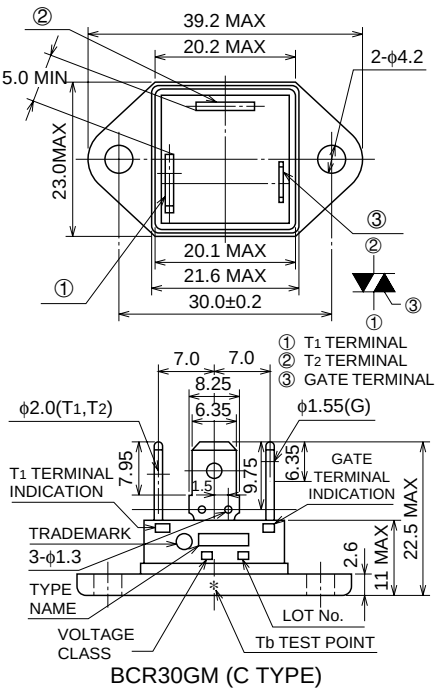
MEDIUM POWER USE

INSULATED TYPE, GLASS PASSIVATION TYPE

BCR30GM

- **IT (RMS) 30A**
- **VDRM 400V/600V**
- **IFGT Ⅰ, IRGT Ⅰ, IRGT Ⅲ 50mA**
- **Viso 2200V**
- **UL Recognized: File No. E80276**

OUTLINE DRAWING Dimensions in mm



BCR30GM (C TYPE)

APPLICATION

Contactless AC switches, light dimmer,
on/off and speed control of small induction motors, on/off control of copier lamps,
microwave ovens

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_b=60°C	30	A
I_{TSM}	Surge on-state current	60Hz sinewave 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	375	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
—	Mounting torque	Screw M4	15	kg·cm
			1.47	N·cm
—	Weight	Typical value	26	g
V_{iso}	Isolation voltage	T_a=25°C, AC 1 minute, T_2 · T_1 · G terminal to base	2200	V

*1. Gate open.

Feb.1999

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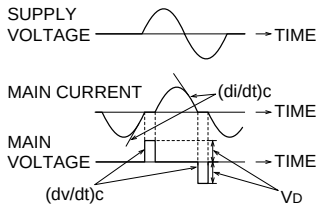
ELECTRICAL CHARACTERISTICS

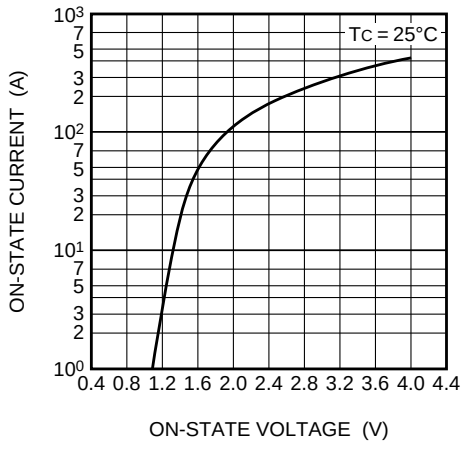
Symbol	Parameter		Test conditions	Limits			Unit
				Min.	Typ.	Max.	
I_{DRM}	Repetitive peak off-state current		T_j=125°C, V_{DRM} applied	—	—	3.0	mA
V_{TM}	On-state voltage		T_b=25°C, I_{TM}=45A, Instantaneous measurement	—	—	1.6	V
$V_{FGT\ I}$	Gate trigger voltage *2	Ⅰ	T_j=25°C, V_D=6V, R_L=6Ω, R_G=330Ω	—	—	2.5	V
$V_{RGT\ I}$		Ⅱ		—	—	2.5	V
$V_{RGT\ III}$		Ⅲ		—	—	2.5	V
$I_{FGT\ I}$	Gate trigger current *2	Ⅰ	T_j=25°C, V_D=6V, R_L=6Ω, R_G=330Ω	—	—	50	mA
$I_{RGT\ I}$		Ⅱ		—	—	50	mA
$I_{RGT\ III}$		Ⅲ		—	—	50	mA
V_{GD}	Gate non-trigger voltage		T_j=125°C, V_D=1/2V_{DRM}	0.2	—	—	V
$R_{th\ (j-b)}$	Thermal resistance		Junction to base *4	—	—	1.6	°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 $R_{th\ (b-f)}$ in case of greasing is 0.5°C/W.

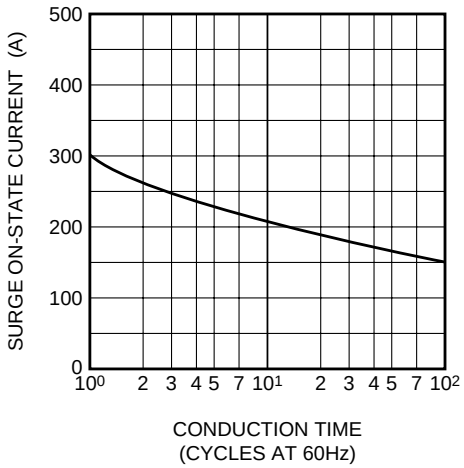
Voltage class	V_{DRM} (V)	$(dv/dt)_c$			Test conditions	Commutating voltage and current waveforms (inductive load)
		Symbol	Min.	Unit		
8	400	R	—	V/µs	1. Junction temperature T_j=125°C 2. Rate of decay of on-state commutating current $(di/dt)_c$=–16A/ms 3. Peak off-state voltage V_D=400V	
		L	20			
12	600	R	—			
		L	20			

PERFORMANCE CURVES

MAXIMUM ON-STATE CHARACTERISTICS



RATED SURGE ON-STATE CURRENT



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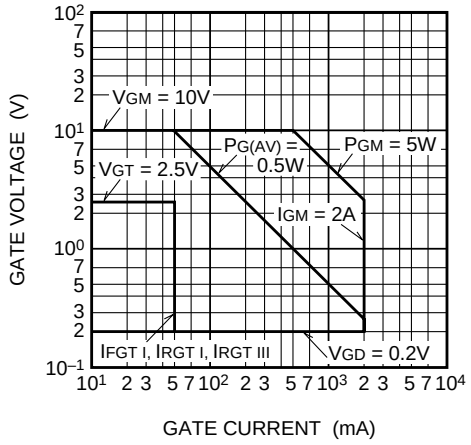
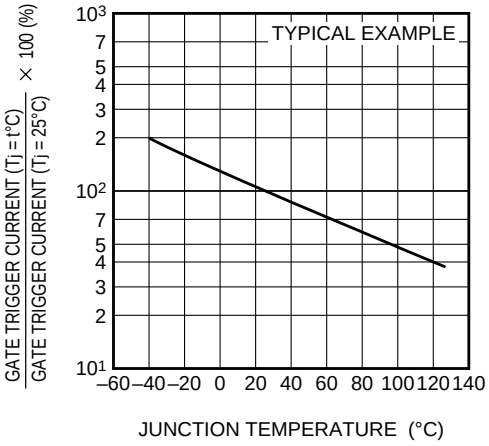
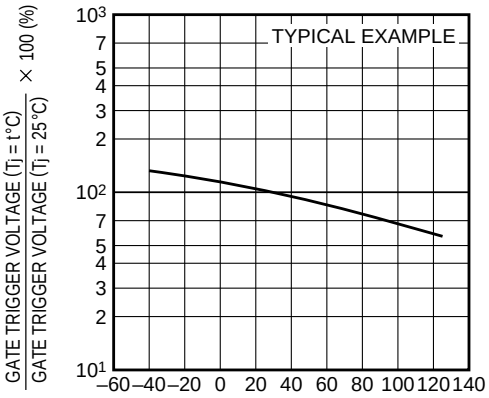
GATE CHARACTERISTICS



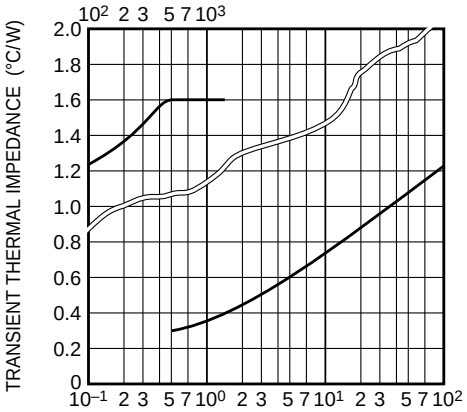
GATE TRIGGER CURRENT VS. JUNCTION TEMPERATURE



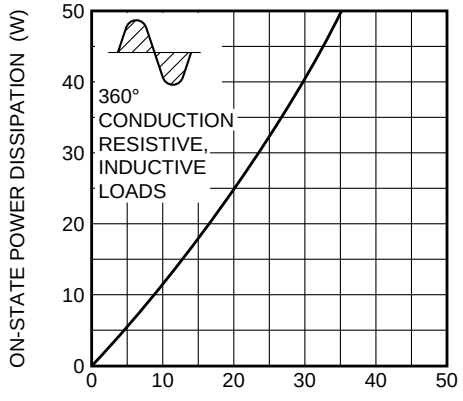
GATE TRIGGER VOLTAGE VS. JUNCTION TEMPERATURE



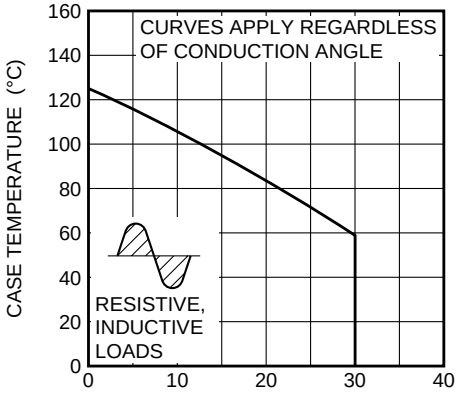
MAXIMUM TRANSIENT THERMAL IMPEDANCE CHARACTERISTICS (JUNCTION TO CASE)



MAXIMUM ON-STATE POWER DISSIPATION



ALLOWABLE CASE TEMPERATURE VS. RMS ON-STATE CURRENT



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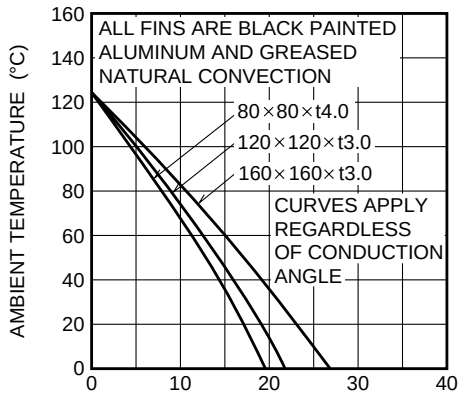
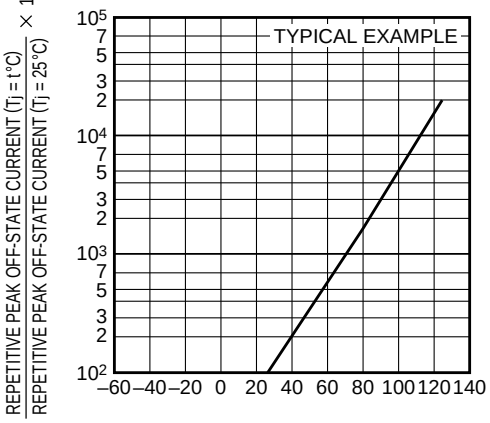
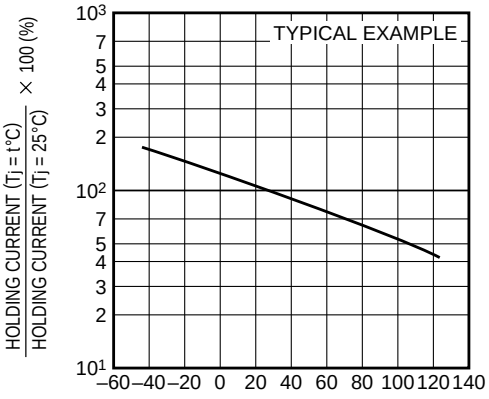
ALLOWABLE AMBIENT TEMPERATURE VS. RMS ON-STATE CURRENT



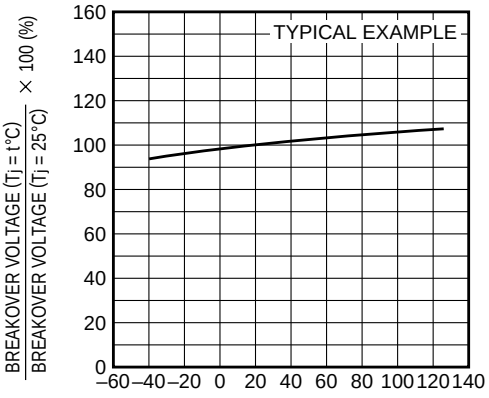
REPETITIVE PEAK OFF-STATE CURRENT VS. JUNCTION TEMPERATURE



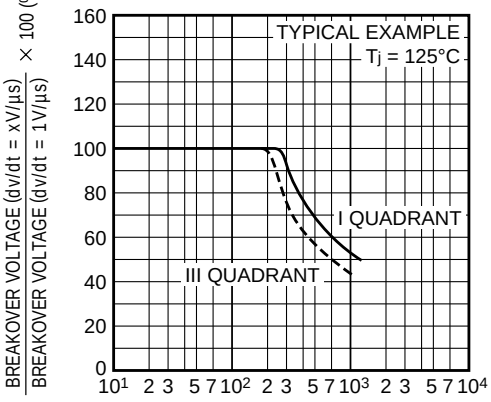
HOLDING CURRENT VS. JUNCTION TEMPERATURE



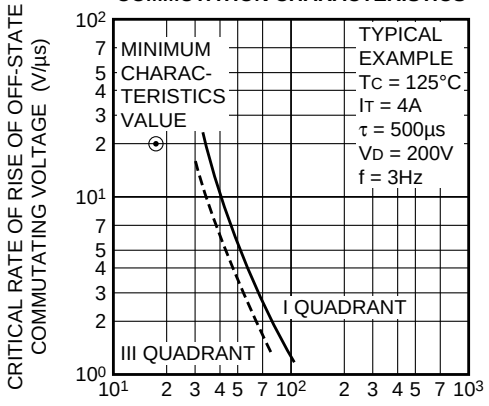
BREAKOVER VOLTAGE VS. JUNCTION TEMPERATURE



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



COMMUTATION CHARACTERISTICS



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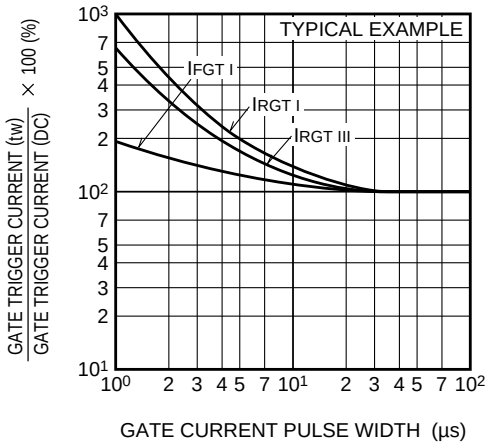
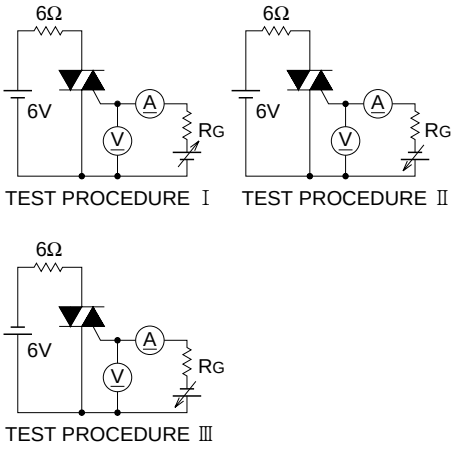
GATE TRIGGER CURRENT VS. GATE CURRENT PULSE WIDTH



GATE TRIGGER CHARACTERISTICS TEST CIRCUITS



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