

BCR3PM

Refer to the page 6 as to the product guaranteed maximum junction temperature 150°C

LOW POWER USE
INSULATED TYPE, PLANAR PASSIVATION TYPE

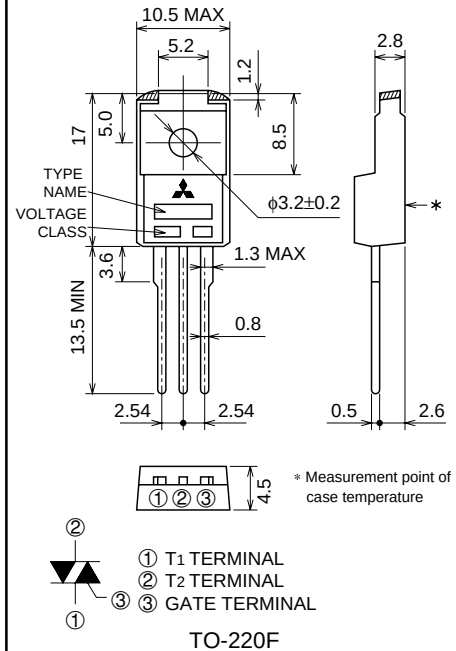
BCR3PM



- IT (RMS) 3A
- VDRM 600V
- IFGT I, IRGT I, IRGT III 20mA (10mA) *5
- Viso 2000V
- UL Recognized: Yellow Card No.E80276(N)
File No. E80271

OUTLINE DRAWING

Dimensions
in mm



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
		12	
VDRM	Repetitive peak off-state voltage *1	600	V
VDSM	Non-repetitive peak off-state voltage *1	720	V

Symbol	Parameter	Conditions	Ratings	Unit
IT (RMS)	RMS on-state current	Commercial frequency, sine full wave 360° conduction, Tc=107°C	3.0	A
ITSM	Surge on-state current	60Hz sinewave 1 full cycle, peak value, non-repetitive	30	A
I ² _t	I ² _t for fusing	Value corresponding to 1 cycle of half wave 60Hz, surge on-state current	3.7	A ² s
PGM	Peak gate power dissipation		3	W
PG (AV)	Average gate power dissipation		0.3	W
VGM	Peak gate voltage		6	V
IGM	Peak gate current		0.5	A
Tj	Junction temperature		-40 ~ +125	°C
Tstg	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	2000	V

*1. Gate open.

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LOW 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°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	T _j =25°C, V _D =6V, R _L =6Ω, R _G =330Ω	—	—	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	—	—	20 *5	mA
I _{RGT} I			—	—	20 *5	mA
I _{RGT} III			—	—	20 *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 *3	—	—	4.5	°C/W
(dv/dt) _c	Critical-rate of rise of off-state commutating voltage *4	T _j =125°C	5	—	—	V/μs

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

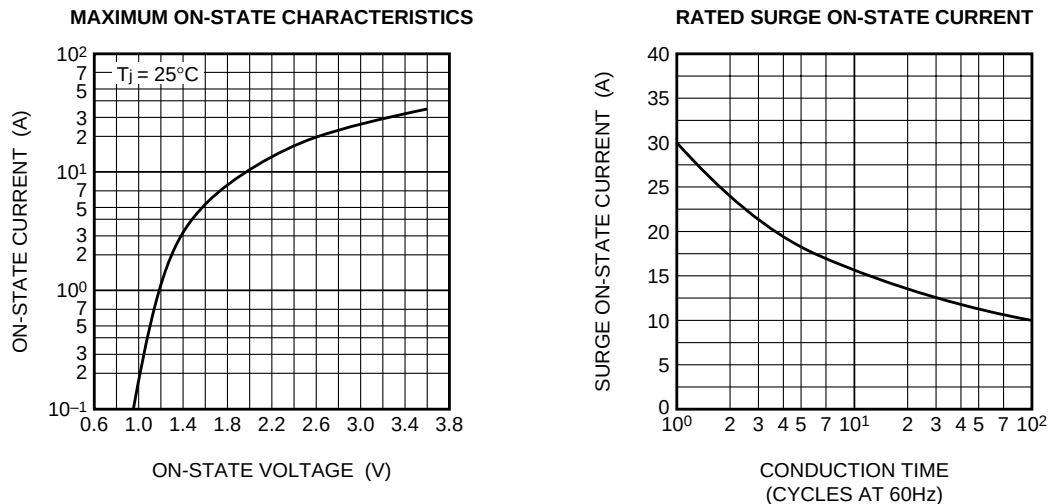
*3. The contact thermal resistance R_{th} (c-f) in case of greasing is 0.5°C/W.

*4. Test conditions of the critical-rate of rise of off-state commutating voltage is shown in the table below.

*5. High sensitivity (I_{GT}≤10mA) is also available. (I_{GT} item①)

Test conditions	Commutating voltage and current waveforms (inductive load)
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	

PERFORMANCE CURVES

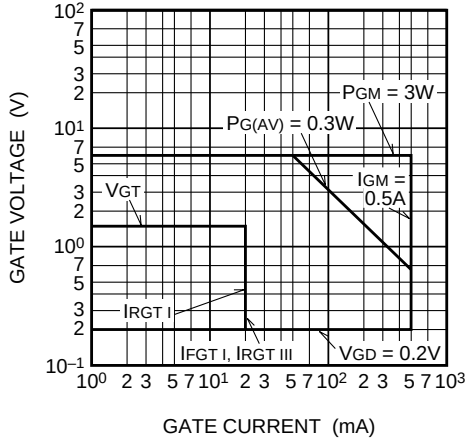


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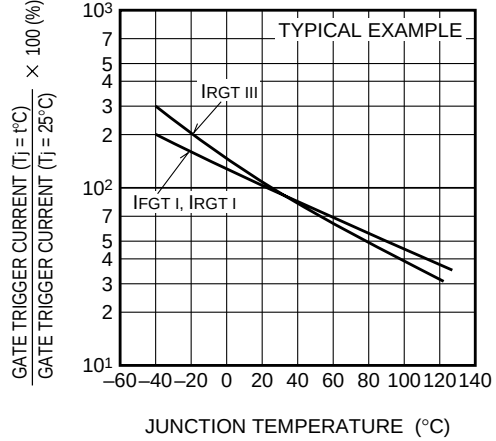
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LOW POWER USE
INSULATED TYPE, PLANAR PASSIVATION TYPE

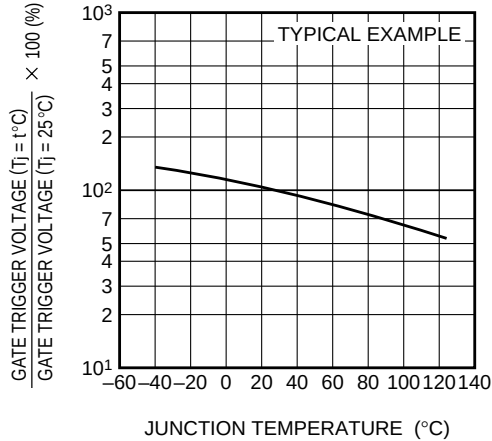
**GATE CHARACTERISTICS
(I, II AND III)**



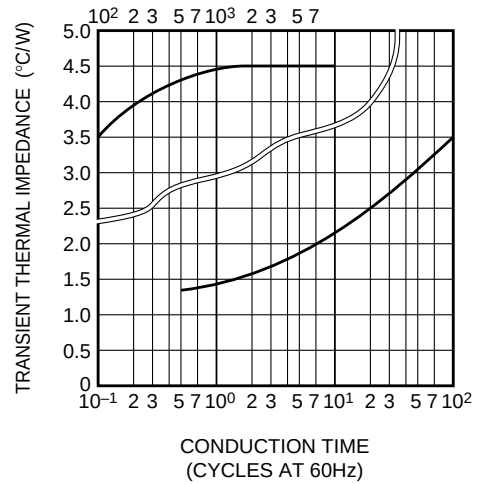
**GATE TRIGGER CURRENT VS.
JUNCTION TEMPERATURE**



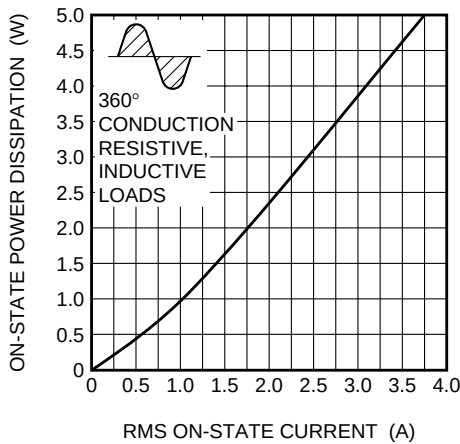
**GATE TRIGGER VOLTAGE VS.
JUNCTION TEMPERATURE**



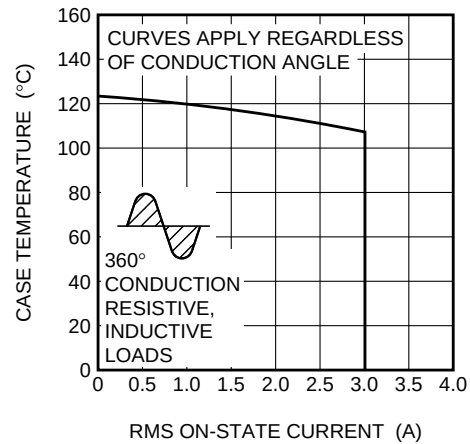
**MAXIMUM TRANSIENT THERMAL
IMPEDANCE CHARACTERISTICS
(JUNCTION TO CASE)**



**MAXIMUM ON-STATE POWER
DISSIPATION**



**ALLOWABLE CASE TEMPERATURE
VS. RMS ON-STATE CURRENT**

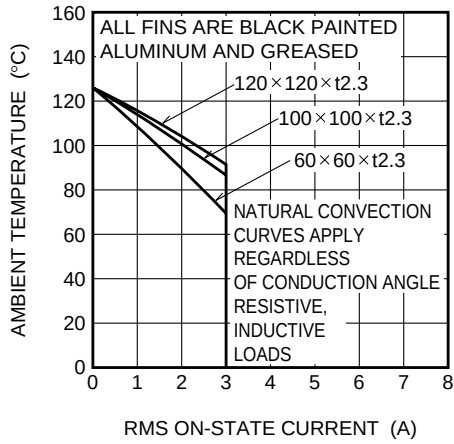


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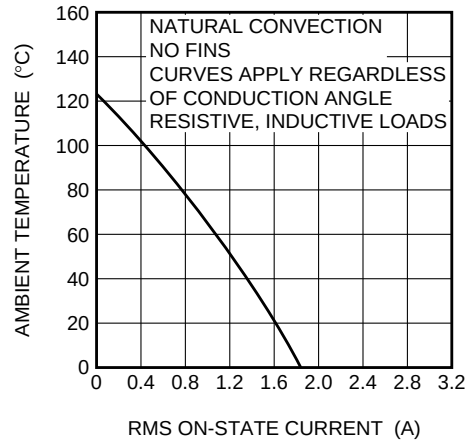
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LOW POWER USE
INSULATED TYPE, PLANAR PASSIVATION TYPE

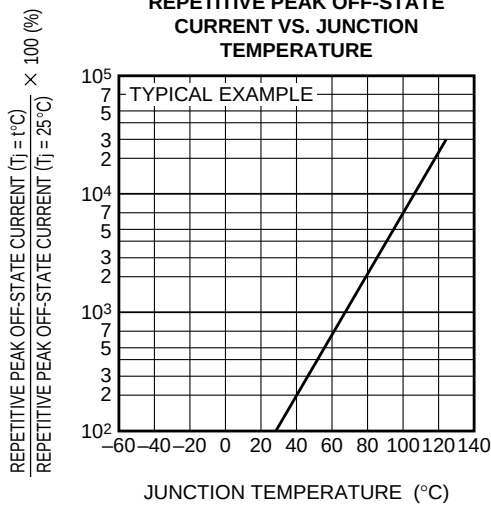
ALLOWABLE AMBIENT TEMPERATURE
VS. RMS ON-STATE CURRENT



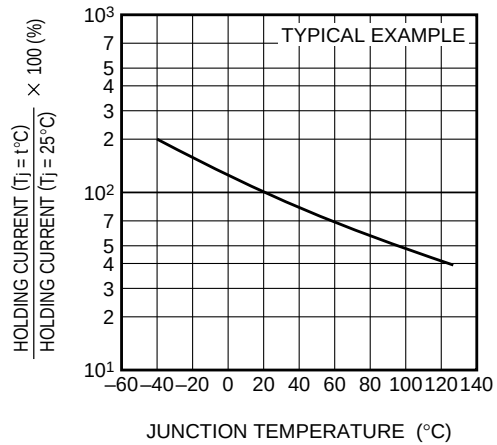
ALLOWABLE AMBIENT TEMPERATURE
VS. RMS ON-STATE CURRENT



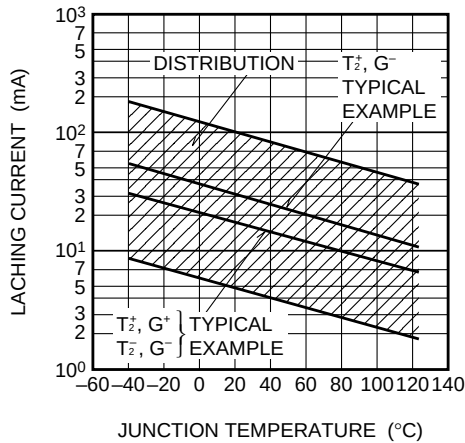
REPETITIVE PEAK OFF-STATE
CURRENT VS. JUNCTION
TEMPERATURE



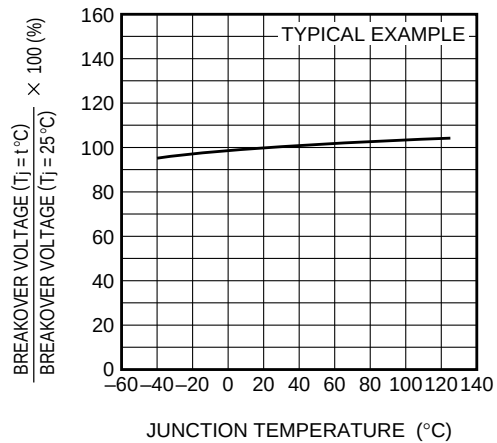
HOLDING CURRENT VS.
JUNCTION TEMPERATURE



LATCHING CURRENT VS.
JUNCTION TEMPERATURE



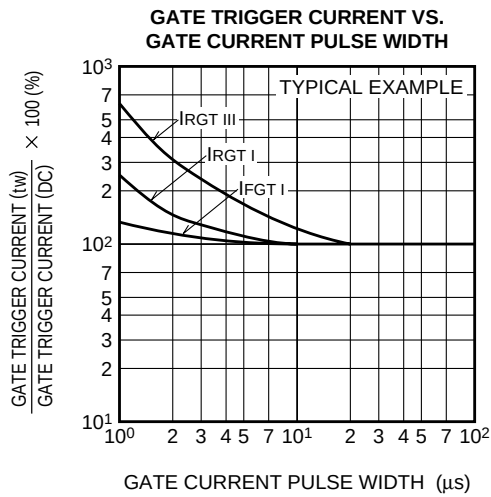
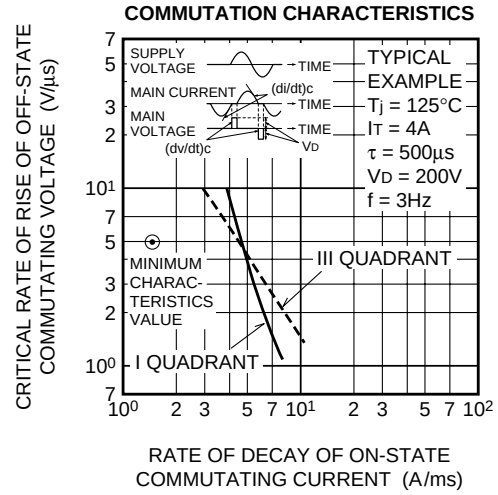
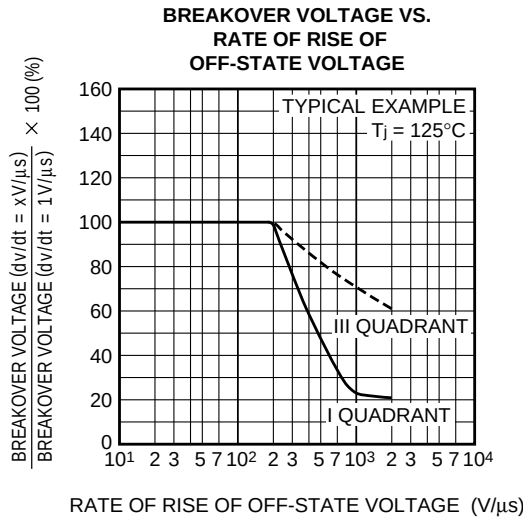
BREAKOVER VOLTAGE VS.
JUNCTION TEMPERATURE



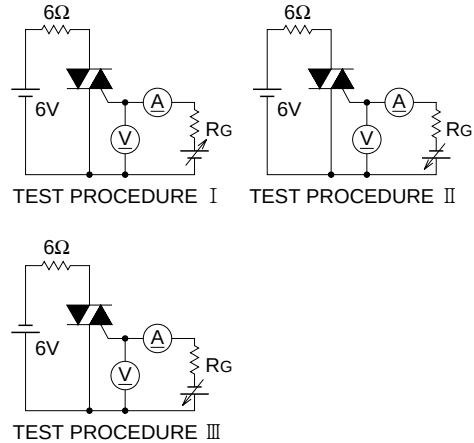
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LOW POWER USE
INSULATED TYPE, PLANAR PASSIVATION TYPE



GATE TRIGGER CHARACTERISTICS TEST CIRCUITS



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The product guaranteed maximum junction temperature 150°C (See warning.)

LOW POWER USE
INSULATED TYPE, PLANAR PASSIVATION TYPE

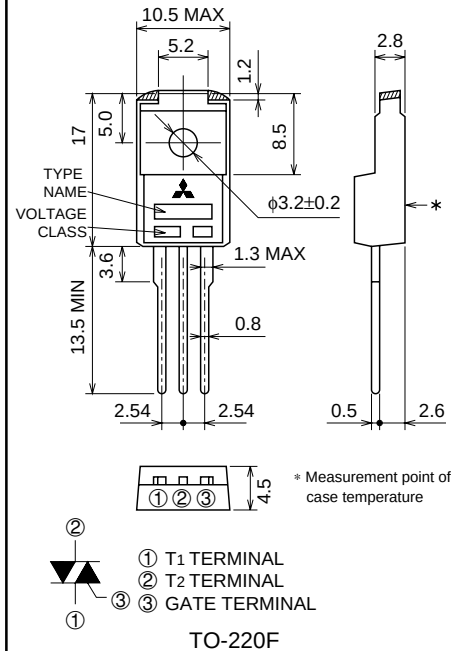
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OUTLINE DRAWING

Dimensions
in mm



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

(Warning)

1. Refer to the recommended circuit values around the triac before using.
2. Be sure to exchange the specification before using. If not exchanged, general triacs will be supplied.

MAXIMUM RATINGS

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

Symbol	Parameter	Conditions	Ratings	Unit
IT (RMS)	RMS on-state current	Commercial frequency, sine full wave 360° conduction, Tc=132°C	3.0	A
ITSM	Surge on-state current	60Hz sinewave 1 full cycle, peak value, non-repetitive	30	A
I ² _t	I ² _t for fusing	Value corresponding to 1 cycle of half wave 60Hz, surge on-state current	3.7	A ² s
PGM	Peak gate power dissipation		3	W
PG (AV)	Average gate power dissipation		0.3	W
VGM	Peak gate voltage		6	V
IGM	Peak gate current		0.5	A
Tj	Junction temperature		-40 ~ +150	°C
Tstg	Storage temperature		-40 ~ +150	°C
—	Weight	Typical value	2.0	g
Viso	Isolation voltage	Ta=25°C, AC 1 minute, T1 · T2 · G terminal to case	2000	V

*1. Gate open.

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INSULATED TYPE, PLANAR PASSIVATION TYPE

ELECTRICAL CHARACTERISTICS

Symbol	Parameter	Test conditions	Limits			Unit
			Min.	Typ.	Max.	
IdRM	Repetitive peak off-state current	T _j =150°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	T _j =25°C, V _D =6V, R _L =6Ω, R _G =330Ω	—	—	1.5	V
V _{RGT} I			—	—	1.5	V
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I _{FGT} I	Gate trigger current *2	T _j =25°C, V _D =6V, R _L =6Ω, R _G =330Ω	—	—	20*5	mA
I _{RGT} I			—	—	20*5	mA
I _{RGT} III			—	—	20*5	mA
V _{GD}	Gate non-trigger voltage	T _j =125°C/150°C, V _D =1/2V _{DRM}	0.2/0.1	—	—	V
R _{th} (j-c)	Thermal resistance	Junction to case *3	—	—	4.5	°C/W
(dv/dt) _c	Critical-rate of rise of off-state commutating voltage *4	T _j =125°C/150°C	5/1	—	—	V/μs

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

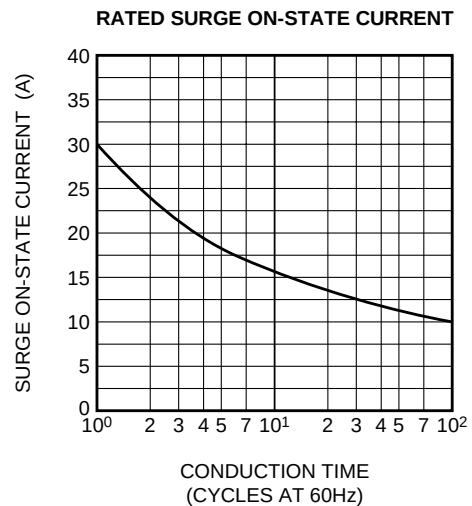
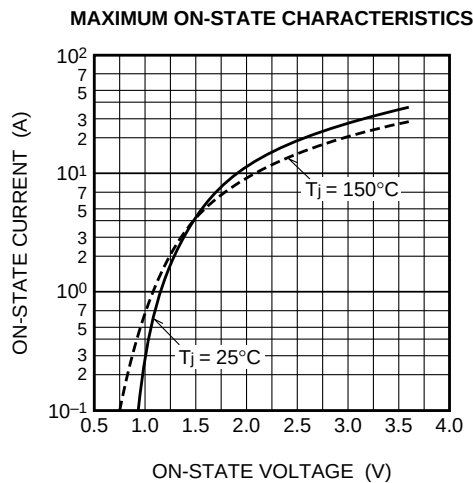
*3. The contact thermal resistance R_{th} (c-f) in case of greasing is 0.5°C/W.

*4. Test conditions of the critical-rate of rise of off-state commutating voltage is shown in the table below.

*5. High sensitivity (I_{GT}≤10mA) is also available. (I_{GT} item①)

Test conditions	Commutating voltage and current waveforms (inductive load)
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PERFORMANCE CURVES

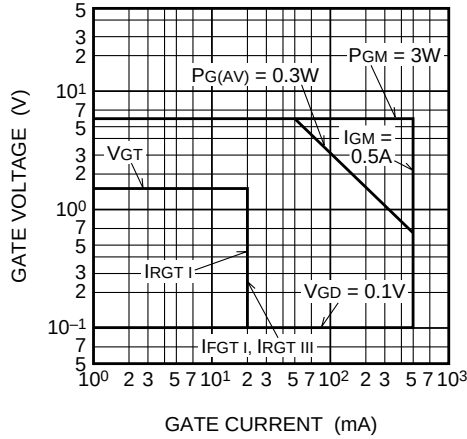


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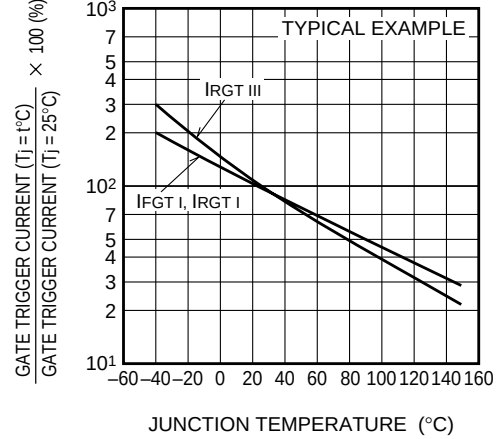
The product guaranteed maximum junction temperature 150°C (See warning.)

LOW POWER USE
INSULATED TYPE, PLANAR PASSIVATION TYPE

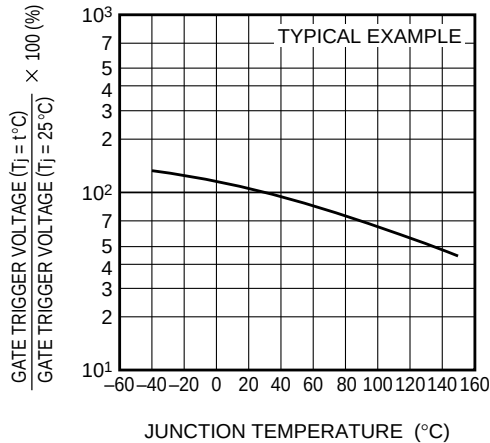
**GATE CHARACTERISTICS
(I, II AND III)**



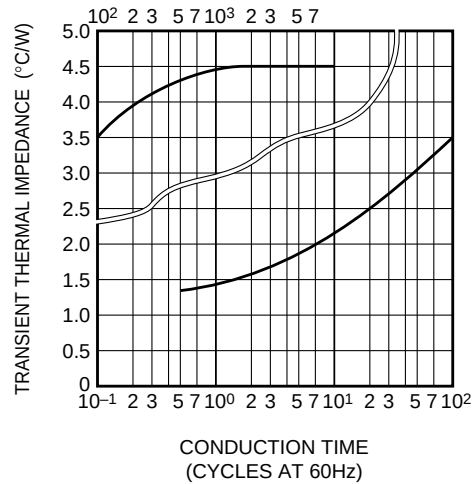
**GATE TRIGGER CURRENT VS.
JUNCTION TEMPERATURE**



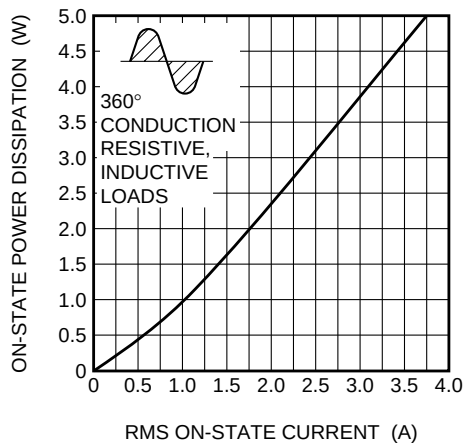
**GATE TRIGGER VOLTAGE VS.
JUNCTION TEMPERATURE**



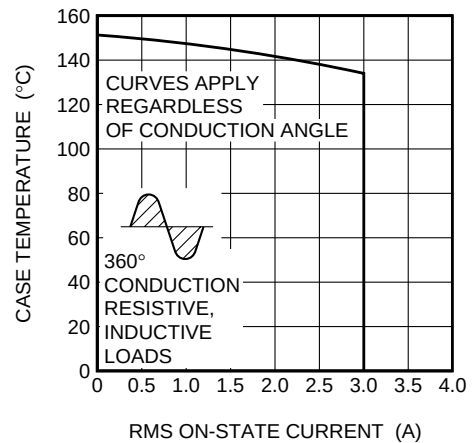
**MAXIMUM TRANSIENT THERMAL
IMPEDANCE CHARACTERISTICS
(JUNCTION TO CASE)**



**MAXIMUM ON-STATE POWER
DISSIPATION**



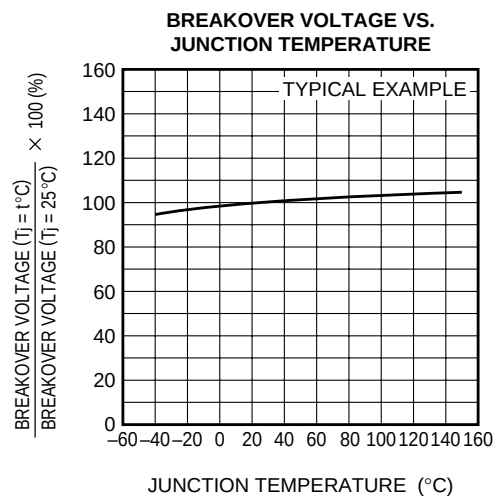
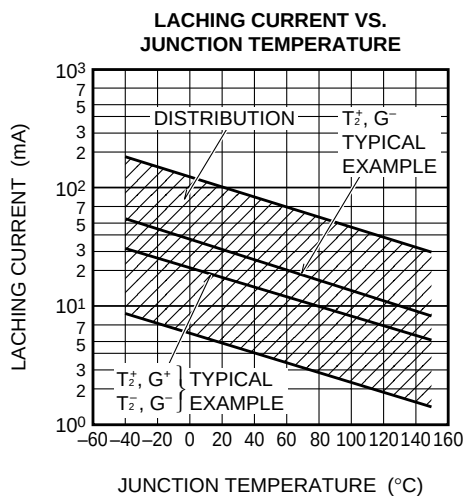
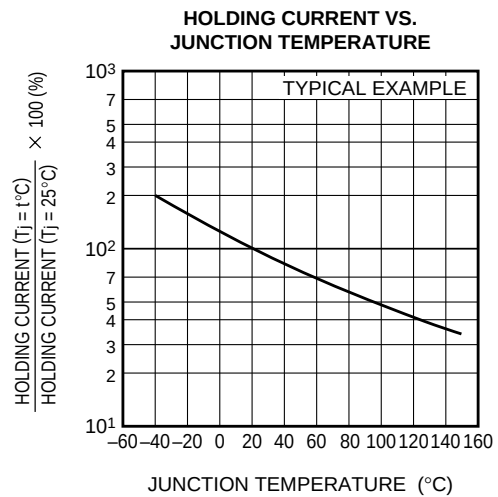
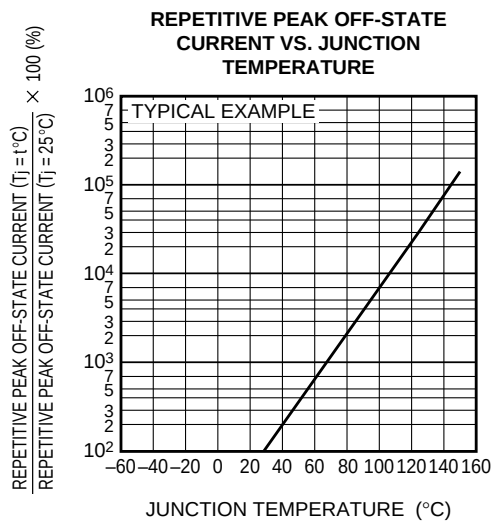
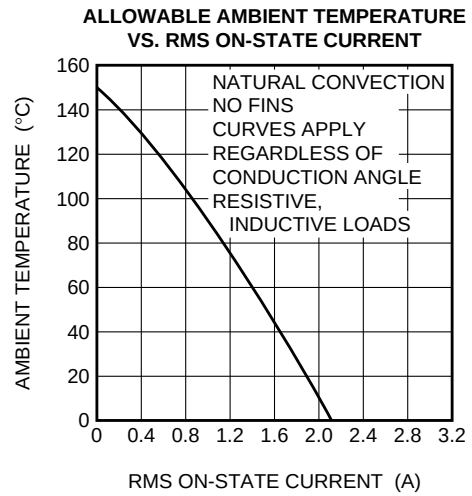
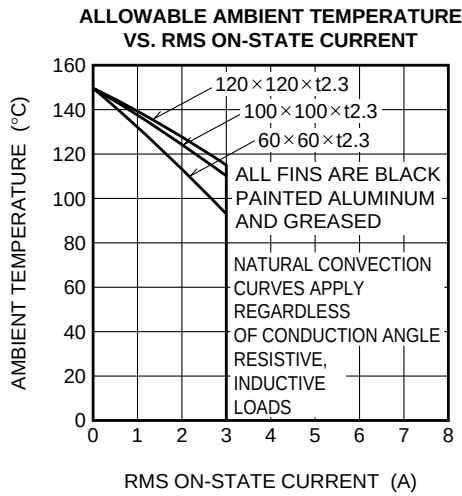
**ALLOWABLE CASE TEMPERATURE
VS. RMS ON-STATE CURRENT**



BCR3PM

The product guaranteed maximum junction temperature 150°C (See warning.)

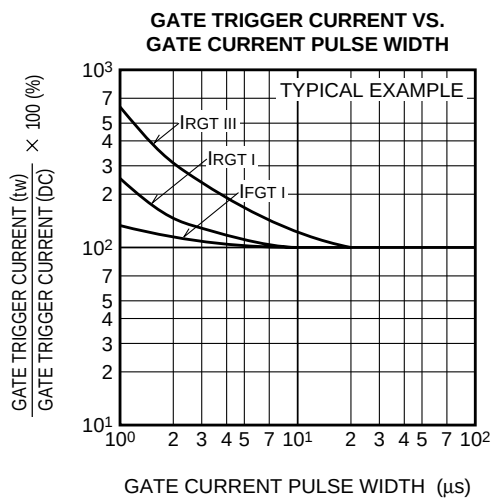
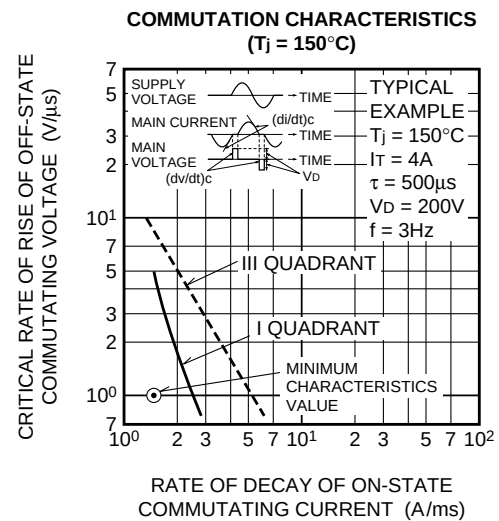
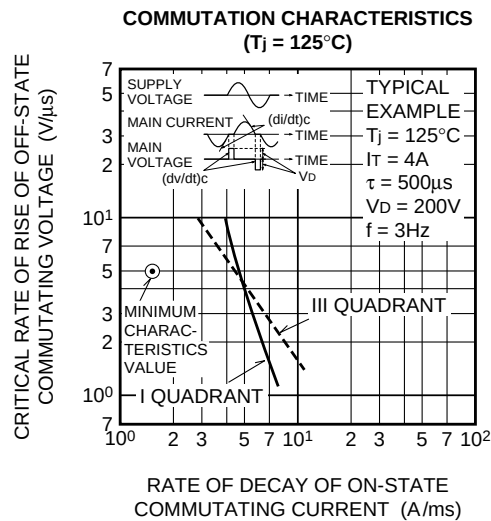
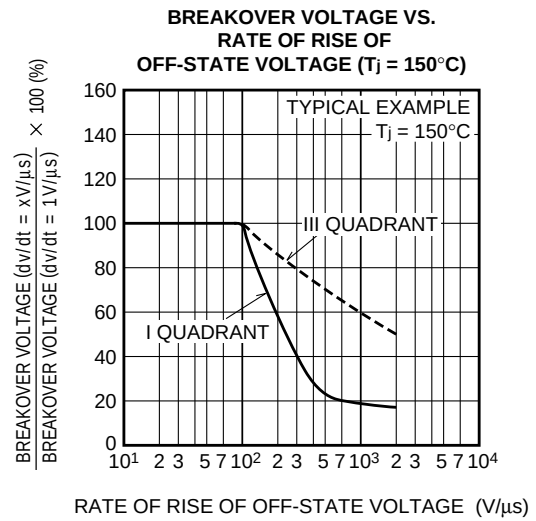
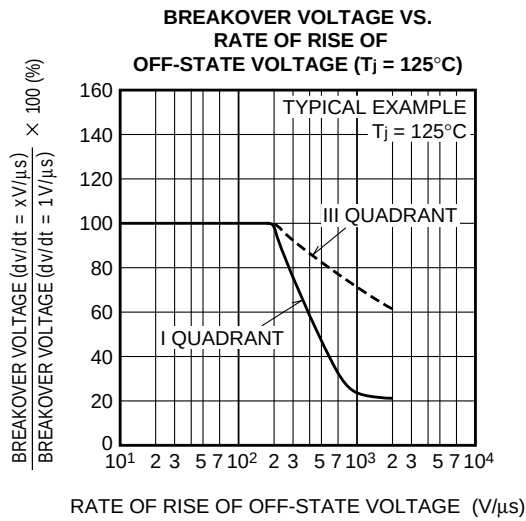
LOW POWER USE
INSULATED TYPE, PLANAR PASSIVATION TYPE



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LOW POWER USE
INSULATED TYPE, PLANAR PASSIVATION TYPE

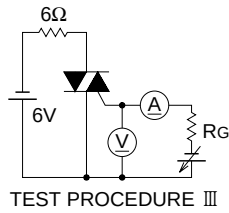
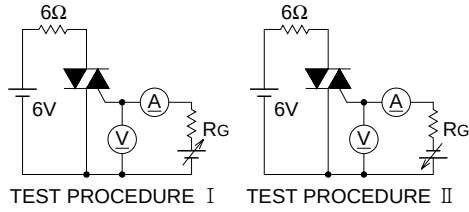


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LOW POWER USE
INSULATED TYPE, PLANAR PASSIVATION TYPE

GATE TRIGGER CHARACTERISTICS TEST CIRCUITS



RECOMMENDED CIRCUIT VALUES AROUND THE TRIAC

