


# BCR5KM

MEDIUM POWER USE

INSULATED TYPE, PLANAR PASSIVATION TYPE

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

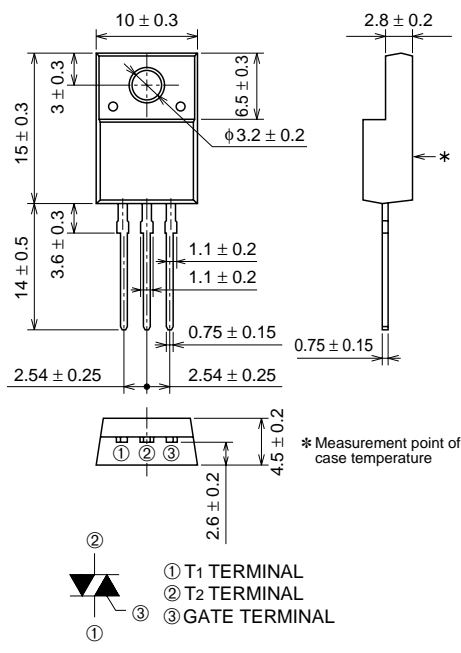
**BCR5KM**



- IT (RMS) ..... 5A
- VDRM ..... 600V
- IFGT I, IRGT I, IRGT III ..... 15mA (10mA) \*3
- UL Recognized: Yellow Card No.E80276(N)

File No. E80271

**OUTLINE DRAWING** Dimensions in mm



**TO-220FN**

\* Measurement point of case temperature

## APPLICATION

Control of heater such as electric rice cooker, electric pot

## MAXIMUM RATINGS

Symbol	Parameter	Voltage class	
		12	Unit
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=103°C	5	A
ITSM	Surge on-state current	60Hz sinewave 1 full cycle, peak value, non-repetitive	50	A
I <sup>2</sup> <sub>t</sub>	I <sup>2</sup> <sub>t</sub> for fusing	Value corresponding to 1 cycle of half wave 60Hz, surge on-state current	10.4	A <sup>2</sup> s
PGM	Peak gate power dissipation		3	W
PG (AV)	Average gate power dissipation		0.3	W
VGM	Peak gate voltage		10	V
IGM	Peak gate current		2	A
T <sub>j</sub>	Junction temperature		-40 ~ +125	°C
T <sub>stg</sub>	Storage temperature		-40 ~ +125	°C
—	Weight		2.0	g
V <sub>iso</sub>	Isolation voltage	Ta=25°C, AC 1 minute, T1 · T2 · G terminal to case	2000	V

\*1. Gate open.

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

**MEDIUM POWER USE**  
**INSULATED TYPE, PLANAR PASSIVATION TYPE**

## ELECTRICAL CHARACTERISTICS

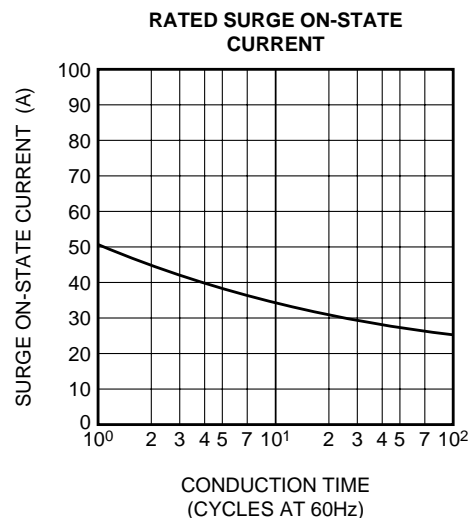
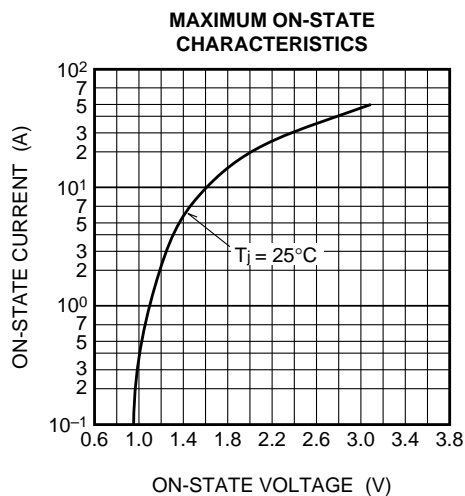
Symbol	Parameter	Test conditions	Limits			Unit
			Min.	Typ.	Max.	
IDRM	Repetitive peak off-state current	T <sub>j</sub> =125°C, V <sub>DRM</sub> applied	—	—	2.0	mA
VTM	On-state voltage	T <sub>c</sub> =25°C, I <sub>TM</sub> =7A, Instantaneous measurement	—	—	1.5	V
VFGT I	Gate trigger voltage *2	T <sub>j</sub> =25°C, V <sub>D</sub> =6V, R <sub>L</sub> =6Ω, R <sub>G</sub> =330Ω	I	—	1.5	V
VRGT I			II	—	1.5	V
VRGT III			III	—	1.5	V
IFGT I	Gate trigger current *2	T <sub>j</sub> =25°C, V <sub>D</sub> =6V, R <sub>L</sub> =6Ω, R <sub>G</sub> =330Ω	I	—	15*3	mA
IRGT I			II	—	15*3	mA
IRGT III			III	—	15*3	mA
VGD	Gate non-trigger voltage	T <sub>j</sub> =125°C, V <sub>D</sub> =1/2V <sub>DRM</sub>	0.2	—	—	V
R <sub>th</sub> (j-c)	Thermal resistance	Junction to case *4	—	—	3.8	°C/W
R <sub>th</sub> (j-a)	Thermal resistance	Junction to ambient	—	—	50	°C/W

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

\*3. High sensitivity (IGT ≤ 10mA) is also available. (IGT item ①)

\*4. The contact thermal resistance R<sub>th</sub> (c-f) in case of greasing is 0.5°C/W.

## PERFORMANCE CURVES

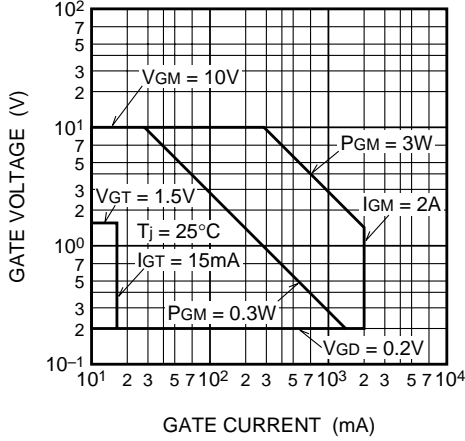


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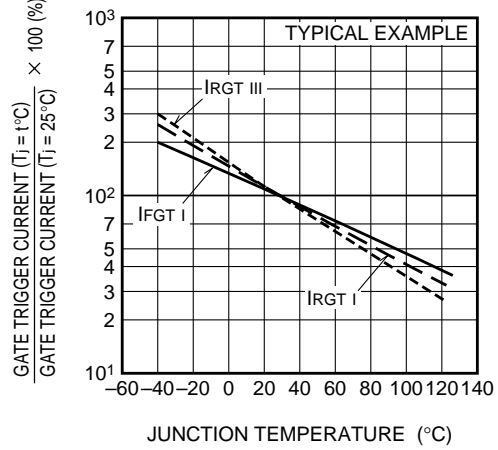
Refer to the page 6 as to the product guaranteed maximum junction temperature 150°C

MEDIUM POWER USE  
INSULATED TYPE, PLANAR PASSIVATION TYPE

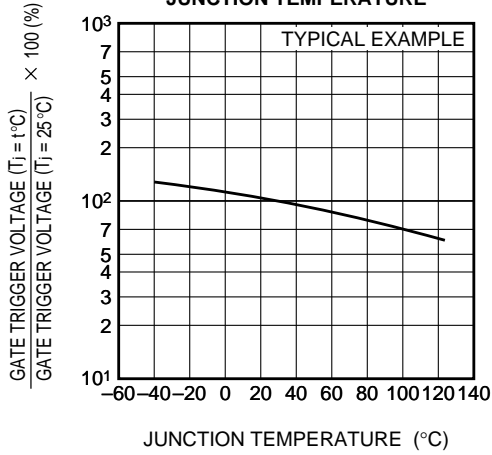
**GATE CHARACTERISTICS (I, II AND III)**



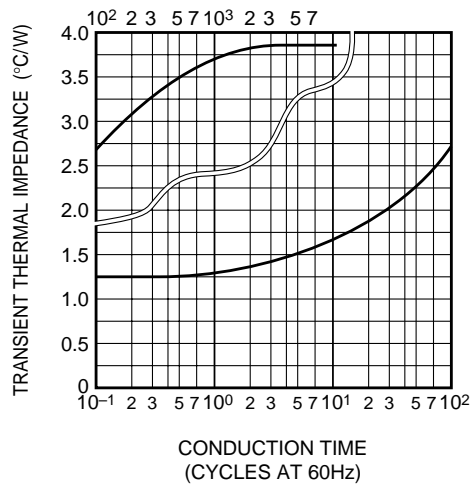
**GATE TRIGGER CURRENT VS. JUNCTION TEMPERATURE**



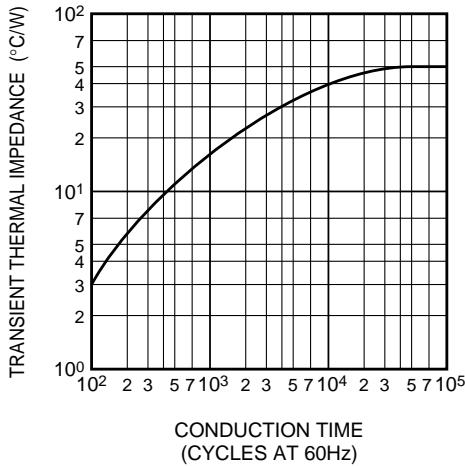
**GATE TRIGGER VOLTAGE VS. JUNCTION TEMPERATURE**



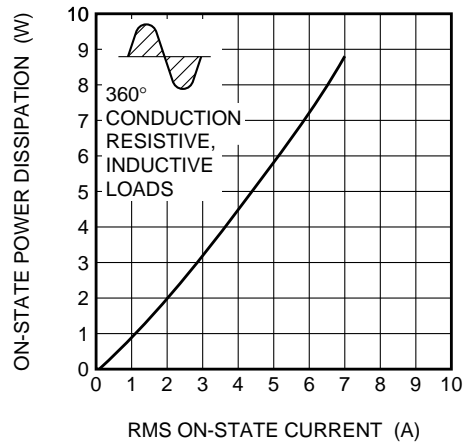
**MAXIMUM TRANSIENT THERMAL IMPEDANCE CHARACTERISTICS (JUNCTION TO CASE)**



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



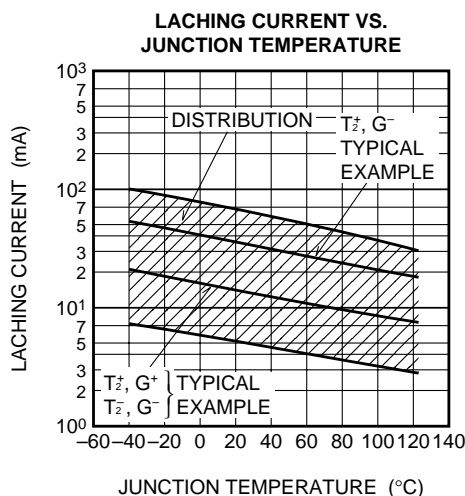
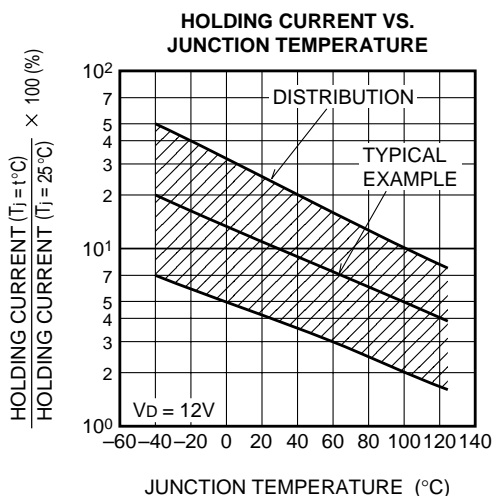
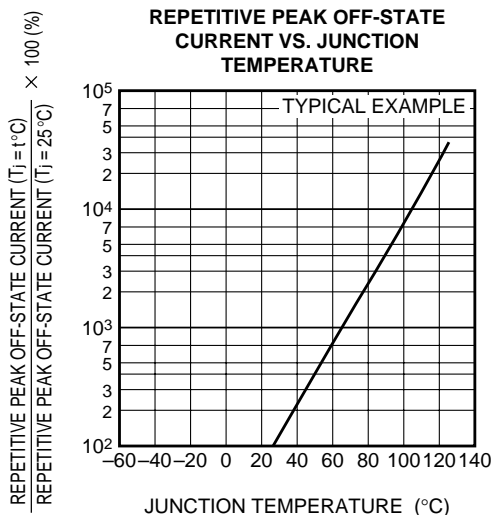
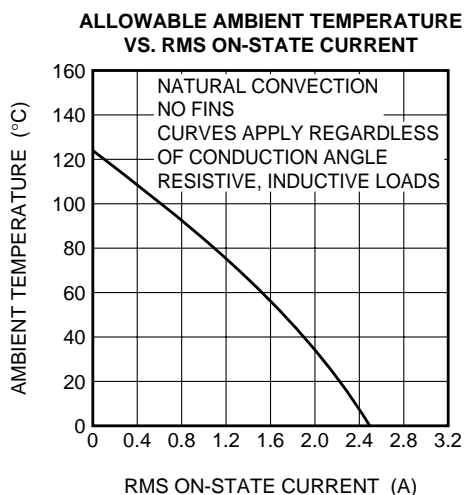
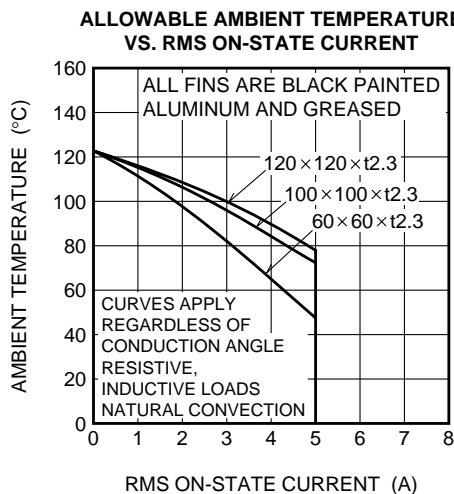
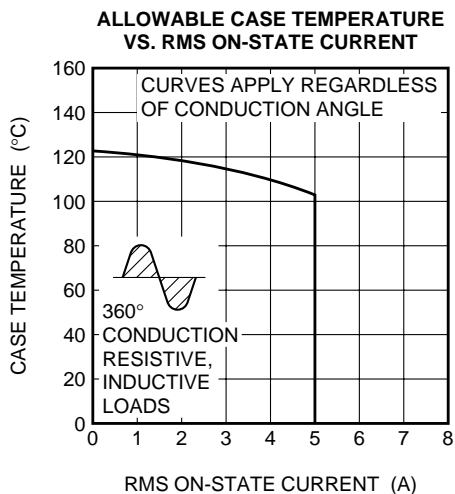
**MAXIMUM ON-STATE POWER DISSIPATION**



# BCR5KM

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

MEDIUM POWER USE  
INSULATED TYPE, PLANAR PASSIVATION TYPE

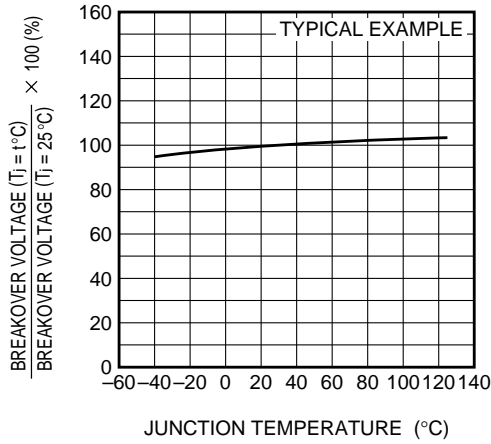


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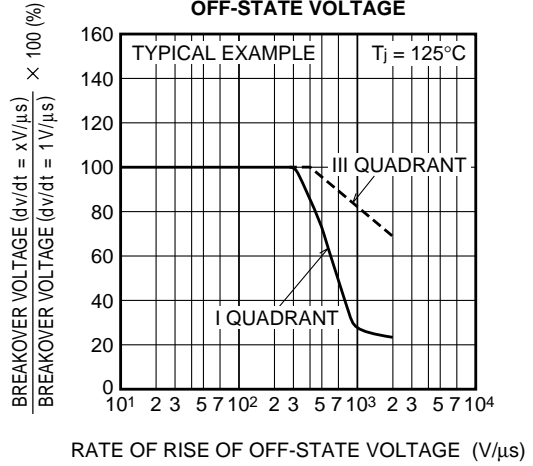
Refer to the page 6 as to the product guaranteed maximum junction temperature 150°C

MEDIUM POWER USE  
INSULATED TYPE, PLANAR PASSIVATION TYPE

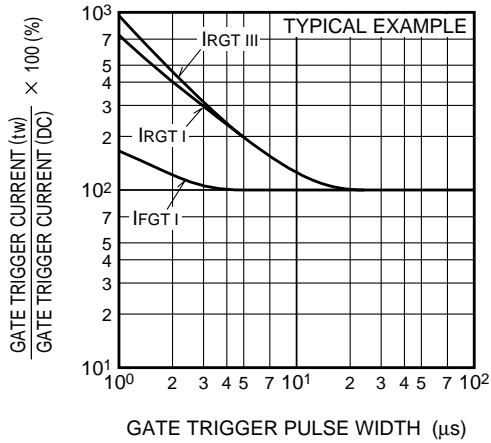
**BREAKOVER VOLTAGE VS. JUNCTION TEMPERATURE**



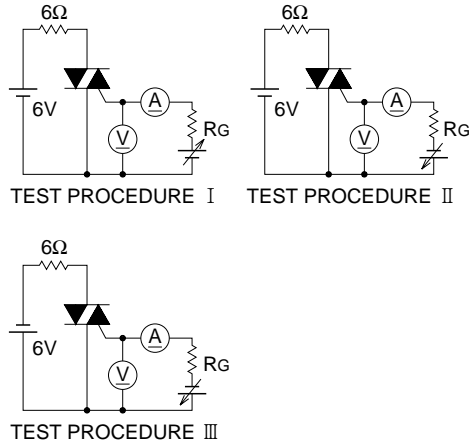
**BREAKOVER VOLTAGE VS. RATE OF RISE OF OFF-STATE VOLTAGE**



**GATE TRIGGER CURRENT VS. GATE CURRENT PULSE WIDTH**



**GATE TRIGGER CHARACTERISTICS TEST CIRCUITS**



# BCR5KM

MEDIUM POWER USE

INSULATED TYPE, PLANAR PASSIVATION TYPE

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

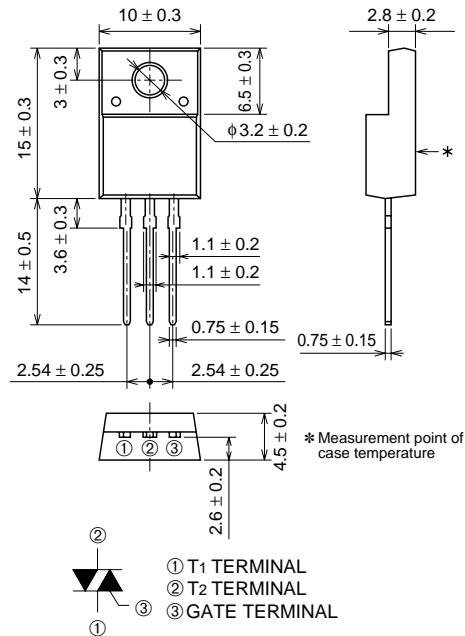
## BCR5KM



- IT (RMS) ..... 5A
- VDRM ..... 600V
- IFGT I, IRGT I, IRGT III ..... 15mA (10mA) \*3
- UL Recognized: Yellow Card No.E80276(N)  
File No. E80271

## OUTLINE DRAWING

Dimensions in mm



TO-220FN

## APPLICATION

Control of heater such as electric rice cooker, electric pot

(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	
		12	Unit
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=128°C	5	A
ITSM	Surge on-state current	60Hz sinewave 1 full cycle, peak value, non-repetitive	50	A
I <sup>2</sup> <sub>t</sub>	I <sup>2</sup> <sub>t</sub> for fusing	Value corresponding to 1 cycle of half wave 60Hz, surge on-state current	10.4	A <sup>2</sup> s
PGM	Peak gate power dissipation		3	W
PG (AV)	Average gate power dissipation		0.3	W
VGM	Peak gate voltage		10	V
IGM	Peak gate current		2	A
T <sub>j</sub>	Junction temperature		-40 ~ +150	°C
T <sub>stg</sub>	Storage temperature		-40 ~ +150	°C
—	Weight		2.0	g
V <sub>iso</sub>	Isolation voltage	Ta=25°C, AC 1 minute, T1 · T2 · G terminal to case	2000	V

\*1. Gate open.

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

**MEDIUM POWER USE**  
**INSULATED TYPE, PLANAR PASSIVATION TYPE**

## ELECTRICAL CHARACTERISTICS

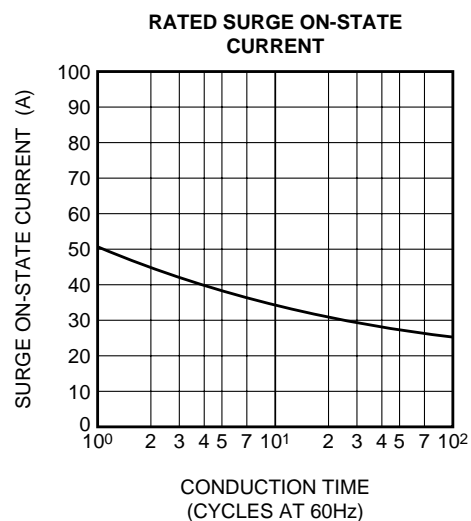
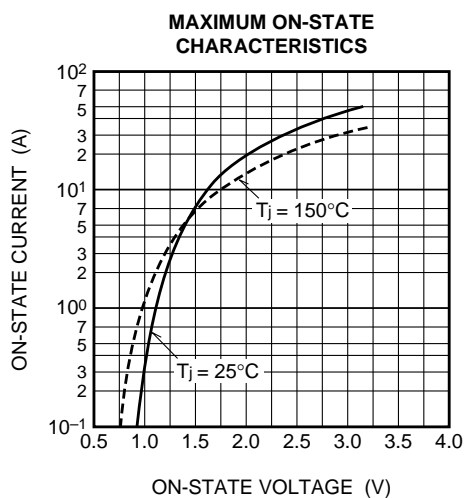
Symbol	Parameter	Test conditions	Limits			Unit	
			Min.	Typ.	Max.		
IDRM	Repetitive peak off-state current	T <sub>j</sub> =150°C, V <sub>DRM</sub> applied	—	—	2.0	mA	
V <sub>TM</sub>	On-state voltage	T <sub>c</sub> =25°C, I <sub>TM</sub> =7A, Instantaneous measurement	—	—	1.5	V	
V <sub>FGT I</sub>	Gate trigger voltage *2	T <sub>j</sub> =25°C, V <sub>D</sub> =6V, R <sub>L</sub> =6Ω, R <sub>G</sub> =330Ω	I	—	—	1.5	V
V <sub>RGT I</sub>			II	—	—	1.5	V
V <sub>RGT III</sub>			III	—	—	1.5	V
I <sub>FGT I</sub>	Gate trigger current *2	T <sub>j</sub> =25°C, V <sub>D</sub> =6V, R <sub>L</sub> =6Ω, R <sub>G</sub> =330Ω	I	—	—	15*3	mA
I <sub>RGT I</sub>			II	—	—	15*3	mA
I <sub>RGT III</sub>			III	—	—	15*3	mA
V <sub>GD</sub>	Gate non-trigger voltage	T <sub>j</sub> =125°C/150°C, V <sub>D</sub> =1/2V <sub>DRM</sub>	0.2/0.1	—	—	V	
R <sub>th(j-c)</sub>	Thermal resistance	Junction to case *4	—	—	3.8	°C/W	
R <sub>th(j-a)</sub>	Thermal resistance	Junction to ambient	—	—	50	°C/W	

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

\*3. High sensitivity (I<sub>GT</sub> ≤ 10mA) is also available. (IGT item ①)

\*4. The contact thermal resistance R<sub>th(c-f)</sub> in case of greasing is 0.5°C/W.

## PERFORMANCE CURVES



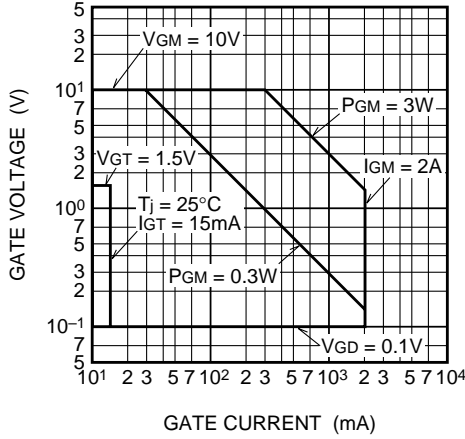
**BCR5KM**

MEDIUM POWER USE

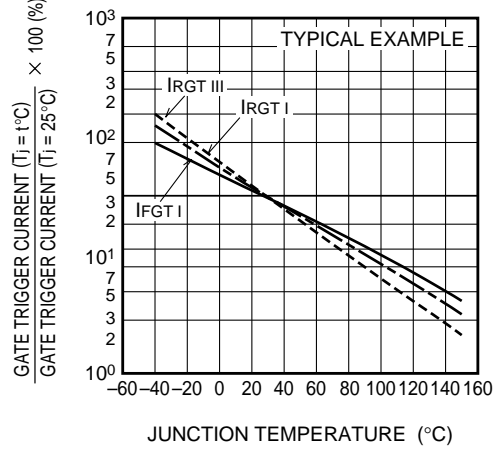
INSULATED TYPE, PLANAR PASSIVATION TYPE

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

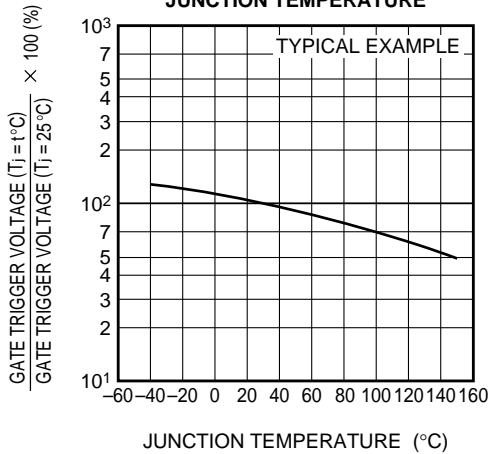
**GATE CHARACTERISTICS (I, II AND III)**



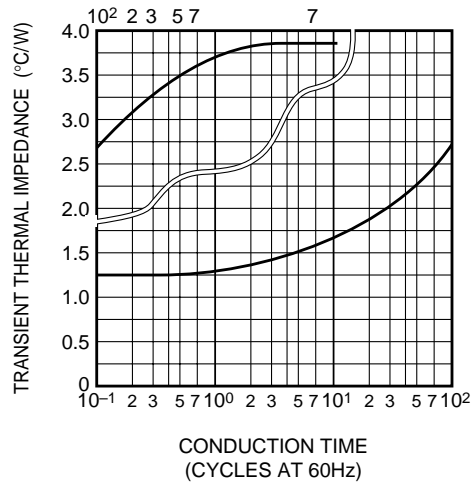
**GATE TRIGGER CURRENT VS. JUNCTION TEMPERATURE**



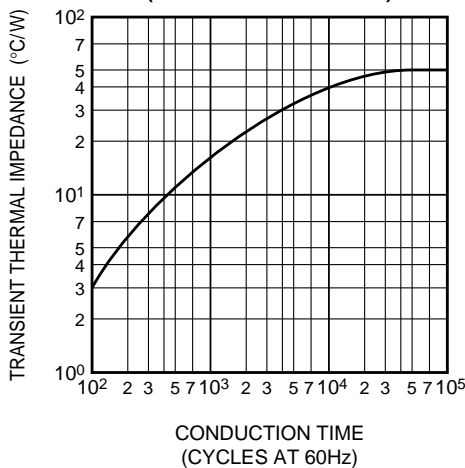
**GATE TRIGGER VOLTAGE VS. JUNCTION TEMPERATURE**



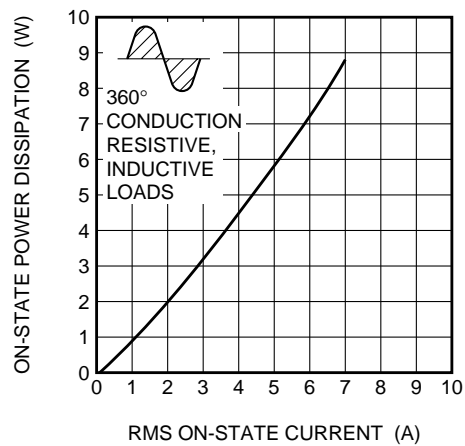
**MAXIMUM TRANSIENT THERMAL IMPEDANCE CHARACTERISTICS (JUNCTION TO CASE)**



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



**MAXIMUM ON-STATE POWER DISSIPATION**

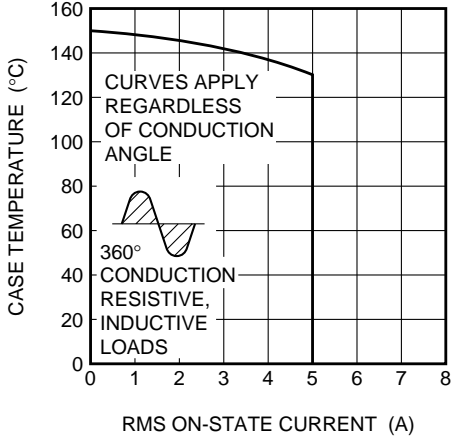


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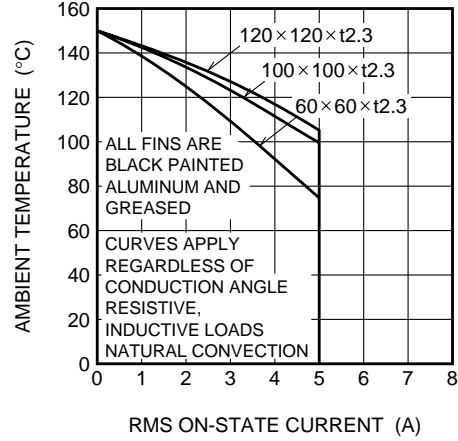
The product guaranteed maximum junction temperature 150°C (See warning.)

**MEDIUM POWER USE**  
**INSULATED TYPE, PLANAR PASSIVATION TYPE**

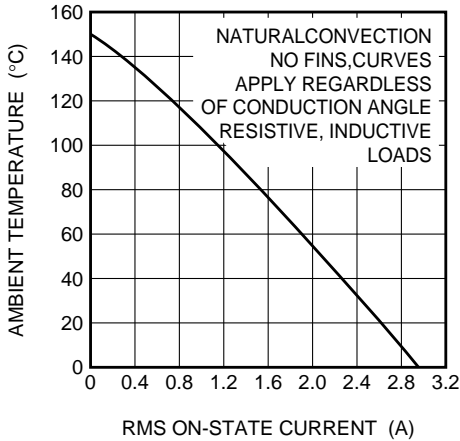
**ALLOWABLE CASE TEMPERATURE VS. RMS ON-STATE CURRENT**



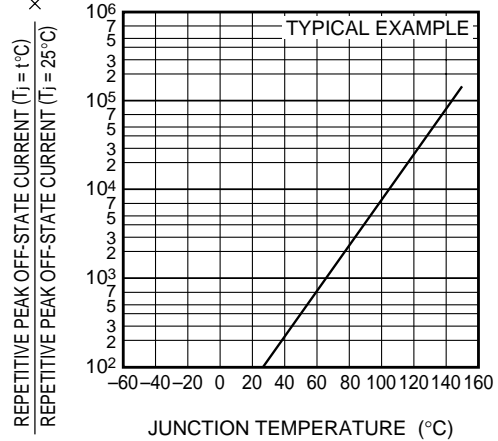
**ALLOWABLE AMBIENT TEMPERATURE VS. RMS ON-STATE CURRENT**



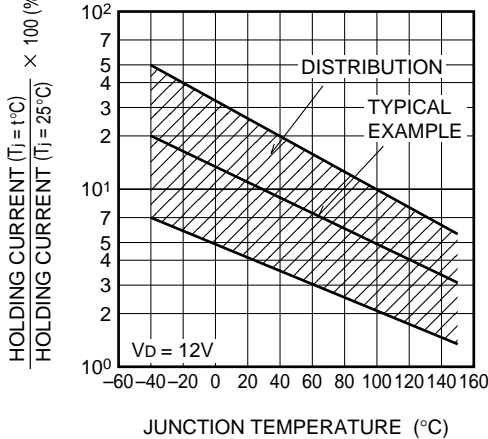
**ALLOWABLE AMBIENT TEMPERATURE VS. RMS ON-STATE CURRENT**



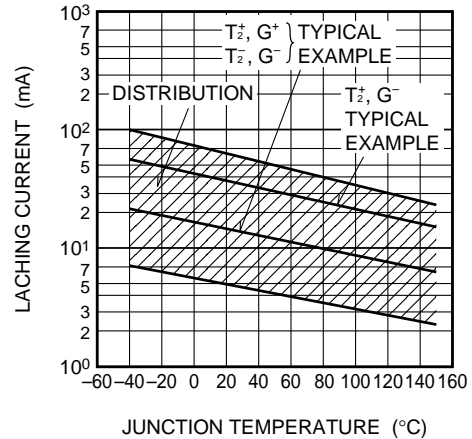
**REPETITIVE PEAK OFF-STATE CURRENT VS. JUNCTION TEMPERATURE**



**HOLDING CURRENT VS. JUNCTION TEMPERATURE**



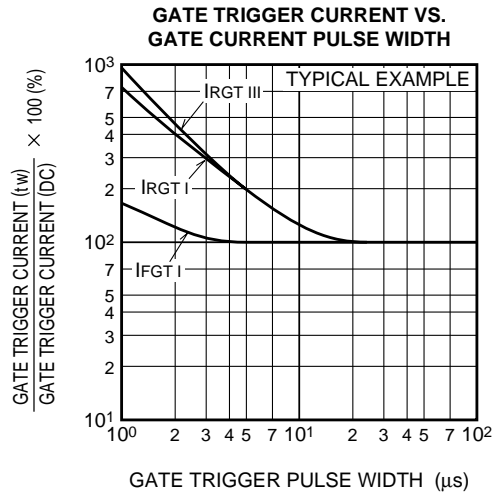
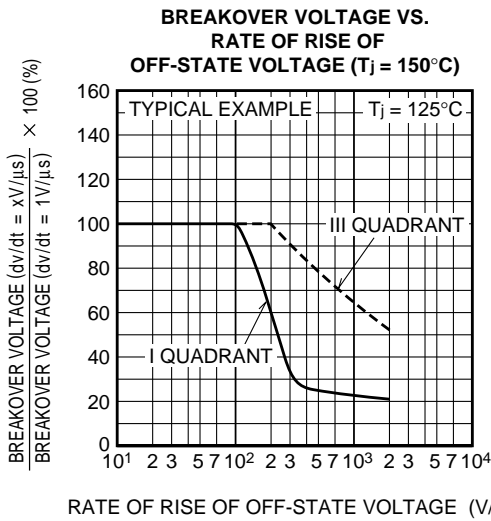
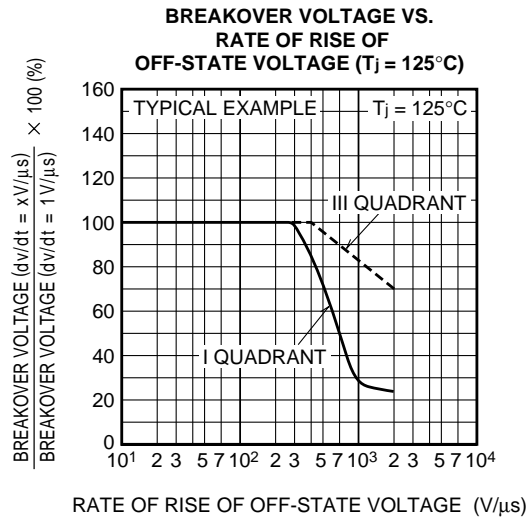
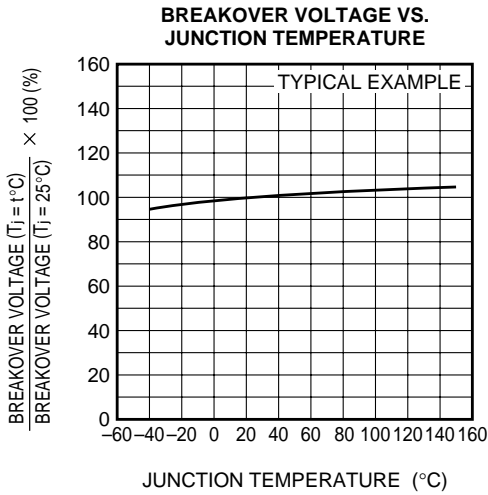
**LACHING CURRENT VS. JUNCTION TEMPERATURE**



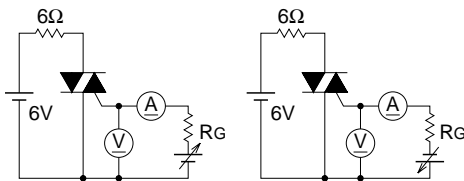
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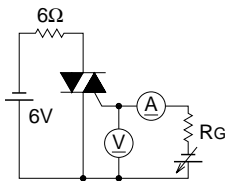
MEDIUM POWER USE  
INSULATED TYPE, PLANAR PASSIVATION TYPE



**GATE TRIGGER CHARACTERISTICS TEST CIRCUITS**

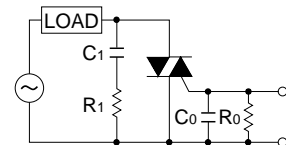


TEST PROCEDURE I TEST PROCEDURE II



TEST PROCEDURE III

**RECOMMENDED CIRCUIT VALUES AROUND THE TRIAC**



C<sub>1</sub> = 0.1~0.47μF    C<sub>0</sub> = 0.1μF  
R<sub>1</sub> = 47~100Ω      R<sub>0</sub> = 100Ω