

# BCR3KM-12

Triac

Low Power Use

REJ03G0312-0200

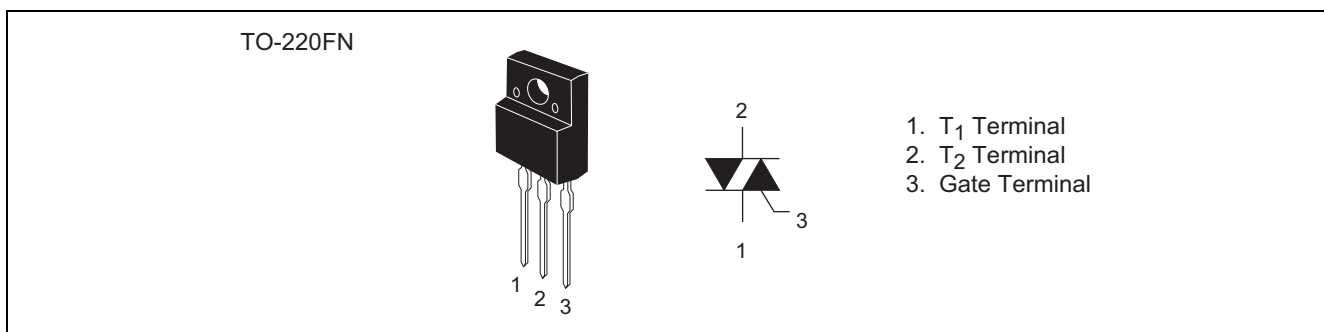
Rev.2.00

Nov.09.2004

## Features

- $I_{T(RMS)}$  : 3 A
- $V_{DRM}$  : 600 V
- $I_{FGT I}$ ,  $I_{RGT I}$ ,  $I_{RGT III}$  : 15 mA (10 mA)<sup>Note3</sup>
- Insulated Type
- Planar Passivation Type
- UL Recognized : Yellow Card No. E223904  
File No. E80271

## Outline



## Applications

Electric rice cooker, electric pot, and controller for other heater

## Maximum Ratings

Parameter	Symbol	Voltage class	Unit
		12	
Repetitive peak off-state voltage <sup>Note1</sup>	$V_{DRM}$	600	V
Non-repetitive peak off-state voltage <sup>Note1</sup>	$V_{DSM}$	720	V

Parameter	Symbol	Ratings	Unit	Conditions
RMS on-state current	$I_{T(RMS)}$	3.0	A	Commercial frequency, sine full wave 360° conduction, $T_c = 111^\circ\text{C}$
Surge on-state current	$I_{TSM}$	30	A	60Hz sinewave 1 full cycle, peak value, non-repetitive
$I^2t$ for fusing	$I^2t$	3.7	$\text{A}^2\text{s}$	Value corresponding to 1 cycle of half wave 60Hz, surge on-state current
Peak gate power dissipation	$P_{GM}$	3	W	
Average gate power dissipation	$P_{G(AV)}$	0.3	W	
Peak gate voltage	$V_{GM}$	6	V	
Peak gate current	$I_{GM}$	0.5	A	
Junction temperature	$T_j$	- 40 to +125	$^\circ\text{C}$	
Storage temperature	$T_{stg}$	- 40 to +125	$^\circ\text{C}$	
Mass	—	2.0	g	
Isolation voltage	$V_{iso}$	2000	V	$T_a = 25^\circ\text{C}$ , AC 1 minute, $T_1 \cdot T_2 \cdot G$ terminal to case

Notes: 1. Gate open.

## Electrical Characteristics

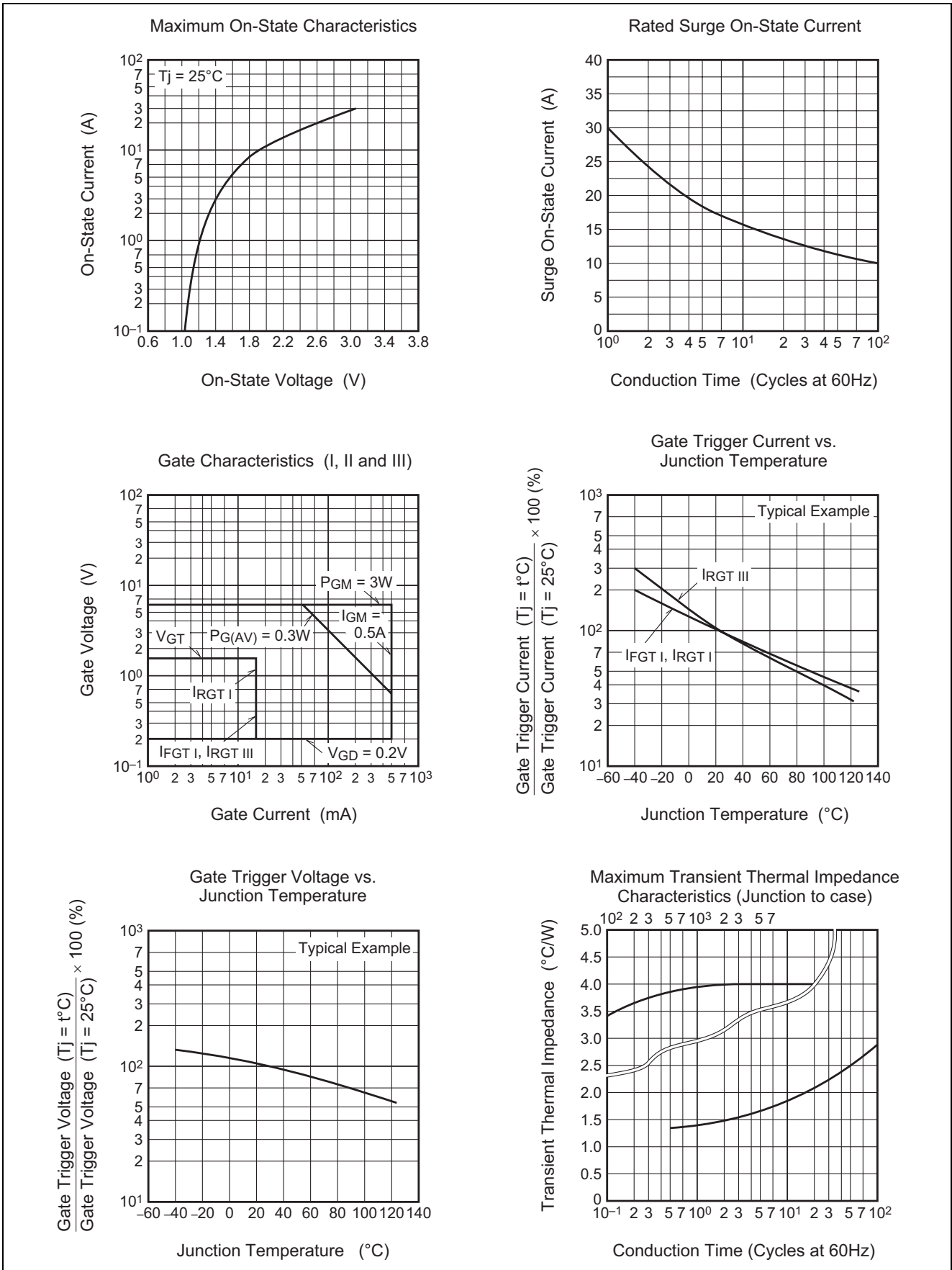
Parameter	Symbol	Min.	Typ.	Max.	Unit	Test conditions	
Repetitive peak off-state current	$I_{DRM}$	—	—	2.0	mA	$T_j = 125^\circ\text{C}$ , $V_{DRM}$ applied	
On-state voltage	$V_{TM}$	—	—	1.5	V	$T_c = 25^\circ\text{C}$ , $I_{TM} = 4.5\text{ A}$ , Instantaneous measurement	
Gate trigger voltage <sup>Note2</sup>	I	$V_{FGT\ I}$	—	—	1.5	V	$T_j = 25^\circ\text{C}$ , $V_D = 6\text{ V}$ , $R_L = 6\ \Omega$ , $R_G = 330\ \Omega$
	II	$V_{RGT\ I}$	—	—	1.5	V	
	III	$V_{RGT\ III}$	—	—	1.5	V	
Gate trigger current <sup>Note2</sup>	I	$I_{FGT\ I}$	—	—	15 <sup>Note3</sup>	mA	$T_j = 25^\circ\text{C}$ , $V_D = 6\text{ V}$ , $R_L = 6\ \Omega$ , $R_G = 330\ \Omega$
	II	$I_{RGT\ I}$	—	—	15 <sup>Note3</sup>	mA	
	III	$I_{RGT\ III}$	—	—	15 <sup>Note3</sup>	mA	
Gate non-trigger voltage	$V_{GD}$	0.2	—	—	V	$T_j = 125^\circ\text{C}$ , $V_D = 1/2V_{DRM}$	
Thermal resistance	$R_{th(j-c)}$	—	—	4.0	$^\circ\text{C/W}$	Junction to case <sup>Note4</sup>	
Thermal resistance	$R_{th(j-a)}$	—	—	50	$^\circ\text{C/W}$	Junction to ambient	

Notes: 2. Measurement using the gate trigger characteristics measurement circuit.

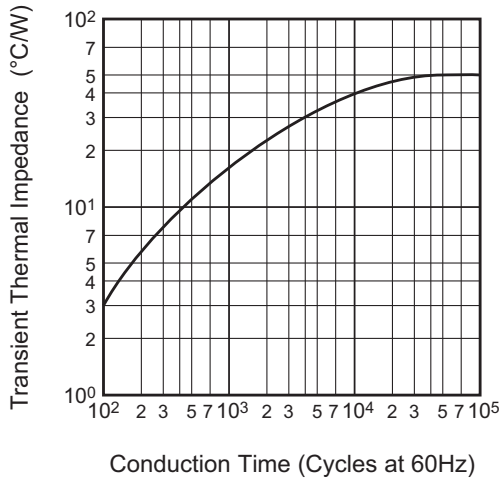
3. High sensitivity ( $I_{GT} \leq 10\text{ mA}$ ) is also available. ( $I_{GT}$  item: 1)

4. The contact thermal resistance  $R_{th(c-f)}$  in case of greasing is  $0.5^\circ\text{C/W}$ .

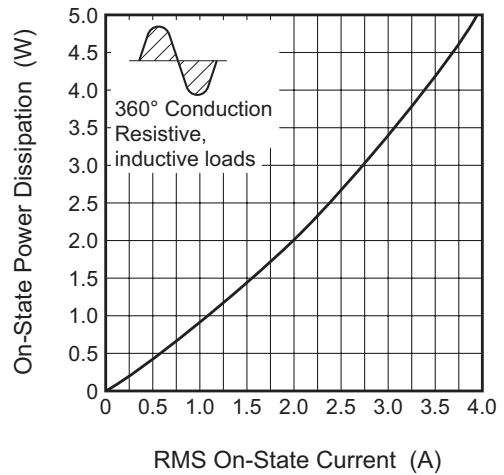
Performance Curves



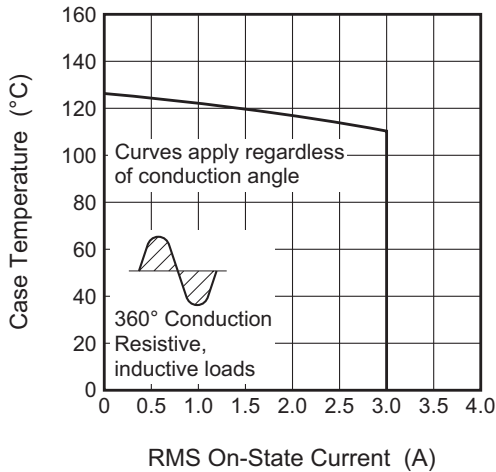
Maximum Transient Thermal Impedance Characteristics (Junction to ambient)



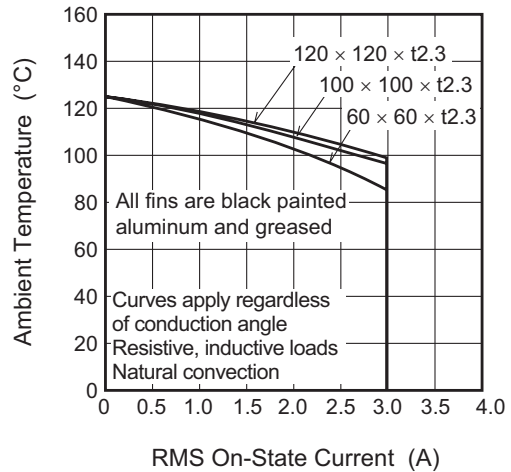
Maximum On-State Power Dissipation



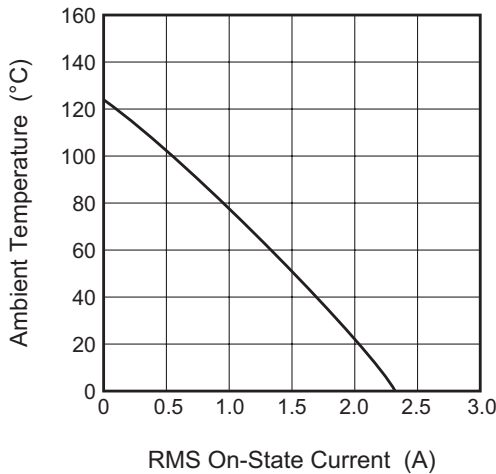
Allowable Case Temperature vs. RMS On-State Current



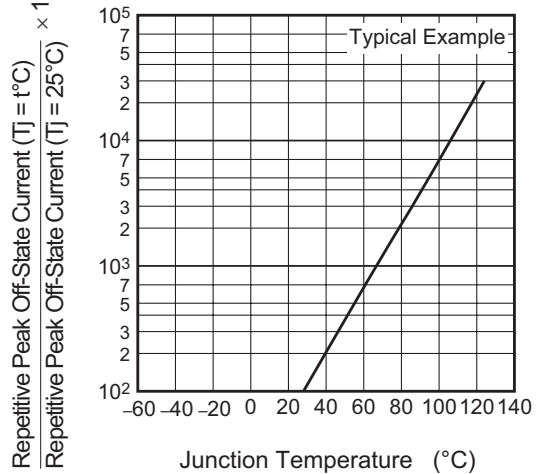
Allowable Ambient Temperature vs. RMS On-State Current



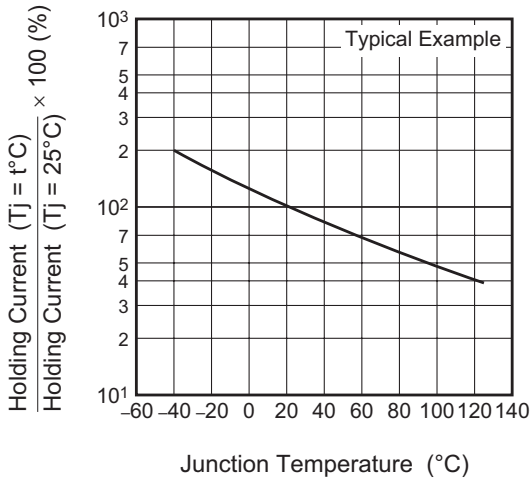
Allowable Ambient Temperature vs. RMS On-State Current



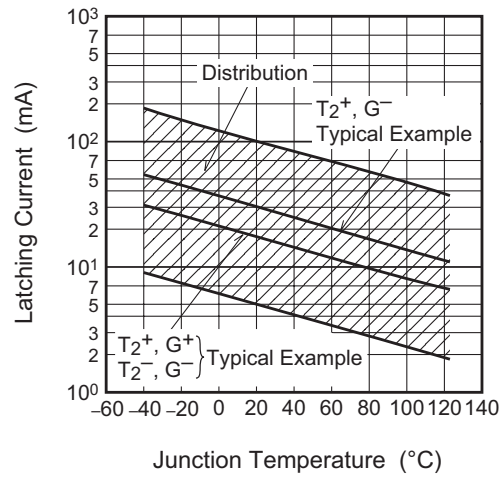
Repetitive Peak Off-State Current vs. Junction Temperature



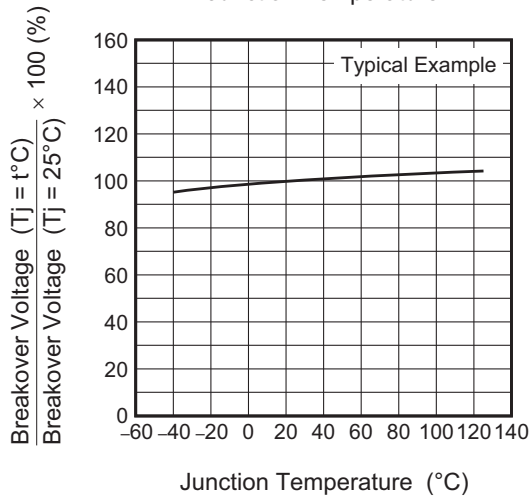
Holding Current vs. Junction Temperature



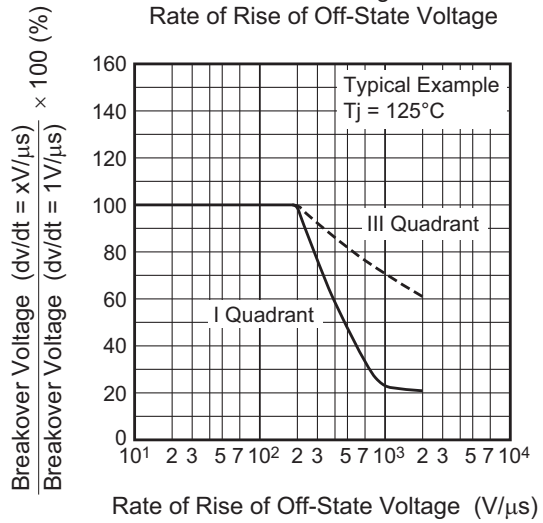
Latching Current vs. Junction Temperature



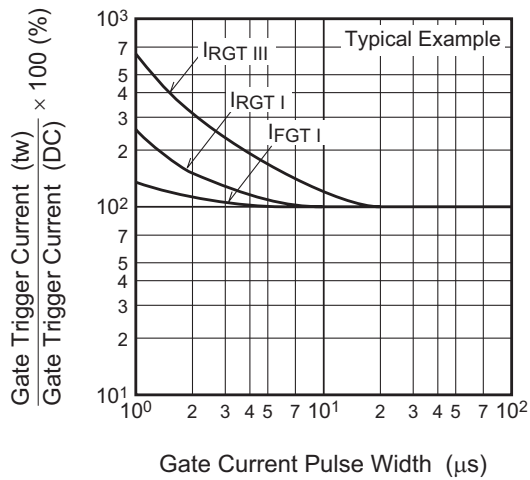
Breakover Voltage vs. Junction Temperature



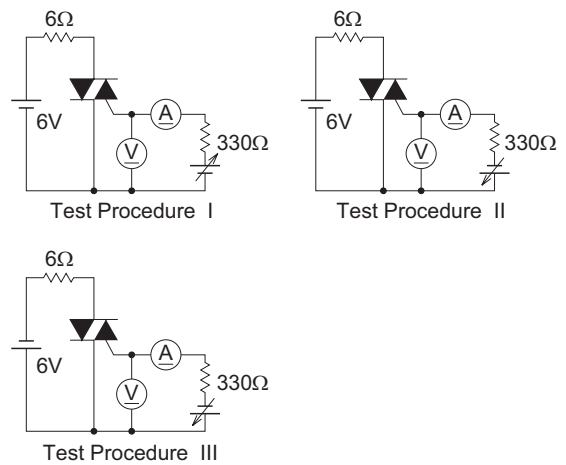
Breakover Voltage vs. Rate of Rise of Off-State Voltage



Gate Trigger Current vs. Gate Current Pulse Width



Gate Trigger Characteristics Test Circuits



## Package Dimensions

**TO-220FN**

EIAJ Package Code	JEDEC Code	Mass (g) (reference value)	Lead Material
—	—	2.0	Cu alloy

Note 1) The dimensional figures indicate representative values unless otherwise the tolerance is specified.

Symbol	Dimension in Millimeters		
	Min	Typ	Max
A	—	—	—
A <sub>1</sub>	—	—	—
A <sub>2</sub>	—	—	—
b	—	—	—
D	—	—	—
E	—	—	—
e	—	—	—
x	—	—	—
y	—	—	—
y <sub>1</sub>	—	—	—
ZD	—	—	—
ZE	—	—	—

## Order Code

Lead form	Standard packing	Quantity	Standard order code	Standard order code example
Straight type	Plastic Magazine (Tube)	50	Type name +RA	BCR3KM-12RA
Lead form	Plastic Magazine (Tube)	50	Type name +RA – Lead forming code	BCR3KM-12RA-A8

Note : Please confirm the specification about the shipping in detail.

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