

BCR5KM-14LA

Triac

Medium Power Use

REJ03G0331-0100

Rev.1.00

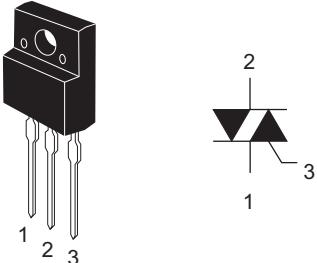
Aug.20.2004

Features

- $I_{T(RMS)}$: 5 A
- V_{DRM} : 700 V
- I_{FGTI} , I_{RGTI} , $I_{RGTI\text{III}}$: 30 mA
- Viso : 2000 V
- Insulated Type
- Planar Passivation Type
- UL Recognized : Yellow Card No. E223904
File No. E80271

Outline

TO-220FN



1. T_1 Terminal
2. T_2 Terminal
3. Gate Terminal

Applications

Switching mode power supply, washing machine, small motor control, heater control, and other general controlling devices

Maximum Ratings

Parameter	Symbol	Voltage class		Unit
		14		
Repetitive peak off-state voltage ^{Note1}	V_{DRM}	700		V
Non-repetitive peak off-state voltage ^{Note1}	V_{DSM}	840		V

Parameter	Symbol	Ratings	Unit	Conditions
RMS on-state current	I _T (RMS)	5	A	Commercial frequency, sine full wave 360° conduction, T _c = 96°C
Surge on-state current	I _{TSM}	50	A	60Hz sinewave 1 full cycle, peak value, non-repetitive
I ² t for fusing	I ² t	10.4	A ² 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}	10	V	
Peak gate current	I _{GM}	2	A	
Junction temperature	T _j	- 40 to +125	°C	
Storage temperature	T _{stg}	- 40 to +125	°C	
Mass	—	2.0	g	Typical value
Isolation voltage	V _{iso}	2000	V	T _a = 25°C, AC 1 minute, T ₁ ·T ₂ ·G terminal to case

Notes: 1. Gate open.

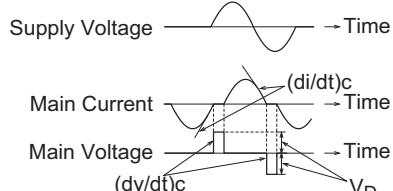
Electrical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test conditions
Repetitive peak off-state current	I _{DRM}	—	—	2.0	mA	T _j = 125°C, V _{DRM} applied
On-state voltage	V _{TM}	—	—	1.8	V	T _c = 25°C, I _{TM} = 7 A, Instantaneous measurement
Gate trigger voltage ^{Note2}	I	V _{FGTI}	—	1.5	V	T _j = 25°C, V _D = 6 V, R _L = 6 Ω, R _G = 330 Ω
	II	V _{RGTI}	—	1.5	V	
	III	V _{RGTIII}	—	1.5	V	
Gate trigger current ^{Note2}	I	I _{FGTI}	—	30	mA	T _j = 25°C, V _D = 6 V, R _L = 6 Ω, R _G = 330 Ω
	II	I _{RGTI}	—	30	mA	
	III	I _{RGTIII}	—	30	mA	
Gate non-trigger voltage	V _{GD}	0.2	—	—	V	T _j = 125°C, V _D = 1/2 V _{DRM}
Thermal resistance	R _{th} (j-c)	—	—	3.8	°C/W	Junction to case ^{Note3}
Critical-rate of rise of off-state commutating voltage ^{Note4}	(dv/dt)c	5	—	—	V/μs	T _j = 125°C

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

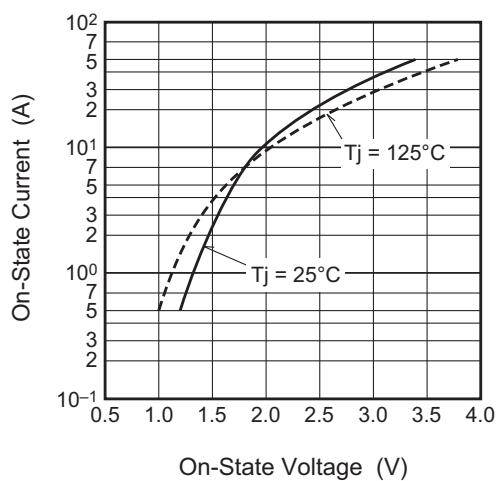
3. The contact thermal resistance R_{th} (c-f) in case of greasing is 0.5°C/W.

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

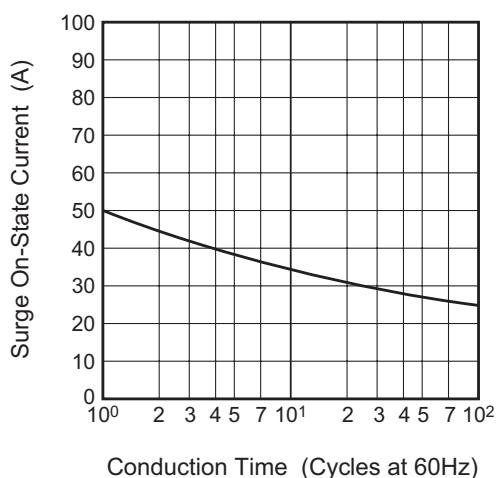
Test conditions	Commutating voltage and current waveforms (inductive load)
1. Junction temperature T _j = 125°C 2. Rate of decay of on-state commutating current (di/dt) _c = - 2.5 A/ms 3. Peak off-state voltage V _D = 400 V	 <p>The graph shows three waveforms over time: Supply Voltage, Main Current, and Main Voltage. The Main Current and Main Voltage curves are shown with their respective rates of change (di/dt)c and (dv/dt)c indicated. The peak off-state voltage VD is also marked on the Main Voltage curve.</p>

Performance Curves

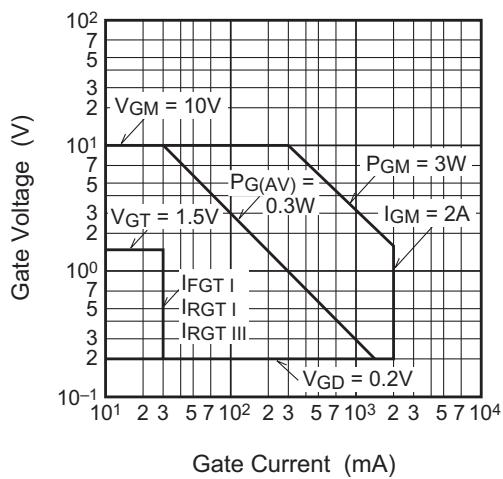
Maximum On-State Characteristics



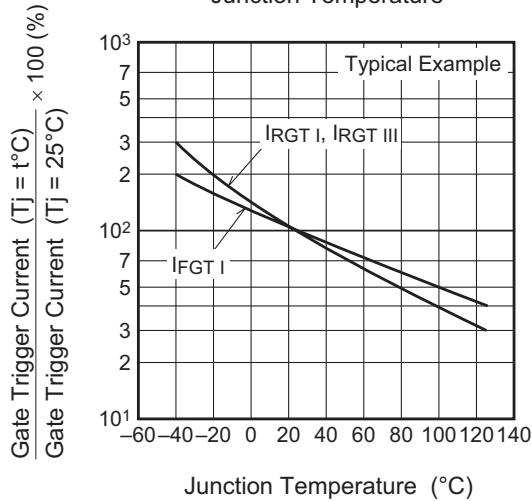
Rated Surge On-State Current



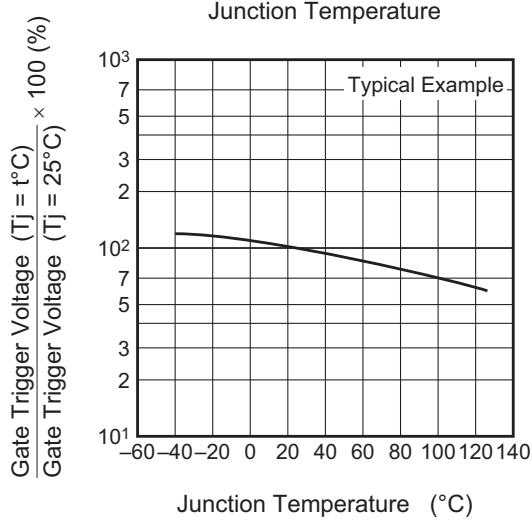
Gate Characteristics (I, II and III)



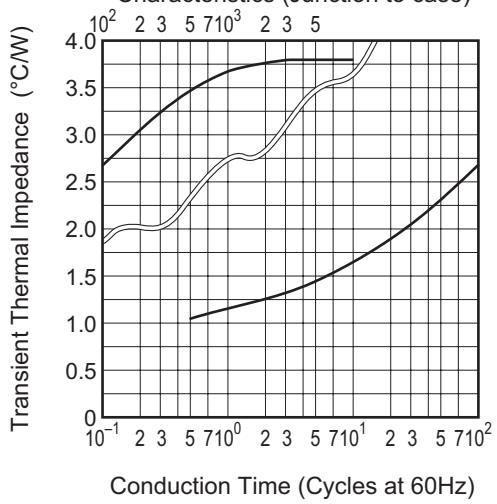
Gate Trigger Current vs. Junction Temperature



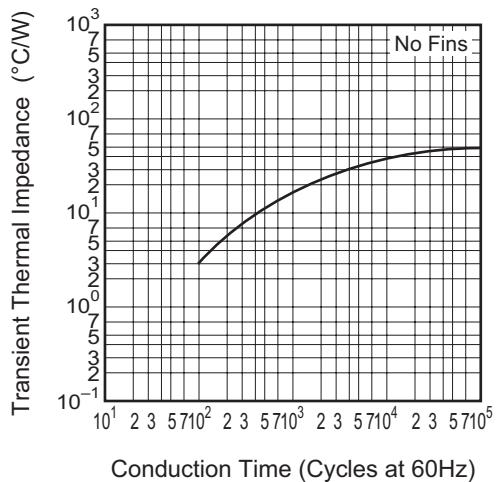
Gate Trigger Voltage vs. Junction Temperature



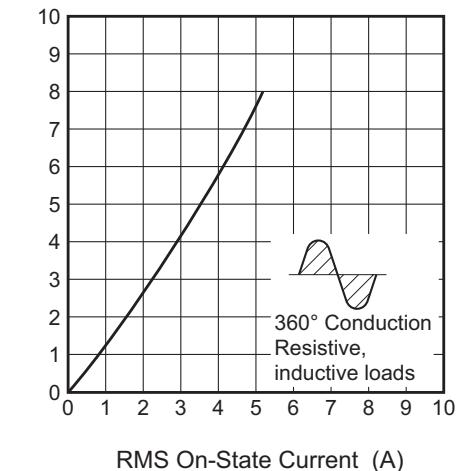
Maximum Transient Thermal Impedance Characteristics (Junction to case)



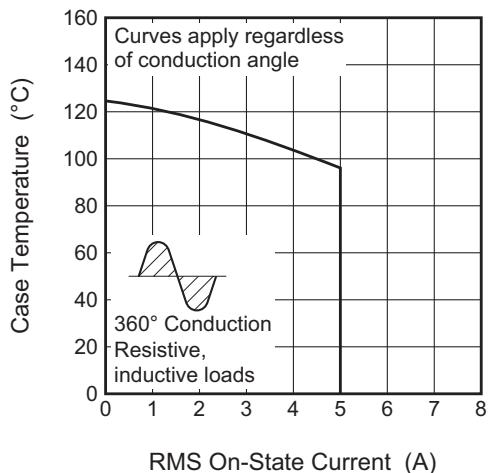
Maximum Transient Thermal Impedance
Characteristics (Junction to ambient)



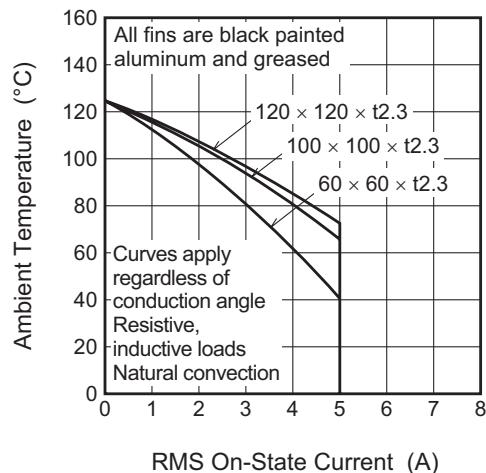
Maximum On-State Power Dissipation



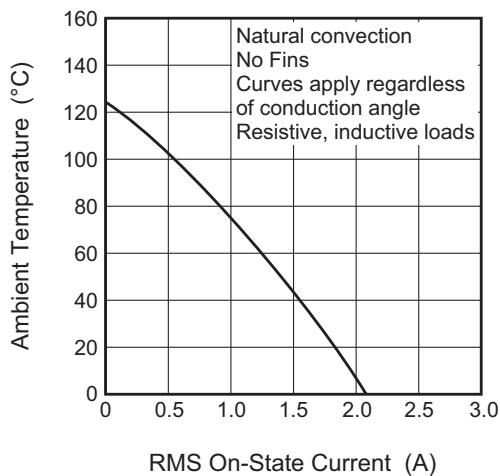
Allowable Case Temperature vs.
RMS On-State Current



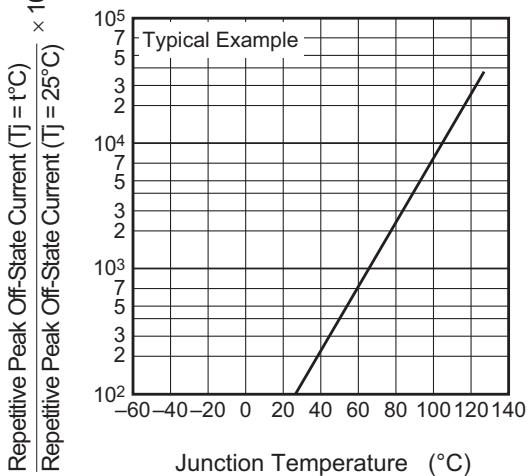
Allowable Ambient Temperature vs.
RMS On-State Current

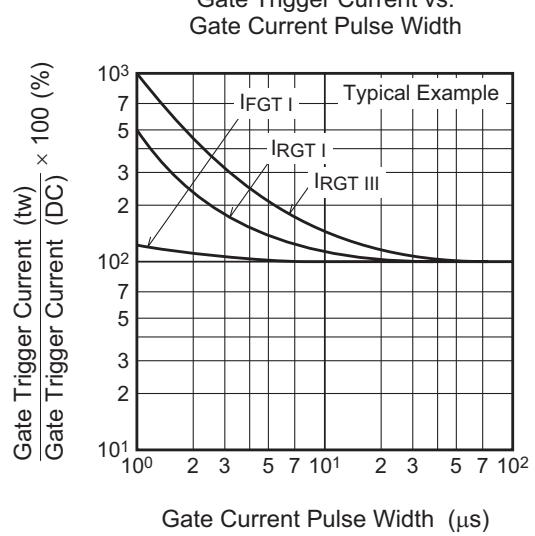
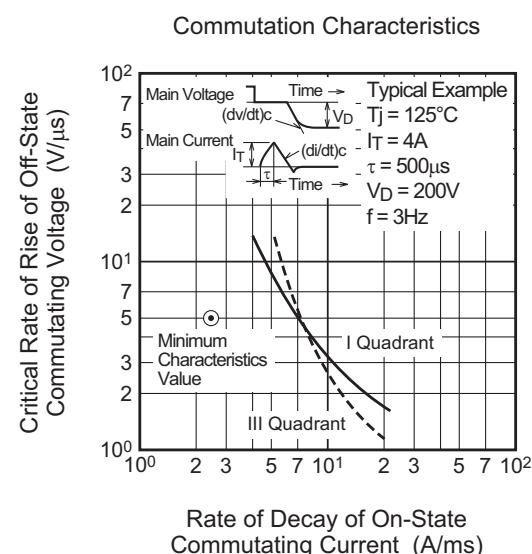
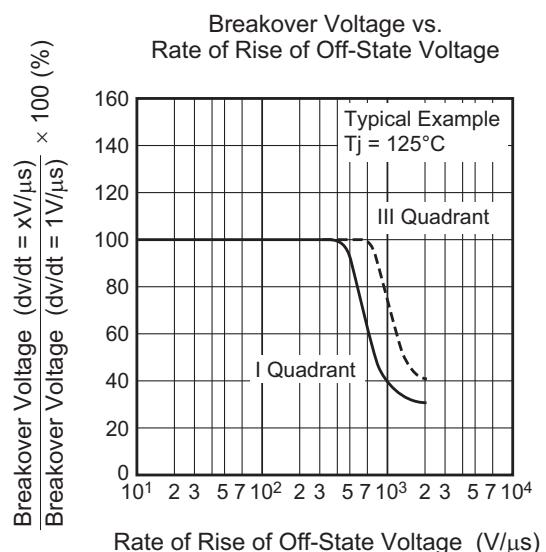
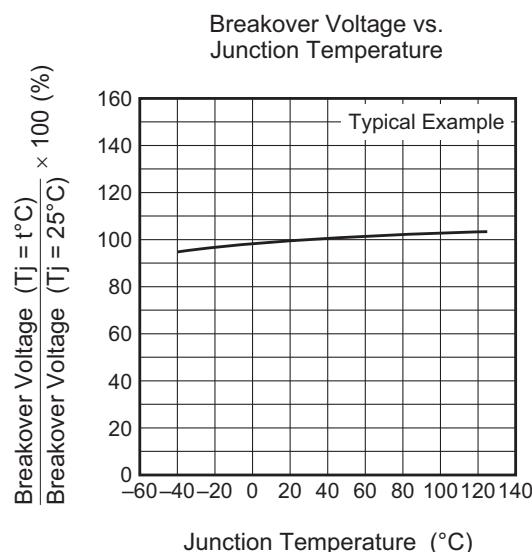
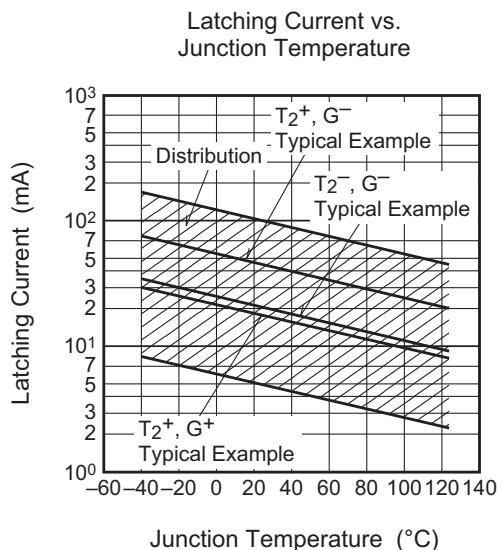
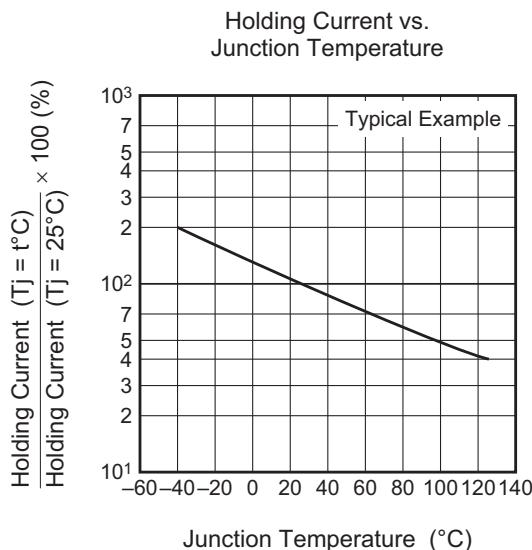


Allowable Ambient Temperature vs.
RMS On-State Current

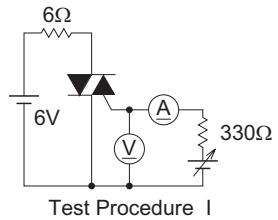


Repetitive Peak Off-State Current vs.
Junction Temperature

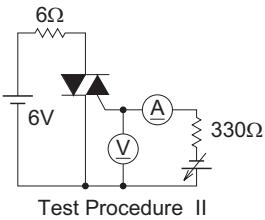




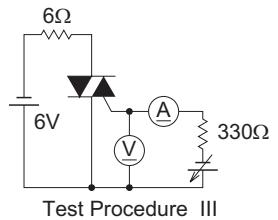
Gate Trigger Characteristics Test Circuits



Test Procedure I



Test Procedure II



Test Procedure III

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 ₁			
A ₂			
b			
D			
E			
e			
x			
y			
y ₁			
ZD			
ZE			

Order Code

Lead form	Standard packing	Quantity	Standard order code	Standard order code example
Straight type	Plastic Magazine (Tube)	50	Type name	BCR5KM-14LA
Lead form	Plastic Magazine (Tube)	50	Type name – Lead forming code	BCR5KM-14LA-A8

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

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