BCR3AS-12

Triac

Low Power Use

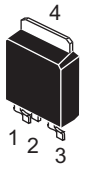
REJ03G0288-0200
Rev.2.00
Nov.08.2004

Features

- $I_{T(RMS)}$: 3 A
- V_{DRM} : 600 V
- $I_{FGT\ I}$, $I_{RGT\ I}$, $I_{RGT\ III}$: 15 mA
- Non-Insulated Type
- Planar Passivation Type

Outline

MP-3A



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

Applications

Hybrid IC, solid state relay, switching mode power supply, light dimmer, electric fan, electric blanket, control of household equipment such as washing machine, and other general purpose control applications

Maximum Ratings

Parameter	Symbol	Voltage class	Unit
		12	
Repetitive peak off-state voltage[Note1]	V_{DRM}	600	V
Non-repetitive peak off-state voltage[Note1]	V_{DSM}	720	V

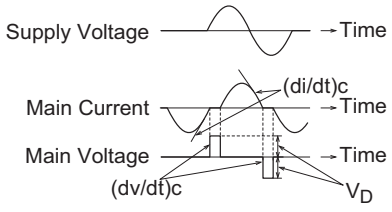
Parameter	Symbol	Ratings	Unit	Conditions
RMS on-state current	$I_{T(RMS)}$	3	A	Commercial frequency, sine full wave 360° conduction, Tc = 108°C Note3
Surge on-state current	I_{TSM}	30	A	60Hz sinewave 1 full cycle, peak value, non-repetitive
I^2t for fusing	I^2t	3.7	A^2s	Value corresponding to 1 cycle 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}	0.3	A	
Junction temperature	Tj	– 40 to +125	°C	
Storage temperature	Tstg	– 40 to +125	°C	
Mass	—	0.26	g	Typical value

Notes: 1. Gate open.

Electrical Characteristics

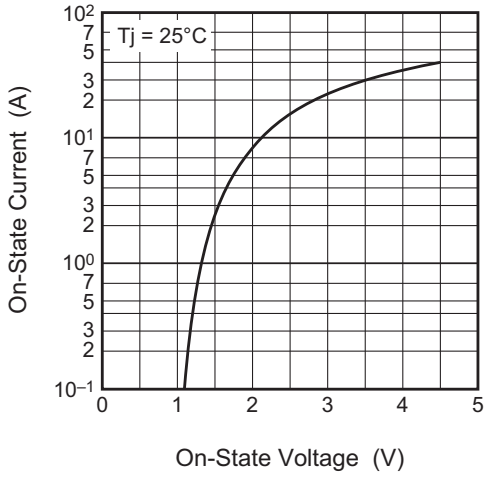
Parameter		Symbol	Min.	Typ.	Max.	Unit	Test conditions
Repetitive peak off-state current		I_{DRM}	—	—	2.0	mA	Tj = 125°C, V_{DRM} applied
On-state voltage		V_{TM}	—	—	1.7	V	Tc = 25°C, I_{TM} = 4.5 A, Instantaneous measurement
Gate trigger voltage Note2	I	$V_{FGT\ I}$	—	—	1.5	V	Tj = 25°C, V_D = 6 V, R_L = 6 Ω, R_G = 330 Ω
	II	$V_{RGT\ I}$	—	—	1.5	V	
	III	$V_{RGT\ III}$	—	—	1.5	V	
Gate trigger current Note2	I	$I_{FGT\ I}$	—	—	15	mA	Tj = 25°C, V_D = 6 V, R_L = 6 Ω, R_G = 330 Ω
	II	$I_{RGT\ I}$	—	—	15	mA	
	III	$I_{RGT\ III}$	—	—	15	mA	
Gate non-trigger voltage		V_{GD}	0.2	—	—	V	Tj = 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	Tj = 125°C

Notes: 2. Measurement using the gate trigger characteristics measureme circuit.
3. Case temperature is measured on the T_2 tab.
4. Test conditions of the critical-rate of rise of off-state commutating voltage is shown in the table below.

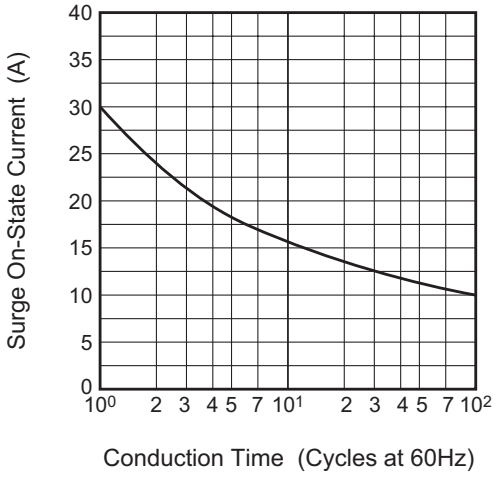
Test conditions	Commutating voltage and current waveforms (inductive load)
1. Junction temperature Tj = 125°C 2. Rate of decay of on-state commutating current (di/dt)c = –1.5 A/ms 3. Peak off-state voltage V_D = 400 V	

Performance Curves

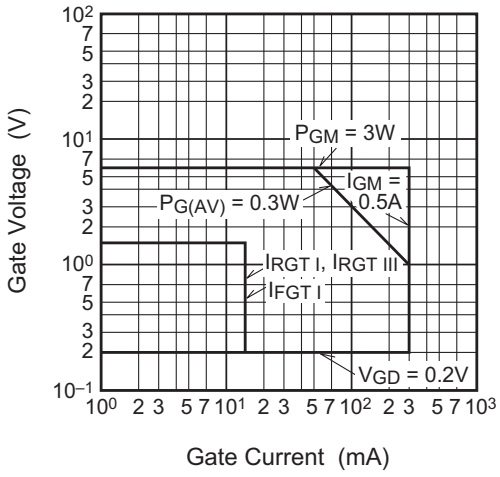
Maximum On-State Characteristics



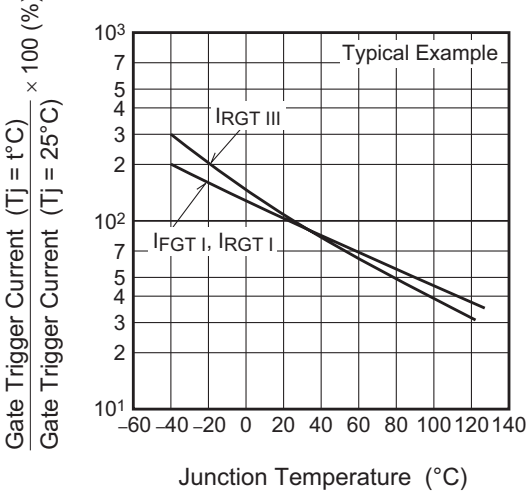
Rated Surge On-State Current



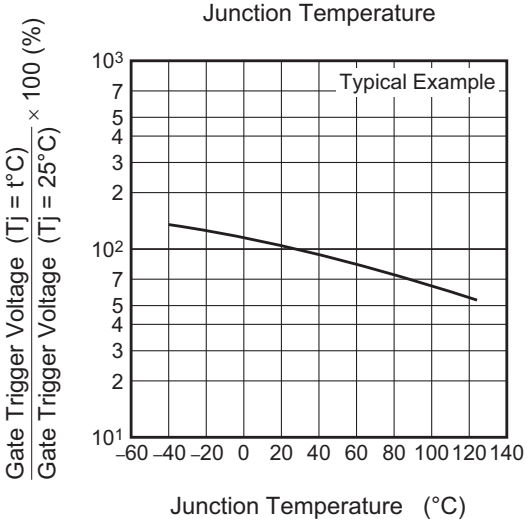
Gate Characteristics (I, II and III)



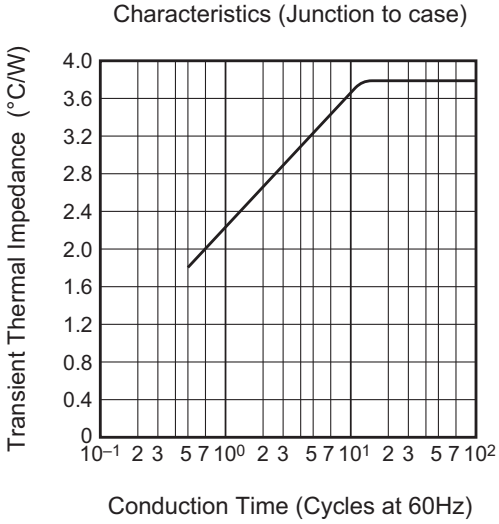
Gate Trigger Current vs. Junction Temperature



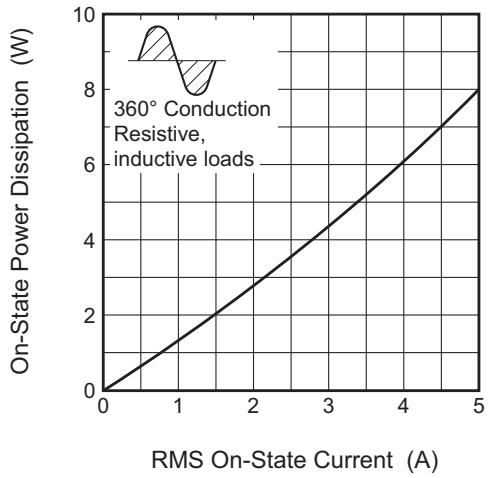
Gate Trigger Voltage vs. Junction Temperature



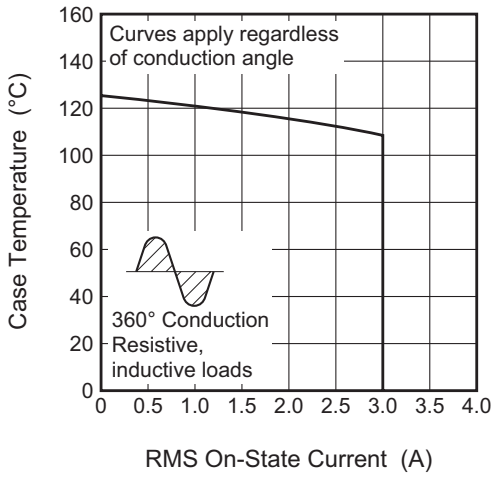
Maximum Transient Thermal Impedance Characteristics (Junction to case)



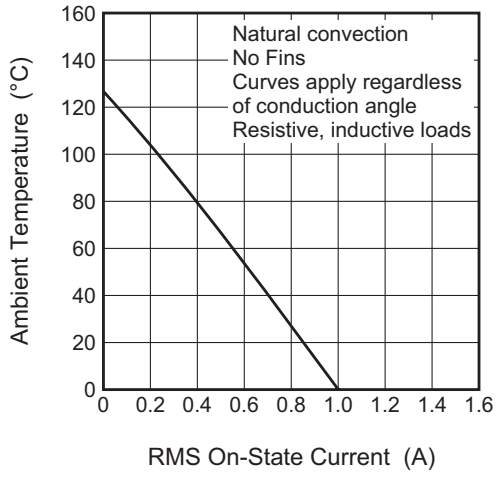
Maximum On-State Power Dissipation



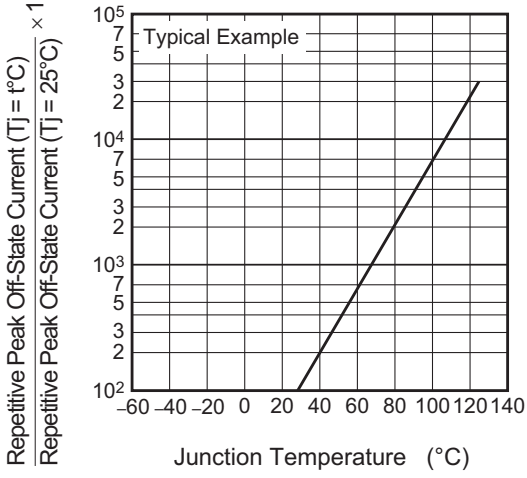
Allowable Case Temperature vs.
RMS On-State Current



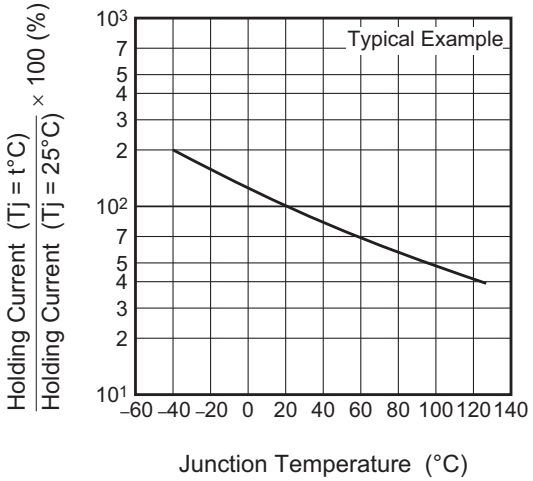
Allowable Ambient Temperature vs.
RMS On-State Current



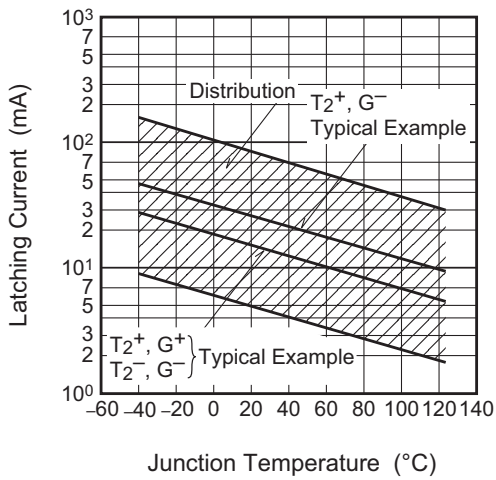
Repetitive Peak Off-State Current vs.
Junction Temperature



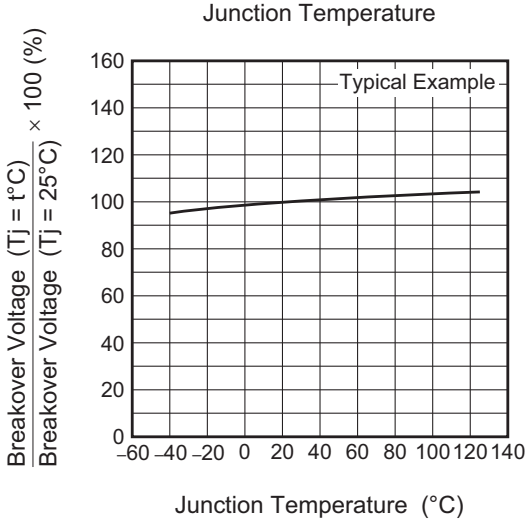
Holding Current vs.
Junction Temperature



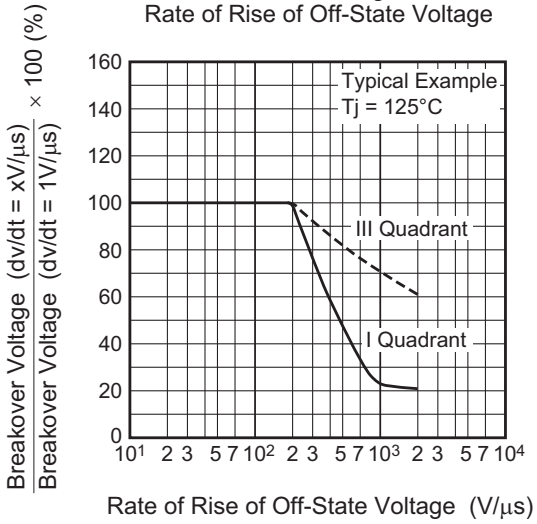
Latching Current vs.
Junction Temperature



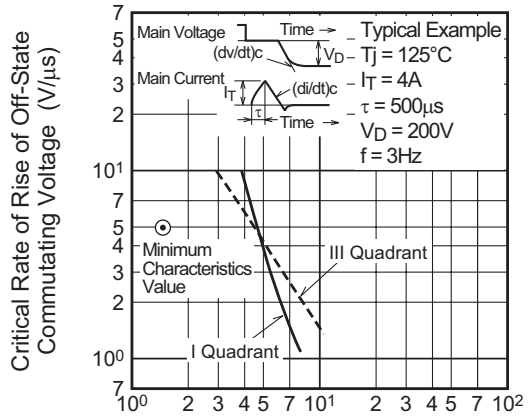
Breakover Voltage vs.
Junction Temperature



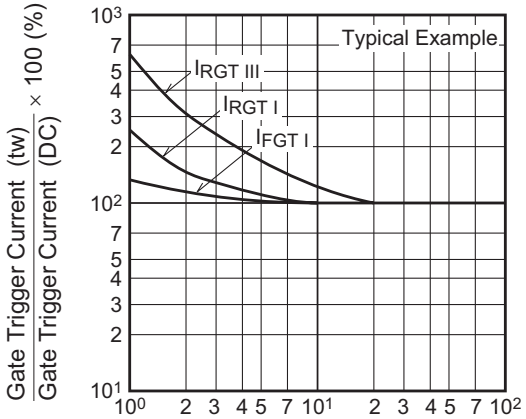
Breakover Voltage vs.
Rate of Rise of Off-State Voltage



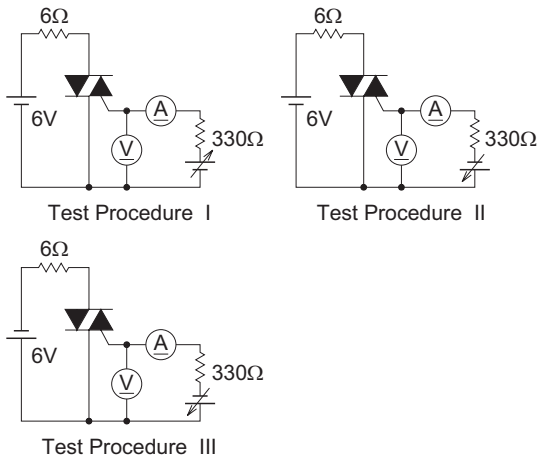
Commutation Characteristics



Gate Trigger Current vs.
Gate Current Pulse Width



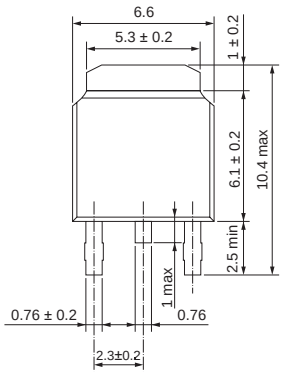
Gate Trigger Characteristics Test Circuits

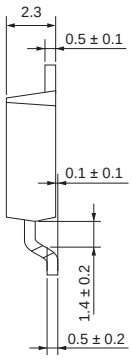


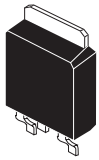
Package Dimensions

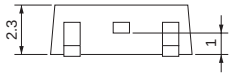
MP-3A

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









Symbol	Dimension in Millimeters		
	Min	Typ	Max
A	—	—	—
A_1	—	—	—
A_2	—	—	—
b	—	—	—
D	—	—	—
E	—	—	—
e	—	—	—
x	—	—	—
y	—	—	—
y_1	—	—	—
ZD	—	—	—
ZE	—	—	—

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

Order Code

Lead form	Standard packing	Quantity	Standard order code	Standard order code example
Surface-mounted type	Taping	3000	Type name +A – T +Direction (1 or 2) +3	BCR3AS-12A-T13
Surface-mounted type	Plastic Magazine (Tube)	75	Type name +A	BCR3AS-12A

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

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