

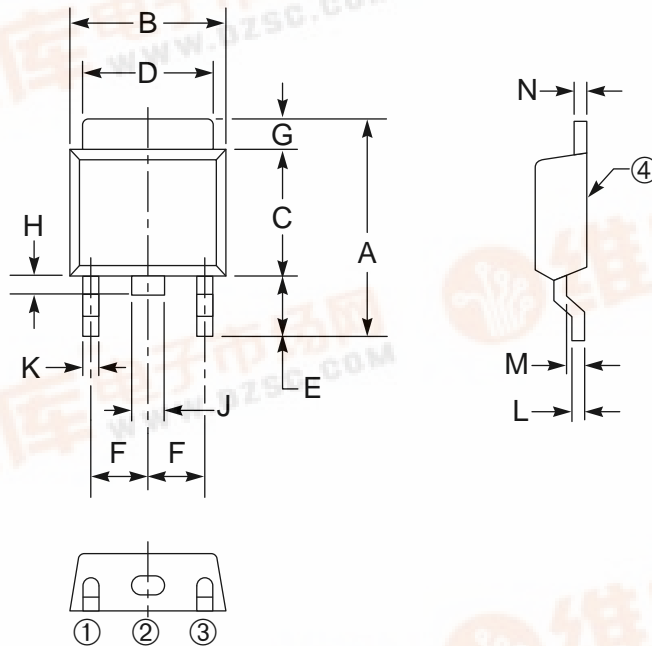


## BCR5AS

Powerex, Inc., 200 Hillis Street, Youngwood, Pennsylvania 15697-1800 (412) 925-7272

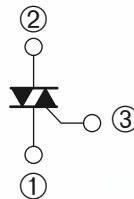
### Surface Mount Triac 5 Amperes/400-600 Volts

#### OUTLINE DRAWING



#### CONNECTION DIAGRAM

- ① T1 TERMINAL
- ② T2 TERMINAL
- ③ GATE TERMINAL
- ④ T2 TERMINAL



#### Description:

A triac is a solid state silicon AC switch which may be gate triggered from an off-state to an on-state for either polarity of applied voltage.

#### Features:

- Surface Mount Type
- Glass Passivation
- Selected for Inductive Loads

#### Applications:

- AC Switch
- Heating
- Motor Controls
- Lighting

#### Ordering Information:

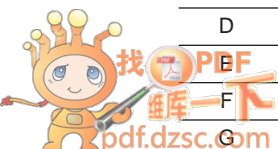
Example: Select the complete eight or nine digit part number you desire from the table - i.e. BCR5AS-8L is a 400 Volt, 5 Ampere Triac.

Outline Drawing (Conforms to MP-3)

Dimensions	Inches	Millimeters
A	0.39 Max.	10 Max.
B	0.26	6.5
C	0.22 ± 0.008	5.5 ± 0.2
D	0.20 ± 0.008	5.0 ± 0.2
H	0.9 Min.	2.3 Min.
F	0.9	2.3
K	0.06 ± 0.008	1.5 ± 0.2

Dimensions	Inches	Millimeters
H	0.040 Min.	1.0 Min.
J	0.040	1.0
K	0.4 Max.	0.9 Max.
L	0.03	0.8
M	0.020 ± 0.01	0.5 ± 0.2
N	0.020	0.5 ± 0.1

Type	V <sub>DRM</sub> Volts	Code	Inductive Load
BCR5AS	400 600	-8 -12	L





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5 Amperes/400-600 Volts

**Absolute Maximum Ratings,  $T_a = 25\text{ }^\circ\text{C}$  unless otherwise specified**

Ratings	Symbol	BCR5AS-8L	BCR5AS-12L	Units
Repetitive Peak Off-state Voltage	$V_{DRM}$	400	600	Volts
Non-repetitive Peak Off-state Voltage	$V_{DSM}$	500	720	Volts
On-state Current, $T_c = 103^\circ\text{C}$	$I_{T(RMS)}$	5	5	Amperes
Non-repetitive Peak Surge, One Cycle (60 Hz)	$I_{TSM}$	50	50	Amperes
$I^2t$ for Fusing, $t = 8.3\text{ msec}$	$I^2t$	10.4	10.4	$\text{A}^2\text{sec}$
Peak Gate Power Dissipation, 20 $\mu\text{sec}$	$P_{GM}$	3	3	Watts
Average Gate Power Dissipation	$P_{G(avg)}$	0.3	0.3	Watts
Peak Gate Current	$I_{GM}$	2	2	Amperes
Peak Gate Voltage	$V_{GM}$	10	10	Volts
Storage Temperature	$T_{stg}$	-40 to 125	-40 to 125	$^\circ\text{C}$
Operating Temperature	$T_j$	-40 to 125	-40 to 125	$^\circ\text{C}$
Weight	–	0.26	0.26	mg



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**Electrical and Thermal Characteristics,  $T_j = 25\text{ }^\circ\text{C}$  unless otherwise specified**

Characteristics	Symbol	Test Conditions (Trigger Mode)				BCR5AS			Units
		$V_D$	$R_L$	$R_G$	$T_j$	Min.	Typ.	Max.	
Gate Parameters									
DC Gate Trigger Current									
MT2+ Gate+	$I_{GT}$	6V	6 $\Omega$	330 $\Omega$	25 $^\circ\text{C}$	–	–	30	mA
MT2+ Gate–		6V	6 $\Omega$	330 $\Omega$	25 $^\circ\text{C}$	–	–	30	mA
MT2– Gate–		6V	6 $\Omega$	330 $\Omega$	25 $^\circ\text{C}$	–	–	30	mA
DC Gate Trigger Voltage									
MT2+ Gate+	$V_{GT}$	6V	6 $\Omega$	330 $\Omega$	25 $^\circ\text{C}$	–	–	1.5	Volts
MT2+ Gate–		6V	6 $\Omega$	330 $\Omega$	25 $^\circ\text{C}$	–	–	1.5	Volts
MT2– Gate–		6V	6 $\Omega$	330 $\Omega$	25 $^\circ\text{C}$	–	–	1.5	Volts
DC Gate Non-trigger Voltage									
All	$V_{GD}$	1/2 V	–	–	125 $^\circ\text{C}$	0.2	–	–	Volts



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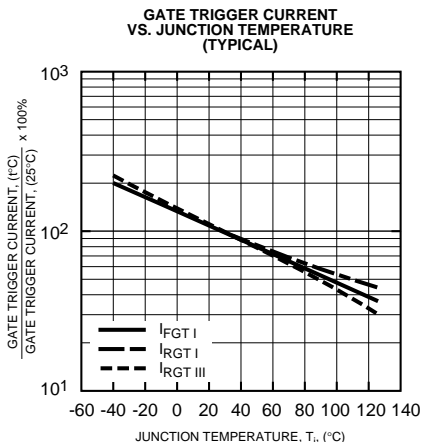
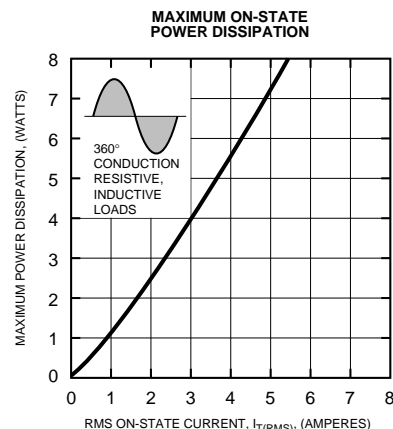
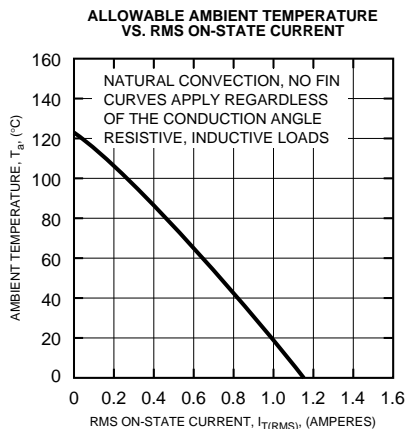
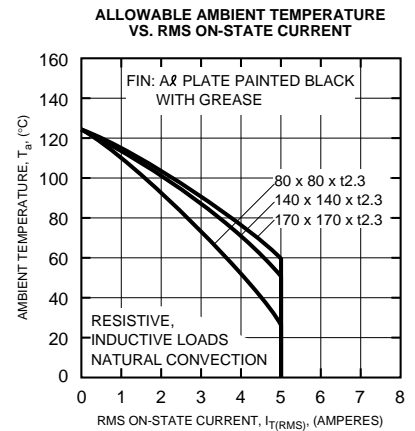
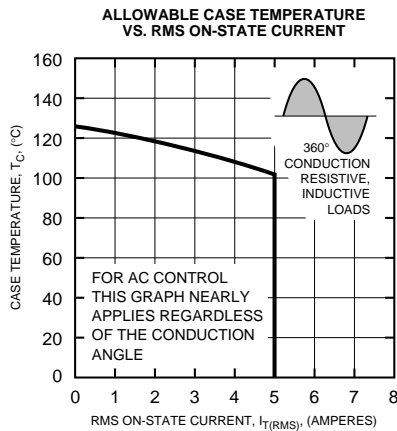
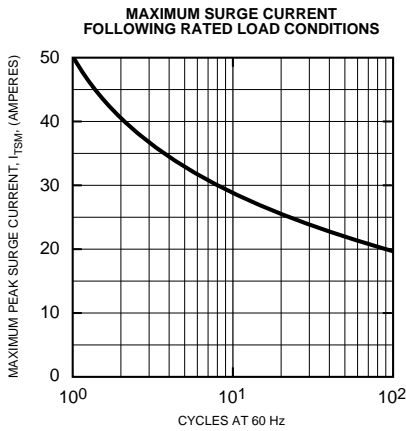
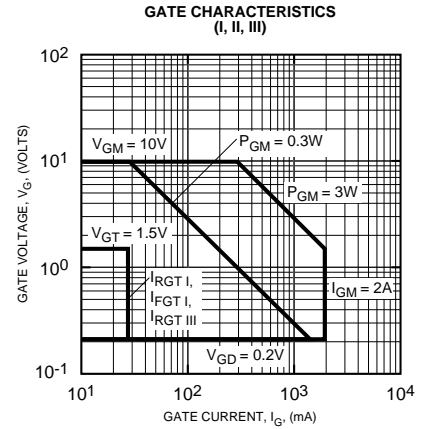
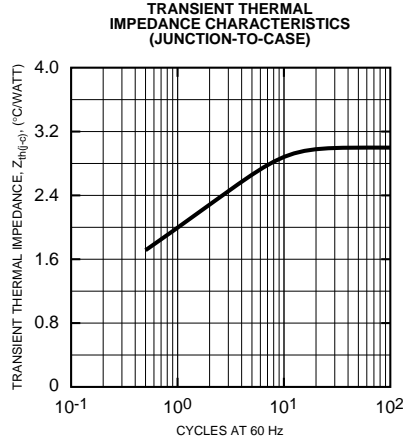
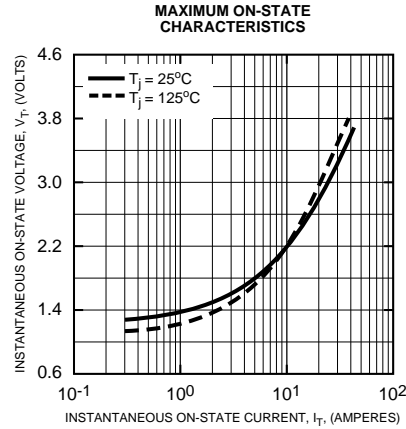
Characteristics	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Thermal Resistance, Junction-to-case	$R_{th(j-c)}$	–	–	–	3.0	$^\circ\text{C/W}$
Voltage – Blocking State Repetitive Off-state Current	$I_{DRM}$	$V_{DRM}$ = Maximum Allowable Repetitive Off-state Voltage Rating, Gate Open Circuited, $T_j = 125^\circ\text{C}$	–	–	2.0	mA
Current – Conducting State Peak On-state Current	$V_{TM}$	$T_c = 25^\circ\text{C}$ , 8.3ms Pulsewidth Duty Cycle < 2%, $I_{TM} = 7\text{A}$	–	–	1.8	Volts
Critical Rate-of-rise of Commutating Off-state Voltage (Commutating $dv/dt$ ) ▲ for Inductive Load (Switching)	$(dv/dt)_c$	–	–	–	–	$\text{V}/\mu\text{s}$

$\Delta$ Part Number	$V_{DRM}$ (Volts)	Commutating $dv/dt$ , $(dv/dt)_c$ ( $\text{V}/\mu\text{sec}$ )		Test Condition	Commutating Voltage & Current Waveform (Inductive Load)
		Load Type	Minimum		
BCR5AS-8L	400	L	5	$T_j = 125^\circ\text{C}$ ,	
BCR5AS-12L	600	L	5	Rate of Decay On-state Commutating Current $(di/dt)_c = -2.5\text{A/msec}$ ; Peak Off-state Voltage $V_D = 400\text{V}$	



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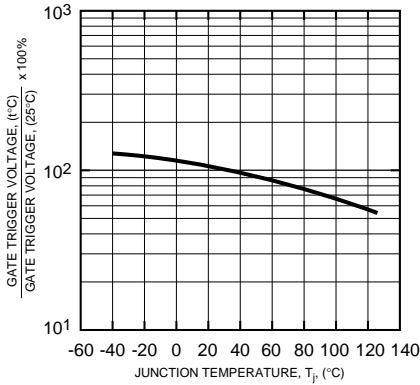
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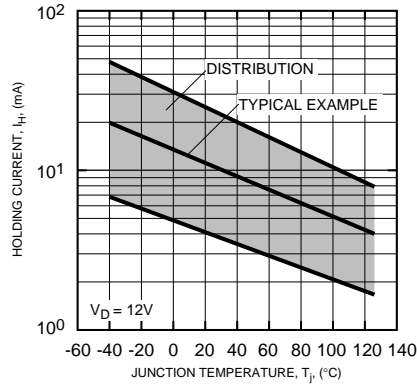
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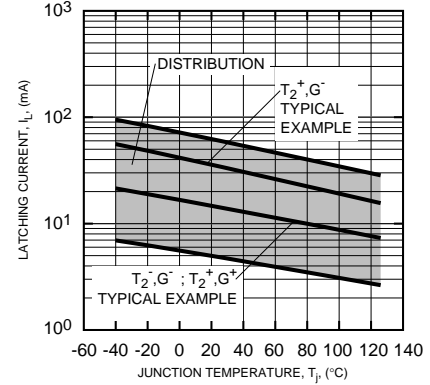
**GATE TRIGGER VOLTAGE VS. JUNCTION TEMPERATURE (TYPICAL)**



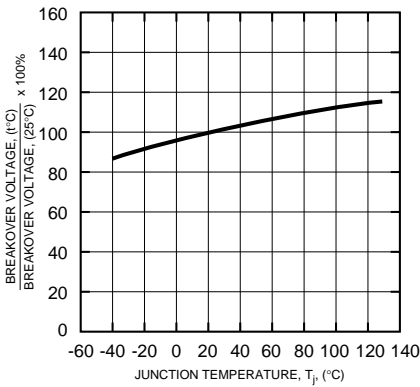
**HOLDING CURRENT VS. JUNCTION TEMPERATURE (TYPICAL)**



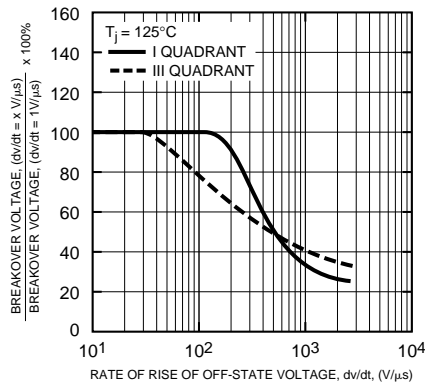
**LATCHING CURRENT VS. JUNCTION TEMPERATURE (TYPICAL)**



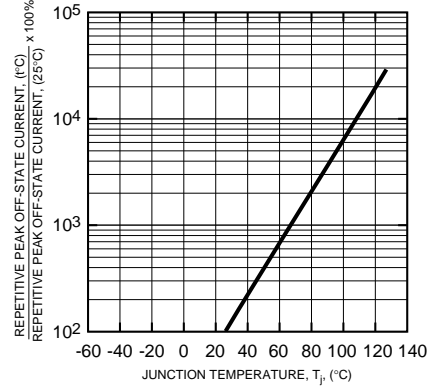
**BREAKOVER VOLTAGE VS. JUNCTION TEMPERATURE (TYPICAL)**



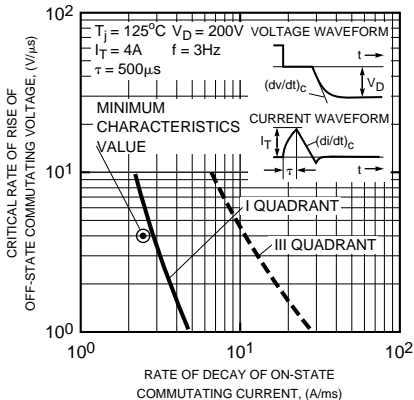
**BREAKOVER VOLTAGE VS. RATE OF RISE OF OFF-STATE VOLTAGE (TYPICAL)**



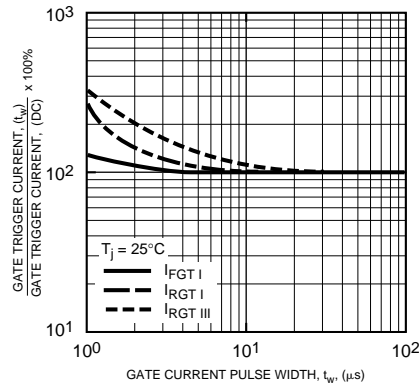
**REPETITIVE PEAK OFF-STATE CURRENT VS. JUNCTION TEMPERATURE (TYPICAL)**



**COMMUTATION CHARACTERISTICS (TYPICAL)**



**GATE TRIGGER CURRENT VS. GATE CURRENT PULSE WIDTH (TYPICAL)**



**GATE TRIGGER CHARACTERISTICS TEST CIRCUITS**

