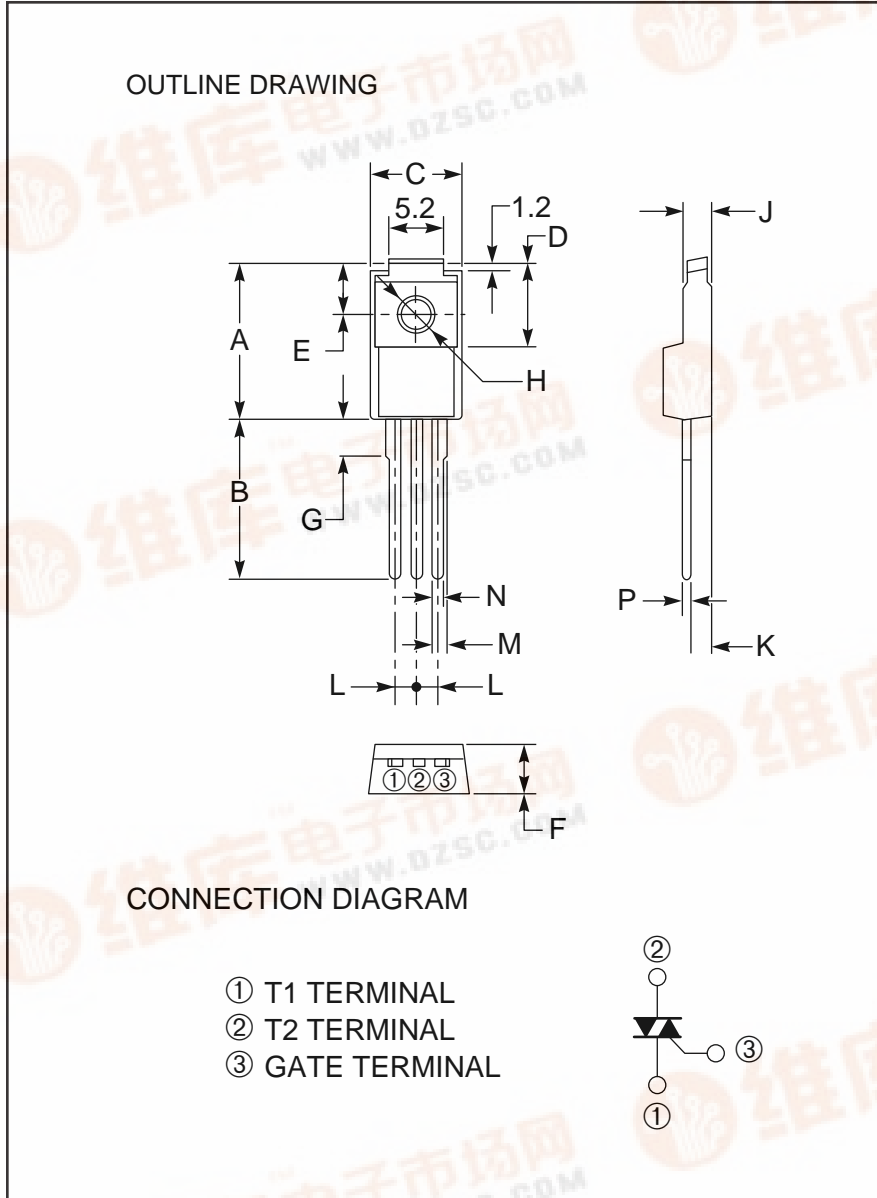




BCR12PM

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

Isolated Triac 12 Amperes/400-600 Volts



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:

- Full Molded Isolation Package
- Glass Passivation
- 1500 V_{RMS} Isolation Voltage
- Selected for Inductive Loads
- UL Approved

Applications:

- AC Switch
- Motor Controls
- Lighting

Ordering Information:

Example: Select the complete eight, nine or ten digit part number you desire from the table - i.e. BCR12PM-8 is a 400 Volt, 12 Ampere Triac.

Outline Drawing (Conforms to TO-220F)

Dimensions	Inches	Millimeters
A	0.67	17.0
B	0.49 Min.	12.5 Min.
C	0.39	10.0
D	0.33	8.5
E	0.20	5.0
F	0.18	4.5
G	0.14	3.6

Dimensions	Inches	Millimeters
H	0.126 ±0.008 Dia.	3.2 ±0.2 Dia.
J	0.11	2.8
K	0.102	2.6
L	0.10	2.5
M	0.039	1.0
N	0.031	0.8
P	0.020	0.5

Type	V _{DRM} Volts	Code	Inductive Load*
BCR12PM	400	-8	L
	600	-12	

*For inductive load, add L.





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

Ratings	Symbol	BCR12PM-8	BCR12PM-12	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, $T_c = 74^\circ\text{C}$	$I_{T(RMS)}$	12	12	Amperes
Non-repetitive Peak Surge, One Cycle (60 Hz)	I_{TSM}	120	120	Amperes
I^2t for Fusing, $t = 8.3\text{ msec}$	I^2t	60	60	A^2sec
Peak Gate Power Dissipation, 20 μsec	P_{GM}	5	5	Watts
Average Gate Power Dissipation	$P_{G(avg)}$	0.5	0.5	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	$^\circ\text{C}$
Isolation Voltage	V_{iso}	1500	1500	Volts
Weight	—	2	2	Grams



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

Characteristics	Symbol	Test Conditions (Trigger Mode)			BCR12PM			Units
		V_D	R_L	T_j	Min.	Typ.	Max.	
Gate Parameters								
DC Gate Trigger Current								
MT2+ Gate+	I_{GT}	6V	6Ω	25°C	–	–	30	mA
MT2+ Gate–		6V	6Ω	25°C	–	–	30	mA
MT2– Gate–		6V	6Ω	25°C	–	–	30	mA
DC Gate Trigger Voltage								
MT2+ Gate+	V_{GT}	6V	6Ω	25°C	–	–	1.5	Volts
MT2+ Gate–		6V	6Ω	25°C	–	–	1.5	Volts
MT2– Gate–		6V	6Ω	25°C	–	–	1.5	Volts
DC Gate Non-trigger Voltage								
All	V_{GD}	$1/2 V_{DRM}$	–	125°C	0.2	–	–	Volts



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

Characteristics	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Thermal Resistance, Junction-to-case	$R_{th(j-c)}$	–	–	–	3.5	$^\circ\text{C/W}$
Steady State Thermal Resistance, Junction-to-ambient	$R_{th(j-a)}$	–	–	–	60	$^\circ\text{C/W}$
Voltage – Blocking State Repetitive Off-state Current	I_{DRM}	Gate Open Circuited, $V_D = V_{DRM}, T_j = 125^\circ\text{C}$	–	–	2	mA
Current – Conducting State Peak On-state voltage	V_{TM}	$T_c = 25^\circ\text{C},$ $I_{TM} = 20\text{A}$	–	–	1.6	Volts
Critical Rate-of-rise of Commutating Off-state Voltage (Commutating dv/dt)	$(dv/dt)_c$	–	–	–	–	$\text{V}/\mu\text{s}$

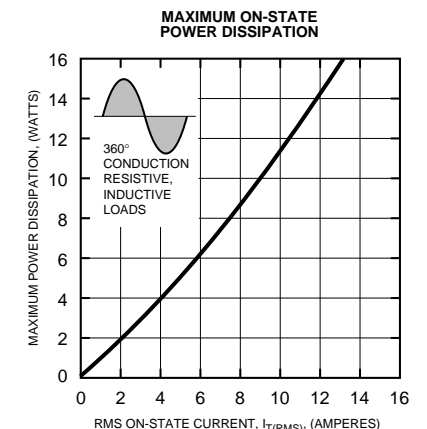
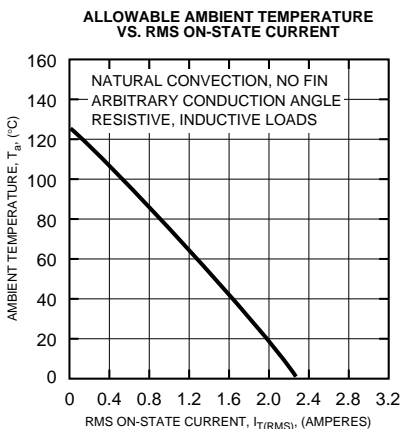
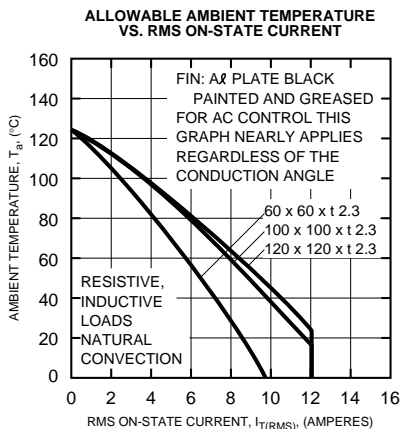
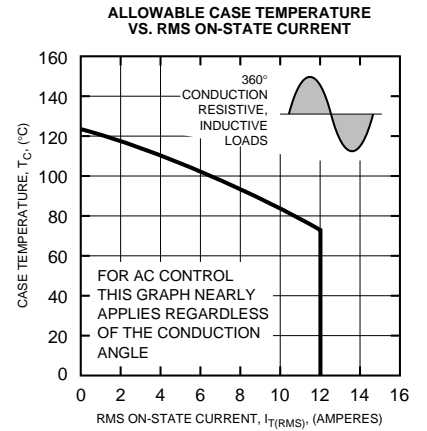
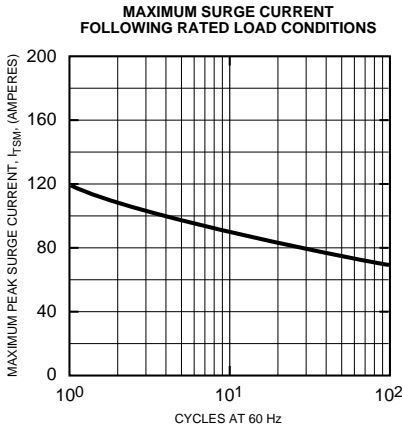
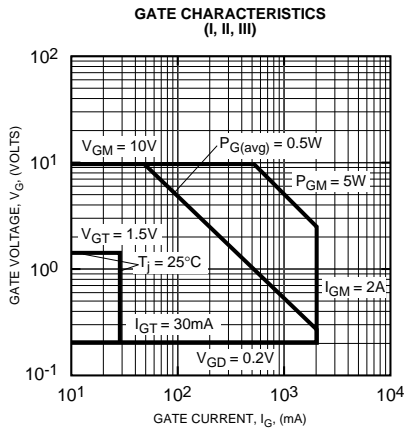
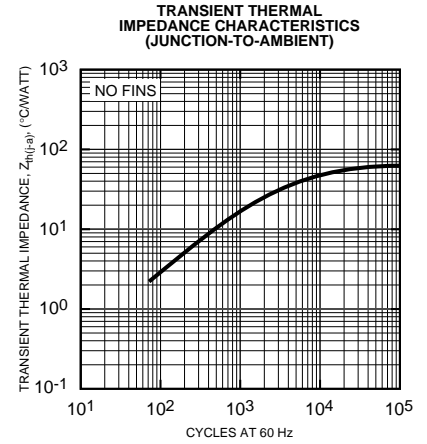
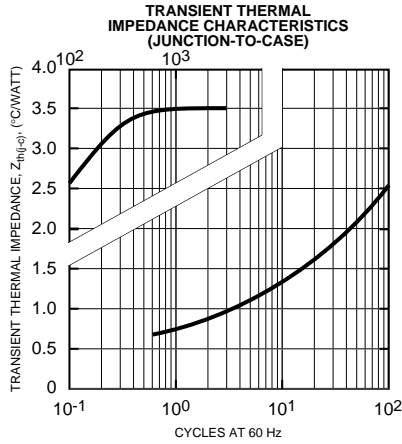
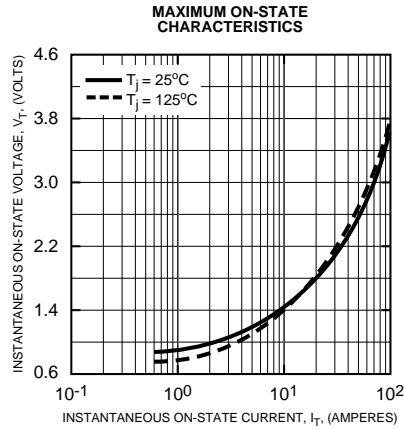
▲ for inductive load (L)
(Switching)

Δ 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		
BCR12PM-8L	400	L	10	$T_j = 125^\circ\text{C},$	
BCR12PM-12L	600	L	10	Rate of Decay On-state Commutating Current $(di/dt)_c = -6\text{A/msec};$ Peak Off-state Voltage $V_D = 400\text{V}$	



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BCR12PM
Isolated Triac
 12 Amperes/400-600 Volts





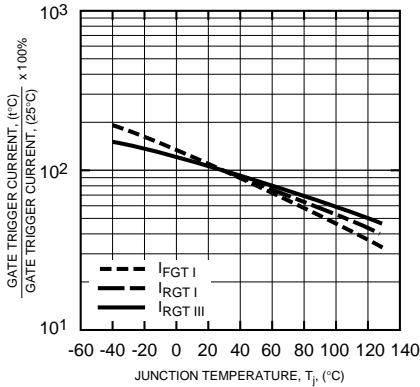
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BCR12PM

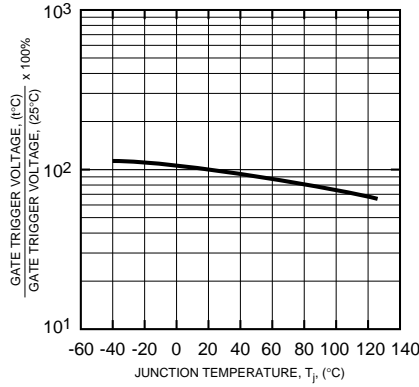
Isolated Triac

12 Amperes/400-600 Volts

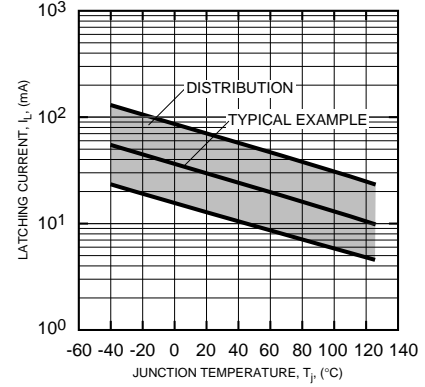
GATE TRIGGER CURRENT VS. JUNCTION TEMPERATURE (TYPICAL)



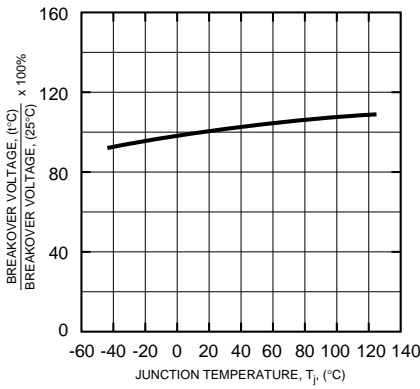
GATE TRIGGER VOLTAGE VS. JUNCTION TEMPERATURE (TYPICAL)



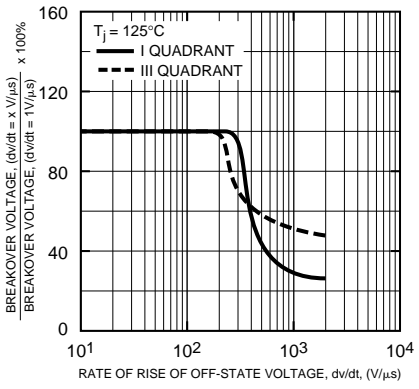
LATCHING CURRENT VS. JUNCTION TEMPERATURE (TYPICAL)



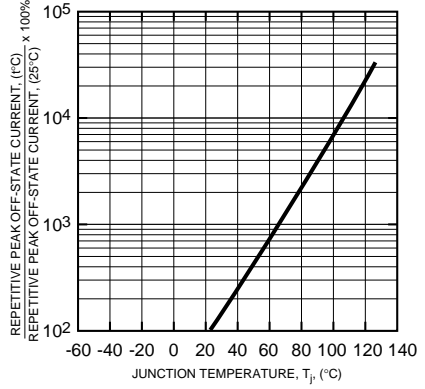
BREAKOVER VOLTAGE VS. JUNCTION TEMPERATURE (TYPICAL)



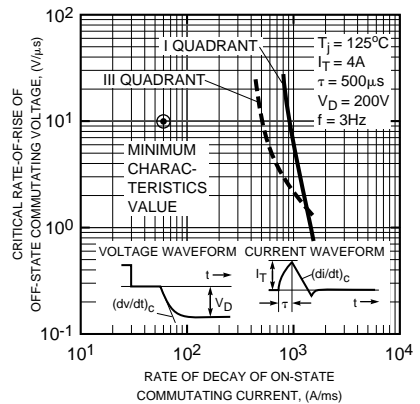
BREAKOVER VOLTAGE VS. RATE OF RISE OF OFF-STATE VOLTAGE (TYPICAL)



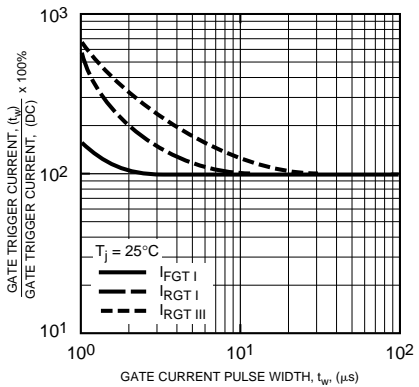
REPETITIVE PEAK OFF-STATE CURRENT VS. JUNCTION TEMPERATURE (TYPICAL)



COMMUTATION CHARACTERISTICS (TYPICAL)



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



GATE TRIGGER CHARACTERISTICS TEST CIRCUITS

