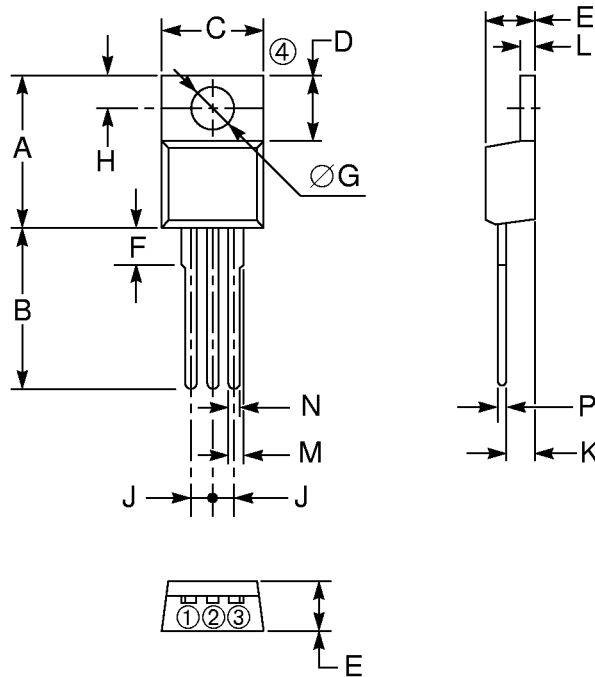


Triac

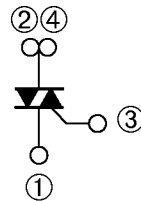
12 Amperes/400-600 Volts

OUTLINE DRAWING



CONNECTION DIAGRAM

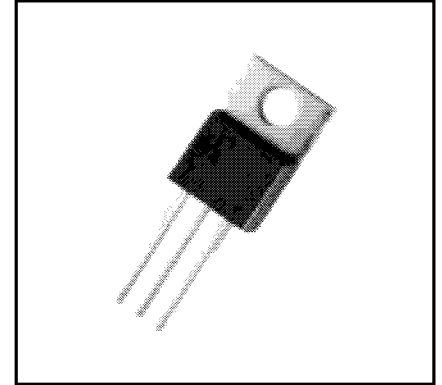
- ① T1 TERMINAL
- ② T2 TERMINAL
- ③ GATE
- ④ T2 TERMINAL



Outline Drawing (Conforms to TO-220)

Dimensions	Inches	Millimeters
A	0.63 Max.	16.0 Max.
B	0.49 Max.	12.5 Max.
C	0.41 Max.	10.5 Max.
D	0.28	7.0
E	0.18	4.5
F	0.15 Max.	3.8 Max.
G	0.142 ± 0.008 Dia.	3.6 ± 0.2 Dia.
H	0.125 ± 0.008	3.2 ± 0.2

Dimensions	Inches	Millimeters
J	0.99	2.54
K	0.10	2.6
L	0.051	1.3
M	0.051	1.3
N	0.039	1.0
P	0.031	0.8
Q	0.020	0.5



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:

- ☐ Glass Passivation
- ☐ Selected for Inductive Loads

Applications:

- ☐ AC Switch
- ☐ Heating
- ☐ Motor Controls
- ☐ Lighting
- ☐ Solid State Relay
- ☐ Switch Mode Power Supply

Ordering Information:

Example: Select the complete eight, nine or ten digit part number you desire from the table - i.e. BCR12CM-8 is a 400 Volt, 12 Ampere Triac

Type	V _{DRM} Volts	Code	Inductive Load*
BCR12CM	400 60	-8 -12	L

*For inductive load, add L.



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

BCR12CM

Triac

12 Amperes/400-600 Volts

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

Ratings	Symbol	BCR12CM-8	BCR12CM-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, $T_c = 98^\circ\text{C}$	$I_{\text{T(RMS)}}$	12	12	Amperes
Non-repetitive Peak Surge, One Cycle (60 Hz)	I_{TSM}	120	120	Amperes
I^2t for Fusing, $t = 8.3$ msec	I^2t	60	60	A^2sec
Peak Gate Power Dissipation, 20 μsec	P_{GM}	5	5	Watts
Average Gate Power Dissipation	$P_{\text{G(avg)}}$	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	$^\circ\text{C}$
Weight	—	2.3	2.3	Grams



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BCR12CM

Triac

12 Amperes/400-600 Volts

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

Characteristics	Symbol	Test Conditions (Trigger Mode)				BCR12CM			
		V _D	R _L	R _G	T _j	Min.	Typ.	Max.	Units
Gate Parameters									
DC Gate Trigger Current									
MT2+ Gate+	I _{GT}	6V	6Ω	330Ω	25 °C	–	–	30	mA
MT2+ Gate–		6V	6Ω	330Ω	25 °C	–	–	30	mA
MT2– Gate–		6V	6Ω	330Ω	25 °C	–	–	30	mA
DC Gate Trigger Voltage									
MT2+ Gate+	V _{GT}	6V	6Ω	330Ω	25 °C	–	–	1.5	Volts
MT2+ Gate–		6V	6Ω	330Ω	25 °C	–	–	1.5	Volts
MT2– Gate–		6V	6Ω	330Ω	25 °C	–	–	1.5	Volts
DC Gate Non-trigger Voltage									
All	V _{GD}	1/2 V _{DRM}	–	–	125 °C	0.2	–	–	Volts

BCR12CM

Triac

12 Amperes/400-600 Volts

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

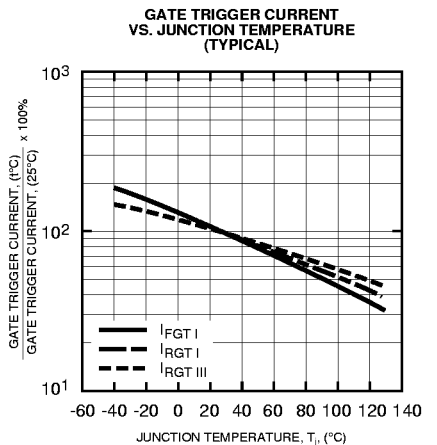
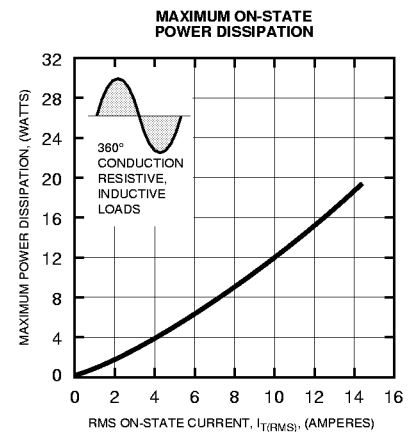
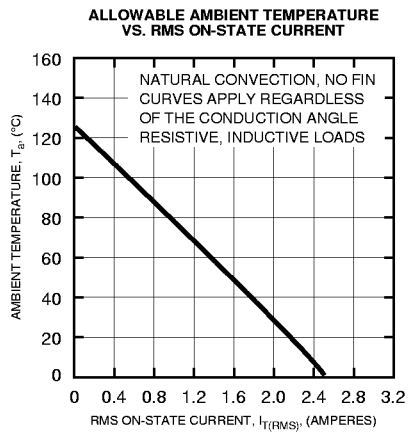
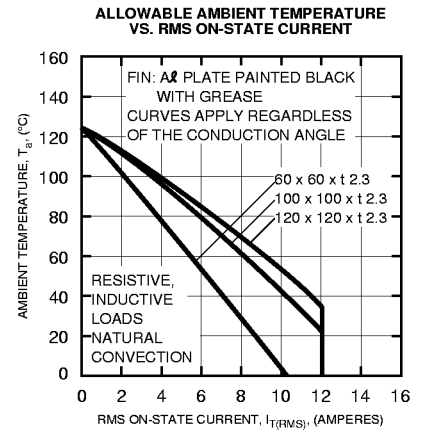
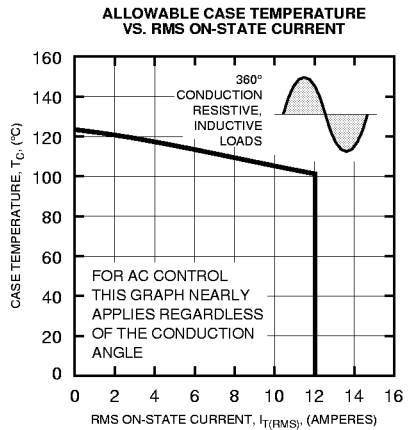
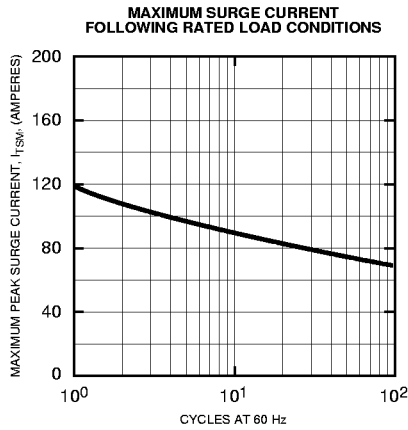
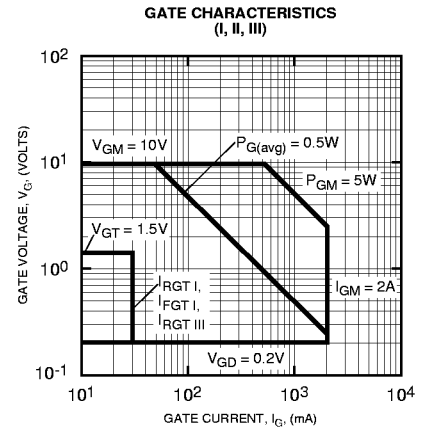
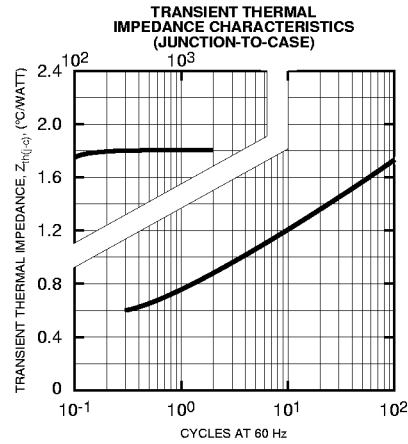
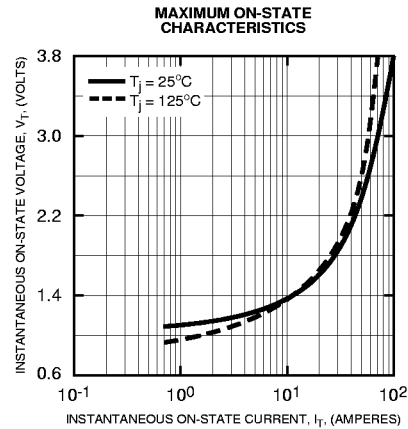
Characteristics	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Thermal Resistance, Junction-to-case	$R_{th(j-c)}$	—	—	—	1.8	$^\circ\text{C/W}$
Voltage – Blocking State Miximums Repetitive Off-state Current	I_{DRM}	Gate Open Circuited $V_D = V_{DRM}$; $T_j = 125^\circ\text{C}$	—	—	2	mA
Current – Conducting State Maximums 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) ▲ for inductive load (L) (Switching)	$(dv/dt)_C$	—	—	—	—	$\text{V}/\mu\text{s}$

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)
		Minimum		
BCR12CM-8L 400	10		$T_j = 125^\circ\text{C}$,	
BCR12CM-12L 600	10		Rate of Decay On-state Commutating Current $(di/dt)_C = -6\text{A/msec}$: Peak Off-state Voltage $V_D = 400\text{V}$	

BCR12CM

Triac

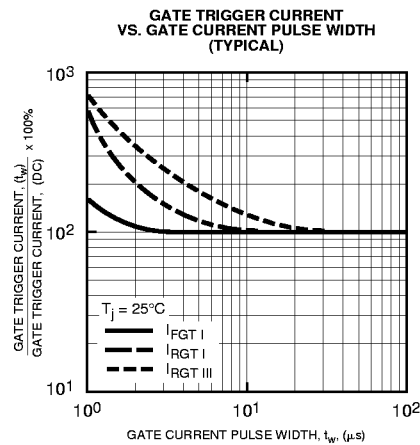
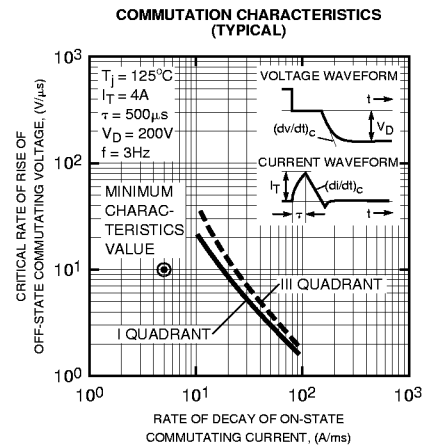
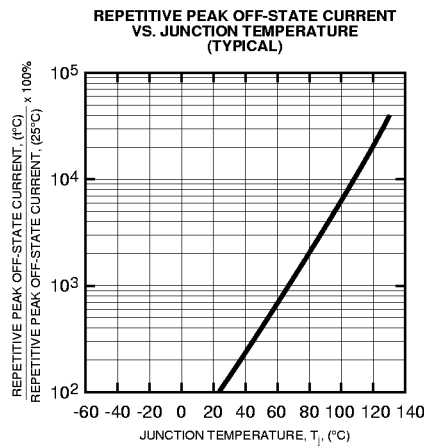
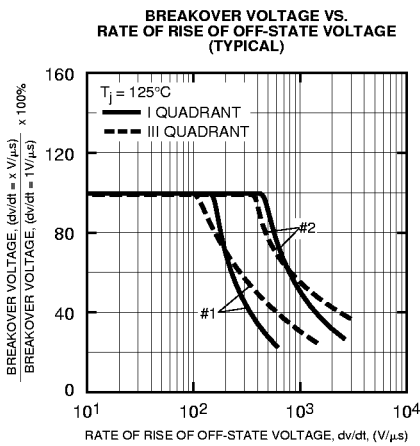
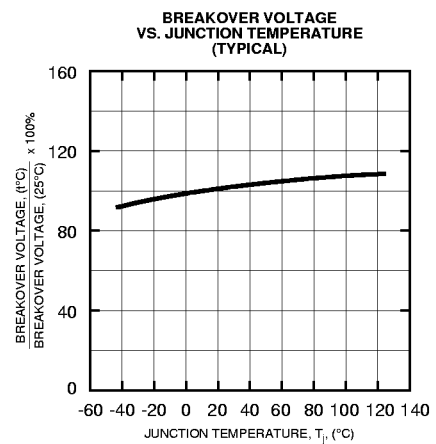
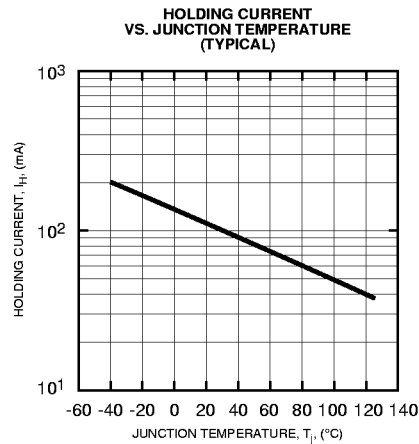
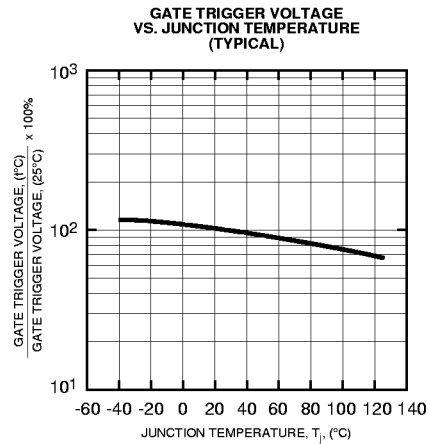
12 Amperes/400-600 Volts



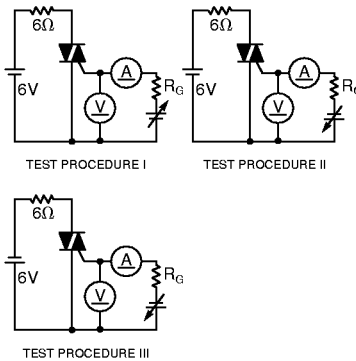
BCR12CM

Triac

12 Amperes/400-600 Volts



GATE TRIGGER CHARACTERISTICS TEST CIRCUITS





T-91-01

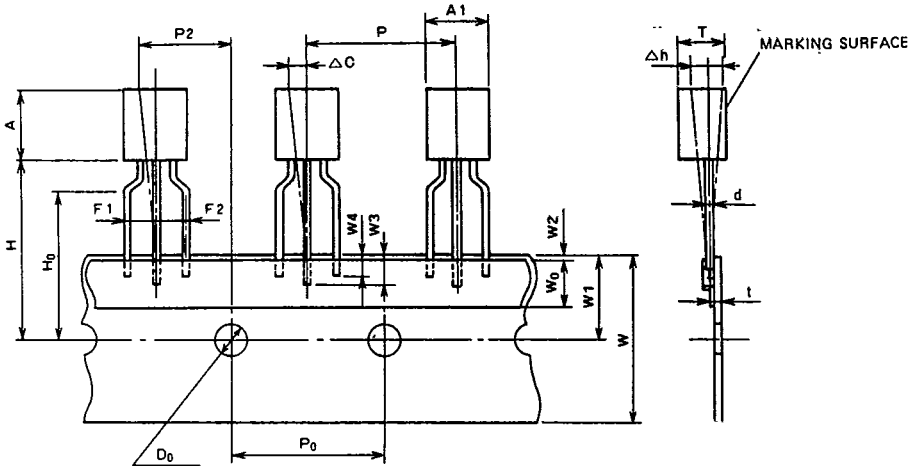
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Powerex Europe, S.A., 428 Avenue G. Durand, BP107, 72003 Le Mans, France (43) 41.14.14

Taping

STANDARD SPECIFICATIONS
FOR TAPING OF MOLDED
PACKAGE THYRISTORS AND
TRIACS

TO-92 Package

Thyristor
CR02AM, CR03AM, CR04AM
Triac
BCR1AM



Taping dimensions

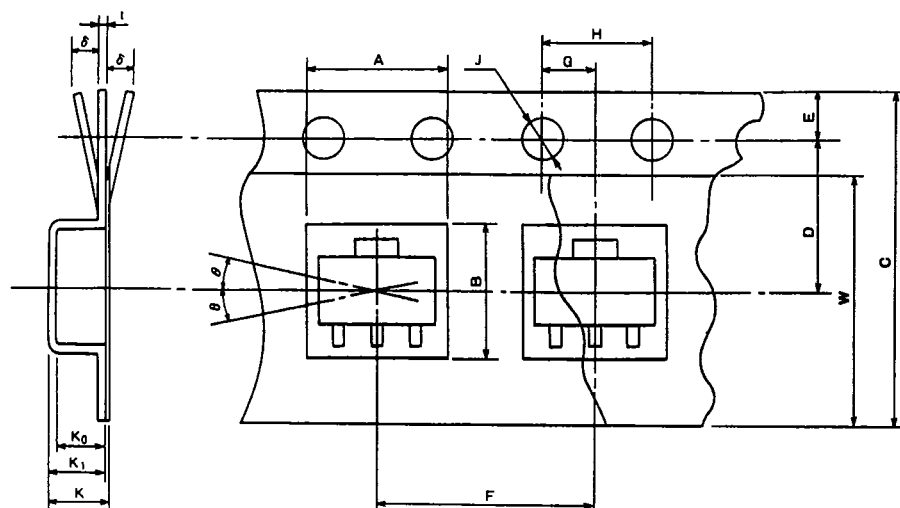
Description of symbol	Symbol	Dimensions (Unit:mm)	Remark
Product width	A1	5.0 MAX	
Product height	A	5.0 MAX	
Product thickness	T	3.7 MAX	
Lead wire diameter	d	0.6 MAX	
Sticker lead wire length (1)	W3	2.5 MIN	
Sticker lead wire length (2)	W4	2.0 MIN	
Pitch between products	P	12.7 ± 1.0	
Feed hole pitch	P0	12.7 ± 0.3	The cumulative pitch error is ± 1mm per 20 pitches.
Feed hole deviation (1)	P2	6.35 ± 1.3	
Distance between lead wires	F1, F2	2.5 ± 0.4	
Defective product (1)	Δh	0 ± 2.0	
Tape width	W	18.0 ± ^{1.0} _{0.5}	
Sticker tape width	W0	6.0 ± 0.5	
Feed hole deviation (2)	W1	9.0 ± 0.5	
Sticker tape deviation	W2	0.5 MAX	
Position of product bottom surface	H	17.5 MIN	
Lynch height of lead wire	H0	16.0 ± 0.5	
Feed hole diameter	D0	4.0 ± 0.2	
Tape thickness	t	0.7 ± 0.2	
Defective product (2)	ΔC	0 ± 1.0	



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Powerex Semiconductor Data Book
Taping



SOT-89 Package

Thyristor
CR08AS

Taping dimensions

Description of symbol		Symbol	Dimensions/angles Unit:mm	Remark
Parts Insertion	Height	A	5.0 ± 0.1	Cross-section of the surface 0.5mm above the inner bottom
	Width	B	4.6 ± 0.1	Cross-section of the surface 0.5mm above the inner bottom
Concave square hole	Depth	K ₀	1.8 ± 0.1	Inner space
	Pitch	F	8.0 ± 0.1	Cumulative error +0.1/-0.3 MAX/10 pitches
Round feed hole	Diameter	J	$\phi 1.5 \pm 0.05$	
	Pitch	H	4.0 ± 0.1	Cumulative error +0.1/-0.3 MAX/10 pitches
	Position	E	1.5 ± 0.1	Distance between the tape edge and the hole center
Distance between center lines	Vertical	G	2.0 ± 0.5	Center line of concave square hole and round feed hole
	Horizontal	D	5.65 ± 0.05	Center line of concave square hole and round feed hole
Cover tape	Width	W	$9.5 + 0.3/-0$	Thickness: 0.1 MAX
Carrier tape	Width	C	12 ± 0.2	Warp ± 0.3 MAX
	Thickness	t	0.3 ± 0.05	
	Package hole depth	K ₁	2.1 ± 0.1	
Device	Package dimensions	—	—	As shown in (e)
	Inclination	θ	30° MAX.	
Total Thickness		K	2.3 ± 0.1	Total thickness including cover and carrier tapes