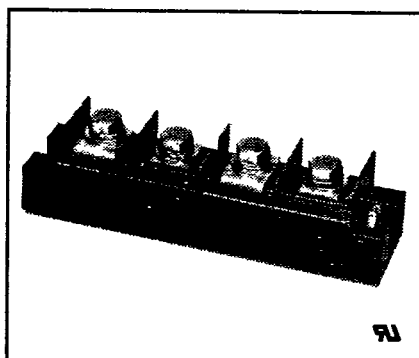
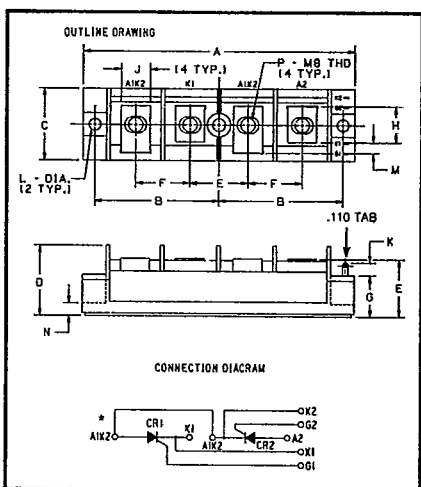




**CM530413**  
**CM530813**

Powerex, Inc., Hills Street, Youngwood, Pennsylvania 15697 (412) 925-7272  
Powerex Europe, S.A., 428 Avenue G. Durand, BP107, 72003 Le Mans, France (43) 72.75.15

**Dual SCR**  
**POW-R-BLOK™ Modules**  
**130 Amperes/400-800 Volts**



**CM530413, CM530813**  
**Dual SCR POW-R-BLOK™ Modules**  
130 Amperes/400-800 Volts

**400-800 Volts CM530413,**  
**CM530813 Outline Drawing**

Dimension	Inches	Millimeters
A	5.906	150
B	2.697 ± .02	68.5 ± 0.2
C	1.575	40
D	1.535	39
E	1.260	32
F	1.181	30
G	.906	23
H	.787	20
J	.630	16
K	.276	7
L	.256 ± .008 Dia.	Dia. 6.5 ± 0.2
M	.236	6
N	.197	5
P	M8 Metric	M8

\*AIK2-AIK2 Connection made by external shorting bar.

**Description**

Powerex Dual SCR POW-R-BLOK™ Modules are designed for use in applications requiring phase control and isolated packaging. The modules are isolated for easy mounting with other components on common heatsinks. POW-R-BLOK™ has been tested and recognized by Underwriters Laboratories (QQX2 Power Switching Semiconductors).

**Features:**

- Isolated Mounting
- Glass Passivated Chips
- Metal Baseplate
- Low Thermal Impedance
- UL Recognized

**Applications:**

- Battery Supplies
- Bridge Circuits
- AC and DC Motor Control
- Tap Changers
- Lighting Control

**Ordering Information**

Example: Select the complete eight digit module part number you desire from the table — i.e. CM530813 is an 800 Volt, 130 Ampere Dual SCR POW-R-BLOK™ Module.

Type	Voltage Volts (x100)	Current Rating Amperes (x10)
CM53	04	13
	08	



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CM530413, CM530813  
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130 Amperes/400-800 Volts

### Absolute Maximum Ratings

Characteristics	Symbol	CM530413	CM530813	Units
Peak Forward Blocking Voltage	$V_{DRM}$	400	800	Volts
Transient Peak Forward Blocking Voltage (Non-Repetitive) $t < 5$ ms	$V_{DSM}$	480	960	Volts
DC Forward Blocking Voltage	$V_{D(DC)}$	320	640	Volts
Peak Reverse Blocking Voltage	$V_{RRM}$	400	800	Volts
Transient Peak Reverse Blocking Voltage (Non-Repetitive) $t < 5$ ms	$V_{RSM}$	480	960	Volts
DC Reverse Blocking Voltage	$V_{R(DC)}$	320	640	Volts
RMS On-State Current	$I_{T(RMS)}$	205	205	Amperes
Average On-State Current, $T_C = 85^\circ\text{C}$	$I_{T(AV)}$	130	130	Amperes
Peak One-Cycle Surge (Non-Repetitive) On-State Current (60Hz)	$I_{TSM}$	2600	2600	Amperes
Peak One-Cycle Surge (Non-Repetitive) On-State Current (50Hz)	$I_{TSM}$	2365	2365	Amperes
$I^2t$ (for Fusing), 8.3 milliseconds	$I^2t$	28000	28000	$\text{A}^2\text{sec}$
Critical Rate-of-Rise of On-State Current $\text{\textcircled{D}}$	$di/dt$	100	100	Amperes/ $\mu\text{s}$
Peak Gate Power Dissipation	$P_{GM}$	10	10	Watts
Average Gate Power Dissipation	$P_{G(AV)}$	3.0	3.0	Watts
Peak Forward Gate Voltage	$V_{GFM}$	10	10	Volts
Peak Reverse Gate Voltage	$V_{GRM}$	5.0	5.0	Volts
Peak Forward Gate Current	$I_{GFM}$	4.0	4.0	Amperes
Storage Temperature	$T_{STG}$	-40 to 125	-40 to 125	$^\circ\text{C}$
Operating Temperature	$T_J$	-40 to 125	-40 to 125	$^\circ\text{C}$
Maximum Mounting Torque M6 Mounting Screw	—	26	26	in.-lb.
Maximum Terminal Torque M8 Terminal Screw	—	72	72	in.-lb.
Module Weight (Typical)	—	300	300	Grams
V Isolation	$V_{RMS}$	2000	2000	Volts

$\text{\textcircled{D}} T_J = 125^\circ\text{C}$ ,  $I_G = 1.0$  A,  $V_D = 1/2 V_{DRM}$

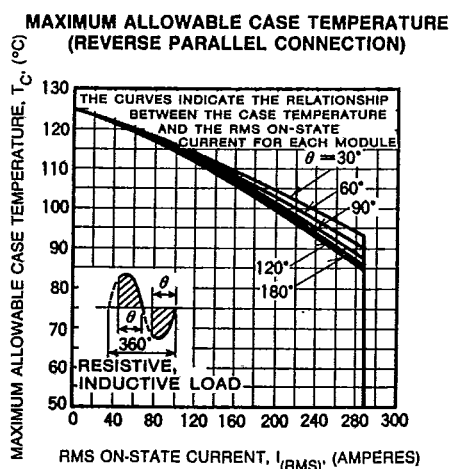
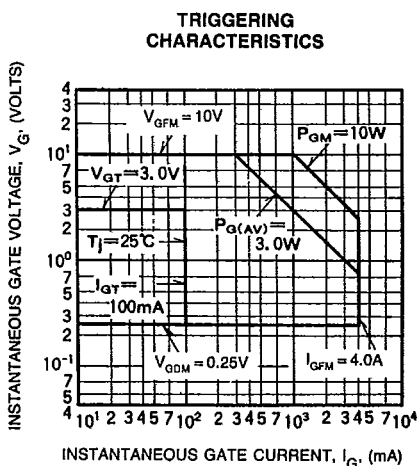
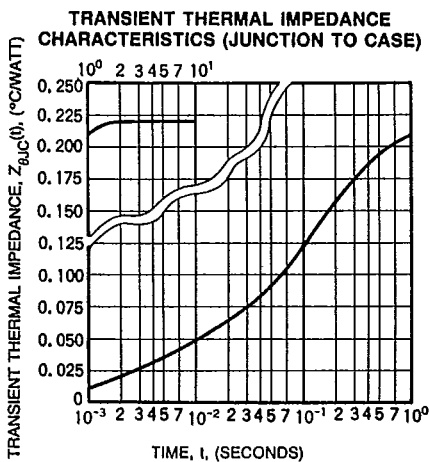
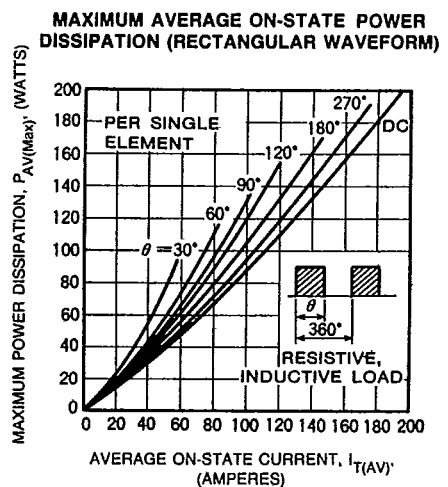
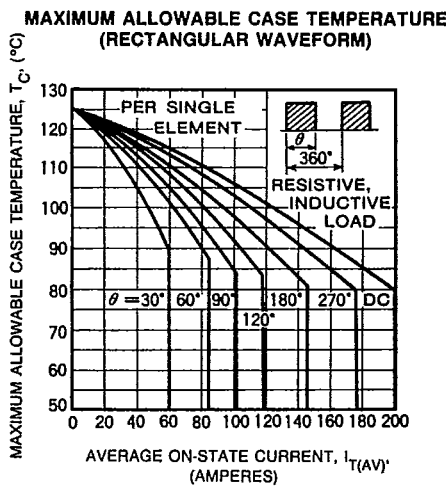
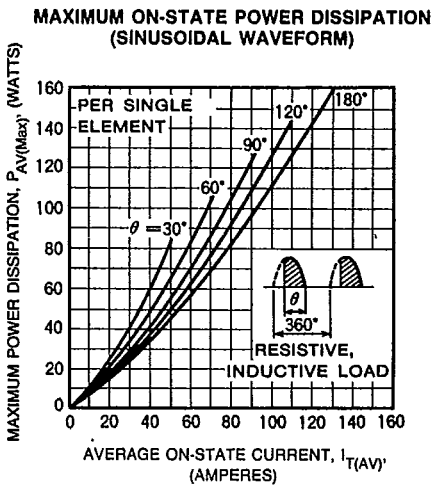
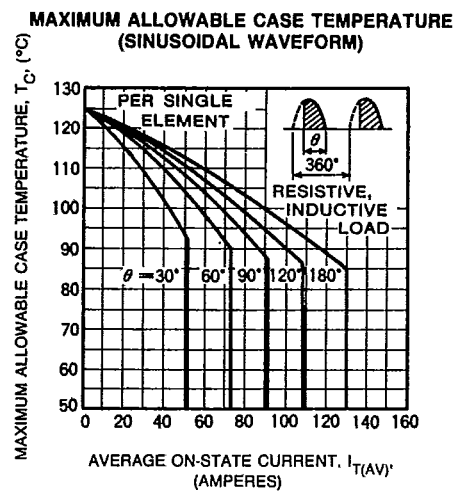
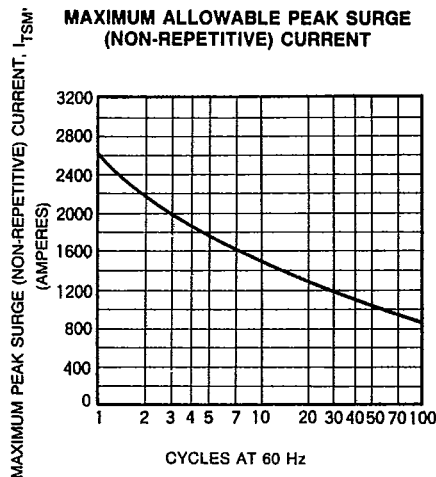
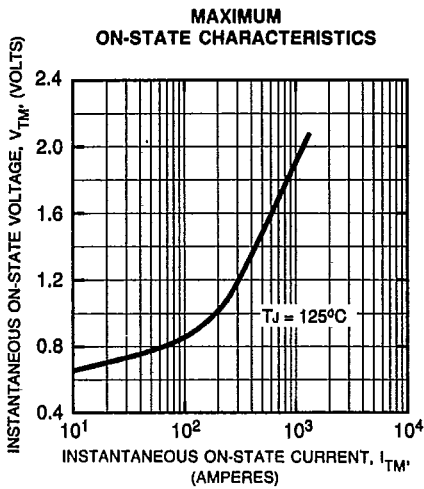
### Electrical and Thermal Characteristics, $T_J = 25^\circ\text{C}$ unless otherwise specified

Characteristic	Symbol	Test Conditions	CM530413	CM530813	Units
<b>Blocking State Maximums</b>					
Forward Leakage Current, Peak	$I_{DRM}$	$T_J = 125^\circ\text{C}$ , $V_{DRM} = \text{rated}$	30		mA
Reverse Leakage Current, Peak	$I_{RRM}$	$T_J = 125^\circ\text{C}$ , $V_{RRM} = \text{rated}$	30		mA
<b>Conducting State Maximums</b>					
Peak On-State Voltage	$V_{TM}$	$I_{TM} = 390\text{A}$		1.3	Volts
<b>Switching Minimums</b>					
Critical Rate of Rise of Off-State Voltage	$dv/dt$	$T_J = 125^\circ\text{C}$ , $V_D = 2/3 V_{DRM}$	500		Volts/ $\mu\text{sec}$
<b>Thermal Maximums</b>					
Thermal Resistance, Junction to Case	$R_{\theta JC}$	Per Device	0.22		$^\circ\text{C}/\text{Watt}$
Thermal Resistance, Case to Sink Lubricated	$R_{\theta CS}$	Per Device	0.05		$^\circ\text{C}/\text{Watt}$
<b>Gate Parameters Maximums</b>					
Gate Current to Trigger	$I_{GT}$	$V_D = 6$ V, $R_L = 2 \Omega$	100		mA
Gate Voltage to Trigger	$V_{GT}$	$V_D = 6$ V, $R_L = 2 \Omega$	3.0		Volts
Non-Triggering Gate Voltage	$V_{GDM}$	$T_J = 125^\circ\text{C}$ , $V_D = 1/2 V_{DRM}$	0.25		Volts



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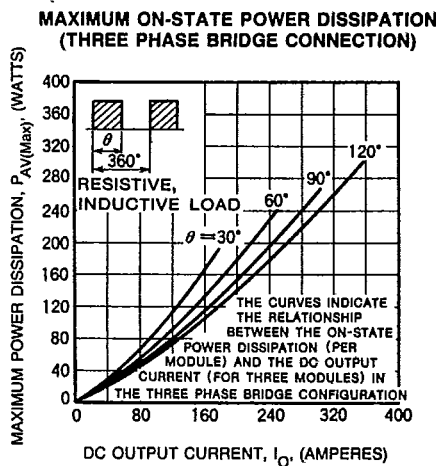
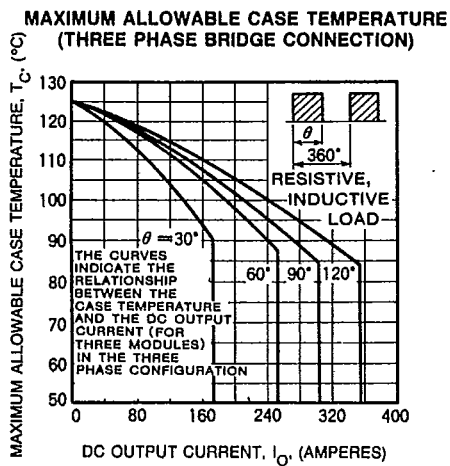
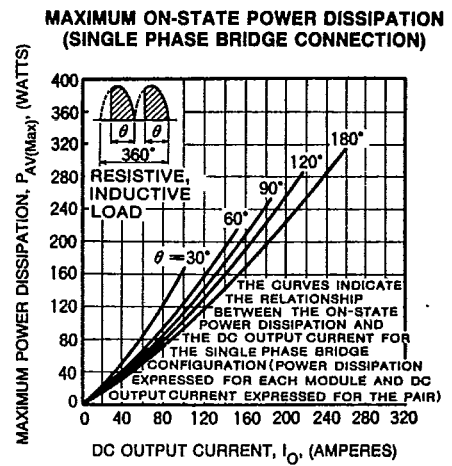
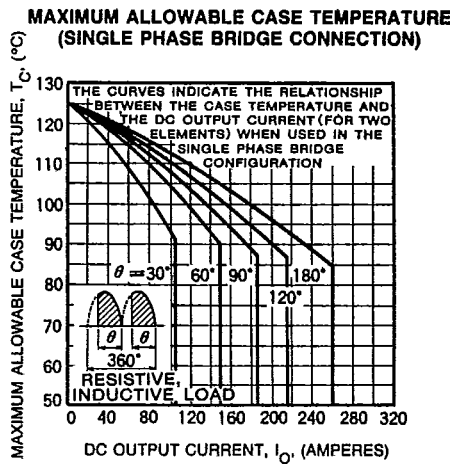
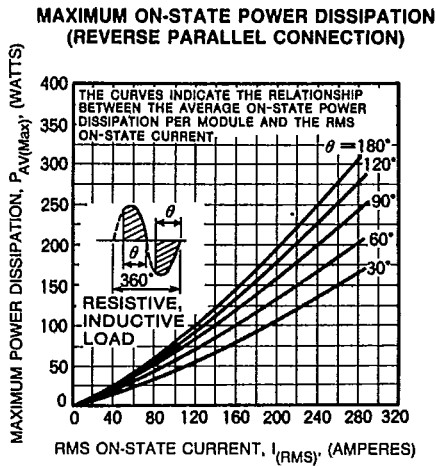
CM530413, CM530813  
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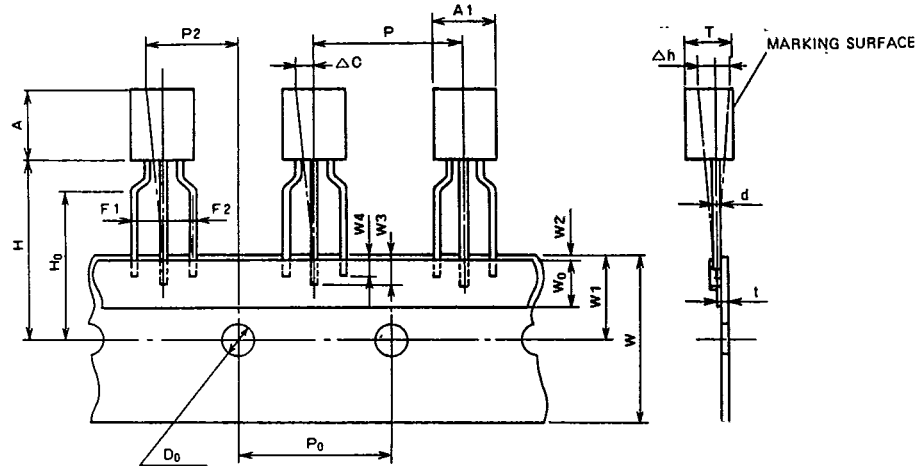
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## Taping

### STANDARD SPECIFICATIONS FOR TAPING OF MOLDED PACKAGE THYRISTORS AND TRIACS

#### TO-92 Package

Thyristor  
CR02AM, CR03AM, CR04AM  
Triac  
BCR1AM



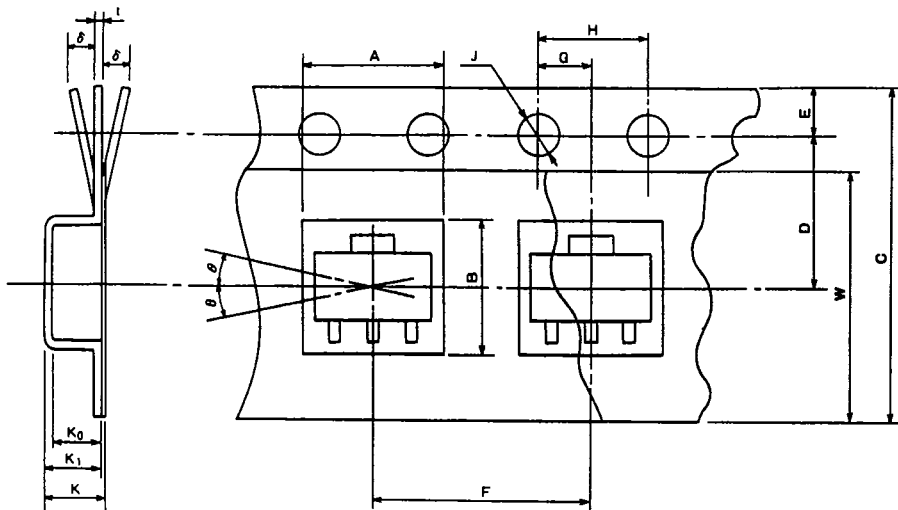
Taping dimensions

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	P <sub>0</sub>	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 ± <sup>1.0</sup> / <sub>0.5</sub>	
Sticker tape width	W <sub>0</sub>	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	H <sub>0</sub>	16.0 ± 0.5	
Feed hole diameter	D <sub>0</sub>	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	$5.0 \pm 0.1$	Cross-section of the surface 0.5mm above the inner bottom
	Width	B	$4.6 \pm 0.1$	Cross-section of the surface 0.5mm above the inner bottom
Concave square hole	Depth	K <sub>0</sub>	$1.8 \pm 0.1$	Inner space
	Pitch	F	$8.0 \pm 0.1$	Cumulative error +0.1/-0.3 MAX/10 pitches
Round feed hole	Diameter	J	$\phi 1.5 \pm 0.05$	
	Pitch	H	$4.0 \pm 0.1$	Cumulative error +0.1/-0.3 MAX/10 pitches
	Position	E	$1.5 \pm 0.1$	Distance between the tape edge and the hole center
Distance between center lines	Vertical	G	$2.0 \pm 0.5$	Center line of concave square hole and round feed hole
	Horizontal	D	$5.65 \pm 0.05$	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	$12 \pm 0.2$	Warp $\pm 0.3$ MAX
	Thickness	t	$0.3 \pm 0.05$	
	Package hole depth	K <sub>1</sub>	$2.1 \pm 0.1$	
Device	Package dimensions	—	—	As shown in (e)
	Inclination	$\theta$	30° MAX.	
Total Thickness		K	$2.3 \pm 0.1$	Total thickness including cover and carrier tapes