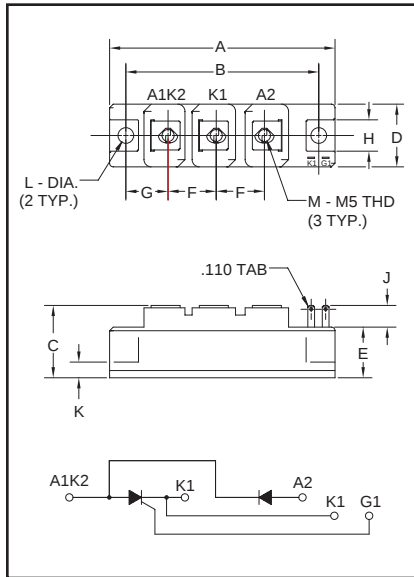


SCR/Diode POW-R-BLOK™ Modules 90 Amperes/800 Volts



Outline Drawing

Dimension	Inches	Millimeters
A	3.681	93.5
B	3.150±0.012	80±0.3
C	1.181	30
D	1.024	26
E	0.827	21
F	0.787	20
G	0.689	17.5
H	0.492	12.5
J	0.354	9
K	0.256	6.5
L	0.256±0.008 Dia.	6.5±0.2
M	M5 Metric	M5



CM420890
SCR/Diode
POW-R-BLOK™ Modules
90 Amperes/800 Volts

Description:

Powerex SCR/Diode POW-R-BLOK™ Modules are designed for use in applications requiring Half-Control and isolated packaging. The modules are isolated for easy mounting with other components on common heatsinks.

Features:

- ☐ Isolated Mounting
- ☐ Glass Passivated Chips
- ☐ Metal Baseplate
- ☐ Low Thermal Impedance

Applications:

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

Ordering Information:

Select the complete eight digit module part number you desire from the table below.

Example: CM420890 is a 800 Volt, 90 Ampere SCR/Diode POW-R-BLOK™ Module.

Type	Voltage Volts (x100)	Current Rating Amperes (90)
CM42	08	90



Powerex, Inc., 200 Hillis Street, Youngwood, Pennsylvania 15697-1800 (724) 925-7272

CM420890

SCR/Diode POW-R-BLOK™ Modules

90 Amperes/800 Volts

Absolute Maximum Ratings

Characteristics	Symbol	CM420890	Units
Peak Forward Blocking Voltage	V_{DRM}	800	Volts
Transient Peak Forward Blocking Voltage (Non-Repetitive), $t < 5\text{ms}$	V_{DSM}	960	Volts
DC Forward Blocking Voltage	$V_{D(DC)}$	640	Volts
Peak Reverse Blocking Voltage	V_{RRM}	800	Volts
Transient Peak Reverse Blocking Voltage (Non-Repetitive), $t < 5\text{ms}$	V_{RSM}	960	Volts
DC Reverse Blocking Voltage	$V_{R(DC)}$	640	Volts
RMS On-State Current	$I_{T(RMS)}, I_{F(RMS)}$	140	Amperes
Average On-State Current, $T_C = 86^\circ\text{C}$	$I_{T(AV)}, I_{F(AV)}$	90	Amperes
Peak One-Cycle Surge (Non-Repetitive) On-State Current (60Hz)	I_{TSM}, I_{FSM}	1800	Amperes
Peak One-Cycle Surge (Non-Repetitive) On-State Current (50Hz)	I_{TSM}, I_{FSM}	1730	Amperes
I^2t (for Fusing), 8.3 milliseconds	I^2t	15000	A^2sec
Critical Rate-of-Rise of On-State Current*	di/dt	100	Amperes/ μs
Peak Gate Power Dissipation	P_{GM}	5.0	Watts
Average Gate Power Dissipation	$P_{G(AV)}$	0.5	Watts
Peak Forward Gate Voltage	V_{GFM}	10	Volts
Peak Reverse Gate Voltage	V_{GRM}	5.0	Volts
Peak Forward Gate Current	I_{GFM}	2.0	Amperes
Storage Temperature	T_{STG}	-40 to 125	$^\circ\text{C}$
Operating Temperature	T_j	-40 to 125	$^\circ\text{C}$
Maximum Mounting Torque M6 Mounting Screw	—	26	in.-lb.
Maximum Mounting Torque M5 Terminal Screw	—	17	in.-lb.
Module Weight (Typical)	—	160	Grams
V Isolation	V_{RMS}	2000	Volts

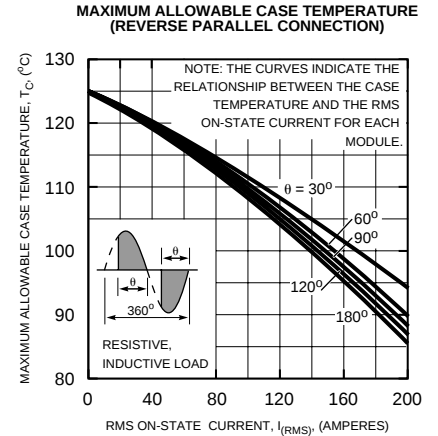
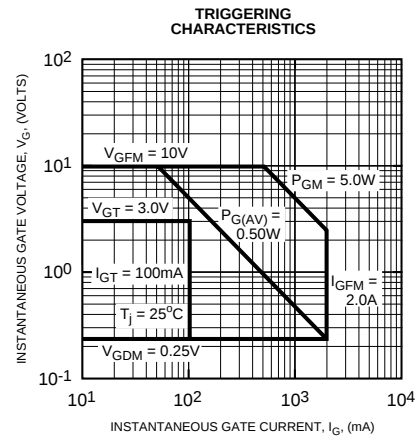
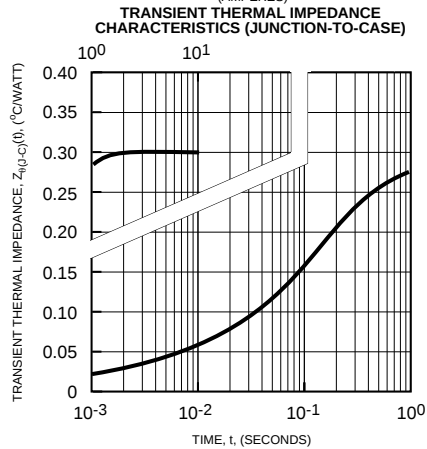
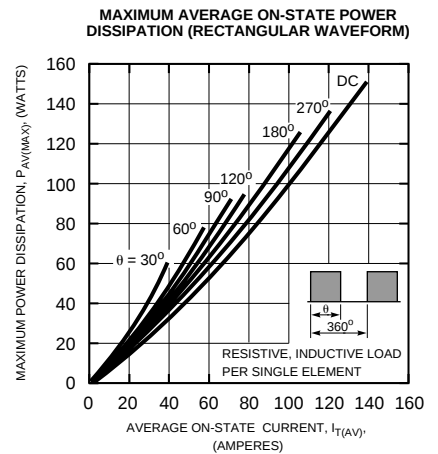
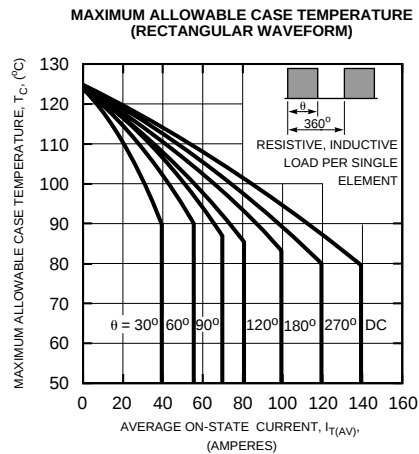
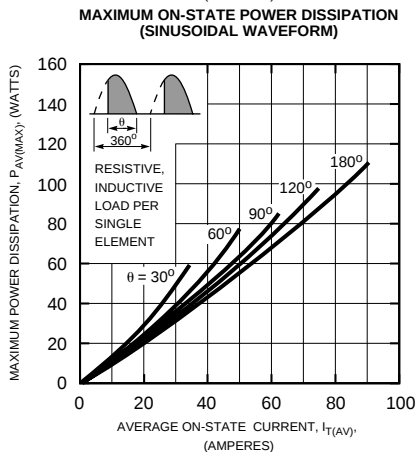
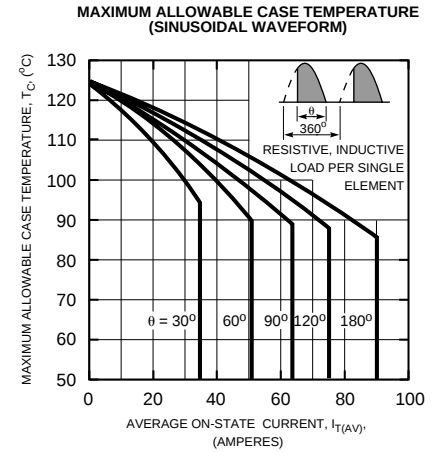
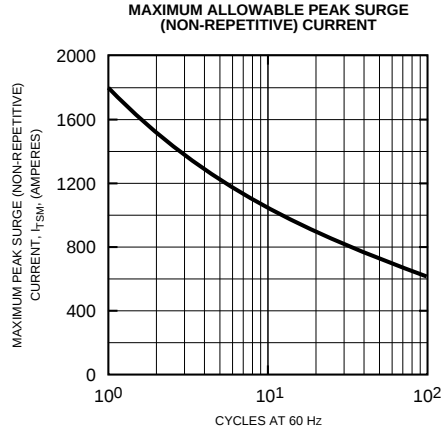
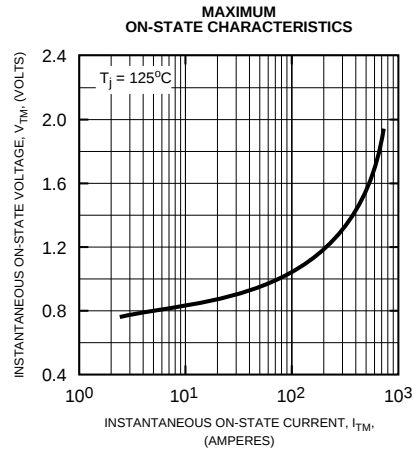
* $T_j = 125^\circ\text{C}$, $I_G = 1.0\text{A}$, $V_D = 1/2 V_{DRM}$

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

Characteristics	Symbol	Test Conditions	CM420890	Units
Blocking State Maximums				
Forward Leakage Current, Peak	I_{DRM}	$T_j = 125^\circ\text{C}$, $V_{DRM} = \text{Rated}$	15	mA
Reverse Leakage Current, Peak	I_{RRM}	$T_j = 125^\circ\text{C}$, $V_{RRM} = \text{Rated}$	15	mA
Conducting State Maximums				
Peak On-State Voltage	V_{FM}, V_{TM}	$I_{FM} = 270\text{A}$, $I_{TM} = 270\text{A}$	1.3	Volts
Switching Minimums				
Critical Rate-of-Rise of Off-State Voltage	dv/dt	$T_j = 125^\circ\text{C}$, $V_D = 2/3 V_{DRM}$	500	Volts/ μs
Thermal Maximums				
Thermal Resistance, Junction-to-Case	$R_{\theta(J-C)}$	Per Module	0.3	$^\circ\text{C/Watt}$
Thermal Resistance, Case-to-Sink (Lubricated)	$R_{\theta(C-S)}$	Per Module	0.2	$^\circ\text{C/Watt}$
Gate Parameters Maximums				
Gate Current-to-Trigger	I_{GT}	$V_D = 6\text{V}$, $R_L = 2\Omega$	100	mA
Gate Voltage-to-Trigger	V_{GT}	$V_D = 6\text{V}$, $R_L = 2\Omega$	3.0	Volts
Non-Triggering Gate Voltage	V_{GDM}	$T_j = 125^\circ\text{C}$, $V_D = 1/2 V_{DRM}$	0.25	Volts

CM420890

SCR/Diode POW-R-BLOK™ Modules
90 Amperes/800 Volts

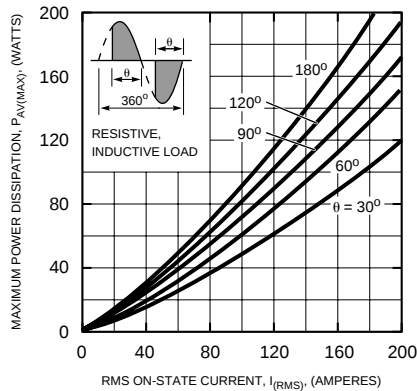


CM420890

SCR/Diode POW-R-BLOK™ Modules

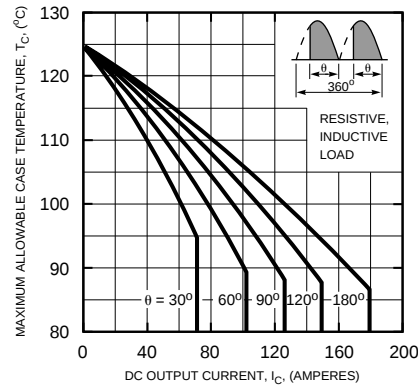
90 Amperes/800 Volts

**MAXIMUM ON-STATE POWER DISSIPATION
(REVERSE PARALLEL CONNECTION)**



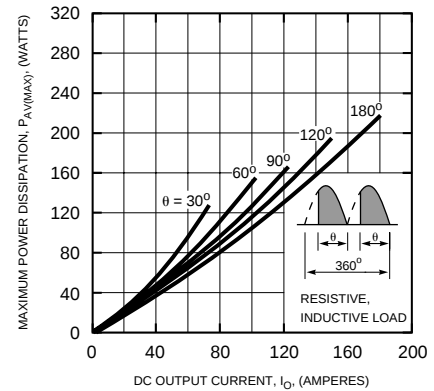
NOTE: THE CURVES INDICATE THE RELATIONSHIP BETWEEN THE AVERAGE ON-STATE POWER DISSIPATION PER MODULE AND THE RMS ON-STATE CURRENT.

**MAXIMUM ALLOWABLE CASE TEMPERATURE
(SINGLE PHASE BRIDGE CONNECTION)**



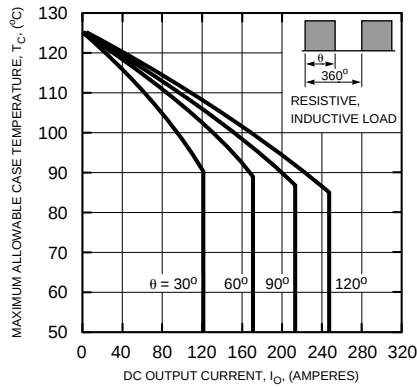
NOTE: THE CURVES INDICATE THE RELATIONSHIP BETWEEN THE CASE TEMPERATURE AND THE DC OUTPUT CURRENT (FOR TWO ELEMENTS) WHEN USED IN THE SINGLE PHASE BRIDGE CONFIGURATION.

**MAXIMUM ON-STATE POWER DISSIPATION
(SINGLE PHASE BRIDGE CONNECTION)**



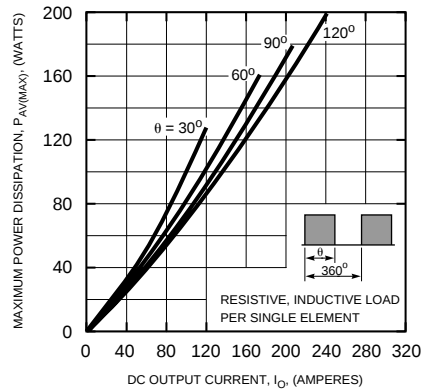
NOTE: THE CURVES INDICATE THE RELATIONSHIP BETWEEN THE AVERAGE ON-STATE POWER DISSIPATION AND THE DC OUTPUT CURRENT FOR THE SINGLE PHASE BRIDGE CONFIGURATION (POWER DISSIPATION EXPRESSED FOR EACH MODULE AND DC OUTPUT CURRENT EXPRESSED FOR THE PAIR)

**MAXIMUM ALLOWABLE CASE TEMPERATURE
(THREE PHASE BRIDGE CONNECTION)**



NOTE: THE CURVES INDICATE THE RELATIONSHIP BETWEEN THE CASE TEMPERATURE AND THE DC OUTPUT CURRENT (FOR THREE MODULES) IN THE THREE PHASE CONFIGURATION.

**MAXIMUM ON-STATE POWER DISSIPATION
(THREE PHASE BRIDGE CONNECTION)**



NOTE: THE CURVES INDICATE THE RELATIONSHIP BETWEEN THE ON-STATE POWER DISSIPATION (PER MODULE) AND THE DC OUTPUT CURRENT (FOR THREE MODULES) IN THE THREE PHASE BRIDGE CONFIGURATION.