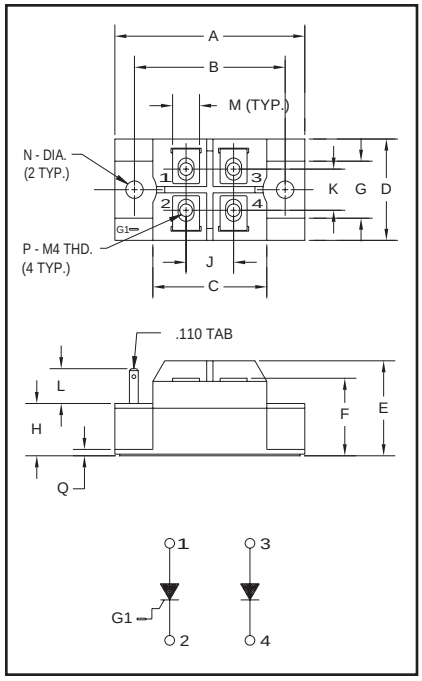
Powerex, Inc., 200 Hillis Street, Youngwood, Pennsylvania 15697-1800 (724) 925-7272

Split SCR/Diode POW-R-BLOK™ Modules

20 Amperes/800 Volts



Outline Drawing

Dimension	Inches	Millimeters
A	2.362 Max.	60 Max.
B	1.874	47.6
C	1.417	36
D	1.260 Max.	32 Max.
E	1.181 Max.	30 Max.
F	0.964	24.5
G	0.709	18
H	0.650	16.5
J	0.591	15
K	0.512	13
L	0.433	11
M	0.335	8.5
N	0.216 Dia.	Dia. 5.5
P	M4 Metric	M4
Q	0.079	2

CT220802
Split SCR/Diode
POW-R-BLOK™ Modules
20 Amperes/800 Volts

Description:
Powerex Split SCR/Diode POW-R-BLOK™ Modules are designed for use in applications requiring control and rectification. The modules are isolated for easy mounting with other components on common heatsinks.

Features:

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

Applications:

- ☐ Battery Supplies
- ☐ Contactless Switches
- ☐ Furnace Control
- ☐ Light Dimmers

Ordering Information:
Select the complete eight digit module part number you desire from the table below.
Example: CT220802 is an 800 Volt, 20 Ampere Split SCR/Diode POW-R-BLOK™ Module.

Type	Voltage Volts (x100)	Current Rating Amperes (x10)
CT22	08	02

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Absolute Maximum Ratings

Characteristics	Symbol	CT220802	Units
Peak Forward Blocking Voltage	V_{DRM}	800	Volts
Transient Peak Forward Blocking Voltage (Non-Repetitive), t < 5ms	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 < 5ms	V_{RSM}	960	Volts
DC Reverse Blocking Voltage	$V_{R(DC)}$	640	Volts
RMS On-State Current	$I_{T(RSM)}$, $I_{F(RSM)}$	30	Amperes
Average On-State Current, T_C = 87°C	$I_{T(AV)}$, $I_{F(AV)}$	20	Amperes
Peak One-Cycle Surge (Non-Repetitive) On-State Current (60Hz)	I_{TSM}, I_{FSM}	400	Amperes
Peak One-Cycle Surge (Non-Repetitive) On-State Current (50Hz)	I_{TSM}, I_{FSM}	365	Amperes
I^2t (for Fusing), 8.3 milliseconds	I^2t	667	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	°C
Operating Temperature	T_j	-40 to 125	°C
Maximum Mounting Torque M5 Mounting Screw	—	17	in.-lb.
Maximum Mounting Torque M4 Terminal Screw	—	12	in.-lb.
Module Weight (Typical)	—	80	Grams
V Isolation	V_{RMS}	2000	Volts

*T_j = 125°C, I_G = 0.5A, V_D = 1/2 V_{DRM}

Electrical and Thermal Characteristics, T_j = 25°C unless otherwise specified

Characteristics	Symbol	Test Conditions	CT220802	Units
Blocking State Maximums				
Forward Leakage Current, Peak	I_{DRM}	T_j = 125°C, V_{DRM} = Rated	4.0	mA
Reverse Leakage Current, Peak	I_{RRM}	T_j = 125°C, V_{RRM} = Rated	4.0	mA
Conducting State Maximums				
Peak On-State Voltage	V_{FM},V_{TM}	I_{FM} = 60A, I_{TM} = 60A	1.8	Volts
Switching Minimums				
Critical Rate-of-Rise of Off-State Voltage	dv/dt	T_j = 125°C, V_D = 2/3 V_{DRM}	500	Volts/μs
Thermal Maximums				
Thermal Resistance, Junction-to-Case	$R_{\theta(J-C)}$	Per Module	1.0	°C/Watt
Thermal Resistance, Case-to-Sink (Lubricated)	$R_{\theta(C-S)}$	Per Module	0.25	°C/Watt
Gate Parameters Maximums				
Gate Current-to-Trigger	I_{GT}	V_D = 6V, R_L = 2Ω	50	mA
Gate Voltage-to-Trigger	V_{GT}	V_D = 6V, R_L = 2Ω	3.0	Volts
Non-Triggering Gate Voltage	V_{GDM}	T_j = 125°C, V_D = 1/2 V_{DRM}	0.25	Volts

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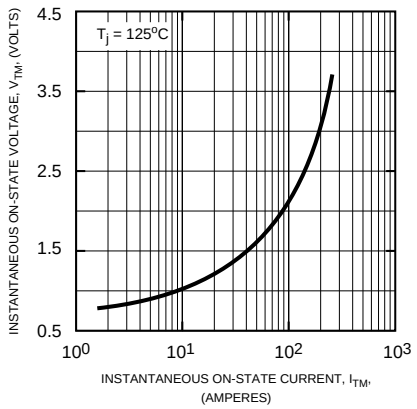
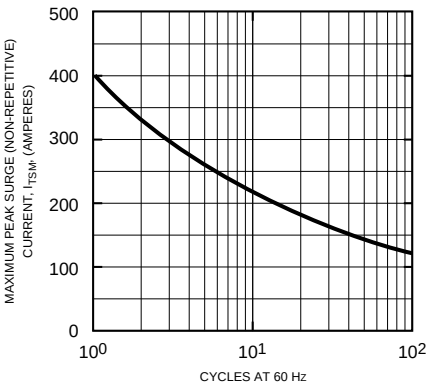
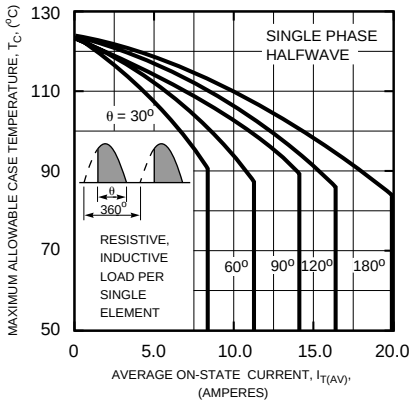
MAXIMUM ON-STATE CHARACTERISTICS



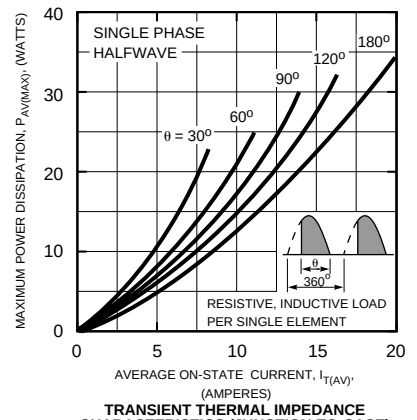
MAXIMUM ALLOWABLE PEAK SURGE (NON-REPETITIVE) CURRENT



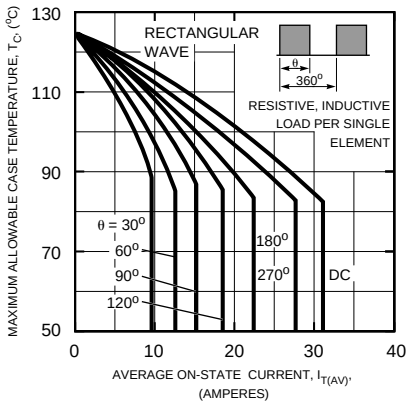
MAXIMUM ALLOWABLE CASE TEMPERATURE (SINUSOIDAL WAVEFORM)



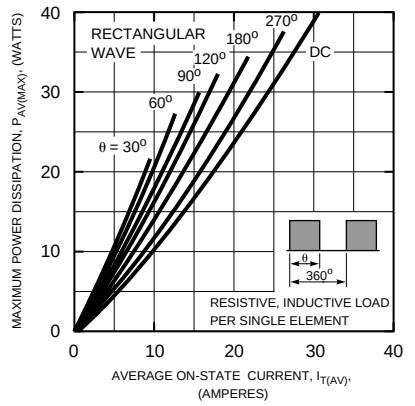
MAXIMUM ON-STATE POWER DISSIPATION (SINUSOIDAL WAVEFORM)



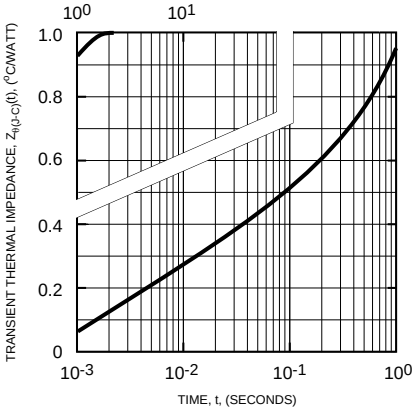
MAXIMUM ALLOWABLE CASE TEMPERATURE (RECTANGULAR WAVEFORM)



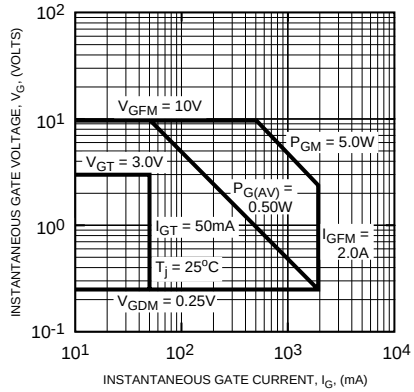
MAXIMUM AVERAGE ON-STATE POWER DISSIPATION (RECTANGULAR WAVEFORM)



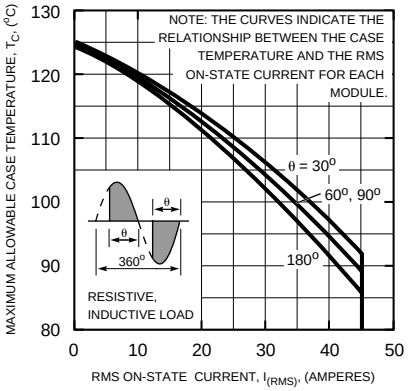
TRANSIENT THERMAL IMPEDANCE CHARACTERISTICS (JUNCTION-TO-CASE)



TRIGGERING CHARACTERISTICS



MAXIMUM ALLOWABLE CASE TEMPERATURE (REVERSE PARALLEL CONNECTION)



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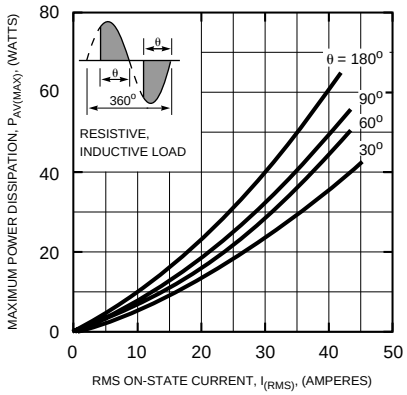
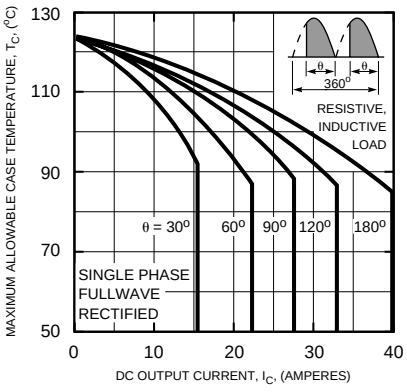
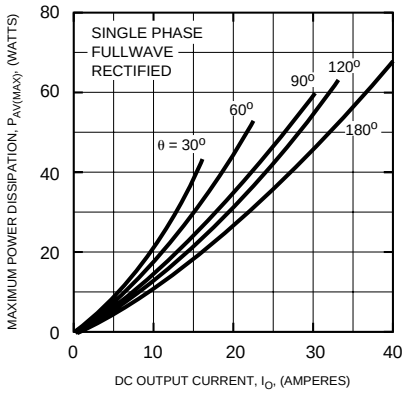
MAXIMUM ON-STATE POWER DISSIPATION (REVERSE PARALLEL CONNECTION)



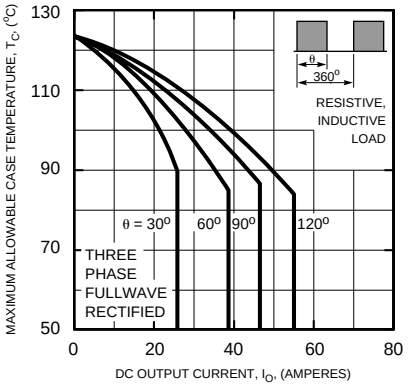
MAXIMUM ALLOWABLE CASE TEMPERATURE (SINGLE PHASE BRIDGE CONNECTION)



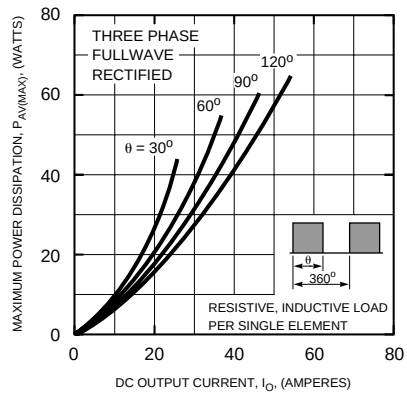
MAXIMUM ON-STATE POWER DISSIPATION (SINGLE PHASE BRIDGE CONNECTION)



MAXIMUM ALLOWABLE CASE TEMPERATURE (THREE PHASE BRIDGE CONNECTION)



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



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