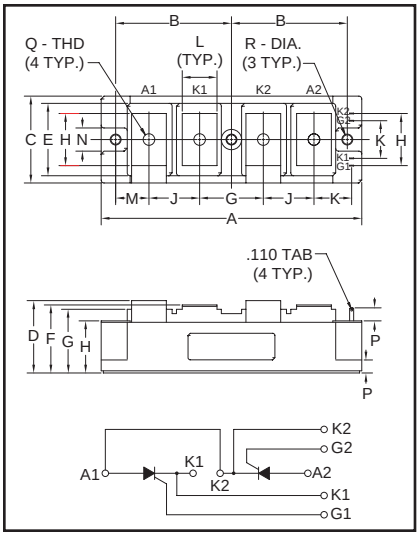
Powerex, Inc., 200 Hillis Street, Youngwood, Pennsylvania 15697-1800 (724) 925-7272

Dual SCR Module
400 Amperes/1600 Volts



Outline Drawing

Dimension	Inches	Millimeters
A	7.09	180.0
B	3.15±0.008	80.0±0.2
C	2.36	60.0
D	1.97 Max.	50.0 Max.
E	1.97	50.0
F	1.87 Max.	47.5 Max.
G	1.73	44.0
H	1.42	36.0
J	1.38	35.0
K	1.02	26.0
L	0.94	24.0
M	0.90	23.0
N	0.63	16.0
P	0.35	9.0
Q	M8 Metric	M8
R	0.26 Dia.	Dia. 6.5

TM400DZ-2H
Dual SCR Module
400 Amperes/1600 Volts

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.

Features:

- ☐ Isolated Mounting
- ☐ Low Thermal Impedance

Applications:

- ☐ AC and DC Motor Control
- ☐ Lighting Control
- ☐ Electric Furnace Temperature Control
- ☐ Contactless Switches

Ordering Information:
Select the complete eight digit module part number you desire from the table below.
Example: TM400DZ-2H is a 1600 Volt, 400 Ampere Dual SCR Module.

Type	Current Rating Amperes (x10)	Voltage Volts
TM	40	1600 (2H)

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Absolute Maximum Ratings

Characteristics	Symbol	TM400DZ-2H	Units
Peak Forward Blocking Voltage	V_{DRM}	1600	Volts
Transient Peak Forward Blocking Voltage (Non-Repetitive), t < 5ms	V_{DSM}	1700	Volts
DC Forward Blocking Voltage	$V_{D(DC)}$	1280	Volts
Peak Reverse Blocking Voltage	V_{RRM}	1600	Volts
Transient Peak Reverse Blocking Voltage (Non-Repetitive), t < 5ms	V_{RSM}	1700	Volts
DC Reverse Blocking Voltage	$V_{R(DC)}$	1280	Volts
RMS On-State Current	$I_{T(RMS)}$	620	Amperes
Average On-State Current, T_C = 66°C	$I_{T(AV)}$	400	Amperes
Peak Half-Cycle Surge (Non-Repetitive) On-State Current (60Hz)	I_{TSM}	8000	Amperes
I^2t (for Fusing), 8.3 milliseconds	I^2t	270000	A^2sec
Critical Rate-of-Rise of On-State Current*	di/dt	200	Amperes/μs
Peak Gate Power Dissipation	P_{GM}	10	Watts
Average Gate Power Dissipation	$P_{G(AV)}$	3	Watts
Peak Forward Gate Voltage	V_{GFM}	10	Volts
Peak Reverse Gate Voltage	V_{GRM}	5	Volts
Peak Forward Gate Current	I_{GFM}	4	Amperes
Storage Temperature	T_{STG}	-40 to 125	°C
Junction Temperature	T_j	-40 to 125	°C
Maximum Mounting Torque M6 Mounting Screw	—	26	in.-lb.
Maximum Mounting Torque M8 Terminal Screw	—	95	in.-lb.
Module Weight (Typical)	—	1100	Grams
V Isolation	V_{RMS}	2500	Volts

*T_j = 125°C, I_G = 1.0A, V_D = 1/2 V_{DRM}

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

Characteristics	Symbol	Test Conditions	Min.	Max.	Units
Blocking State Maximums					
Forward Leakage Current, Peak	I_{DRM}	T_j = 125°C, V_{DRM} = Rated	—	60	mA
Reverse Leakage Current, Peak	I_{RRM}	T_j = 125°C, V_{RRM} = Rated	—	60	mA
Conducting State Maximums					
Peak On-State Voltage	V_{TM}	T_j = 125°C, I_{TM} = 1200A	—	1.4	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	—	0.1	°C/Watt
Thermal Resistance, Case-to-Fin	$R_{\theta(C-F)}$	Per Module	—	0.05	°C/Watt
Thermal Resistance, Terminal-to-Case	—	Per Module	10	—	mΩ
Gate Parameters Maximums					
Gate Current-to-Trigger	I_{GT}	V_D = 6V, R_L = 2Ω	15	100	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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TM400DZ-2H
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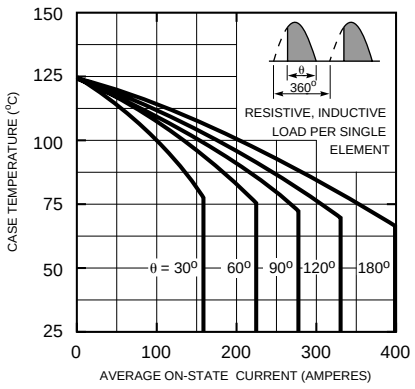
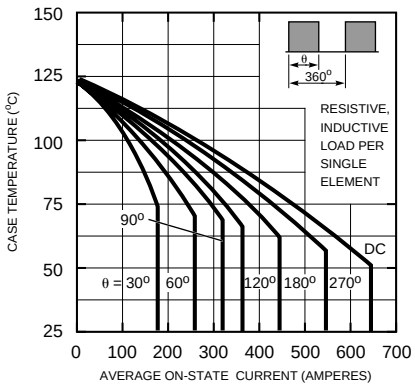
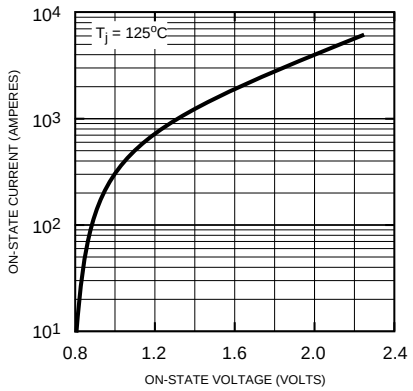
ALLOWABLE CASE TEMPERATURE VS. AVERAGE ON-STATE CURRENT (SINGLE-PHASE, HALF-WAVE)



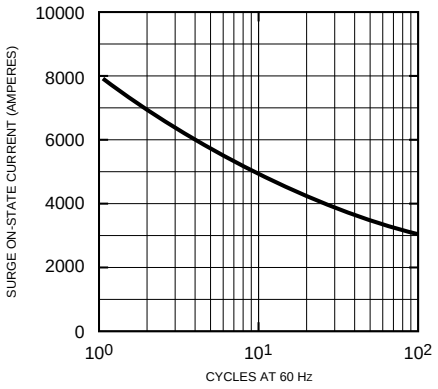
ALLOWABLE CASE TEMPERATURE VS. AVERAGE ON-STATE CURRENT (RECTANGULAR WAVE)



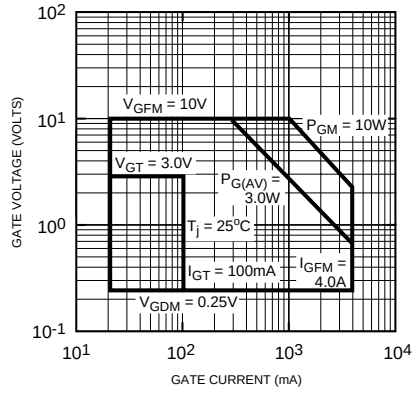
MAXIMUM ON-STATE CHARACTERISTICS



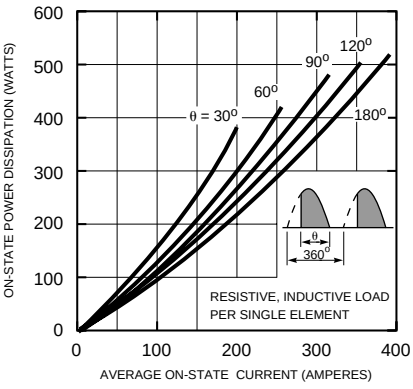
RATED SURGE ON-STATE CURRENT



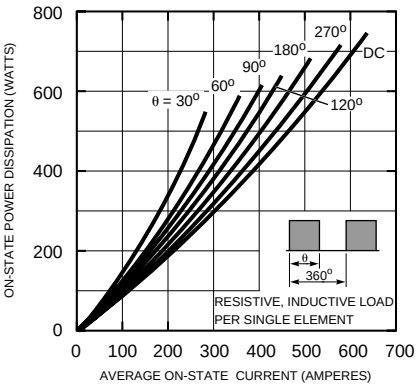
GATE CHARACTERISTICS



MAXIMUM ON-STATE POWER DISSIPATION CHARACTERISTICS (SINGLE-PHASE, HALF WAVE)



MAXIMUM ON-STATE POWER DISSIPATION CHARACTERISTICS (RECTANGULAR WAVEFORM)



MAXIMUM THERMAL IMPEDANCE CHARACTERISTIC (JUNCTION-TO-CASE)