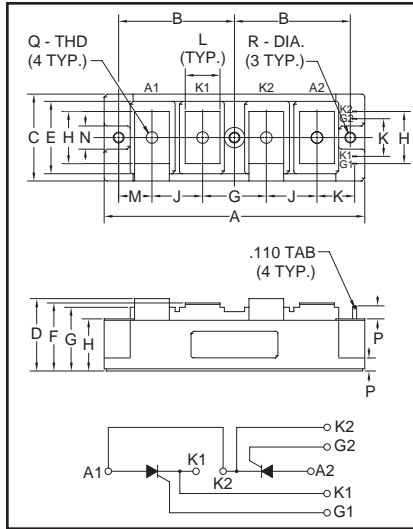


### Dual SCR Module 400 Amperes/1600 Volts



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)

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

**TM400DZ-2H****Dual SCR Module**

400 Amperes/1600 Volts

**Absolute Maximum Ratings**

Characteristics	Symbol	TM400DZ-2H	Units
Peak Forward Blocking Voltage	$V_{DRM}$	1600	Volts
Transient Peak Forward Blocking Voltage (Non-Repetitive), $t < 5\text{ms}$	$V_{DSM}$	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), $t < 5\text{ms}$	$V_{RSM}$	1700	Volts
DC Reverse Blocking Voltage	$V_{R(DC)}$	1280	Volts
RMS On-State Current	$I_{T(RMS)}$	620	Amperes
Average On-State Current, $T_C = 66^\circ\text{C}$	$I_{T(AV)}$	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	$\text{A}^2\text{sec}$
Critical Rate-of-Rise of On-State Current*	$di/dt$	200	Amperes/ $\mu\text{s}$
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	$^\circ\text{C}$
Junction Temperature	$T_j$	-40 to 125	$^\circ\text{C}$
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

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

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

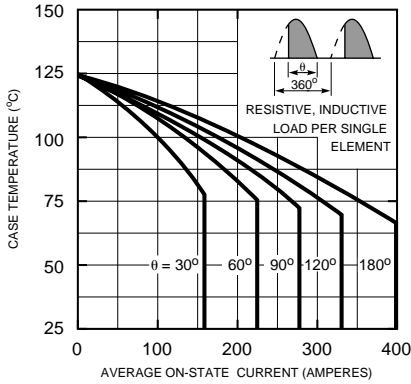
**Electrical and Thermal Characteristics,  $T_j = 25^\circ\text{C}$  unless otherwise specified**

Characteristics	Symbol	Test Conditions	Min.	Max.	Units
<b>Blocking State Maximums</b>					
Forward Leakage Current, Peak	$I_{\text{DRM}}$	$T_j = 125^\circ\text{C}$ , $V_{\text{DRM}} = \text{Rated}$	—	60	mA
Reverse Leakage Current, Peak	$I_{\text{RRM}}$	$T_j = 125^\circ\text{C}$ , $V_{\text{RRM}} = \text{Rated}$	—	60	mA
<b>Conducting State Maximums</b>					
Peak On-State Voltage	$V_{\text{TM}}$	$T_j = 125^\circ\text{C}$ , $I_{\text{TM}} = 1200\text{A}$	—	1.4	Volts
<b>Switching Minimums</b>					
Critical Rate-of-Rise of Off-State Voltage	dv/dt	$T_j = 125^\circ\text{C}$ , $V_{\text{D}} = 2/3 V_{\text{DRM}}$	500	—	Volts/ $\mu\text{s}$
<b>Thermal Maximums</b>					
Thermal Resistance, Junction-to-Case	$R_{\theta(\text{J-C})}$	Per Module	—	0.1	$^\circ\text{C}/\text{Watt}$
Thermal Resistance, Case-to-Fin	$R_{\theta(\text{C-F})}$	Per Module	—	0.05	$^\circ\text{C}/\text{Watt}$
Thermal Resistance, Terminal-to-Case	—	Per Module	10	—	$\text{m}\Omega$
<b>Gate Parameters Maximums</b>					
Gate Current-to-Trigger	$I_{\text{GT}}$	$V_{\text{D}} = 6\text{V}$ , $R_{\text{L}} = 2\Omega$	15	100	mA
Gate Voltage-to-Trigger	$V_{\text{GT}}$	$V_{\text{D}} = 6\text{V}$ , $R_{\text{L}} = 2\Omega$	—	3.0	Volts
Non-Triggering Gate Voltage	$V_{\text{GDM}}$	$T_j = 125^\circ\text{C}$ , $V_{\text{D}} = 1/2 V_{\text{DRM}}$	0.25	—	Volts

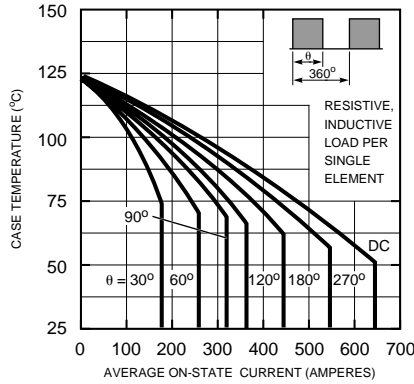
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**TM400DZ-2H**  
**Dual SCR Module**  
 400 Amperes/1600 Volts

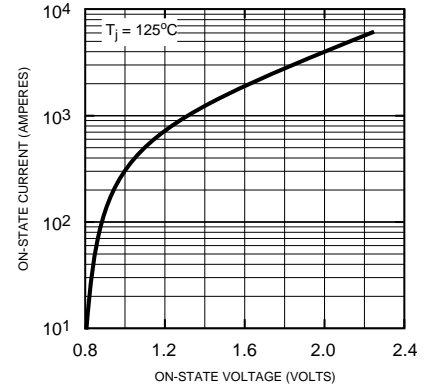
**ALLOWABLE CASE TEMPERATURE VS. AVERAGE ON-STATE CURRENT (SINGLE-PHASE, HALF-WAVE)**



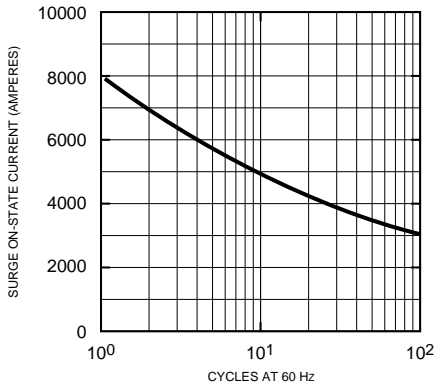
**ALLOWABLE CASE TEMPERATURE VS. AVERAGE ON-STATE CURRENT (RECTANGULAR WAVE)**



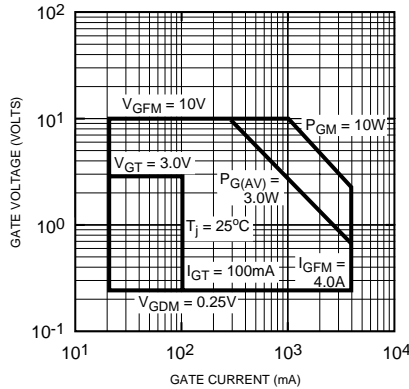
**MAXIMUM ON-STATE CHARACTERISTICS**



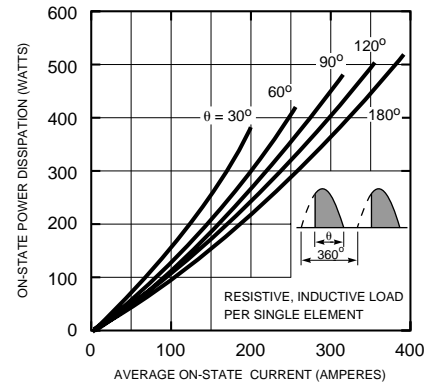
**RATED SURGE ON-STATE CURRENT**



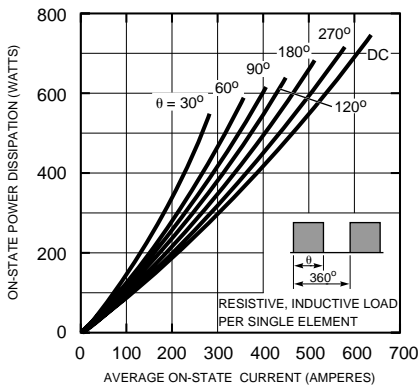
**GATE CHARACTERISTICS**



**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)**

