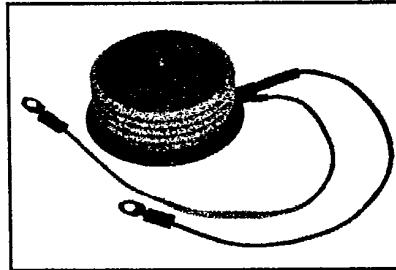
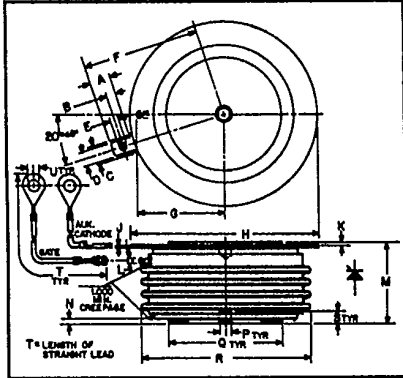




**C440**

Powerex, Inc. Hillis Street, Youngwood, Pennsylvania 15697 (412) 925-7272  
 Powerex Europe, S.A., 428 Ave. G. Durand, BP107, 72003 LeMans, France (43) 72.75.15

**Phase Control SCR**  
**900 Amperes Avg**  
**500-1300 Volts**



**C440**  
**Phase Control SCR**  
 900 Amperes/500-1200 Volts

**C440**  
**Outline Drawing**

Dimensions	Inches		Millimeters	
	Min.	Max.	Min.	Max.
A	.240	.260	6.096	6.604
B	.110	.130	2.794	3.302
C	.245	—	6.223	—
D	.186	.191	4.724	4.851
E	.060	.075	1.524	1.905
F	—	1.430	—	36.32
G	—	1.065	—	27.051
H	2.200	2.500	55.88	63.50
J	.011	.019	2.794	3.483
K	.030	.130	.762	3.302
L	.056	.060	1.422	1.524
M	1.000	1.065	25.40	27.05
N	.030	.096	.762	2.438
P	.130	.150	3.302	3.810
Q	1.300	1.345	33.02	34.16
R	—	2.150	—	54.61
S	.067	.083	1.702	2.110
T	12.200	12.360	309.9	313.9
U	.137	.153	3.480	3.886

**Description**

Powerex Silicon Controlled Rectifiers (SCR) are designed for phase control applications. These are all-diffused, Press-Pak (Pow-R-Disc) devices employing the field-proven amplifying (di/namic) gate.

**Features:**

- Low On-State Voltage
- High di/dt
- High dv/dt
- Hermetic Packaging
- Excellent Surge and I<sup>2</sup>t Ratings

**Applications:**

- Power Supplies
- Battery Chargers
- Motor Control
- Light Dimmers
- VAR Generators

**Ordering Information**

Example: Select the complete five digit part number you desire from the table – i.e. C440M is a 600 Volt, 900 Ampere Phase Control SCR.

Type	Voltage		Current
	V <sub>ORM</sub> V <sub>RRM</sub>	Code	
C440	500	E	900
	600	M	
	700	S	
	800	N	
	900	T	
	1000	P	
	1100	PA	
	1200	PB	
	1300	PC	



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Phase Control SCR

900 Amperes Avg/500-1300 Volts

### Absolute Maximum Ratings

	Symbol	C440	Units
RMS On-State Current			
Average On-State Current	$I_{T(RMS)}$	1400	Amperes
Peak One-Cycle Surge (Non-Repetitive) On-State Current (60Hz)	$I_{T(av)}$	900	Amperes
Peak One-Cycle Surge (Non-Repetitive) On-State Current (50Hz)	$I_{TSM}$	13,000	Amperes
Critical Rate-of-Rise of On-State Current (Non-Repetitive)	$di/dt$	12,000	Amperes
Critical Rate-of-Rise of On-State Current (Repetitive)	$di/dt$	400	Amperes/ $\mu$ s
$I^2t$ (for Fusing), One Cycle at 60Hz	$I^2t$	150	Amperes/ $\mu$ s
Peak Gate Power Dissipation		700,000	A <sup>2</sup> sec
Average Gate Power Dissipation	$P_{GM}$	200	Watts
Storage Temperature	$P_{G(av)}$	5	Watts
Operating Temperature	$T_{STG}$	-40 to 150	$^{\circ}$ C
Mounting Force <sup>Ⓞ</sup>	$T_J$	-40 to 125	$^{\circ}$ C
Mounting Force <sup>Ⓞ</sup>		3000 to 3500	lb.
		13.3 to 15.5	kN

### Electrical and Thermal Characteristics

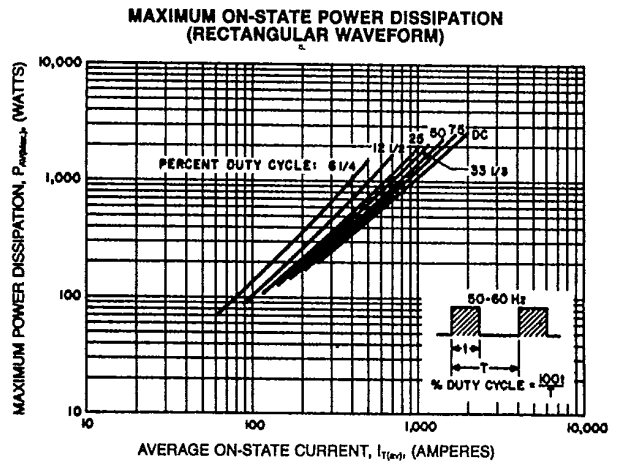
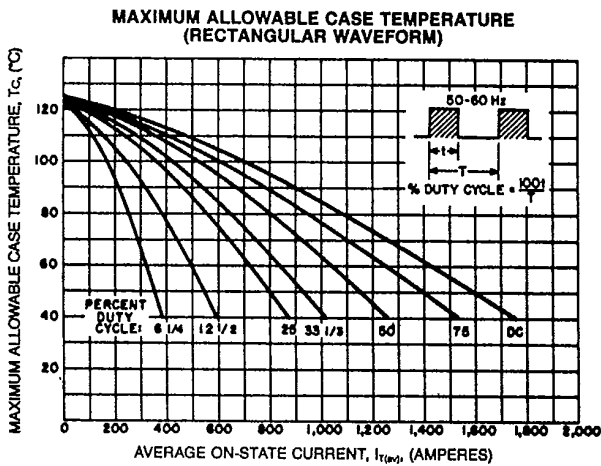
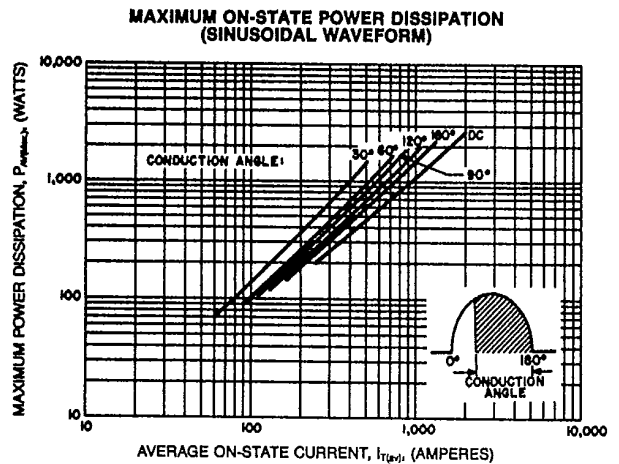
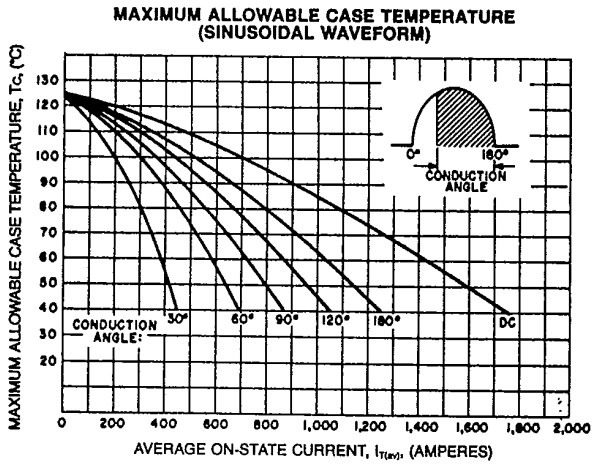
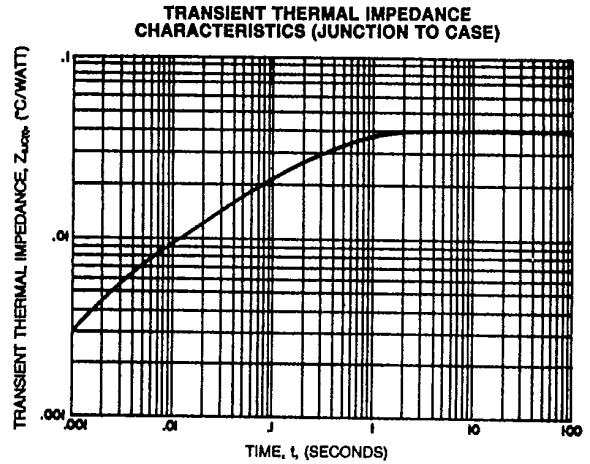
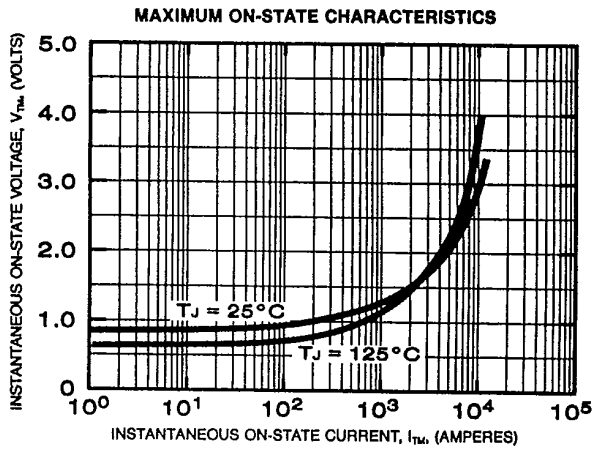
Characteristics	Symbol	Test Conditions	C440	Units
<b>Voltage—Blocking State Maximums<sup>Ⓞ</sup></b>				
Forward Leakage, Peak	$I_{DRM}$	$T_J = 125^{\circ}\text{C}, V = V_{DRM}$	35	mA
Reverse Leakage, Peak	$I_{RRM}$	$T_J = 125^{\circ}\text{C}, V = V_{RRM}$	35	mA
<b>Current—Conducting State Maximums</b>				
Peak On-State Voltage	$V_{TM}$	$I_{TM} = 3000\text{A Peak}, T_J = 25^{\circ}\text{C},$ Duty Cycle $\leq 0.01\%$	1.65	Volts
<b>Switching</b>				
Typical Turn-Off Time	$t_q$	$T_J = 125^{\circ}\text{C}; I_{TM} = 500\text{A}; V_R = 50\text{V Min};$ $0.8 V_{DRM}$ Reapplied; $dv/dt = 20\text{V}/\mu\text{sec}$ (linear); Commutation $di/dt = 25\text{A}/\mu\text{sec};$ Repetition Rate = 1pps; Gate Bias during Turn-Off Interval = 0V, 100 $\Omega$	125	$\mu\text{sec}$
Typical Delay Time	$t_d$	$T_J = 25^{\circ}\text{C}, I_T = 50\text{A},$ Gate Supply: 20V, 20 $\Omega$ , 0.1 $\mu\text{sec}$ rise time	.7	$\mu\text{sec}$
Min. Critical $dv/dt$ exponential to $V_{DRM}$	$dv/dt$	$T_J = 125^{\circ}\text{C}, V_{DRM} = .8$ Rated, Gate Open	200	V/ $\mu\text{sec}$
<b>Thermal</b>				
Maximum Thermal Resistance, <sup>Ⓞ</sup> double sided cooling Junction to Case	$R_{\theta JC}$		.04	$^{\circ}\text{C}/\text{Watt}$
Case to Sink, Lubricated	$R_{\theta CS}$		.02	$^{\circ}\text{C}/\text{Watt}$
<b>Gate—Maximum Parameters</b>				
Gate Current to Trigger	$I_{GT}$	$T_J = 25^{\circ}\text{C}, V_D = 6\text{Vdc}, R_L = 3\Omega$	150	mA
Gate Voltage to Trigger	$V_{GT}$	$T_J = -40$ to $125^{\circ}\text{C}, V_D = 6\text{Vdc}, R_L = 3\Omega$	5	Volts
Non-Triggerring Gate Voltage	$V_{GDM}$	$T_J = 125^{\circ}\text{C},$ Rated $V_{DRM}, R_L = 1000\Omega$	.15	Volts
Peak Forward Gate Current	$I_{GTM}$		10	Amperes
Peak Reverse Gate Voltage	$V_{GRM}$		5	Volts

<sup>Ⓞ</sup> Consult recommended mounting procedures.



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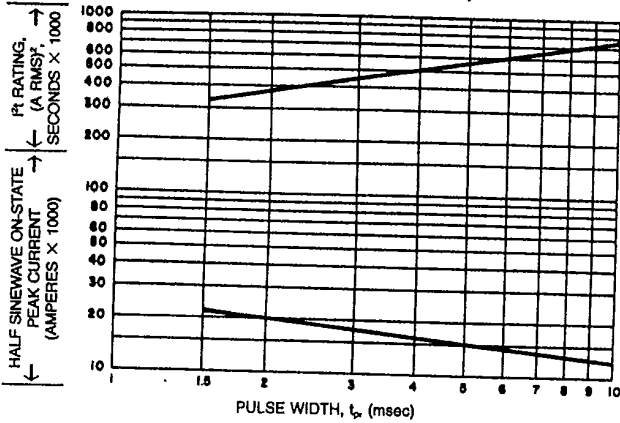




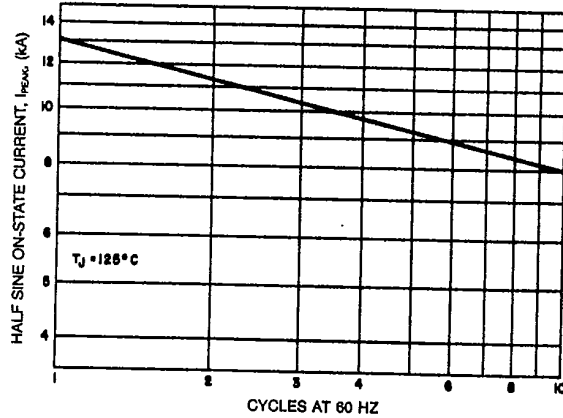
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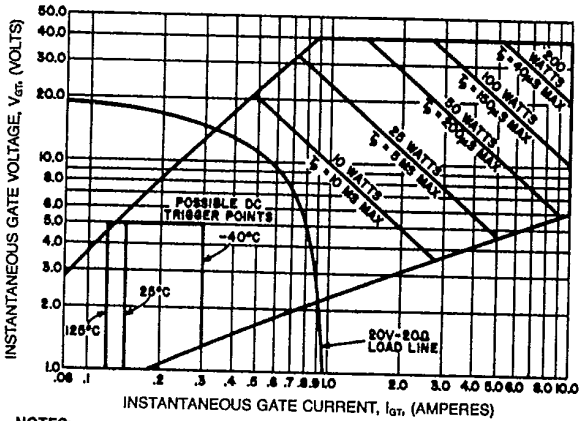
**SUB-CYCLE SURGE AND I<sub>TR</sub> RATINGS (RATED LOAD CONDITIONS)**



**MAXIMUM ALLOWABLE SURGE ON-STATE CURRENT (NON-REPETITIVE)**



**GATE CHARACTERISTICS**



- NOTES:**
1. Maximum allowable average gate dissipation = 5 watts.
  2. The locus of possible DC trigger points lies outside the boundaries shown at various case temperatures.
  3. T<sub>p</sub> = Rectangular Gate Current Pulse Width.