



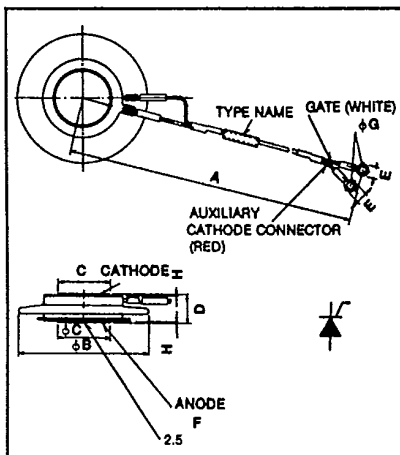
FT500A

T-25-19

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

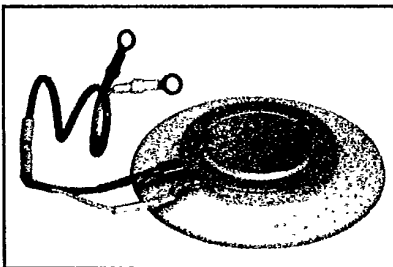
Phase Control SCR

400 Amperes Avg
 800-2500 Volts



FT500A
Outline Drawing

Dimensions	Inches	Metric
A	11.42 ± .40	290 ± 10
φB	3.346	85
φC	1.339	34
D	.71 ± .02	18 ± 0.5
E	.30	7.5
F	M5	M5 × 0.8
φG	.169	4.3
H	.015 Min	0.4 Min



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Description

Powerex Silicon Controlled Rectifiers (SCR) are designed for phase control applications. These are all-diffused, Press-Pak (Pow-R-Disc) devices employing center-fired gate.

Features:

- ☐ Low On-State Voltage
- ☐ High di/dt
- ☐ High dv/dt
- ☐ Hermetic Packaging
- ☐ Excellent Surge and I²t Ratings

Applications:

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

Ordering Information

Example: Select the complete eight digit part number you desire from the table – i.e. FT500A-40 is a 2000 Volt, 400 Ampere Phase Control SCR.

Type	Voltage*		Current
	V _{ORM} V _{RRM}	Code	
FT500A	800	-16	400
	1000	-20	
	1200	-24	
	1400	-28	
	1600	-32	
	1800	-36	
	2000	-40	
	2500	-50	

*Voltage classes 32, 40, and 50 are standard products.



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Absolute Maximum Ratings

	Symbol	FT500A	Units
RMS On-State Current	$I_{T(RMS)}$	630	Amperes
Average On-State Current	$I_{T(av)}$	400	Amperes
Peak One-Cycle Surge (Non Repetitive) On-State Current (60Hz)	I_{TSM}	7000	Amperes
Peak One-Cycle Surge (Non-Repetitive) On-State Current (50Hz)	I_{TSM}	6400	Amperes
Critical Rate-of-Rise of On-State Current (Non-Repetitive)	di/dt	500	Amperes/ μ s
Critical Rate-of-Rise of On-State Current (Repetitive)	di/dt	200	Amperes/ μ s
I^2t (for Fusing), one cycle at 60Hz	I^2t	2.0×10^5	A ² sec
Peak Gate Power Dissipation	P_{GM}	10	Watts
Average Gate Power Dissipation	$P_{G(av)}$	3	Watts
Storage Temperature	T_{STG}	-40 to 150	°C
Operating Temperature	T_J	-40 to 125	°C
Mounting Force ^①		3000 to 4000	lb.
Mounting Force ^①		1350 to 1800	kg

① Consult recommended mounting procedures.



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Electrical and Thermal Characteristics

Characteristics	Symbol	Test Conditions	FT500A	Units
Voltage—Blocking State Maximums				
Forward Leakage, Peak	I_{ORM}	$T_J = 125^\circ\text{C}$, V_{DRM} applied	30	mA
Reverse Leakage, Peak	I_{RRM}	$T_J = 125^\circ\text{C}$, V_{RRM} applied	30	mA
Current—Conducting State Maximums				
Peak On-State Voltage	V_{TM}	$I_{TM} = 1250\text{A}$, $T_J = 125^\circ\text{C}$	2.20	Volts
Switching				
Min. Critical dv/dt exponential to V_{ORM}	dv/dt	$T_J = 125^\circ\text{C}$, $V_D = \frac{1}{2}V_{ORM}$	200	V/ μsec
Thermal				
Maximum Thermal Resistance, ^① double sided cooling Junction to Sink	$R_{\theta JS}$		.05	$^\circ\text{C}/\text{Watt}$
Gate—Maximum Parameters				
Gate Current to Trigger	I_{GT}	$V_D = 6\text{V}$, $T_J = 25^\circ\text{C}$, $R_L = 2\Omega$	250	mA
Gate Voltage to Trigger	V_{GT}	$V_D = 6\text{V}$, $T_J = 25^\circ\text{C}$, $R_L = 2\Omega$	2.5	Volts
Non-Triggering Gate Voltage	V_{GDM}	$T_J = 125^\circ\text{C}$, $V_D = \frac{1}{2}V_{DRM}$	.2	Volts
Peak Forward Gate Current	I_{GTM}		4.0	Amperes
Peak Reverse Gate Voltage	V_{GRM}		5.0	Volts

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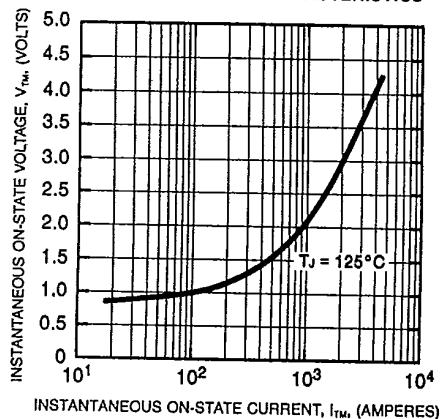
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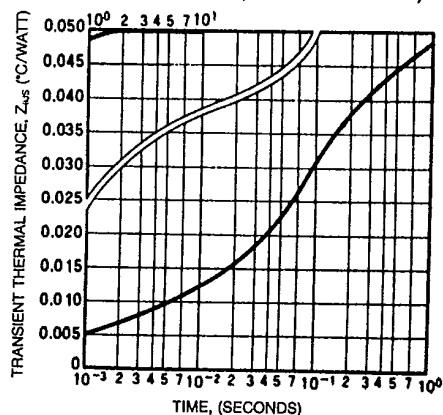
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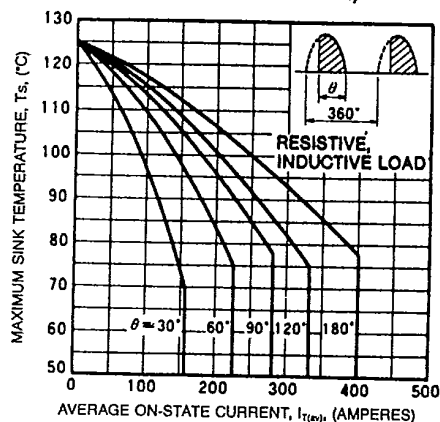
MAXIMUM ON-STATE CHARACTERISTICS



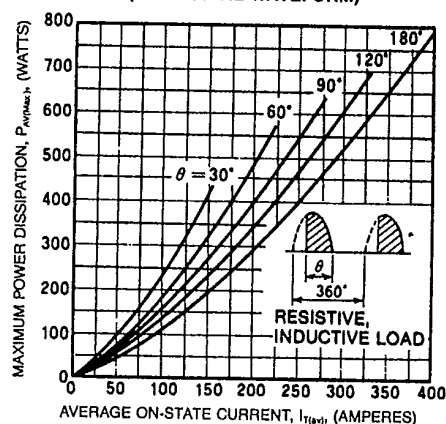
TRANSIENT THERMAL IMPEDANCE CHARACTERISTICS (JUNCTION TO SINK)



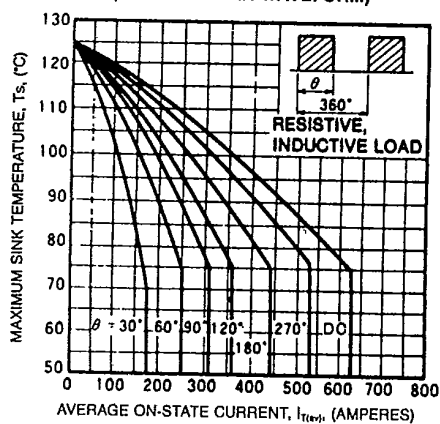
MAXIMUM ALLOWABLE SINK TEMPERATURE (SINUSOIDAL WAVEFORM)



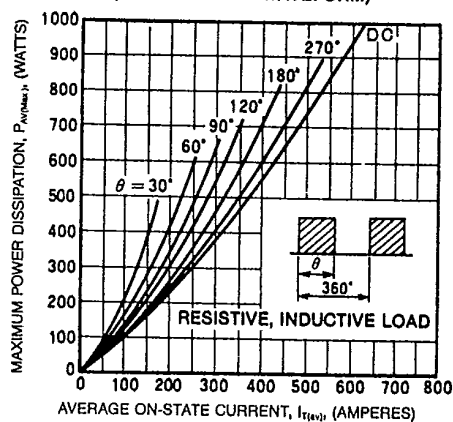
MAXIMUM ON-STATE POWER DISSIPATION (SINUSOIDAL WAVEFORM)



MAXIMUM ALLOWABLE SINK TEMPERATURE (RECTANGULAR WAVEFORM)



MAXIMUM ON-STATE POWER DISSIPATION (RECTANGULAR WAVEFORM)





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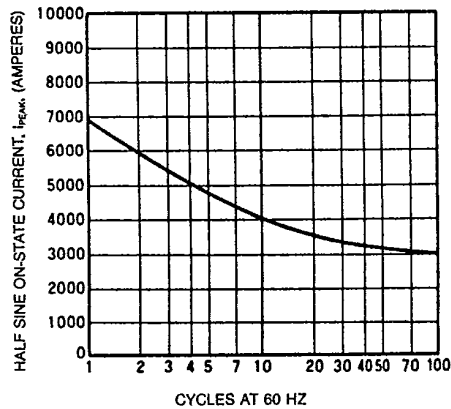
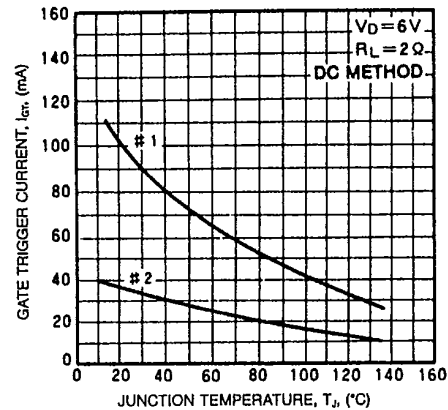
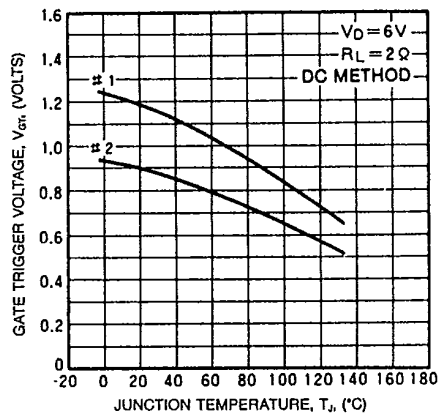
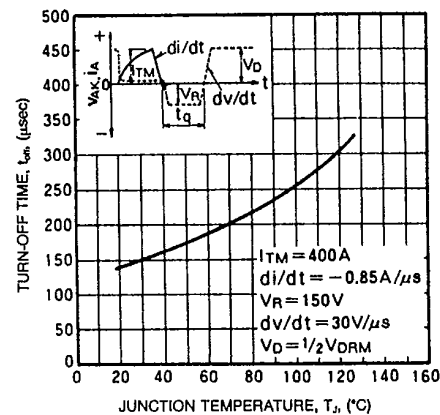
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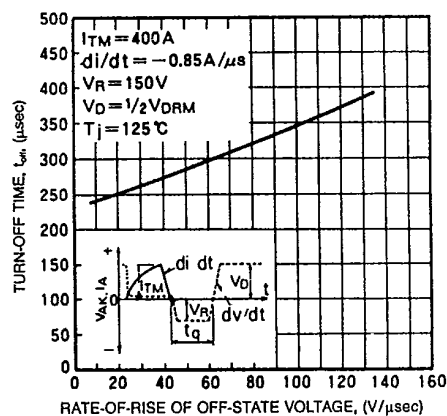
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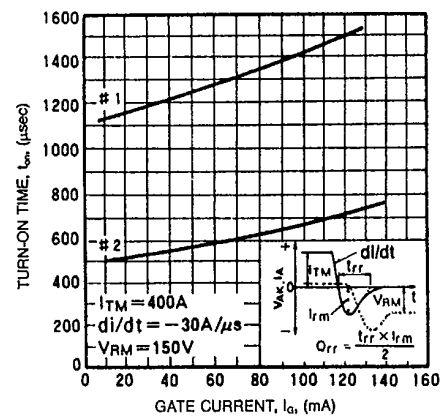
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MAXIMUM ALLOWABLE SURGE ON-STATE
CURRENT (NON-REPETITIVE)GATE TRIGGER CURRENT
(TYPICAL)GATE TRIGGER VOLTAGE
(TYPICAL)TURN-OFF TIME VS. JUNCTION TEMPERATURE
(TYPICAL)

TURN-OFF TIME VS. RATE-OF-RISE



TURN-ON TIME VS. GATE CURRENT





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