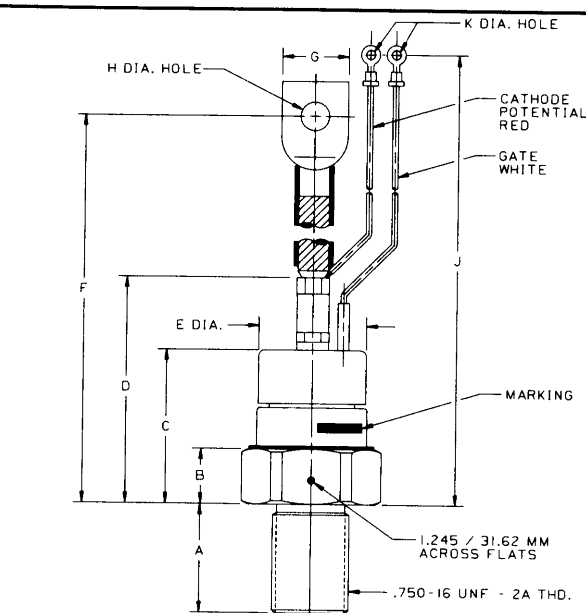
Powerex, Inc., 200 Hillis Street, Youngwood, Pennsylvania 15697-1800 (412) 925-7272
Powerex, Europe, S.A. 428 Avenue G. Durand, BP107, 72003 Le Mans, France (43) 41.14.14

C180_ _X500

Phase Control SCR

190 Amperes Average
600 Volts



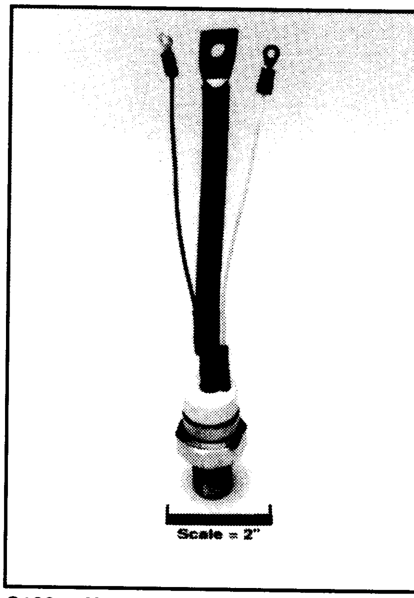
CASE NUMBER T60
NOMINAL DIMENSIONS

STRIKE DISTANCE = .65 INCH / 16.5 MM MIN.
CREEPAGE DISTANCE = .65 INCH / 16.5 MM MIN.

SYM.	A	B	C	D	E	F	G	H	J	K
INCHES	1.06	.55	1.50	2.25	1.07	7.91	.63	.281	7.91	.146
MM	26.9	14.0	38.1	57.2	27.2	200.9	16.0	7.14	200.9	3.71

ALL DIMENSIONS ARE REFERENCE

C180_ _X500 (Outline Drawing)



C180_ _X500 Phase Control SCR
190 Amperes Average, 600 Volts

Description:

Powerex Silicon Controlled Rectifiers (SCR) are designed for phase control applications. These are all-diffused, compression bonded encapsulated (CBE) 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^2t Ratings

Applications:

- ☐ Power Supplies
- ☐ Battery Chargers
- ☐ Motor Control

Ordering Information:

Select the complete nine digit part number you desire from the table, i.e. C180MX500 is a 600 Volt, 190 Ampere Phase Control SCR.

Type	Voltage		Current
	V_{DRM} V_{RRM}	Code	$I_{T(av)}$
C180_ _X500	100	A	190
	200	B	
	300	C	
	400	D	
	500	E	
	600	M	

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Absolute Maximum Ratings

	Symbol	C180__X500	Units
RMS On-State Current @ T_C = 92°C	$I_{T(RMS)}$	300	Amperes
Average On-State Current @ T_C = 92°C	$I_{T(av)}$	190	Amperes
Peak One-Cycle Surge (Non Repetitive) On-State Current (60Hz)	I_{TSM}	5500	Amperes
Peak One-Cycle Surge (Non-Repetitive) On-State Current (50Hz)	I_{TSM}	5000	Amperes
Critical Rate-of-Rise of On-State Current (Non-Repetitive)	di/dt	800	Amperes/µs
Critical Rate-of-Rise of On-State Current (Repetitive)	di/dt	150	Amperes/µs
I^2t (for Fusing), 8.3 milliseconds	I^2t	125,000	A^2sec
Peak Gate Power Dissipation	P_{GM}	10	Watts
Average Gate Power Dissipation	$P_{G(av)}$	2	Watts
Storage Temperature	T_{STG}	−40 to 150	°C
Operating Temperature	T_J	−40 to 125	°C
Mounting Torque		250 to 300	in.-lb.
Mounting Torque		28 to 34	N-M

Electrical and Thermal Characteristics

Characteristics	Symbol	Test Conditions	C180__X500	Units
Voltage—Blocking State Maximums				
Forward Leakage, Peak	I_{DRM}	T_J = 125°C, V_{DRM} = Rated	20	mA
Reverse Leakage, Peak	I_{RRM}	T_J = 125°C, V_{RRM} = Rated	20	mA
Current—Conducting State Maximums				
Peak On-State Voltage	V_{TM}	T_J = 25°C, I_{TM} = 900A Peak	1.75	Volts
Switching				
Typical Turn-Off Time	t_q	I_T = 150A, T_J = 125°C, di_R/dt = 12.5A/µsec Reapplied dv/dt = 20V/µsec, Linear to 0.8 V_{DRM}, V_R = 50V	100	µsec
Typical Delay Time	t_d	I_T = 100A, V_{DRM} = rated; Gate supply: 10V, open circuit; R_L = 25Ω, 0.1µsec rise time	1.0	µsec
Min. Critical dv/dt exponential to V_{DRM}	dv/dt	T_J = 125°C, Gate Open	200	V/µsec
Thermal				
Maximum Thermal Resistance Junction to Case	$R_{\theta JC}$		0.14	°C/Watt
Case to Sink, Lubricated	$R_{\theta CS}$		0.075	°C/Watt
Gate—Maximum Parameters				
Gate Current to Trigger	I_{GT}	T_C = 25°C; V_D = 6Vdc, R_L = 3Ω	150	mA
Gate Voltage to Trigger	V_{GT}	T_C = −40°C to 125°C, V_D = 6Vdc, R_L = 3Ω	3.0	Volts
Non-Triggering Gate Voltage	V_{GDM}	T_J = 125°C, Rated V_{DRM}, R_L = 1000Ω	0.15	Volts
Peak Forward Gate Current	I_{GTM}		10	Amperes
Peak Reverse Gate Voltage	V_{GRM}		5	Volts

POWEREX

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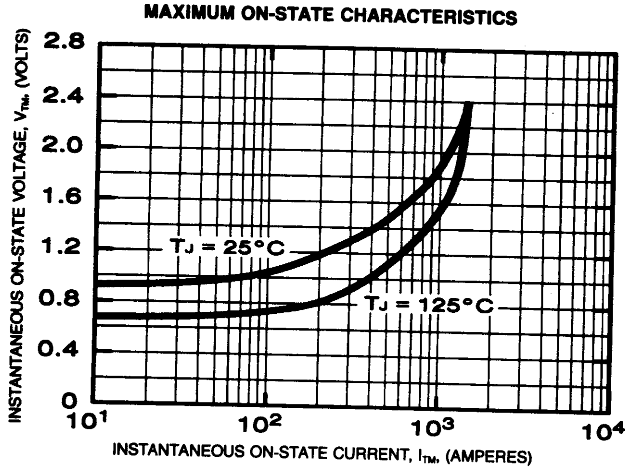

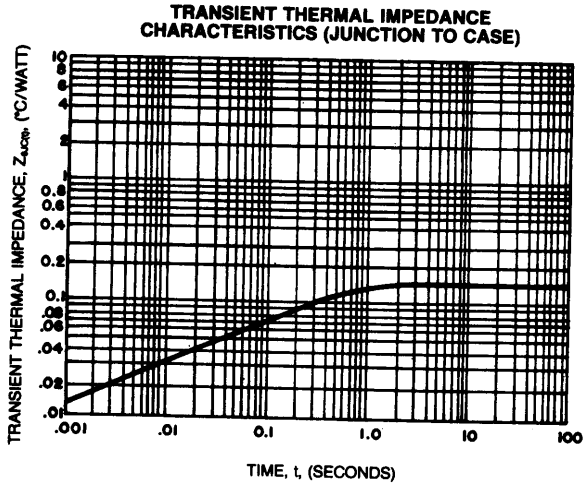

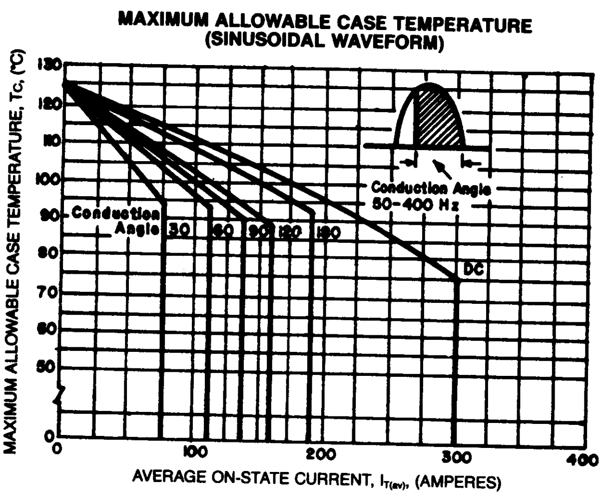

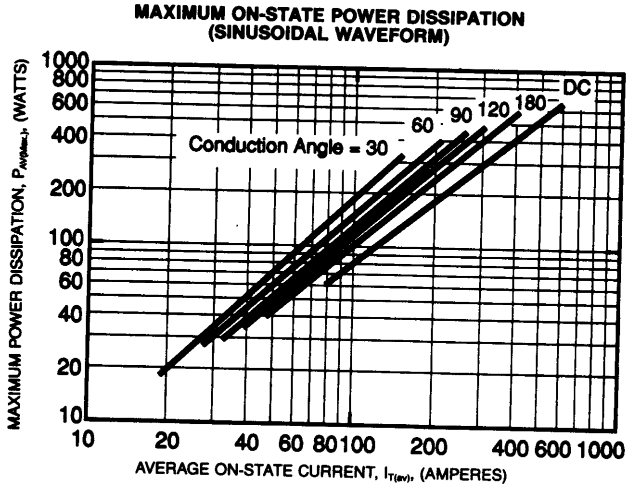

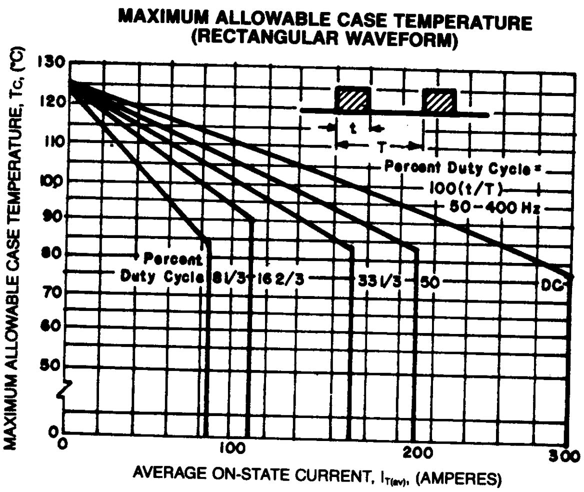

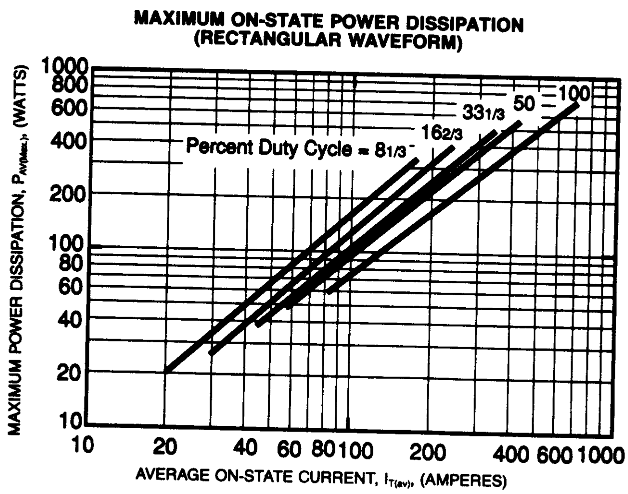

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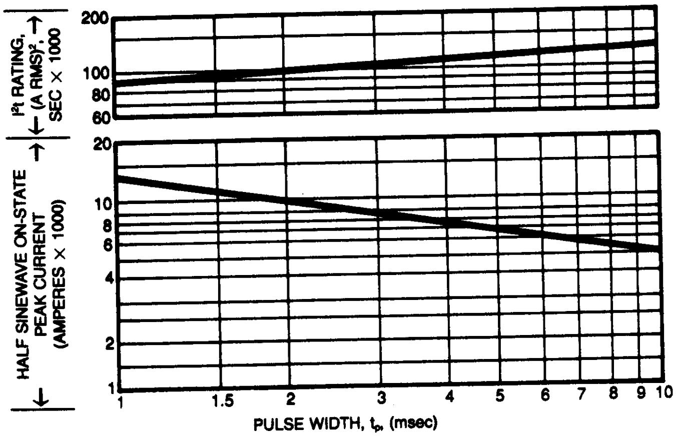
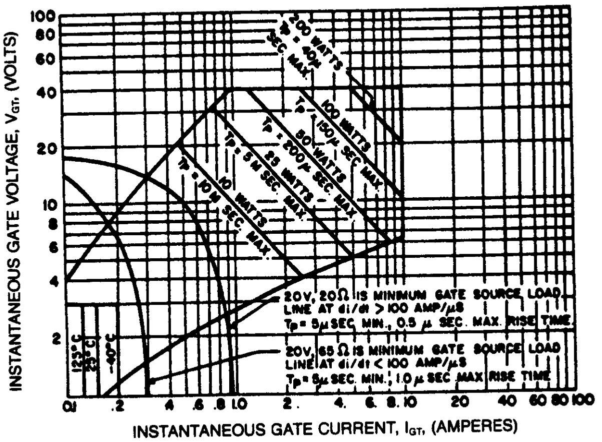
SUB-CYCLE SURGE AND I²t RATINGS (RATED LOAD CONDITIONS)



GATE CHARACTERISTICS



NOTES:
1. Maximum allowable gate power dissipation = 2 watts.
2. The locus of possible DC trigger points lie outside the boundaries shown at various case temperatures.
3. Tp = rectangular gate current pulse width.