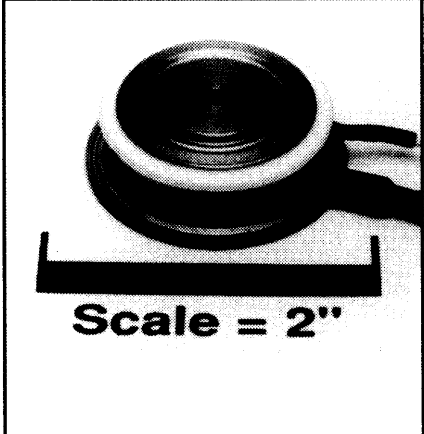
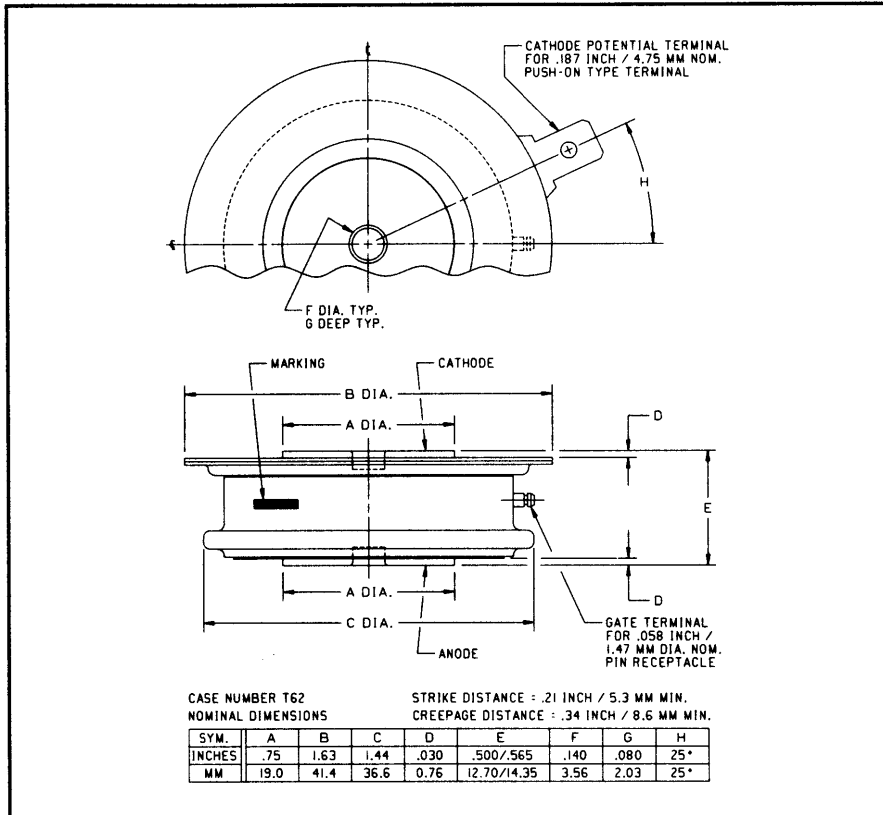


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Phase Control SCR
 250 Amperes Average
 1600 Volts



C380 Phase Control SCR
 250 Amperes Average, 1600 Volts

C380 (Outline Drawing)

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 I²t Ratings

Applications:

- Power Supplies
- Battery Chargers
- Motor Control

Ordering Information:

Select the complete five or six digit part number you desire from the table, i.e. C380PM is a 1600 Volt, 250 Ampere Phase Control SCR.

Type	Voltage		Current
	V _{DRM}	V _{RRM} Code	I _{T(av)}
C380	400	D	250
	600	M	
	800	N	
	1000	P	
	1200	PB	
	1400	PD	
	1600	PM	

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 250 Amperes Average, 1600 Volts

Absolute Maximum Ratings

	Symbol	C380	Units
RMS On-State Current @ $T_C = 74^\circ\text{C}$	$I_{T(RMS)}$	400	Amperes
Average On-State Current @ $T_C = 74^\circ\text{C}$	$I_{T(av)}$	250	Amperes
Peak One-Cycle Surge (Non Repetitive) On-State Current (60Hz)	I_{TSM}	3500	Amperes
Peak One-Cycle Surge (Non-Repetitive) On-State Current (50Hz)	I_{TSM}	3200	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	500	Amperes/ μs
I^2t (for Fusing), 8.3 milliseconds	I^2t	50,000	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	$^\circ\text{C}$
Operating Temperature	T_J	-40 to 125	$^\circ\text{C}$
Mounting Force		720 to 880	lb.
Mounting Force		3.2 to 3.92	kN

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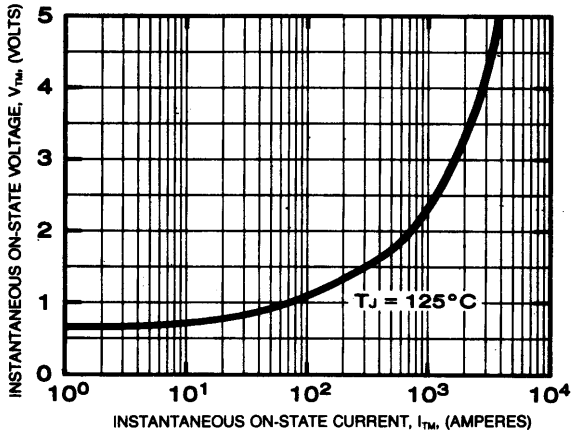
Electrical and Thermal Characteristics

Characteristics	Symbol	Test Conditions	C380	Units
Voltage—Blocking State Maximums				
Forward Leakage, Peak	I_{DRM}	$T_J = 125^\circ\text{C}, V = V_{DRM}$	20	mA
Reverse Leakage, Peak	I_{RRM}	$T_J = 125^\circ\text{C}, V = V_{RRM}$	20	mA
Current—Conducting State Maximums				
Peak On-State Voltage	V_{TM}	$I_{TM} = 1500\text{A Peak}, T_C = 25^\circ\text{C}, \text{Duty Cycle} \leq 0.01\%$	2.85	Volts
Switching				
Typical Turn-Off Time	t_q	$T_J = 120^\circ\text{C}, I_{TM} = 250 \text{ amps};$ $V_R = 50 \text{ Volts Min.}; V_{DRM} \text{ (Reapplied);}$ Rate-of-Rise of Reapplied Off-State; Voltage = 20 Volts/ μsec (Linear); Gate Bias During Turn-Off Interval = 0 Volts, 100 Ohms Duty Cycle $\leq 0.01\%$	200	μsec
Typical Delay Time	t_d	$T_J = 25^\circ\text{C}, I_T = 100 \text{ Adc}, V_{DRM} = \text{Rated};$ Gate Supply: 10 Volt Open Circuit, 25 Ohm, 0.1 μsec max. rise time	1	μsec
Min. Critical dv/dt exponential to V_{DRM}	dv/dt	$T_J = 125^\circ\text{C}, \text{Gate Open}$	200	V/ μsec
Thermal				
Maximum Thermal Resistance, double sided cooling				
Junction to Case	$R_{\theta JC}$		0.095	$^\circ\text{C/Watt}$
Case to Sink, Lubricated	$R_{\theta CS}$		0.02	$^\circ\text{C/Watt}$
Gate—Maximum Parameters				
Gate Current to Trigger	I_{GT}	$V_D = 6\text{V}, T_C = 25^\circ\text{C}, R_L = 3\Omega$	150	mA
Gate Voltage to Trigger	V_{GT}	$V_D = 6\text{V}, T_C = -40 \text{ to } 125^\circ\text{C}, R_L = 3\Omega$	3	Volts
Non-Triggering Gate Voltage	V_{GDM}	$T_J = 125^\circ\text{C}, \text{rated } V_{DRM}, R_L = 1000\Omega$	0.15	Volts
Peak Forward Gate Current	I_{GTM}		10	Amperes
Peak Reverse Gate Voltage	V_{GRM}		5	Volts

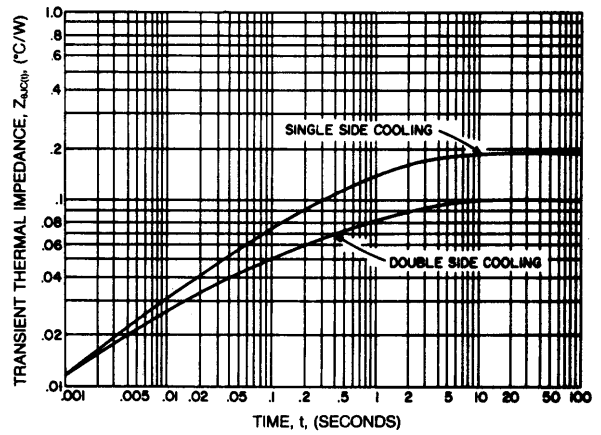
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C380
Phase Control SCR
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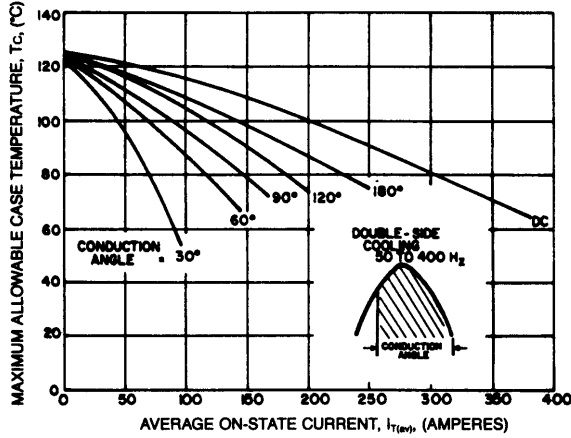
MAXIMUM ON-STATE CHARACTERISTICS



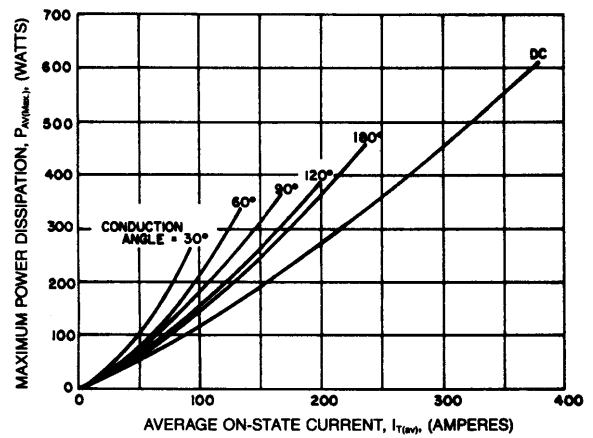
TRANSIENT THERMAL IMPEDANCE CHARACTERISTICS (JUNCTION TO CASE)



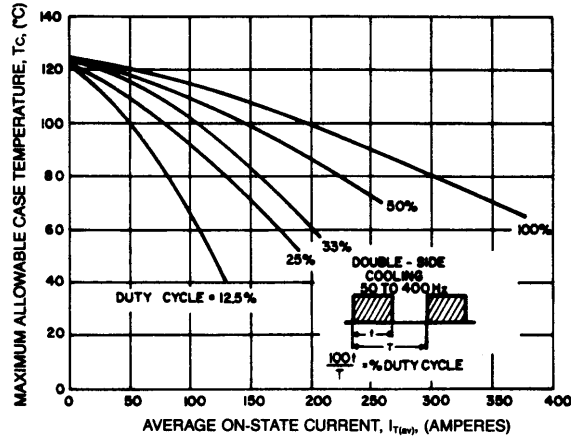
MAXIMUM ALLOWABLE CASE TEMPERATURE (SINUSOIDAL WAVEFORM)



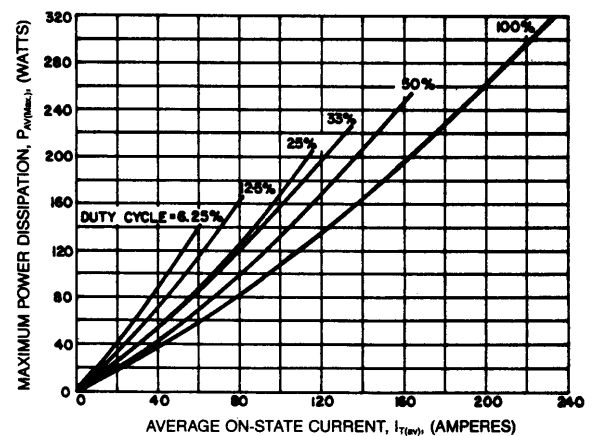
MAXIMUM ON-STATE POWER DISSIPATION (SINUSOIDAL WAVEFORM)



MAXIMUM ALLOWABLE CASE TEMPERATURE (RECTANGULAR WAVEFORM)



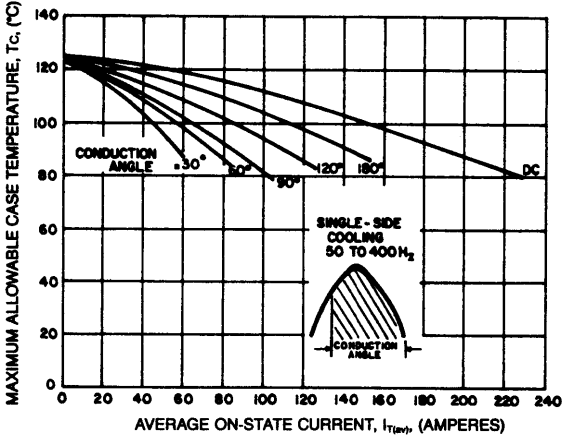
MAXIMUM ON-STATE POWER DISSIPATION (RECTANGULAR WAVEFORM)



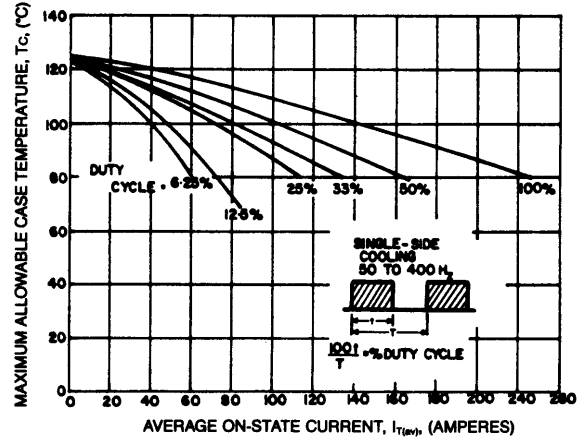
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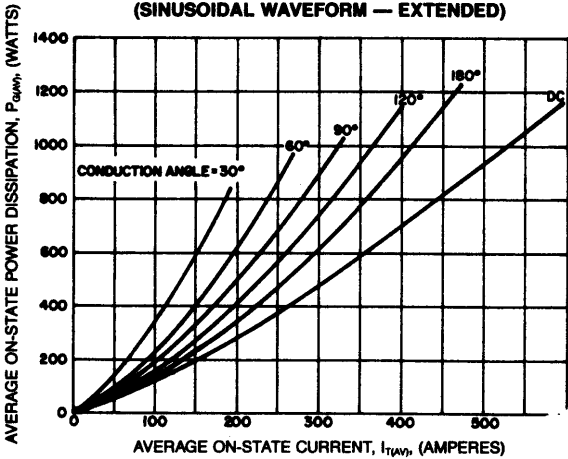
MAXIMUM ALLOWABLE CASE TEMPERATURE (SINUSOIDAL WAVEFORM)



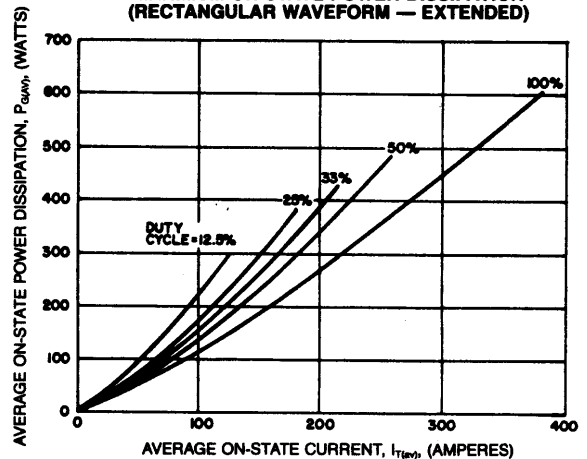
MAXIMUM ALLOWABLE CASE TEMPERATURE (RECTANGULAR WAVEFORM)



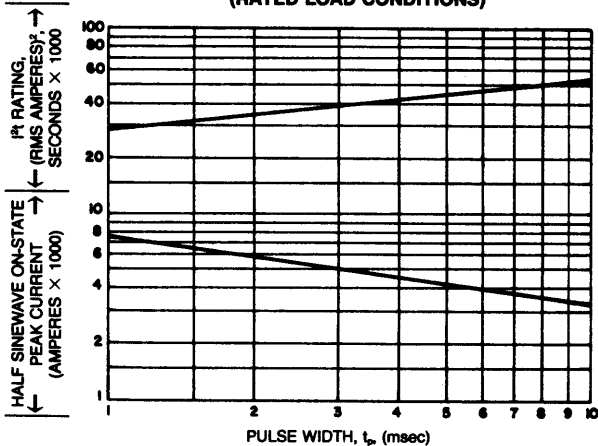
MAXIMUM ON-STATE POWER DISSIPATION (SINUSOIDAL WAVEFORM — EXTENDED)



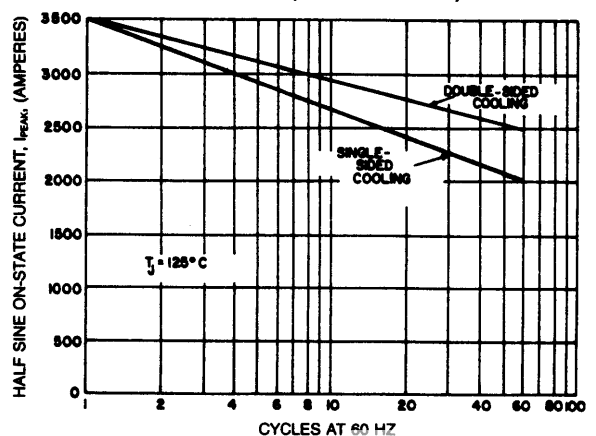
MAXIMUM ON-STATE POWER DISSIPATION (RECTANGULAR WAVEFORM — EXTENDED)



SUB-CYCLE SURGE AND I^2t RATINGS (RATED LOAD CONDITIONS)



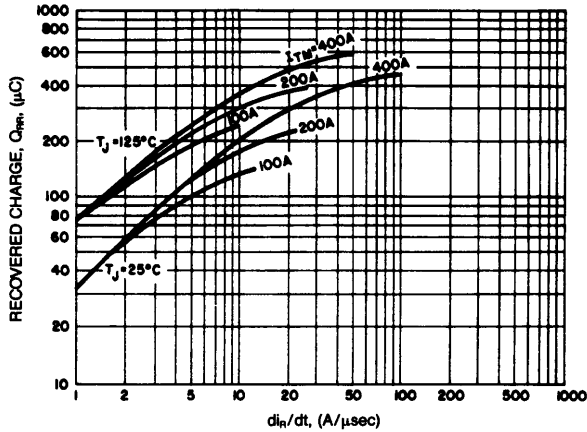
MAXIMUM ALLOWABLE SURGE ON-STATE CURRENT (NON-REPETITIVE)



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MAXIMUM RECOVERED CHARGE



GATE CHARACTERISTICS

