



Powerex, Inc., Hills Street, Youngwood, Pennsylvania 15697 (412) 925-7272

Powerex Europe, S.A., 428 Ave. G. Durand, BP107, 72003 LeMans, France (43) 72.75.15

C350

Phase Control SCR

115 Amperes Avg/500-1300 Volts

Absolute Maximum Ratings

	Symbol	C350	Units
RMS On-State Current	$I_{T(RMS)}$	180	Amperes
Average On-State Current	$I_{T(av)}$	115	Amperes
Peak One-Cycle Surge (Non-Repetitive) On-State Current (60Hz)	I_{TSM}	1600	Amperes
Peak One-Cycle Surge (Non-Repetitive) On-State Current (50Hz)	I_{TSM}	1480	Amperes
Critical Rate-of-Rise of On-State Current (Non-Repetitive)	di/dt	800	Amperes/ μ s
Critical Rate-of-Rise of On-State Current (Repetitive)	di/dt	500	Amperes/ μ s
I^2t (for Fusing), 8.3 milliseconds	I^2t	10,600	A ² sec
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 Force [ⓐ]		720 to 880	lb.
Mounting Force [ⓐ]		3.20 to 3.92	kN

[ⓐ] Consult recommended mounting procedures.



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Electrical and Thermal Characteristics

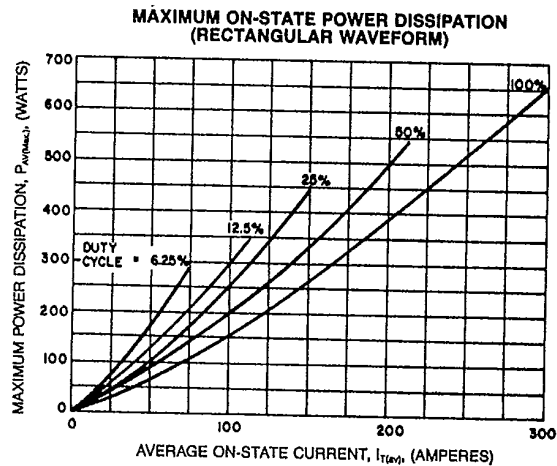
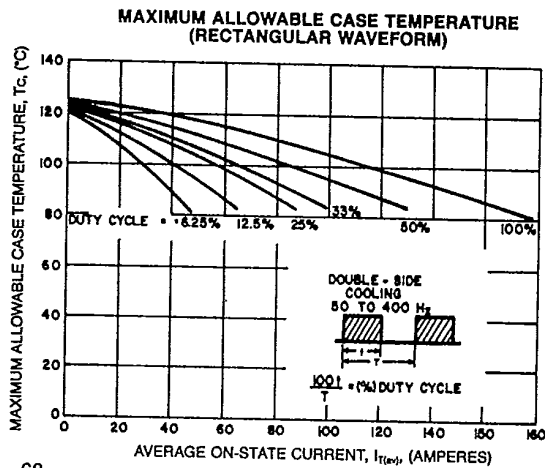
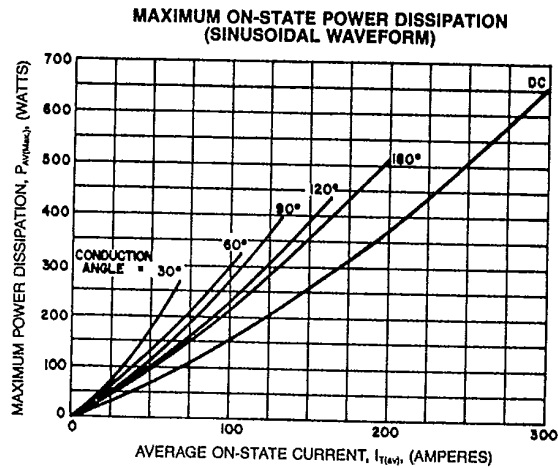
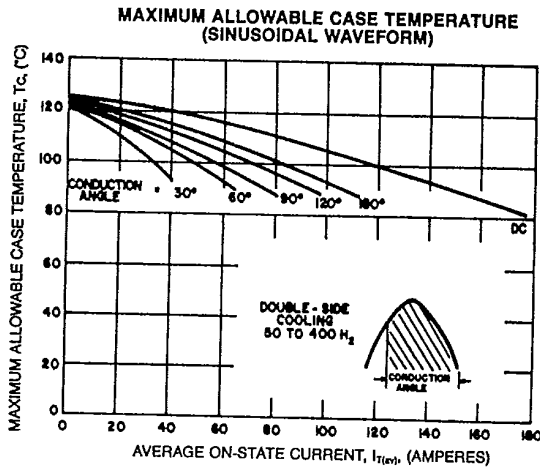
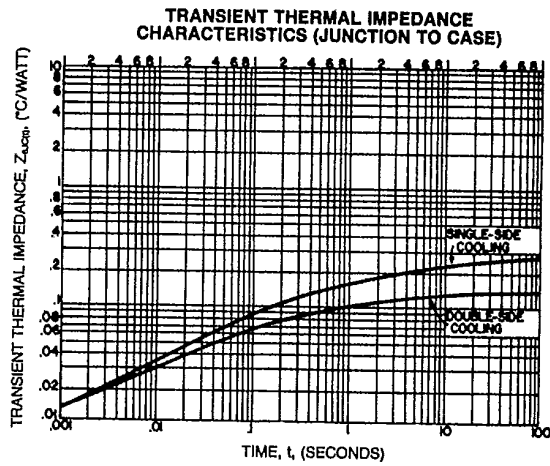
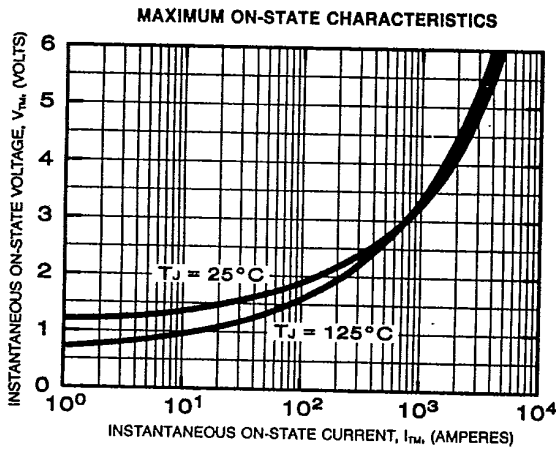
Characteristics	Symbol	Test Conditions	C350	Units
Voltage—Blocking State Maximums				
Forward Leakage, Peak	I_{DRM}	$T_J = 125^\circ\text{C}, V = V_{DRM}$	20	mA
Reverse Leakage, Peak	I_{RRM}	$T_J = 125^\circ\text{C}, V = V_{RRM}$	20	mA
Current—Conducting State Maximums				
Peak On-State Voltage	V_{TM}	$I_{TM} = 500\text{A Peak}, T_C = 25^\circ\text{C}, \text{Duty Cycle} \leq 0.01\%$	2.6	Volts
Switching				
Typical Turn-Off Time	t_q	$T_J = 125^\circ\text{C}; I_{TM} = 50\text{ Amps Peak};$ $V_R = 50\text{ Volts Min.}; V_{DRM} = \text{Rated (Reapplied)};$ Rate-of-Rise of Reapplied Off-State Voltage = $20\text{V}/\mu\text{sec}$ (Linear); Gate Bias = 0 Volts, 100Ω during Turn-Off Interval; Duty Cycle $\leq 0.01\%$	200	μsec
Typical Delay Time	t_d	$T_C = 25^\circ\text{C}, I_{TM} = 50\text{ A dc}, V_{DRM} = \text{Rated},$ Gate Supply: 10 Volt Open Circuit, 20 Ohm, $0.1\ \mu\text{sec}$ max. rise time	1.0	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	$R_{\theta JC}$.135	$^\circ\text{C}/\text{Watt}$
Case to Sink, Lubricated	$R_{\theta CS}$.04	$^\circ\text{C}/\text{Watt}$
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}	$V_D = 6\text{V}, R_L = 3\Omega, T_J = -40^\circ\text{C to } +120^\circ\text{C}$	3.0	Volts
Non-Triggerring Gate Voltage	V_{GDM}	$T_C = 120^\circ\text{C}, \text{Rated } V_{DRM}, R_L = 1000\Omega$.15	Volts
Peak Forward Gate Current	I_{GTM}		10	Amperes
Peak Reverse Gate Voltage	V_{GRM}		5	Volts

[ⓐ] Consult recommended mounting procedures.



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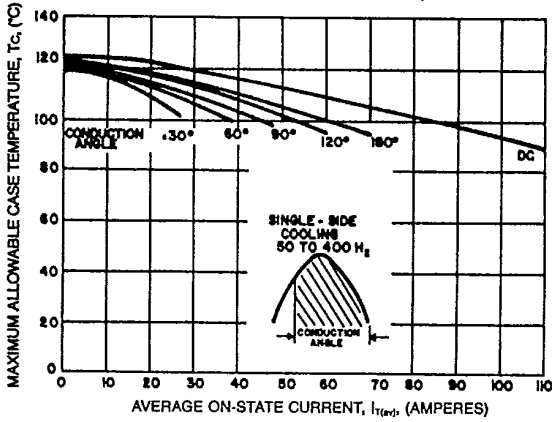




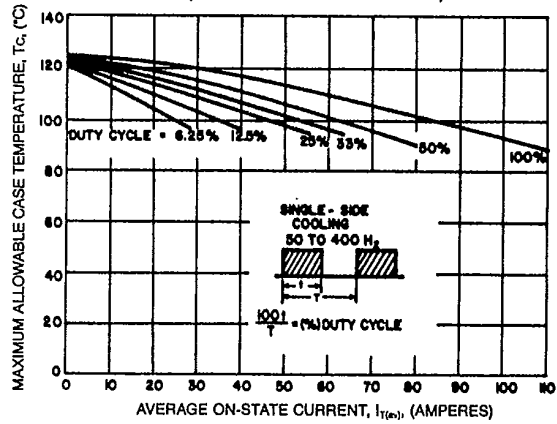
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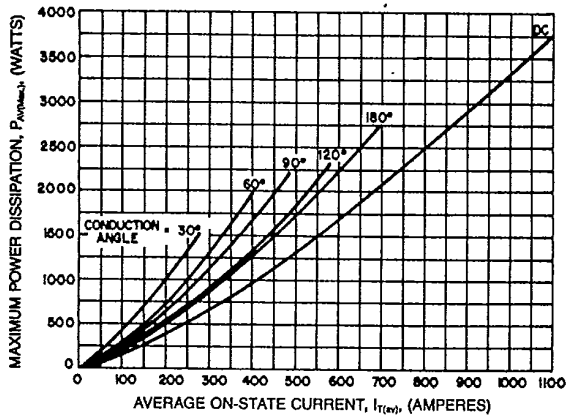
MAXIMUM ALLOWABLE CASE TEMPERATURE
 (SINUSOIDAL WAVEFORM)



MAXIMUM ALLOWABLE CASE TEMPERATURE
 (RECTANGULAR WAVEFORM)



MAXIMUM ON-STATE POWER DISSIPATION
 (SINUSOIDAL WAVEFORM EXTENDED)

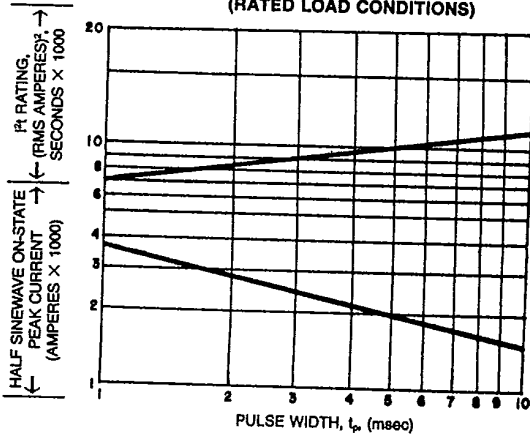




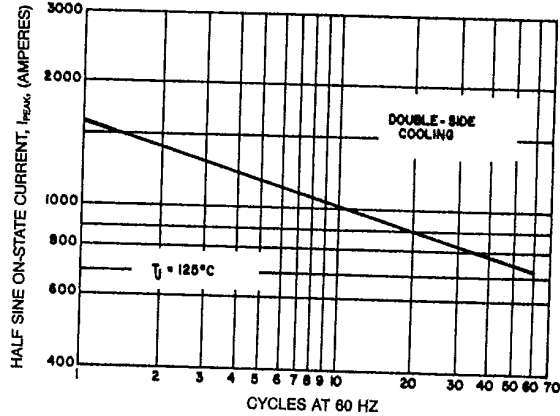
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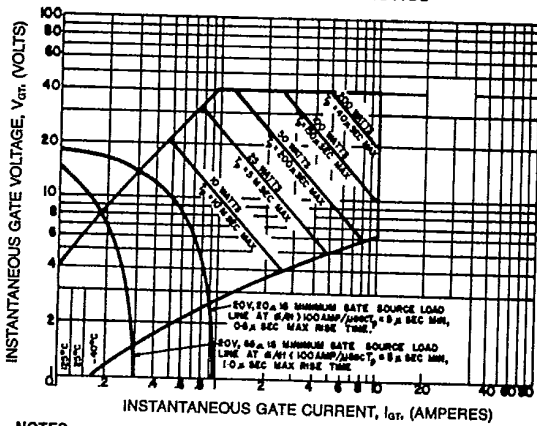
SUB-CYCLE SURGE AND I²t RATINGS
 (RATED LOAD CONDITIONS)



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



GATE CHARACTERISTICS



NOTES:

1. Maximum allowable gate power dissipation = 2 watts.
2. The focus of possible DC trigger points lie outside the boundaries shown at various case temperatures.
3. T_p = Rectangular Gate Current Pulse Width.



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