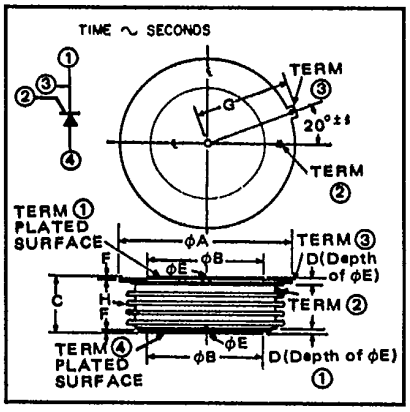
POWEREX

C783

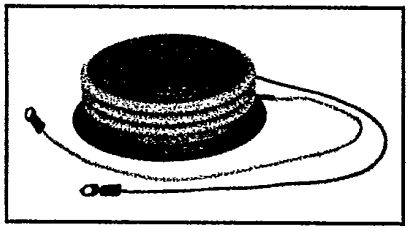
Powerex, Inc. Hillis Street, Youngwood, Pennsylvania 15697 (412) 925-7272
Powerex Europe, S.A., 428 Ave. G. Durand, BP107, 72003 LeMans, France (43) 72.75.15

Phase Control SCR
1800 Amperes Avg
8000-3700 Volts



C783
Outline Drawing

Dimensions	Inches		Millimeters	
	Min.	Max.	Min.	Max.
φA	—	4.350	—	110.49
φB	2.876	2.830	73.05	73.15
C	1.387	1.447	35.23	36.75
D	.080	—	2.03	—
φE	0.136	0.146	3.45	3.71
F	0.20	—	5.08	—
G	2.403	2.418	61.16	61.42
H	—	—	—	—



C783
Phase Control SCR
1800 Amperes/3000-3700 Volts

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^2t Ratings

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

Ordering Information
Example: Select the complete six digit part number you desire from the table – i.e. C784CD is a 3400 Volt, 1800 Ampere Phase Control SCR.

Type	Voltage		Current
	V_{DRM} V_{RRM}	Code	I_T (avg)
C783	3000	CP	1800
	3100	CA	
	3200	CB	
	3300	CC	
	3400	CD	
	3500	CE	
	3600	CM	
	3700	CS	

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Absolute Maximum Ratings

	Symbol	C783	Units
RMS On-State Current	$I_{T(RMS)}$	2826	Amperes
Average On-State Current	$I_{T(av)}$	1800	Amperes
Peak One-Cycle Surge (Non-Repetitive) On-State Current (60Hz)	I_{TSM}	29,000	Amperes
Peak One-Cycle Surge (Non-Repetitive) On-State Current (50Hz)	I_{TSM}	27,000	Amperes
Critical Rate-of-Rise of On-State Current (Non-Repetitive)	di/dt	600	Amperes/μs
Critical Rate-of-Rise of On-State Current (Repetitive)	di/dt	100	Amperes/μs
I^2t (for Fusing), One Cycle at 60Hz	I^2t	3.5×10^6	A^2sec
Peak Gate Power Dissipation, 100 microseconds	P_{GM}	250	Watts
Average Gate Power Dissipation	$P_{G(av)}$	35	Watts
Storage Temperature	T_{STG}	−40 to 150	°C
Operating Temperature	T_J	−40 to 125	°C
Mounting Force①		9000 to 10,000	lb.
Mounting Force①		44 to 44.5	kN

① Consult recommended mounting procedures.

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Electrical and Thermal Characteristics

Characteristics	Symbol	Test Conditions	C783	Units
Voltage—Blocking State Maximums				
Forward Leakage, Peak	I_{DRM}	T_J = 125°C, V_{DRM} = Rated	150	mA
Reverse Leakage, Peak	I_{RRM}	T_J = 125°C V_{RRM} = Rated	150	mA
Current—Conducting State Maximums				
Peak On-State Voltage	V_{TM}	T_J = 125°C, I_{TM} = 2000A	1.71	Volts
Switching				
Typical Turn-Off Time	t_q	T_J = 125°C, I_{TM} = 500A Commutating di/dt = 25A/μsec Minimum reverse voltage, V_R = 50V Reapplied dv/dt = 20V/μsec to 0.8 V_{DRM}	200	μsec
Typical Delay Time	t_d	T_J = 125°C, V_D = 1800V	3	μsec
Min. Critical dv/dt exponential to V_{DRM}	dv/dt	T_J = 125°C, V_D = .8V_{DRM}	500	V/μsec
Thermal				
Maximum Thermal Resistance,① double sided cooling				
Junction to Case	$R_{\theta JC}$		.012	°C/Watt
Case to Sink, Lubricated	$R_{\theta CS}$		.002	°C/Watt
Gate—Maximum Parameters				
Gate Current to Trigger	I_{GT}	T_J = 25°C, V_D = 12Vdc	250	mA
Gate Voltage to Trigger	V_{GT}	T_J = 25°C, V_D = 12Vdc	4.5	Volts
Non-Triggering Gate Voltage	V_{GDM}	T_J = 125°C, V_D = 1800V	.8	Volts
Peak Forward Gate Current	I_{GTM}		20	Amperes
Peak Reverse Gate Voltage	V_{GRM}		20	Volts

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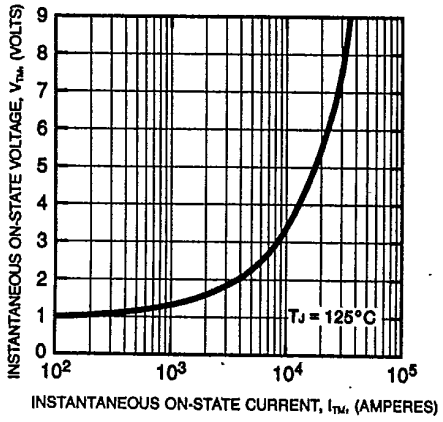
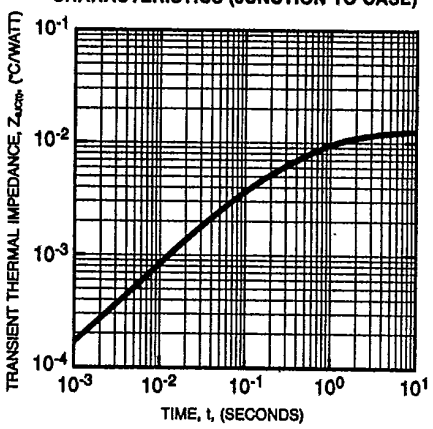
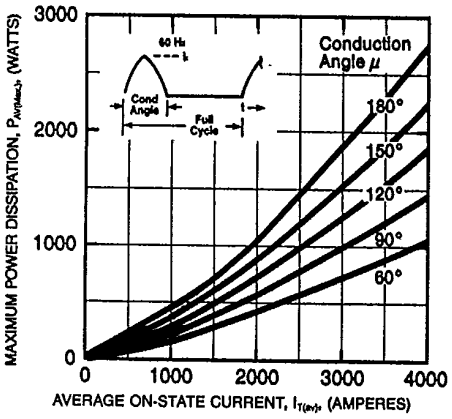
MAXIMUM ON-STATE CHARACTERISTICS



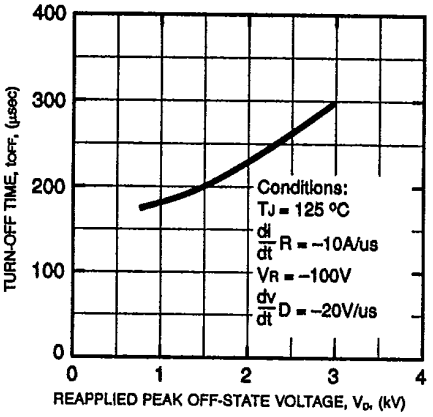
TRANSIENT THERMAL IMPEDANCE CHARACTERISTICS (JUNCTION TO CASE)



MAXIMUM ON-STATE POWER DISSIPATION (SINUSOIDAL WAVEFORM)



CIRCUIT COMMUTATED TURN-OFF VS. REAPPLIED VOLTAGE



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