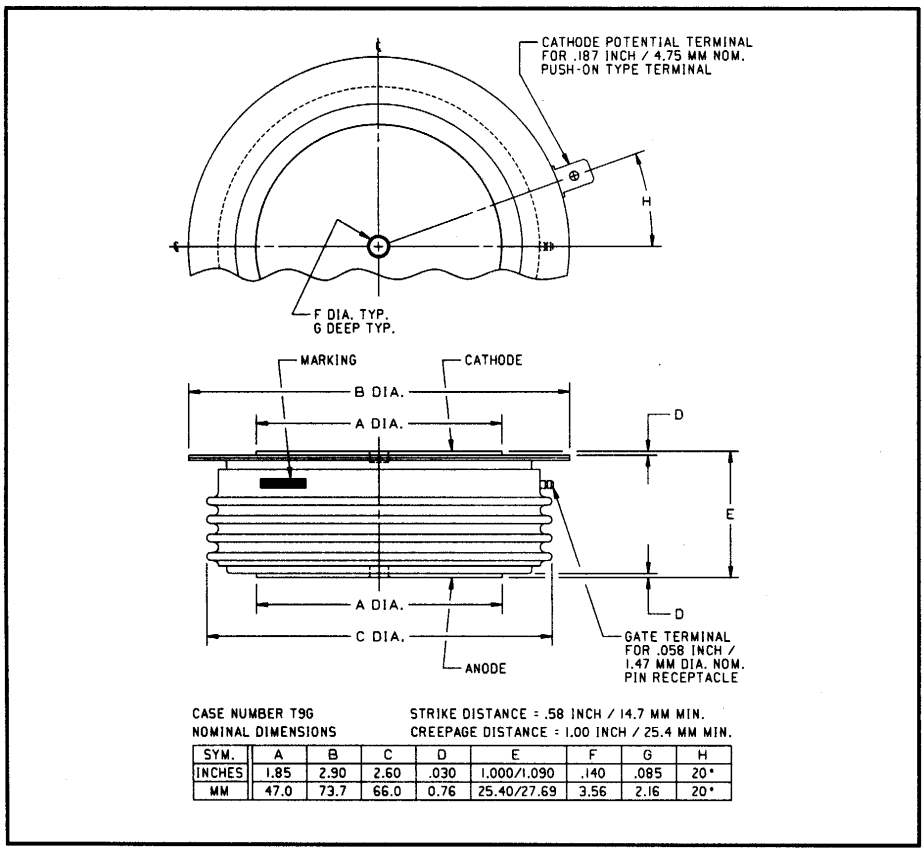
Powerex, Inc., 200 Hillis Street, Youngwood, Pennsylvania 15697-1800 (412) 925-7272
Powerex, Europe, S.A. 428 Avenue G. Durand, BP107, 72003 Le Mans, France (43) 41.14.14

Phase Control SCR
1000 Amperes Average
3200 Volts

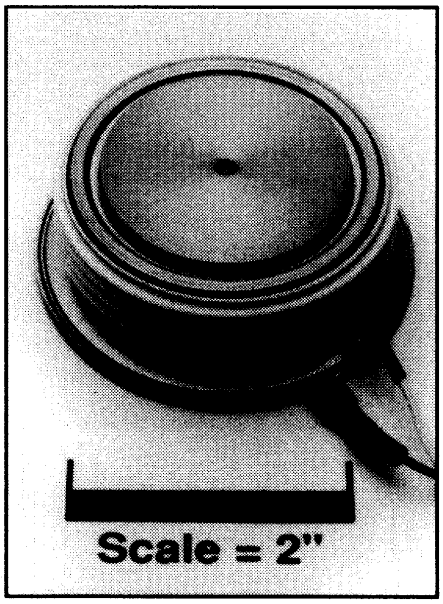


CASE NUMBER T9G
NOMINAL DIMENSIONS

STRIKE DISTANCE = .58 INCH / 14.7 MM MIN.
CREEPAGE DISTANCE = 1.00 INCH / 25.4 MM MIN.

SYM.	A	B	C	D	E	F	G	H
INCHES	1.85	2.90	2.60	.030	1.000/1.090	.140	.085	20°
MM	47.0	73.7	66.0	0.76	25.40/27.69	3.56	2.16	20°

C702 (Outline Drawing)



C702 Phase Control SCR
1000 Amperes Average, 3200 Volts

Description:
Powerex Silicon Controlled Rectifiers (SCR) are designed for phase control applications. These are all-diffused, Press-Pak, hermetic Pow-R-Disc devices employing the field proven amplifying gate.

Features:
- ☐ Low On-State Voltage
- ☐ High di/dt Capability
- ☐ High dv/dt Capability
- ☐ Hermetic Packaging
- ☐ Excellent Surge and I^2t Ratings

Applications:
- ☐ Power Supplies
- ☐ Motor Control

Ordering Information:
Select the complete six digit part number you desire from the table, i.e. C702CB is a 3200 Volt, 1000 Ampere Phase Control SCR.

Type	Voltage		Current
	V_{DRM} V_{RRM}	Code	$I_{T(av)}$
C702	2400	LD	1000
	2600	LM	
	2800	LN	
	3000	CP	
	3200	CB	

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C702
Phase Control SCR
1000 Amperes Average, 3200 Volts

Absolute Maximum Ratings

Characteristics	Symbol	C702	Units
Non-repetitive Transient Peak Reverse Voltage	V_{RSM}	V_{RRM} + 100V	Volts
RMS On-state Current, T_C = 74°C	$I_{T(rms)}$	1570	Amperes
Average Current 180° Sine Wave, T_C = 74°C	$I_{T(av)}$	1050	Amperes
RMS On-state Current, T_C = 55°C	$I_{T(rms)}$	1880	Amperes
Average Current 180° Sine Wave, T_C = 55°C	$I_{T(av)}$	1200	Amperes
Peak One Cycle Surge On-state Current (Non-repetitive) 60Hz	I_{tsm}	15000	Amperes
Peak One Cycle Surge On-state Current (Non-repetitive) 50Hz	I_{tsm}	14000	Amperes
Critical Rate-of-rise of On-state Current (Non-repetitive)	di/dt	100	A/µsec
Critical Rate-of-rise of On-state Current (Repetitive)	di/dt	25	A/µsec
I^2t (for Fusing) for One Cycle, 60Hz	I^2t	933,000	A^2sec
Peak Gate Power Dissipation	P_{GM}	200	Watts
Average Gate Power Dissipation	$P_{G(av)}$	5	Watts
Operating Temperature	T_j	-40 to +125°C	°C
Storage Temperature	T_{stg}	-40 to +125°C	°C
Approximate Weight		1	lb.
		454	g
Mounting Force		5000 to 6000	lb.
		2220 to 2660	kg.

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C702
Phase Control SCR
1000 Amperes Average, 3200 Volts

Electrical Characteristics, T_j = 25°C Unless Otherwise Specified

Characteristics	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Repetitive Peak Reverse Leakage Current	I_{RRM}	T_j = 125°C, $V_R = V_{RRM}$			65	mA
		T_j = 25°C, $V_R = V_{RRM}$			15	mA
Repetitive Peak Forward Leakage Current	I_{DRM}	T_j = 125°C, $V_D = V_{DRM}$			65	mA
		T_j = 25°C, $V_R = V_{RRM}$			15	mA
Peak On-state Voltage	V_{TM}	T_j = 125°C, I_T = 3000A Peak, Duty Cycle < 0.1%			2.26	Volts
Threshold Voltage, Low-level	$V_{(TO)1}$	T_j = 125°C, I = 15%, $I_{T(av)}$ to $\pi I_{T(av)}$			0.94963	Volts
Slope Resistance, Low-level	r_{T1}				0.1234	mΩ
Threshold Voltage, High-level	$V_{(TO)2}$	T_j = 125°C, I = $\pi I_{T(av)}$ to I_{TSM}			1.1007	Volts
Slope Resistance, High-level	r_{T2}				0.1149	mΩ
V_{TM} Coefficients, Low-level		T_j = 125°C, I = 15% $I_{T(av)}$ to $\pi I_{T(av)}$				
				A_1 = -0.007132		
				B_1 = 0.18721		
				C_1 = 1.589E-04		
				D_1 = -0.011393		
V_{TM} Coefficients, High-level		T_j = 125°C, I = $\pi I_{T(av)}$ to I_{TSM}				
				A_2 = 30.510		
				B_2 = -4.6029		
				C_2 = -2.083E-04		
				D_2 = 0.1610		
Typical Delay Time	t_d	Switching from 300V, Gate = 20V, 10Ω, 0.5µsec Rise Time		1.8		µsec
Minimum Critical dv/dt - Exponential to V_{DRM}	dv/dt	T_j = 125°C, V_{DRM} = 0.5 Rated, Gate Open	200			V/µsec
Gate Trigger Current	I_{GT}	T_C = 125°C, V_D = 10V, R_L = 3Ω			200	mA
Gate Trigger Voltage	V_{GT}	T_j = 0° to 125°C, V_D = 10V, R_L = 3Ω			4.5	Volts
Non-Triggering Gate Voltage	V_{GDM}	T_j = 125°C, $V_D = 0.5V_{DRM}$, R_L = 1000Ω			0.3	Volts
Peak Forward Gate Current	I_{GTM}				4	A
Peak Reverse Gate Voltage	V_{GRM}				5	Volts

Thermal Characteristics

Maximum Thermal Resistance, Double Sided Cooling						
Junction-to-Case	$R_{\theta(j-c)}$				0.023	°C/W
Case-to-Sink	$R_{\theta(c-s)}$				0.075	°C/W

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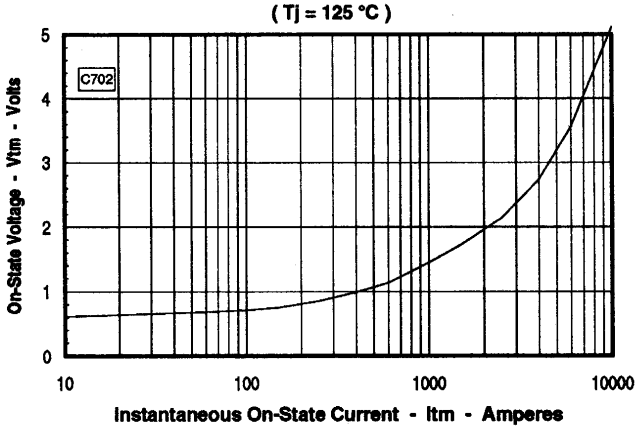
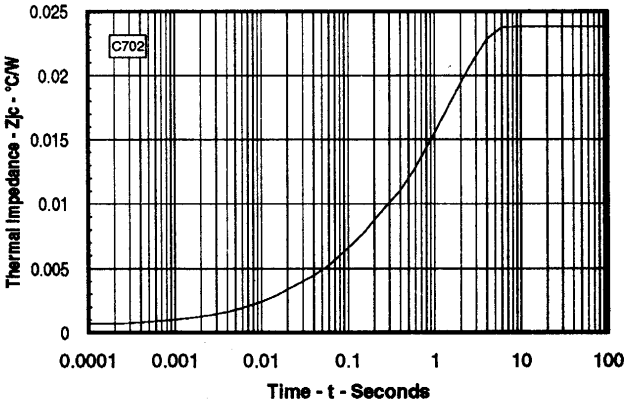
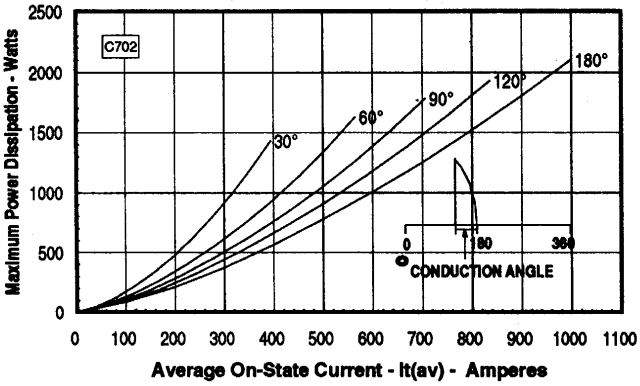
Maximum On-State Forward Voltage Drop
(Tj = 125 °C)



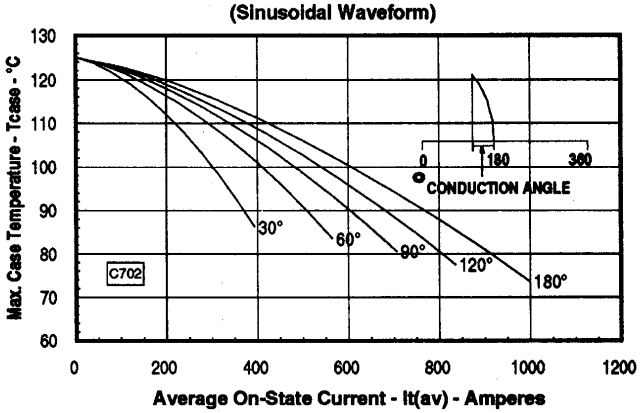
Maximum Transient Thermal Impedance
(Junction to Case)



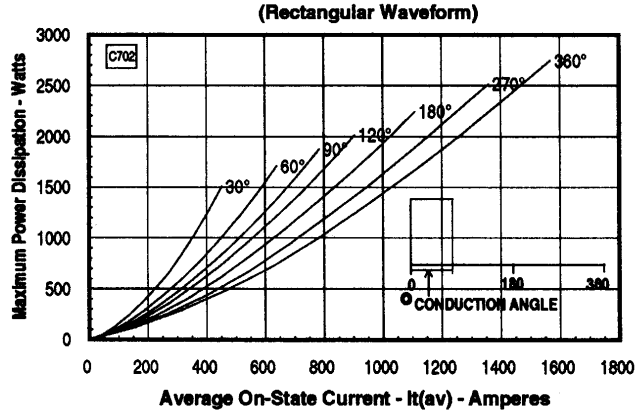
Maximum On-State Power Dissipation
(Sinusoidal Waveform)



Maximum Allowable Case Temperature
(Sinusoidal Waveform)



Maximum On-State Power Dissipation
(Rectangular Waveform)



Maximum Allowable Case Temperature
(Rectangular Waveform)