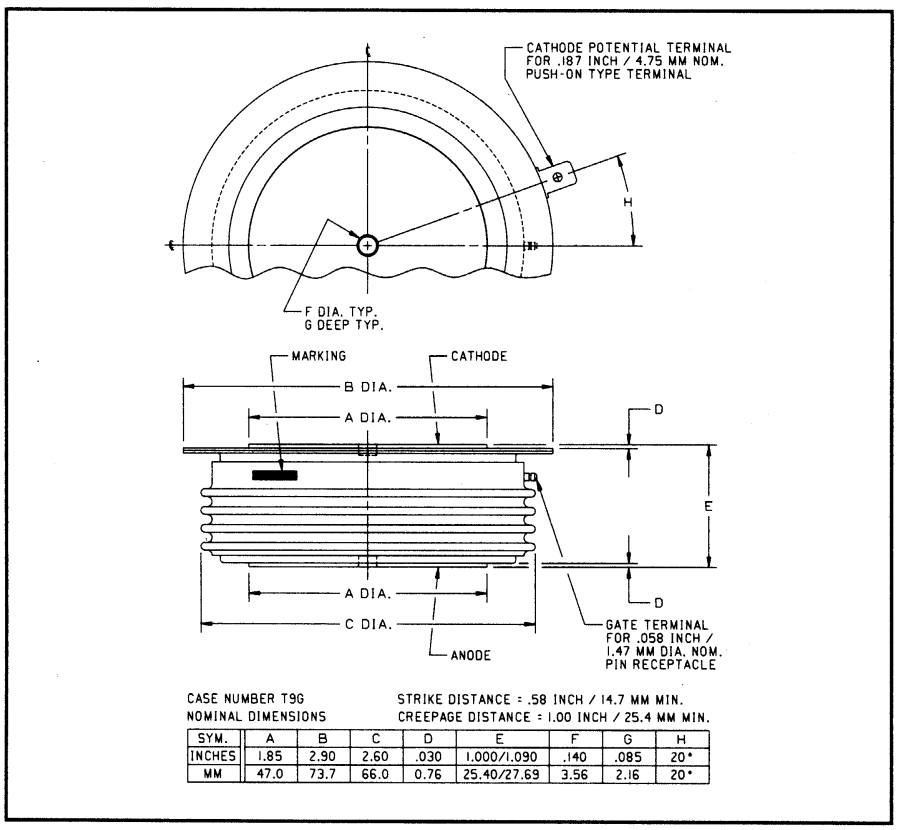
Powerex, Inc., 200 Hillis Street, Youngwood, Pennsylvania 15697-1800 (412) 925-7272
Powerex, Europe, S.A. 428 Avenue G. Durand, BP107, 72003 Le Mans, France (43) 41.14.14

Phase Control SCR
800 Amperes Average
4500 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°

T9K7 800A (Outline Drawing)

T9K7 800A Phase Control SCR
800 Amperes Average, 4500 Volts

Description:
The T9K7 is a high voltage version of the Powerex C702. 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 dv/dt Capability
- ☐ Hermetic Packaging
- ☐ Excellent Surge and I^2t Ratings

Applications:
- ☐ Power Supplies
- ☐ Motor Starters
- ☐ Motor Control
- ☐ VAR Generators

Ordering Information:
Select the complete 12 digit part number you desire from the table below.

Type	Voltage V_{DRM}/V_{RRM} (Volts)	Current $I_{T(av)}$ (A)	Turn-off t_q (µsec)	Gate Current I_{GT} (mA)	Lead Code
T9K7	36 40 42 45	08	0	2	DH
	3600V 4000V 4200V 4500V	800A	500µsec (Typical)	300mA	12"

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T9K7 800A
Phase Control SCR
800 Amperes Average, 4500 Volts

Absolute Maximum Ratings

Characteristics	Symbol	T9K7 800A	Units
Non-repetitive Transient Peak Reverse Voltage	V_{RSM}	V_{RRM} + 100V	Volts
RMS On-state Current, T_C = 79°C	$I_{T(rms)}$	1250	Amperes
Average Current 180° Sine Wave, T_C = 79°C	$I_{T(av)}$	800	Amperes
RMS On-state Current, T_C = 55°C	$I_{T(rms)}$	1665	Amperes
Average Current 180° Sine Wave, T_C = 55°C	$I_{T(av)}$	1060	Amperes
Peak One Cycle Surge On-state Current (Non-repetitive) 60Hz	I_{tsm}	9000	Amperes
Peak One Cycle Surge On-state Current (Non-repetitive) 50Hz	I_{tsm}	8000	Amperes
Critical Rate-of-rise of On-state Current (Non-repetitive)	di/dt	200	A/µsec
Critical Rate-of-rise of On-state Current (Repetitive)	di/dt	75	A/µsec
I^2t (for Fusing) for One Cycle, 60Hz	I^2t	337,500	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 +150°C	°C
Approximate Weight		1	lb.
		454	g
Mounting Force		5000 to 6000	lb.
		22.2 to 26.6	kg.

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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, $V_R = V_{RRM}$			150	mA
Repetitive Peak Forward Leakage Current	I_{DRM}	T_j = 125°C, $V_D = V_{DRM}$			150	mA
Peak On-state Voltage	V_{TM}	I_{TM} = 1500A Peak Duty Cycle < 0.1%			2.0	Volts
Threshold Voltage, Low-level	$V_{(TO)1}$	T_j = 125°C, I = 15%, $I_{T(av)}$ to $\pi I_{T(av)}$			1.2127	Volts
Slope Resistance, Low-level	r_{T1}				0.6021	mΩ
Threshold Voltage, High-level	$V_{(TO)2}$	T_j = 125°C, I = $\pi I_{T(av)}$ to I_{TSM}			1.3048	Volts
Slope Resistance, High-level	r_{T2}				0.5897	mΩ
V_{TM} Coefficients, Low-level		T_j = 125°C, I = 15% $I_{T(av)}$ to $\pi I_{T(av)}$				
					A_1 = 1.9623	
					B_1 = -0.19517	
					C_1 = 4.845E-04	
					D_1 = 0.021894	
V_{TM} Coefficients, High-level		T_j = 125°C, I = $\pi I_{T(av)}$ to I_{TSM}				
					A_2 =-19.918	
					B_2 = 3.7822	
					C_2 = 0.001228	
					D_2 = -0.20013	
Typical Delay Time	t_d	$V_D = 0.5V_{DRM}$		3.0		µsec
Typical Turn-off Time	t_q	V_R = 100V, di_R/dt = 5A/µsec Reapplied dv/dt = 20V/µsec. Linear to 50% V_{DRM}		500		µsec
Minimum Critical dv/dt - Exponential to V_D	dv/dt	T_j = 125°C, $V_D = 0.8V_{DRM}$	800			V/µsec
Gate Trigger Current	I_{GT}	T_j = 25°C, V_D = 12V	30		300	mA
Gate Trigger Voltage	V_{GT}	T_j = 25°C, V_D = 12V	0.5		4.5	Volts
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	$R_{\theta(c-s)}$				0.0075	°C/W

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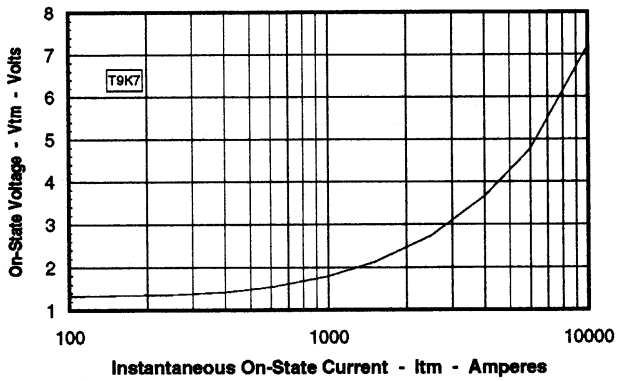
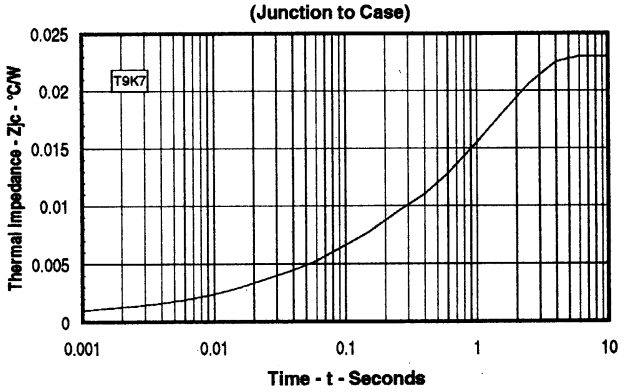
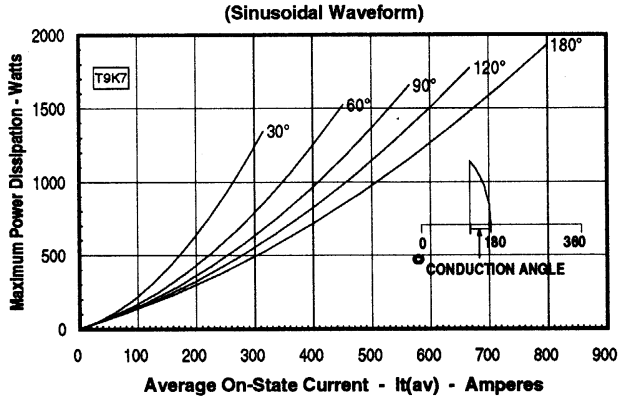
Maximum On-State Forward Voltage Drop
(Tj = 125 °C)



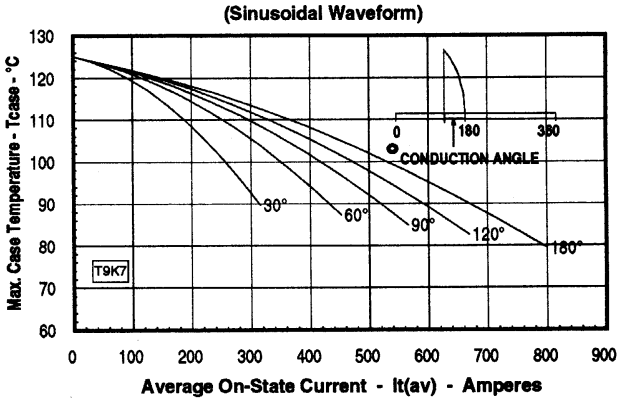
Maximum Transient Thermal Impedance
(Junction to Case)



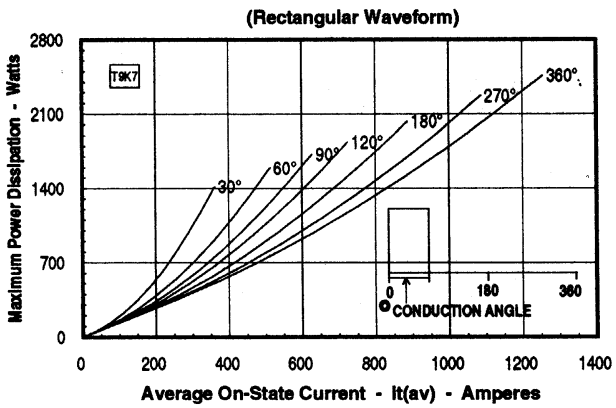
Maximum On-State Power Dissipation
(Sinusoidal Waveform)



Maximum Allowable Case Temperature
(Sinusoidal Waveform)



Maximum On-State Power Dissipation
(Rectangular Waveform)



Maximum Allowable Case Temperature
(Rectangular Waveform)