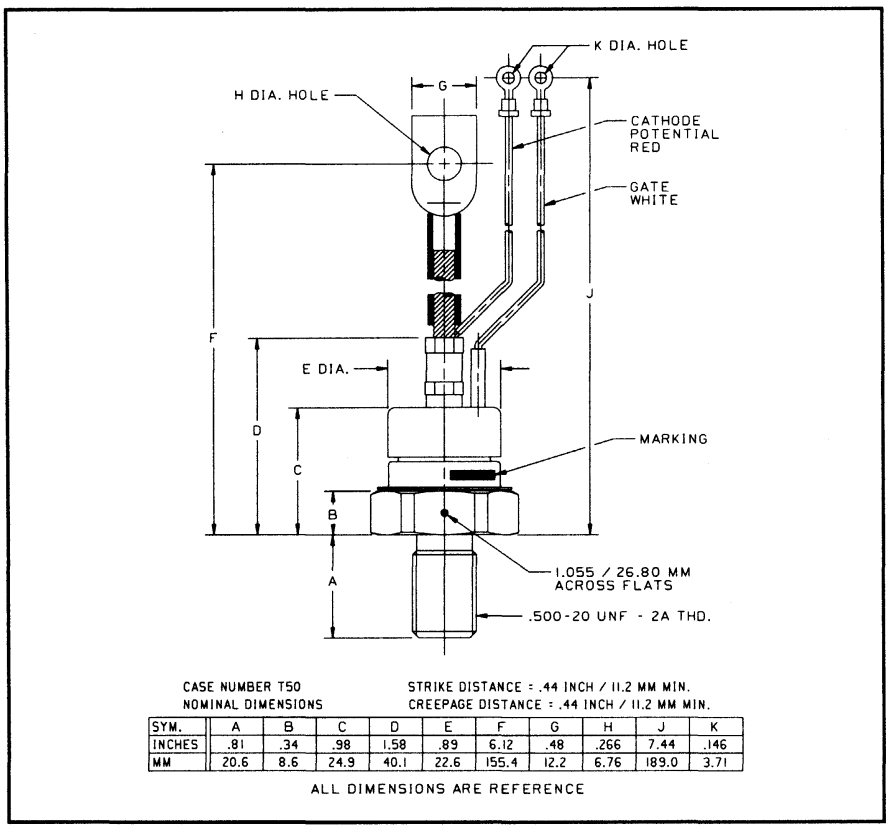
Powerex, Inc., 200 Hillis Street, Youngwood, Pennsylvania 15697-1800 (412) 925-7272
Powerex, Europe, S.A. 428 Avenue G. Durand, BP107, 72003 Le Mans, France (43) 41.14.14

Phase Control SCR
40-80 Amperes (63-125 RMS)
1600 Volts



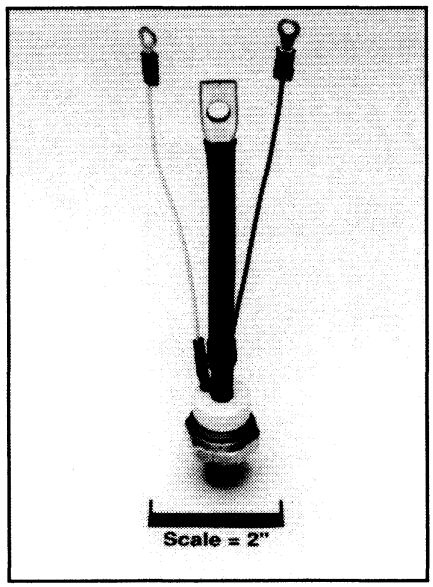
CASE NUMBER T50
NOMINAL DIMENSIONS

STRIKE DISTANCE = .44 INCH / 11.2 MM MIN.
CREEPAGE DISTANCE = .44 INCH / 11.2 MM MIN.

SYM.	A	B	C	D	E	F	G	H	J	K
INCHES	.81	.34	.98	1.58	.89	6.12	.48	.266	7.44	.146
MM	20.6	8.6	24.9	40.1	22.6	155.4	12.2	6.76	189.0	3.71

ALL DIMENSIONS ARE REFERENCE

T500, TO-94 (Outline Drawing) Also Available with Flag Lead, TO-83 Package



T500 Phase Control SCR
40-80 Amperes (63-125 RMS),
1600 Volts

Ordering Information:
Select the complete part number you desire from the following table:

Type	Voltage * V_{DRM} & V_{RRM} (Volts)	Code	Current $I_{T(av)}$ (A)	Code	Turn-off t_q (μsec)	Code	Gate Current I_{GT} (mA)	Code	Leads Case	Code
T500	700	07	40	40	100	0	100	5	TO-94	AQ
	800	08			(Typ.)		150	4		
	900	09					**			
	1000	10	80	80					TO-83	AB
	1100	11								
	1200	12								
	1300	13								
	1400	14								
	1500	15								
	1600	16								

* For 600V and Below, see T510
** For Lower I_{GT} Consult Factory

Example: Type T500 rated at 80A average with V_{DRM} = 1600V, I_{GT} = 150MA, and standard flexible lead, order as:

Type				Voltage		Current		Turn-off	Gate Current	Leads	
T	5	0	0	1	6	8	0	0	4	A	Q

Features:
- ☐ Center Fired, di/namic Gate
- ☐ All Diffused Design
- ☐ Low V_{TM}
- ☐ Compression Bonded Encapsulation
- ☐ Low Thermal Impedance
- ☐ High Surge Current Capability
- ☐ Low Gate Current

Applications:
- ☐ Phase control
- ☐ Motor Control
- ☐ Power Supplies

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1600 Volts

Absolute Maximum Ratings

Characteristics	Symbol	T500 _ _40	T500_ _80	Units
RMS Forward Current	$I_{T(rms)}$	63	125	Amperes
Average Forward Current	$I_{T(av)}$	40	80	Amperes
One-half Cycle Surge Current	I_{TSM}	1200	1800	Amperes
3 Cycle Surge Current	I_{TSM}	950	1300	Amperes
10 Cycle Surge Current	I_{TSM}	800	1170	Amperes
Minimum Rate of Rise of On-State Current (Non-repetitive)	di/dt	800	800	Amperes/μs
I^2t (for Fusing), ≥ 8.3 milliseconds	I^2t	6000	13500	A^2sec
Peak Gate Power Dissipation	P_{GM}	16	16	Watts
Average Gate Power Dissipation	$P_{G(av)}$	3	3	Watts
Storage Temperature	T_{stg}	-40 to +150	-40 to +150	°C
Operating Temperature	T_j	-40 to +125	-40 to +125	°C
Mounting Torque (Lubricated)		130	130	in-lb

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T500 Phase Control SCR
40-80 Amperes (63-125 RMS),
1600 Volts

Electrical and Thermal Characteristics

Characteristics	Symbol	Test Conditions	T500 _ _40	T500_ _80	Units
Current - Conducting State Maximums					
Forward Voltage Drop	V_{TM}	T_j = 25°C, I_{TM} = 500A	3.7	2.2	Volts
Voltage - Blocking State Maximums					
Rep. Peak Forward Blocking Voltage (Rated Limit)	V_{DRM}		1600	1600	Volts
Repetitive Peak Reverse Voltage (Rated Limit)	V_{RRM}		1600	1600	Volts
Non-Rep. Trans. Peak Rev. Voltage (Rated Limit)	V_{RSM}	$t_p \leq 5.0$ msec	1800	1800	Volts
Forward Leakage Current	I_{DRM}	T_j = 125°C, V_{DRM} = Rated	10	10	mA
Reverse Leakage Current	I_{RRM}	T_j = 125°C, V_{RRM} = Rated	10	10	mA
Switching					
Typical Turn-off Time	t_q	I_T = 50A, di_R/dt = 5 A/µsec, reapplied dv/dt = 20V/µsec linear to 0.8 V_{DRM}, T_j = 125°C	100	100	µsec
Typical Turn-on Time	t_{on}	I_T = 100A, V_D = 100V	4	4	µsec
Minimum Critical dv/dt Exponential to V_{DRM}	dv/dt	T_j = 125°C	300	300	V/µsec
Thermal					
Maximum Resistance, Junction to Case	$R_{\theta(j-c)}$		0.28	0.28	°C/Watt
Maximum Resistance, Case to Sink (Lubricated)	$R_{\theta(c-s)}$		0.12	0.12	°C/Watt
Gate - Maximum Parameters					
Gate Current to Trigger	I_{GT}	T_j = 25°C, V_D = 12V	(See Ordering Information)		mA
Gate Voltage to Trigger	V_{GT}	T_j = 25°C, V_D = 12V	3	3	Volts
Non-Triggering Gate Voltage	V_{GDM}	T_j = 125°C, V_{DRM} = Rated	0.15	0.15	Volts
Peak Forward Gate Current	I_{GTM}		4	4	Amperes
Peak Reverse Gate Voltage	V_{GRM}		5	5	Volts

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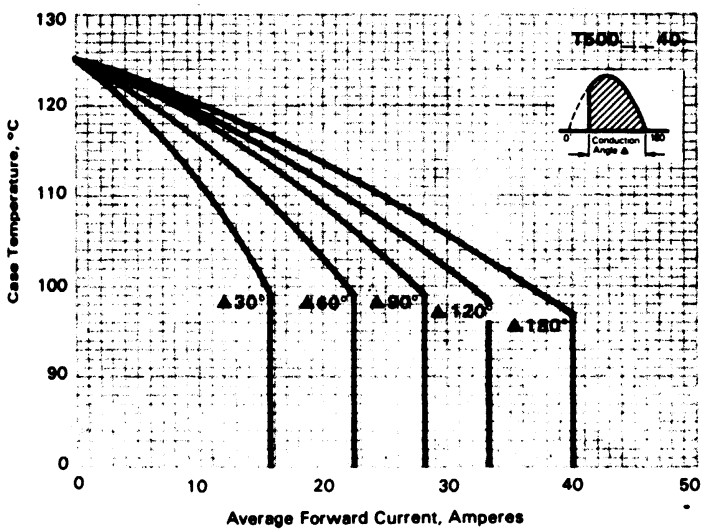
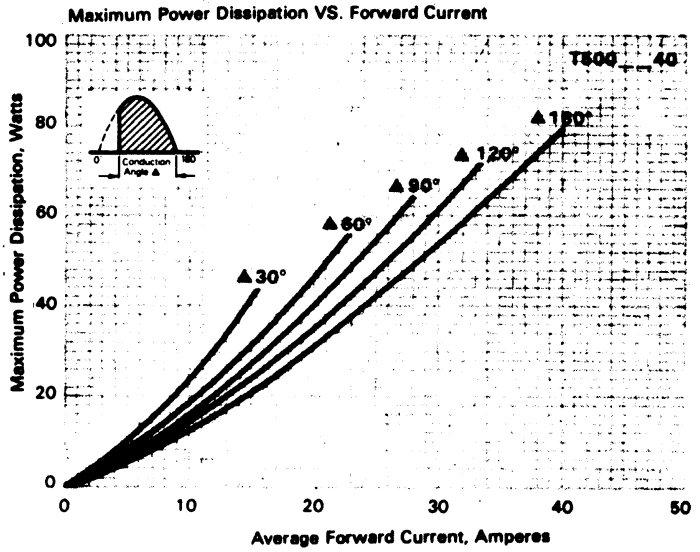
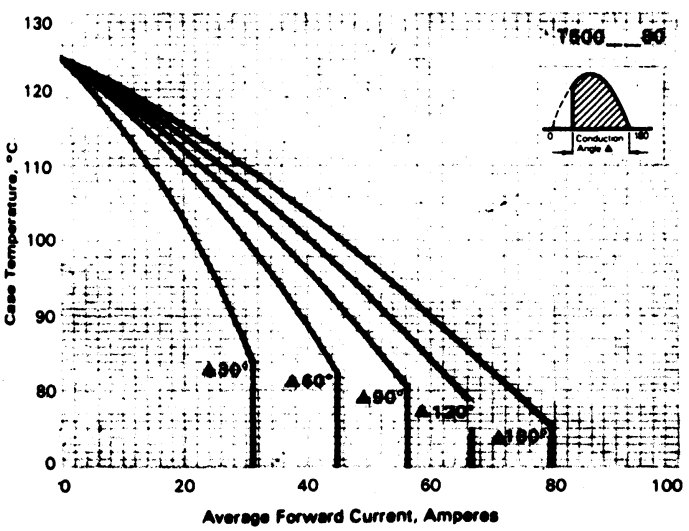
Maximum Case Temperature VS. Forward Current



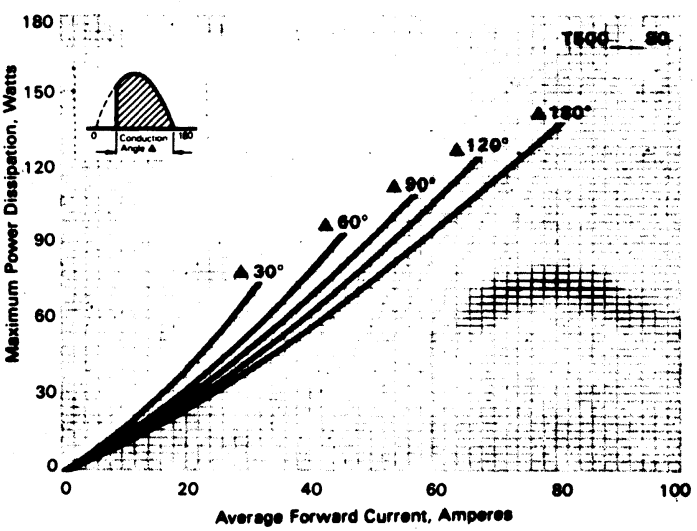
Maximum Power Dissipation VS. Forward Current



Maximum Case Temperature VS. Forward Current



Maximum Power Dissipation VS. Forward Current



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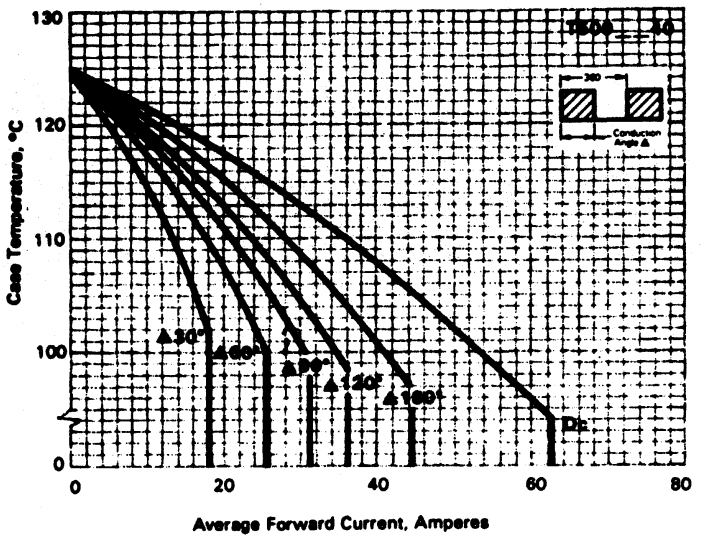
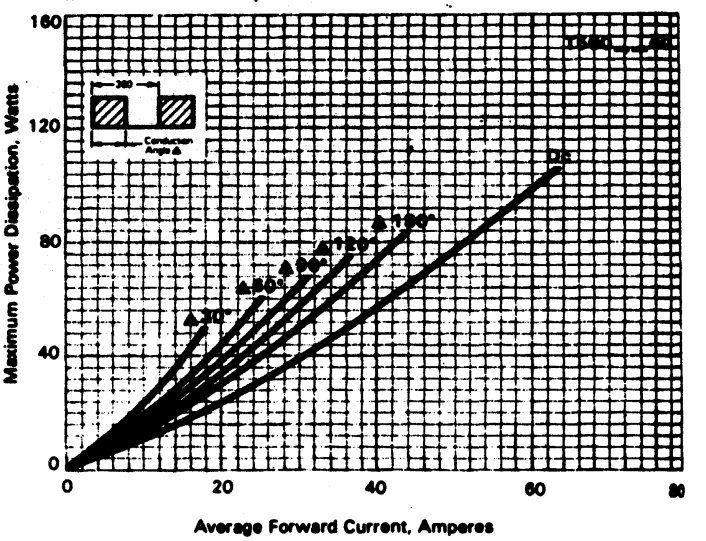
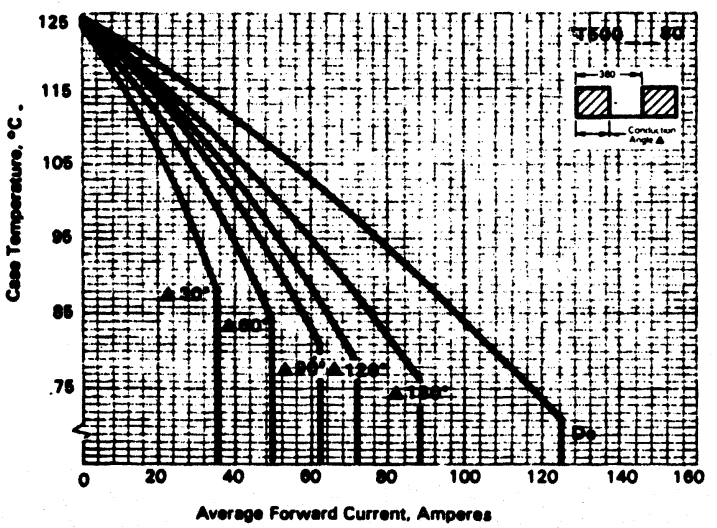


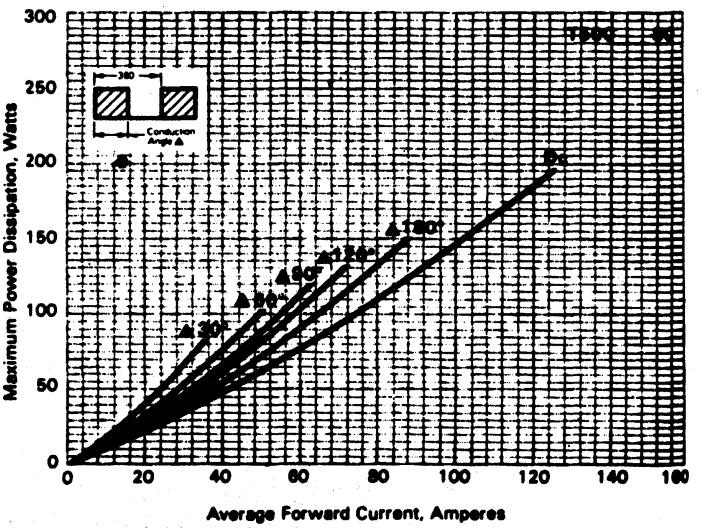
Maximum Power Dissipation VS. Forward Current



Maximum Case Temperature VS. Forward Current



Maximum Power Dissipation Vs. Forward Current



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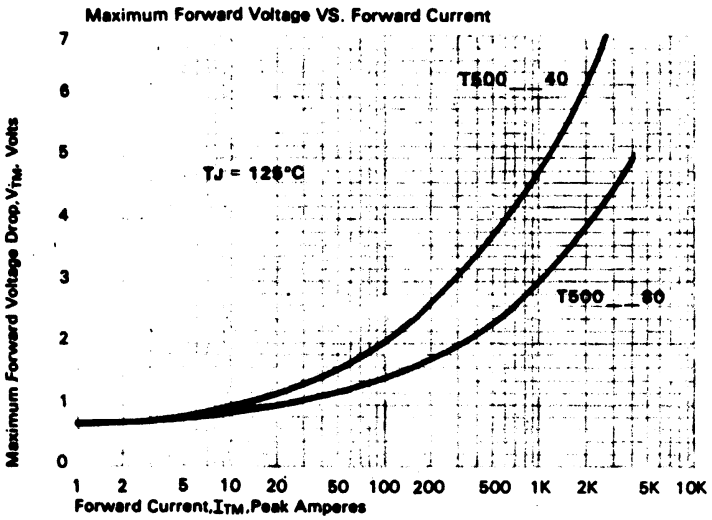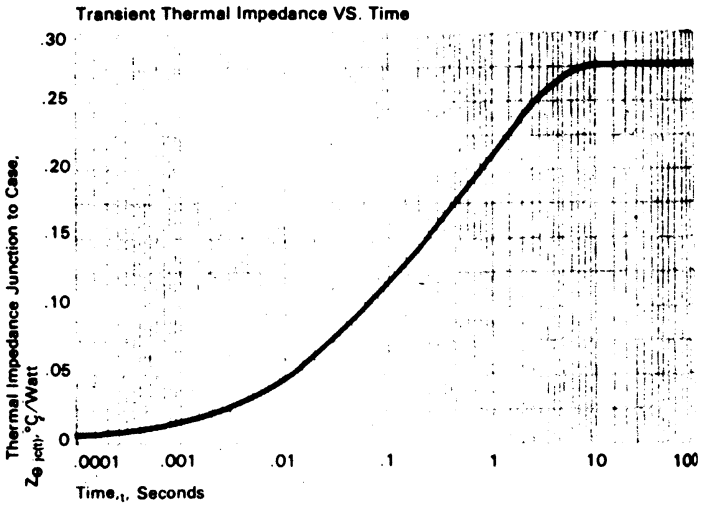
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