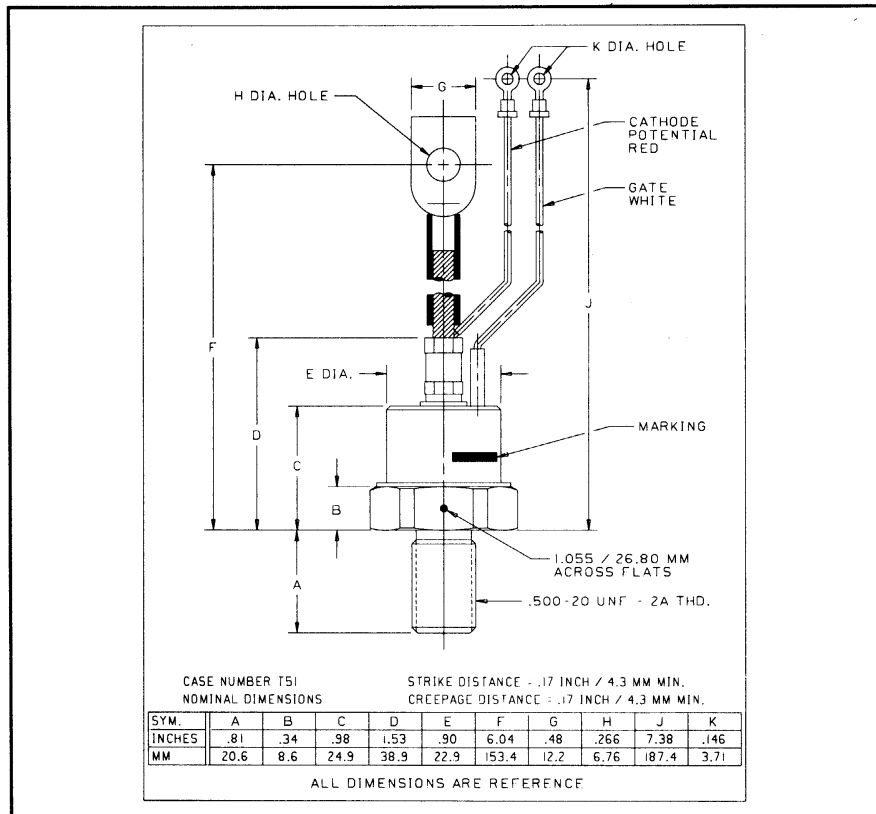
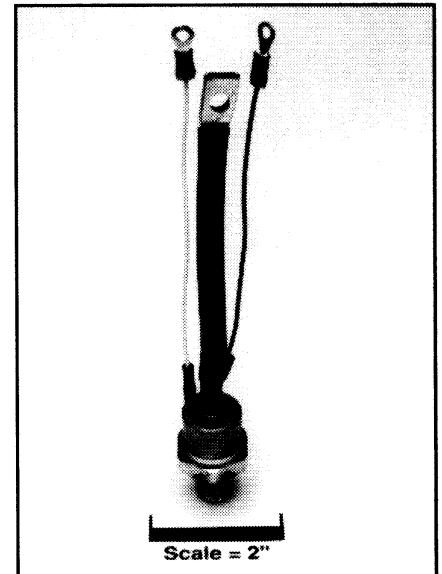


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Powerex, Europe, S.A. 428 Avenue G. Durand, BP107, 72003 Le Mans, France (43) 41.14.14

Phase Control SCR 50-80 Amperes (80-125 RMS) 600 Volts



T510, TO-94 (Outline Drawing) Also Available with Flag Lead, TO-83 Package



T510 Phase Control SCR
50-80 Amperes (80-125 RMS),
600 Volts

Ordering Information:

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

Type	Voltage*		Current		Turn-off		Gate Current		Leads	
	V _{DRM} & V _{RRM} (Volts)	Code	I _{T(av)} (A)	Code	t _q (μsec)	Code	I _{GT} (mA)	Code	Case	Code
T510	50	00	50	50	100	0	70	7	TO-94	AQ
	100	01			(Typ.)		100	5		
	200	02					150	4		
	300	03	80	80					TO-83	AB
	400	04								
	500	05								
	600	06								

* For 700V and Above, see T500

Example: Type T510 rated at 80A average with V_{DRM} = 600V, I_{GT} = 150MA, and standard flexible lead, order as:

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

Features:

- ☐ Center Fired, di/namic Gate
- ☐ All Diffused Design
- ☐ Low V_{TM}
- ☐ Compression Bonded Encapsulation
- ☐ Hermetic Glass to Metal Seal
- ☐ Low Gate Current

Applications:

- ☐ Phase control
- ☐ Power Supplies
- ☐ Light Dimmers
- ☐ Motor Control



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Absolute Maximum Ratings

Characteristics	Symbol	T510 _ 50	T510 _ 80	Units
RMS Forward Current	$I_{T(rms)}$	80	125	Amperes
Average Forward Current	$I_{T(av)}$	50	80	Amperes
One-half Cycle Surge Current	I_{TSM}	1200	1600	Amperes
3 Cycle Surge Current	I_{TSM}	950	1250	Amperes
10 Cycle Surge Current	I_{TSM}	800	1080	Amperes
Minimum Rate of Rise of On-State Current (Non-repetitive)	di/dt	100	100	Amperes/ μs
I^2t (for Fusing), ≥ 8.3 milliseconds	I^2t	6000	10700	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	$^{\circ}C$
Operating Temperature	T_j	-40 to +125	-40 to +125	$^{\circ}C$
Mounting Torque		130	130	in-lb

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T510 Phase Control SCR
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600 Volts

Electrical and Thermal Characteristics

Characteristics	Symbol	Test Conditions	T510 _50	T510 _80	Units
Current - Conducting State Maximums					
Forward Voltage Drop	V_{TM}	$T_j = 25^\circ\text{C}$, $I_{TM} = 500\text{A}$	3.5	2.2	Volts
Voltage - Blocking State Maximums					
Rep. Peak Forward Blocking Voltage (Rated Limit)	V_{DRM}		600	600	Volts
Repetitive Peak Reverse Voltage (Rated Limit)	V_{RRM}		600	600	Volts
Non-Rep. Trans. Peak Rev. Voltage (Rated Limit)	V_{RSM}	$t_p \leq 5.0 \text{ msec}$	700	700	Volts
Forward Leakage Current	I_{DRM}	$T_j = 125^\circ\text{C}$, $V_{DRM} = \text{Rated}$	10	10	mA
Reverse Leakage Current	I_{RRM}	$T_j = 125^\circ\text{C}$, $V_{RRM} = \text{Rated}$	10	10	mA
Switching					
Typical Turn-off Time	t_q	$I_T = 50\text{A}$, $di_R/dt = 5 \text{ A}/\mu\text{sec}$, reapplied $dv/dt = 20\text{V}/\mu\text{sec}$ linear to $0.8 V_{DRM}$, $T_j = 125^\circ\text{C}$	100	100	μsec
Typical Turn-on Time	t_{on}	$I_T = 100\text{A}$, $V_D = 100\text{V}$	4	4	μsec
Minimum Critical dv/dt Exponential to V_{DRM}	dv/dt	$T_j = 125^\circ\text{C}$	300	300	$\text{V}/\mu\text{sec}$
Thermal					
Maximum Resistance, Junction to Case	$R_{\theta(j-c)}$		0.28	0.28	$^\circ\text{C}/\text{Watt}$
Maximum Resistance, Case to Sink (Lubricated)	$R_{\theta(c-s)}$		0.12	0.12	$^\circ\text{C}/\text{Watt}$
Gate - Maximum Parameters					
Gate Current to Trigger	I_{GT}	$T_j = 25^\circ\text{C}$, $V_D = 12\text{V}$	(See Ordering Information)		mA
Gate Voltage to Trigger	V_{GT}	$T_j = 25^\circ\text{C}$, $V_D = 12\text{V}$	3	3	Volts
Non-Triggering Gate Voltage	V_{GDM}	$T_j = 125^\circ\text{C}$, $V_{DRM} = \text{Rated}$	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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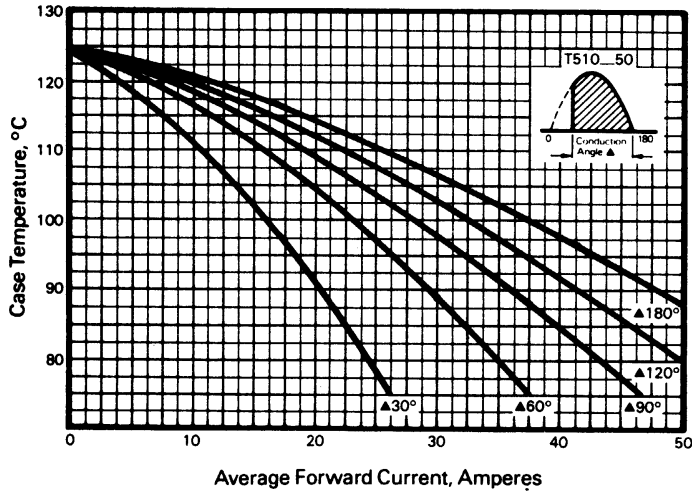
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T510 Phase Control SCR

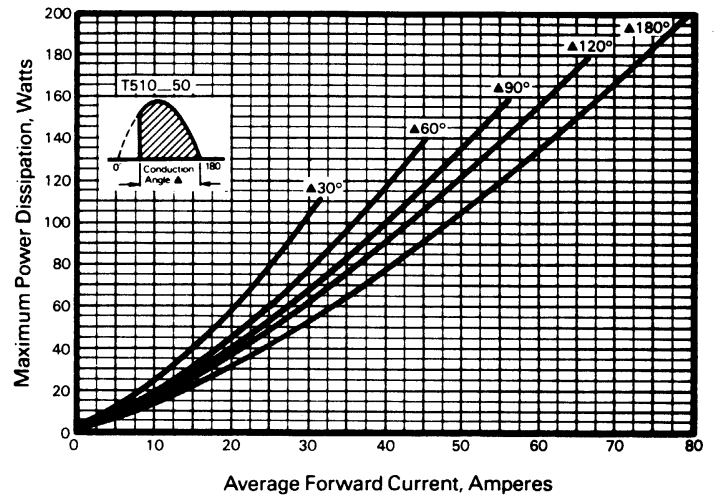
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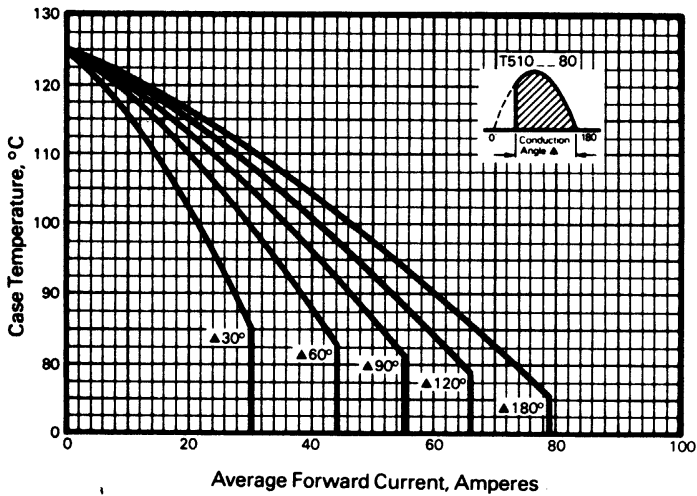
Maximum Case Temperature Vs. Forward Current



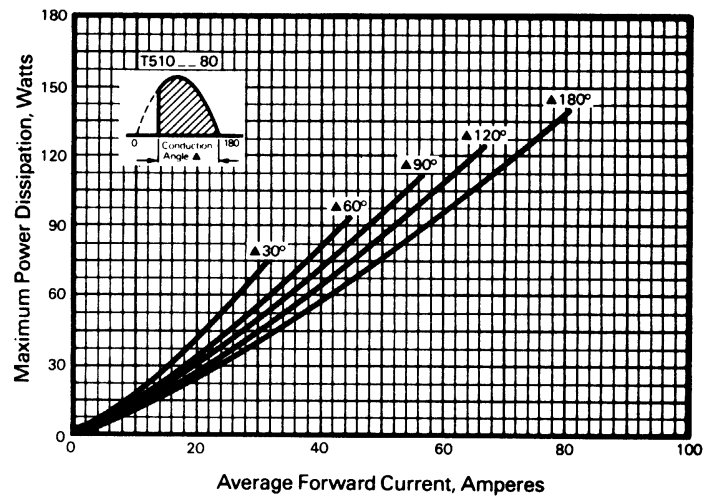
Maximum Power Dissipation Vs. Forward Current



Maximum Case Temperature Vs. Forward Current



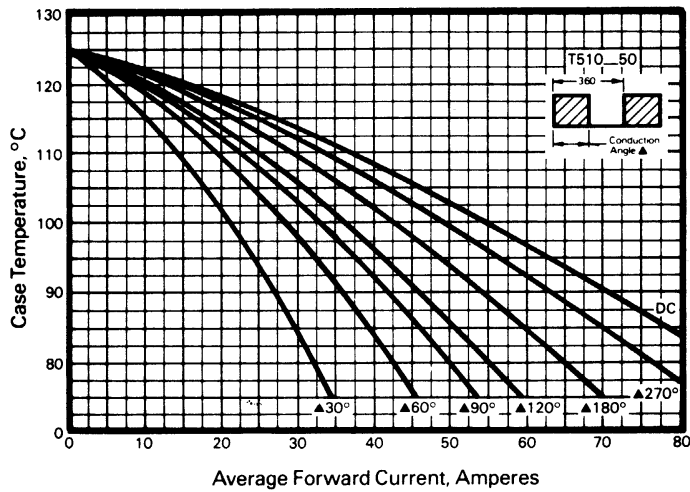
Maximum Power Dissipation Vs. Forward Current



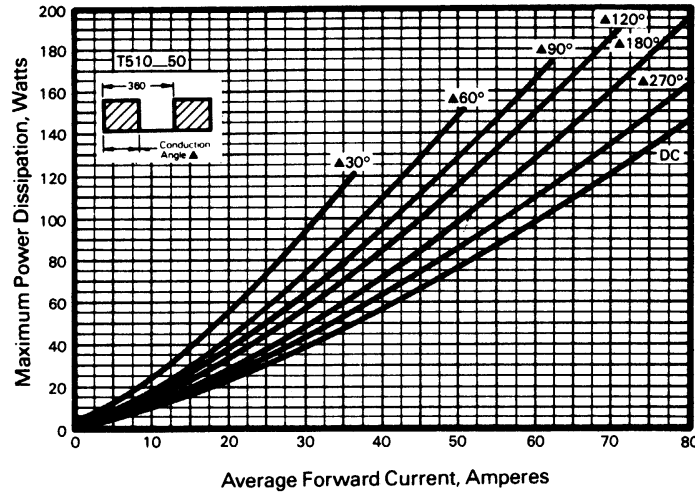
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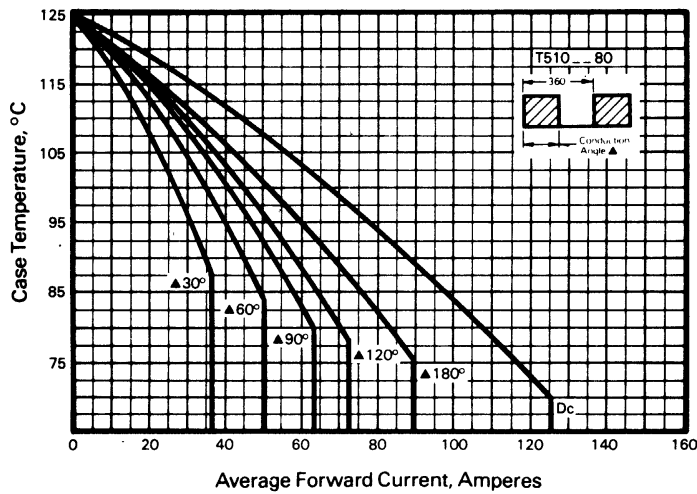
Maximum Case Temperature Vs. Forward Current



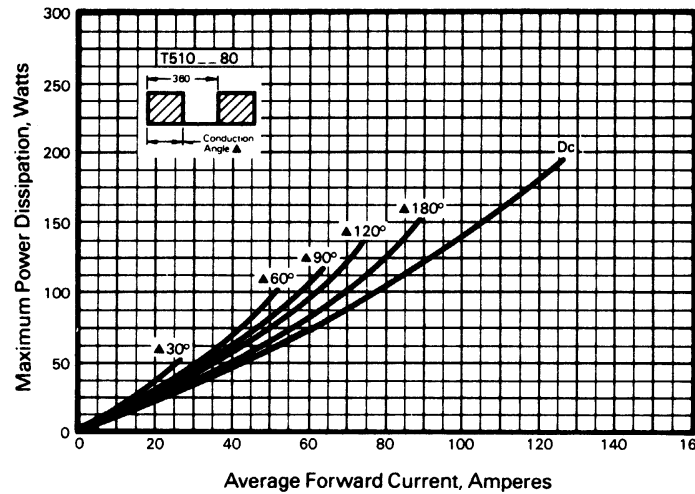
Maximum Power Dissipation Vs. Forward Current



Maximum Case Temperature Vs. Forward Current



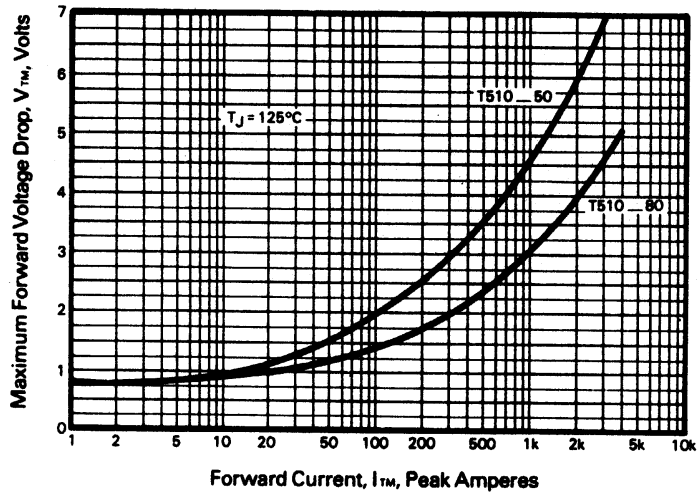
Maximum Power Dissipation Vs. Forward Current



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Maximum Forward Voltage Vs. Forward Current



Transient Thermal Impedance Vs. Time

