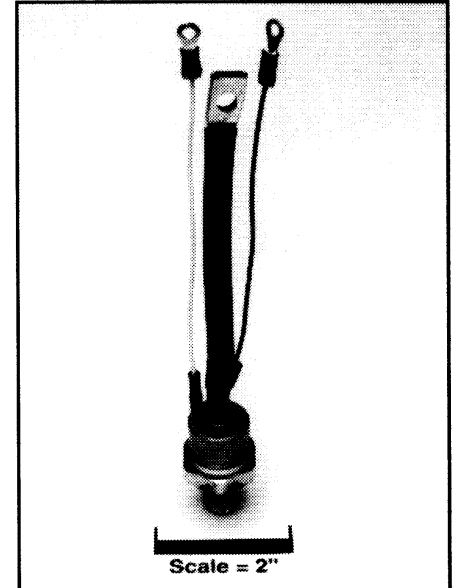
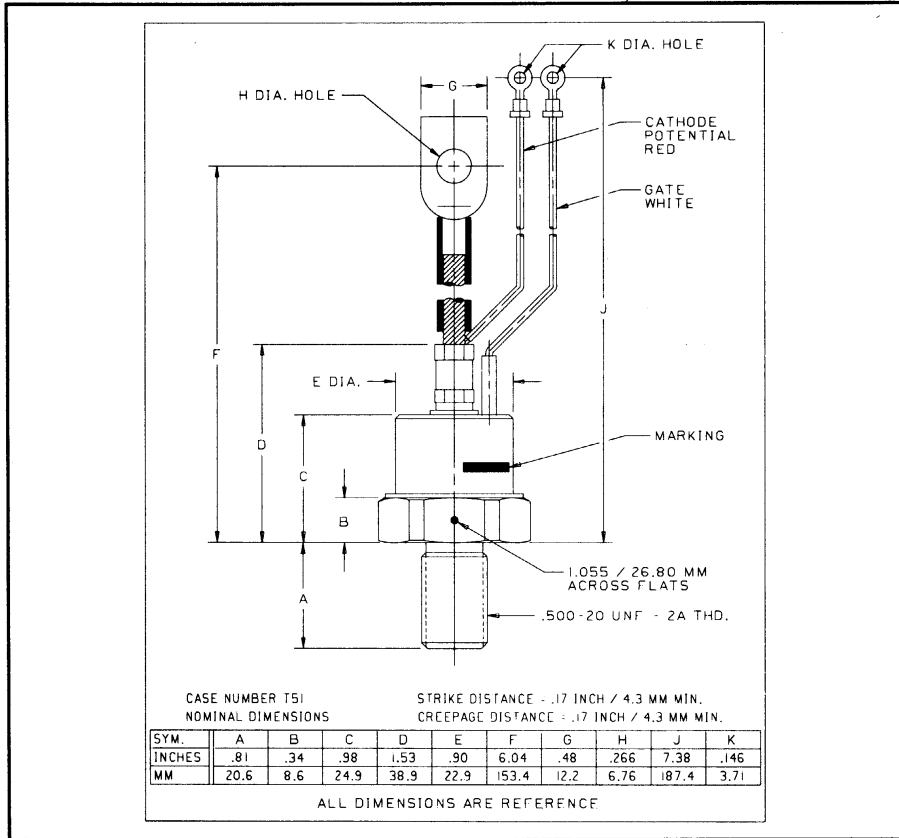


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**Phase Control SCR**  
 50-80 Amperes (80-125 RMS)  
 600 Volts



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

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

### 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	$t_q$ ( $\mu$ sec)	Code	$I_{GT}$ (mA)	Code	Case	Code
T510	50	00	50	50	100	0	70	7	TO-94	AQ
	100	01								
	200	02								
	300	03	80	80			150	4	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/ $\mu s$
$I^2t$ (for Fusing), $\geq 8.3$ 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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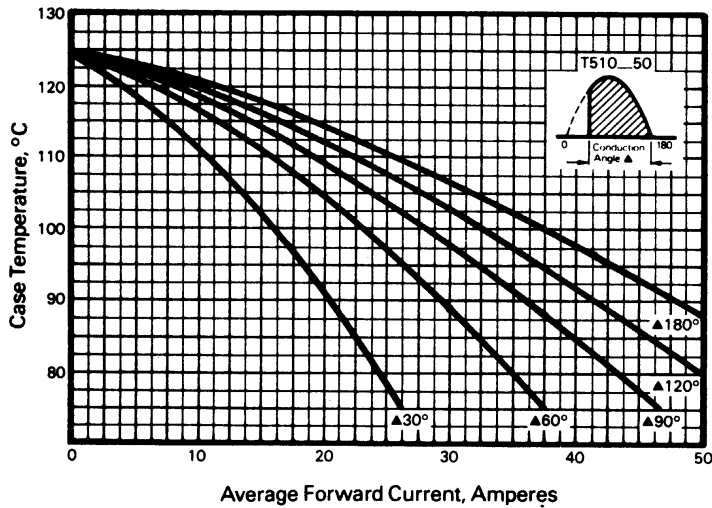
## Electrical and Thermal Characteristics

Characteristics	Symbol	Test Conditions	T510__50	T510__80	Units
<b>Current - Conducting State Maximums</b>					
Forward Voltage Drop	$V_{TM}$	$T_j = 25^\circ\text{C}$ , $I_{TM} = 500\text{A}$	3.5	2.2	Volts
<b>Voltage - Blocking State Maximums</b>					
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
<b>Switching</b>					
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	$\mu\text{sec}$
Typical Turn-on Time	$t_{on}$	$I_T = 100\text{A}$ , $V_D = 100\text{V}$	4	4	$\mu\text{sec}$
Minimum Critical $dv/dt$ Exponential to $V_{DRM}$	$dv/dt$	$T_j = 125^\circ\text{C}$	300	300	$\text{V}/\mu\text{sec}$
<b>Thermal</b>					
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	$^\circ\text{C}/\text{Watt}$
<b>Gate - Maximum Parameters</b>					
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

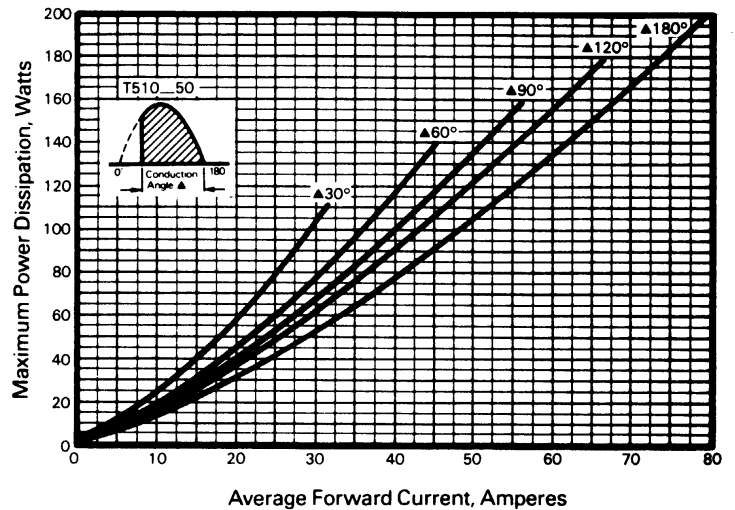
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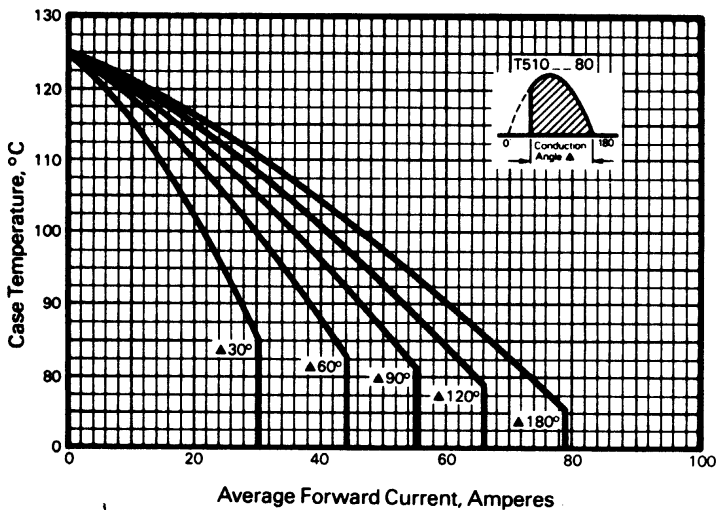
Maximum Case Temperature Vs. Forward Current



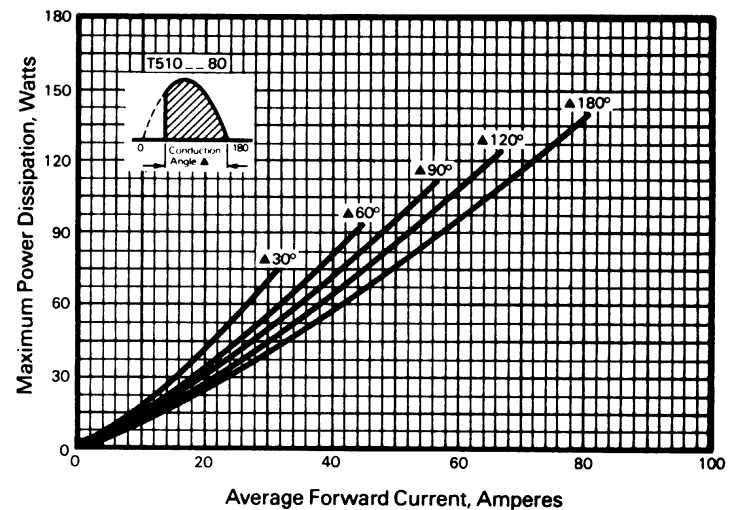
Maximum Power Dissipation Vs. Forward Current



Maximum Case Temperature Vs. Forward Current



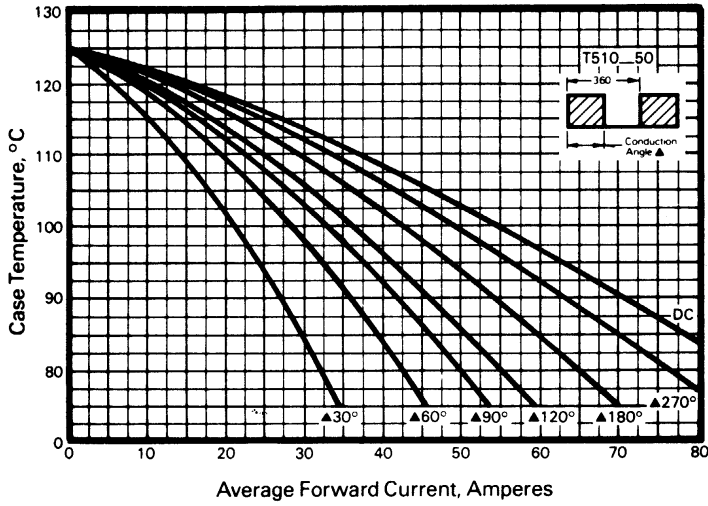
Maximum Power Dissipation Vs. Forward Current



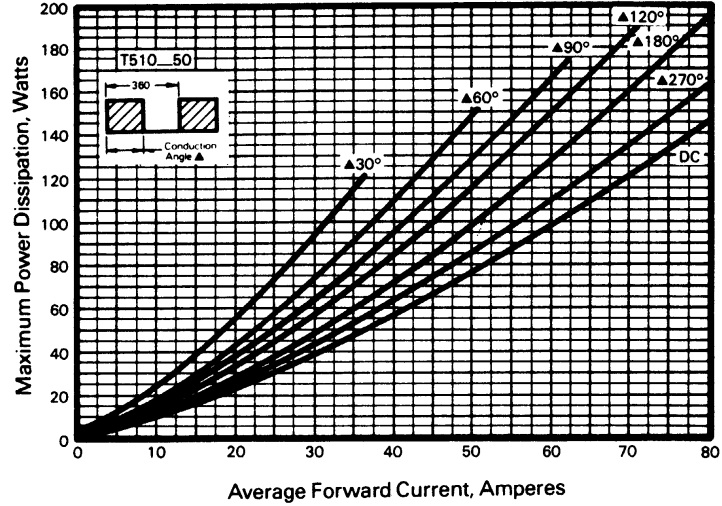
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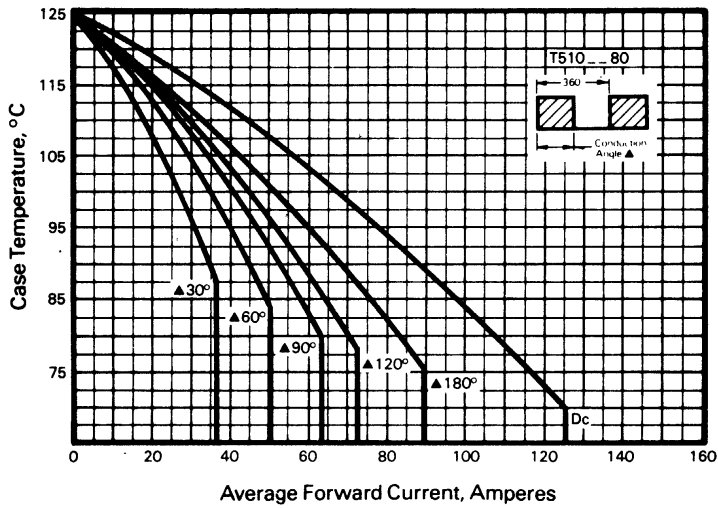
Maximum Case Temperature Vs. Forward Current



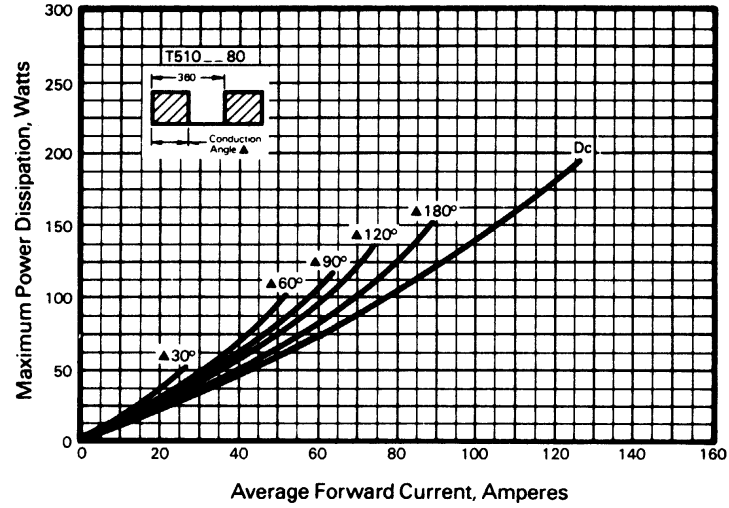
Maximum Power Dissipation Vs. Forward Current



Maximum Case Temperature Vs. Forward Current



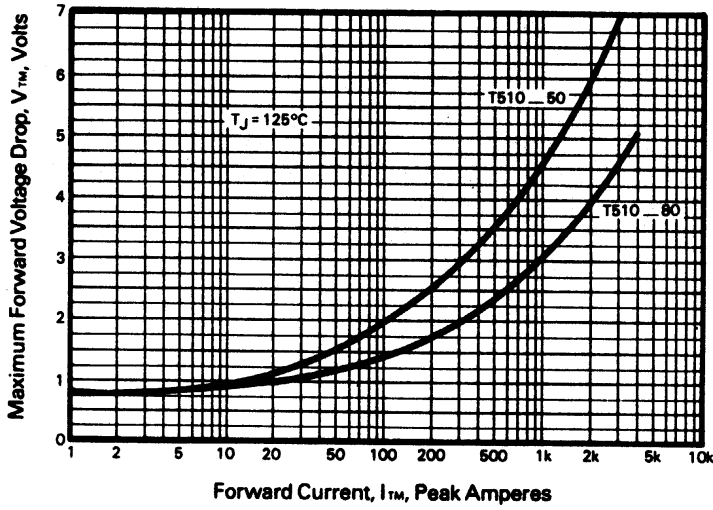
Maximum Power Dissipation Vs. Forward Current



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Maximum Forward Voltage Vs. Forward Current



Transient Thermal Impedance Vs. Time

