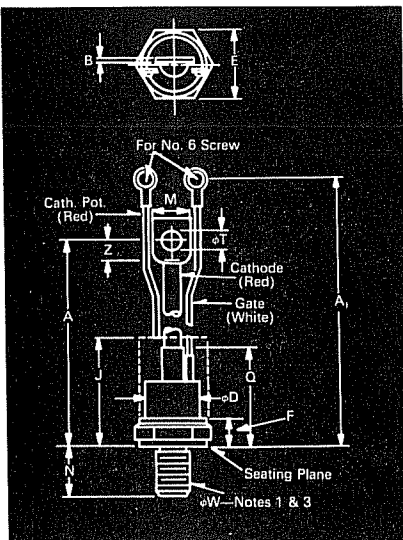




Fast Switching SCR T507_80

80A Avg.
(125 RMS)
Up to 1400 Volts
10-50 μ s



Conforms to TO-94 Outline

Symbol	Inches		Millimeters	
	Min.	Max.	Min.	Max.
A	5.775	6.265	146.69	159.13
A ₁	6.850	7.500	173.99	190.50
B	.055	.075	1.40	1.91
ϕ D	.860	1.000	21.84	25.40
E	1.031	1.063	26.19	27.00
F	.255	.400	6.48	10.16
J	2.50		63.50	
M	.437	.650	11.10	16.51
N	.796	.827	20.24	21.01
Q		1.675		42.55
ϕ T	.260	.291	6.60	7.39
Z	.250		6.35	
ϕ W	$\frac{1}{2}$ -20 UNF-2A			

Creep & Strike Distance.
T500—.50 in. min. (12.85 mm).
(In accordance with NEMA standards.)

Finish—Nickel Plate.
Approx. Weight—5 oz. (142 g).

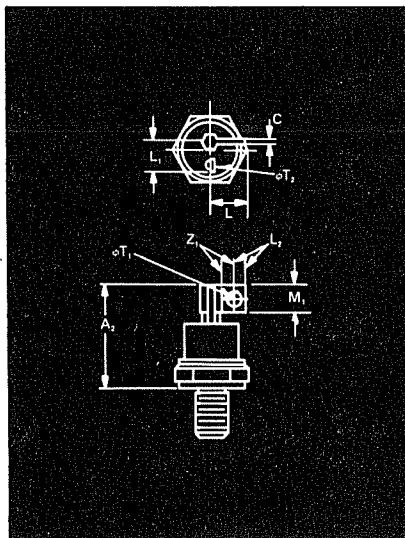
- Complete threads to extend to within 2½ threads of seating plane.
- Angular orientation of terminals is undefined.
- Pitch diameter of $\frac{1}{2}$ -20 UNF-2A (coated) threads (ASA B1.1-1960).
- Dimension "J" denotes seated height with leads bent at right angles.

*for 10 μ sec turn-off,
consult factory

Example

Obtain optimum device performance for your application by selecting proper Order Code.

Type T 507 rated at 80 A average with $V_{DRM} = 1000V$,
 $I_{GT} = 150$ ma, $t_q = 30 \mu$ sec max. and flex leads—order as:



Conforms to TO-83 Outline

Symbol	Inches		Millimeters	
	Min.	Max.	Min.	Max.
A ₂		1.810		45.97
C	.070	.110	1.78	2.79
L		.650		16.51
L ₁	.420	.520	10.67	13.21
L ₂	.180		4.57	
M ₁	.360	.470	9.14	11.94
ϕ T ₁	.190	.235	4.83	5.97
ϕ T ₂	.060	.080	1.52	2.03
Z ₁	.180		4.57	
ϕ W	$\frac{1}{2}$ -20 UNF-2A			

Approx. Weight—4 oz. (114 g).
1. Basic dimensions of TO-94 and TO-83 are same except as noted.

Ordering Information

Type	Voltage		Current		Turn-off		Gate-current		Leads			
	V_{DRM} and V_{RRM} (V)	Code	$I_{T(RAV)}$ (A)	Code	t_q (μ sec)	Code	I_{GT} (ma)	Code	Case	Code		
T507	100	01	80	80	10	5	150	4	TO-94	AG		
	200	02			15							
	300	03			20						TO-83	AB
	400	04			25							
	500	05			30							
	600	06			40							
	700	07			50							
	800	08										
	900	09										
	1000	10										
	1100	11										
	1200	12										
	1400	*14										

Type	Voltage	Current	Turn Off	Gate Current	Leads
T 5 0 7	1 0 8 0	5	4	A Q	

Westinghouse Electric Corporation • Semiconductor Division • Youngwood, Pa. 15697

**80A Avg.
(125 RMS)
Up to 1400 Volts
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**Fast Switching
SCR
T507__80**



Voltage

Blocking State Maximums @ ($T_J = 125^\circ\text{C}$)

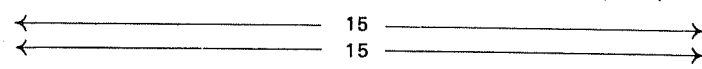
Repetitive peak forward blocking voltage, V . . .
 Repetitive peak reverse voltage, V
 Non-repetitive transient peak reverse voltage,
 $t \leq 5.0$ msec, V

Symbol

V_{DRM}	100	200	300	400	500	600	700	800	900	1000	1100	1200	1400
V_{RRM}	100	200	300	400	500	600	700	800	900	1000	1100	1200	1400
V_{RSM}	200	300	400	500	600	700	800	900	1000	1100	1200	1300	1500

Forward leakage current, mA peak
 Reverse leakage current, mA peak

I_{DRM}
 I_{RRM}



Current

Conducting State Maximums
 ($T_J = 125^\circ\text{C}$)

Symbol

T507__80

RMS forward current, A
 Ave. forward current, A
 One-half cycle surge current^③, A
 I^2t for fusing (for times ≥ 8.3 ms)
 A² sec.
 Forward voltage drop at $I_{TM} = 500A$
 and $T_J = 25^\circ\text{C}$, V
 Min. repetitive di/dt ^{①②④}, A/ μ sec

$I_T(\text{rms})$
 $I_T(\text{av})$
 I_{TSM}
 I^2t
 V_{TM}
 di/dt

$I_T(\text{rms})$	125
$I_T(\text{av})$	80
I_{TSM}	1400
I^2t	8150
V_{TM}	3.2
di/dt	150

Switching

($T_J = 25^\circ\text{C}$)

Symbol

Max. turn-off time, $I_T = 50A$,
 $T_J = 125^\circ\text{C}$, $di_R/dt = 5$
 A/ μ sec, reappplied $dv/dt =$
 $20V/\mu$ sec linear to $0.8 V_{DRM}$, μ sec ^{③④}
 t_q
 Typ. turn-on-time, $I_T = 100A$
 $V_D = 100V$ ^④, μ sec
 t_{on}
 Min. critical dv/dt , exponential to V_{DRM} ,
 $T_J = 125^\circ\text{C}$, V/ μ sec ^{③④}
 dv/dt
 Min. di/dt non-repetitive,
 A/ μ sec ^{①②④}
 di/dt

t_q
 t_{on}
 dv/dt
 di/dt

t_q	10 to 50
t_{on}	3.5
dv/dt	200
di/dt	800

Gate

Maximum Parameters
 ($T_J = 25^\circ\text{C}$)

Symbol

Gate current to trigger at $V_D = 12V$, mA
 I_{GT}
 Gate voltage to trigger at $V_D = 12V$, V
 V_{GT}
 Non-triggering gate voltage, $T_J = 125^\circ\text{C}$,
 and rated V_{DRM} , V
 V_{GDM}
 Peak forward gate current, A
 I_{GTM}
 Peak reverse gate voltage, V
 V_{GRM}
 Peak gate power, Watts
 P_{GM}
 Average gate power, Watts
 $P_{G(av)}$

I_{GT}
 V_{GT}
 V_{GDM}
 I_{GTM}
 V_{GRM}
 P_{GM}
 $P_{G(av)}$

I_{GT}	150
V_{GT}	3
V_{GDM}	0.15
I_{GTM}	4
V_{GRM}	5
P_{GM}	16
$P_{G(av)}$	3

Thermal and Mechanical

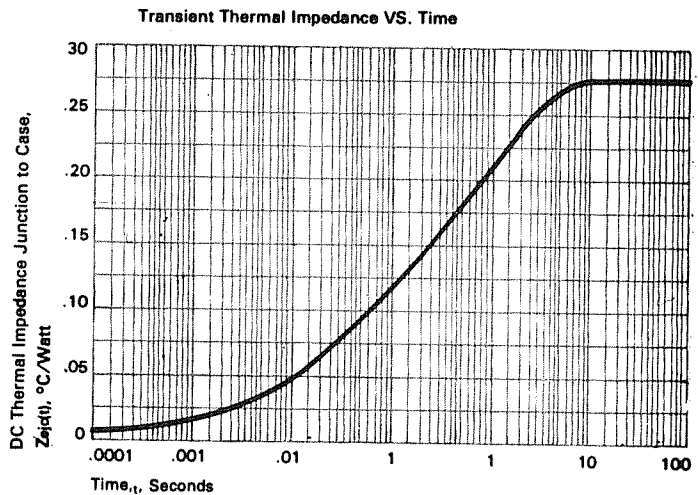
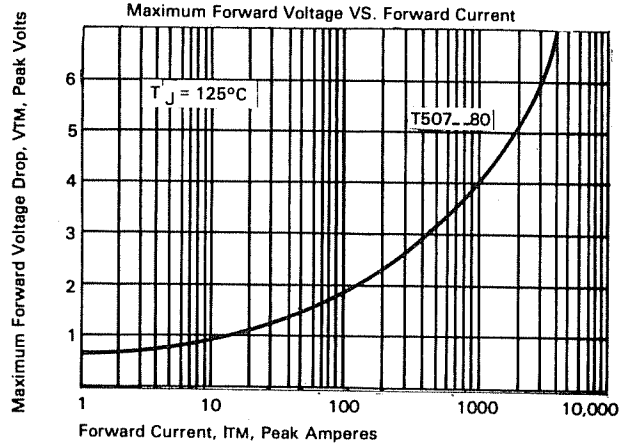
Symbol

Min., Max. oper. junction temp., $^\circ\text{C}$
 T_J
 Min., Max. storage temp., $^\circ\text{C}$
 T_{stg}
 Max. mounting torque, in lb. ^①
 130
 Max. Thermal resistance ^①
 Junction to case, $^\circ\text{C}/\text{Watt}$
 $R_{\theta JC}$
 Case to sink, lubricated, $^\circ\text{C}/\text{Watt}$
 $R_{\theta CS}$

T_J
 T_{stg}
 $R_{\theta JC}$
 $R_{\theta CS}$

T_J	-40 to +125
T_{stg}	-40 to +150
$R_{\theta JC}$.28
$R_{\theta CS}$.12

- ① Consult recommended mounting procedures.
- ② Applies for zero or negative gate bias.
- ③ Per JEDEC RS-397, 5.2.2.1.
- ④ With recommended gate drive.
- ⑤ Higher dv/dt ratings available, consult factory.
- ⑥ Per JEDEC standard RS-397, 5.2.2.6.
- ⑦ For operation with antiparallel diode, consult factory.



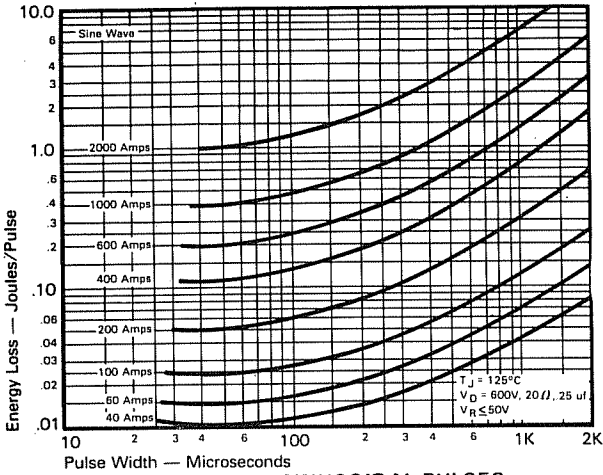
FAST SWITCHING THYRISTORS



Fast Switching SCR T507..80

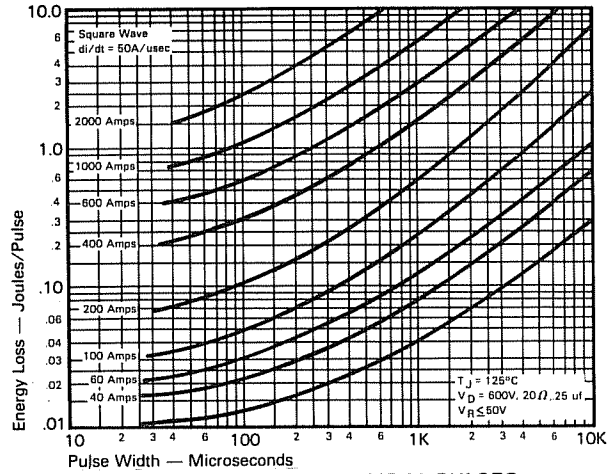
80A Avg.
(125 RMS)
Up to 1400 Volts
10-50 μ s

Sinusoidal Current Data

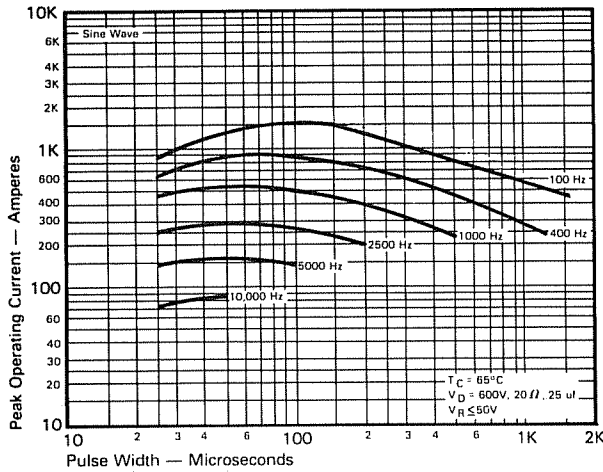


ENERGY PER PULSE FOR SINUSOIDAL PULSES

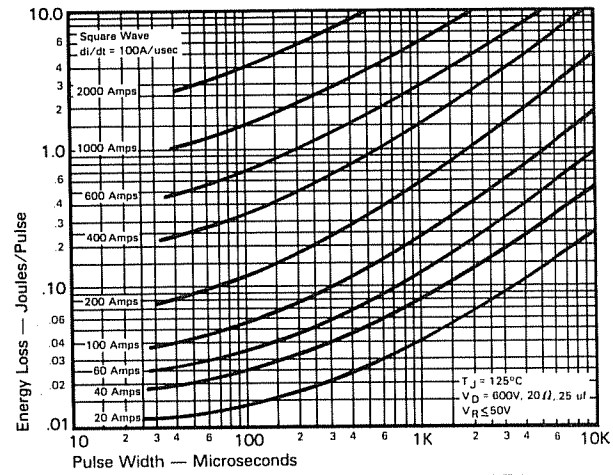
Trapezoidal Wave Current Data



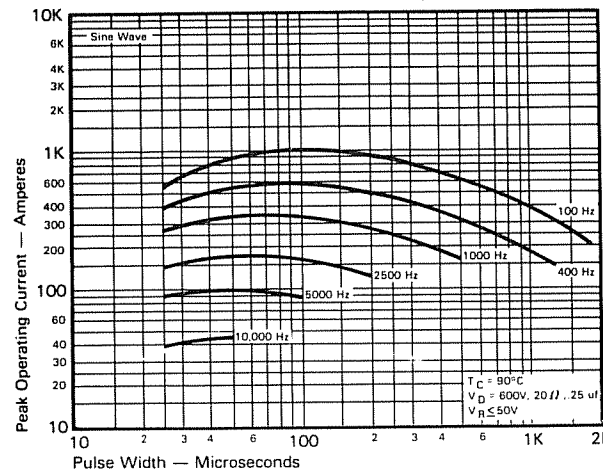
ENERGY PER PULSE FOR TRAPEZOIDAL PULSES
(di/dt = 50A/usec)



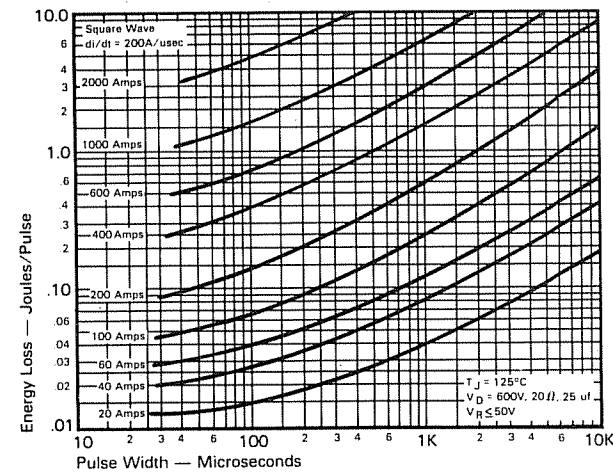
MAXIMUM ALLOWABLE PEAK ON-STATE CURRENT
vs. PULSE WIDTH ($T_C = 65^\circ\text{C}$)



ENERGY PER PULSE FOR TRAPEZOIDAL PULSES
(di/dt = 100A/usec)



MAXIMUM ALLOWABLE PEAK ON-STATE CURRENT
vs. PULSE WIDTH ($T_C = 90^\circ\text{C}$)



ENERGY PER PULSE FOR TRAPEZOIDAL PULSES
(di/dt = 200A/usec)

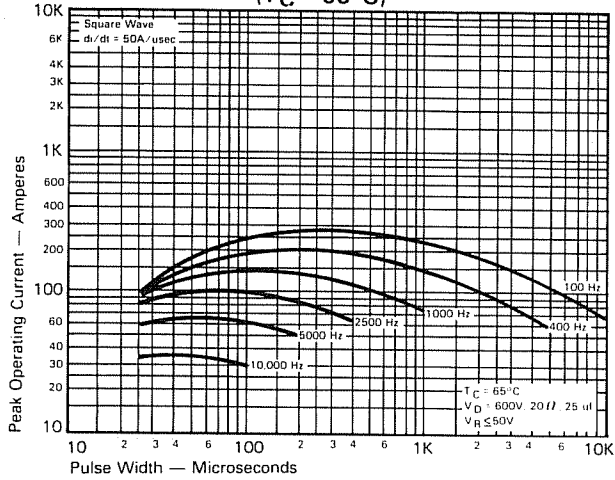
FAST SWITCHING
THYRISTORS

80A Avg.
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Fast Switching
SCR
T507_80

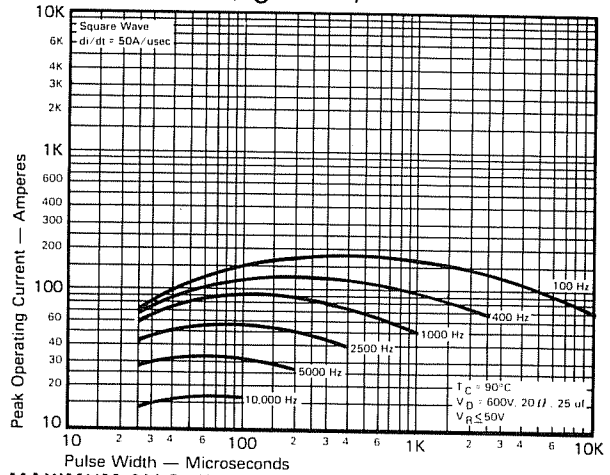


Trapezoidal Wave Current Data
($T_C = 65^\circ\text{C}$)

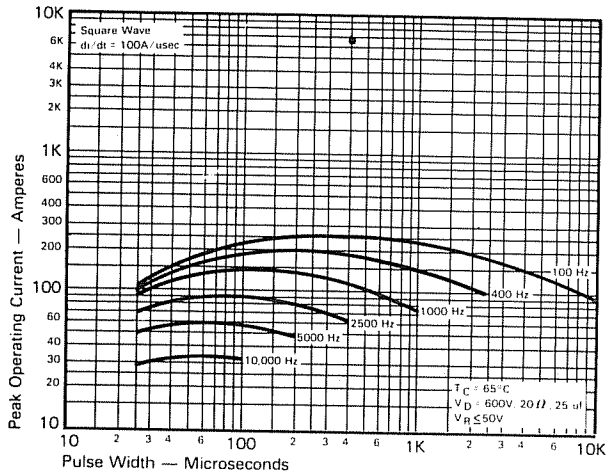


MAXIMUM ALLOWABLE PEAK ON-STATE CURRENT vs. PULSE WIDTH ($di/dt = 50\text{A/usec}$)

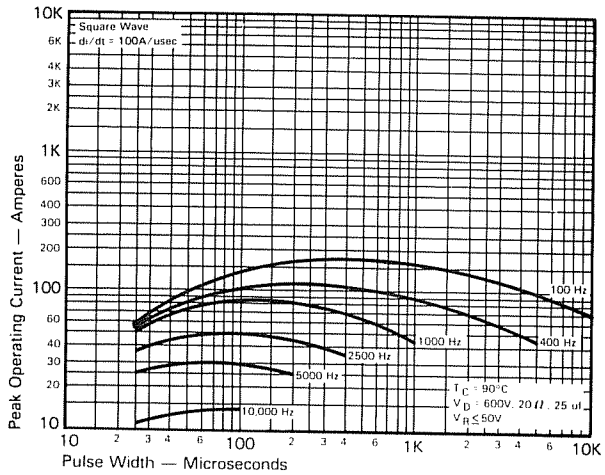
Trapezoidal Wave Current Data
($T_C = 90^\circ\text{C}$)



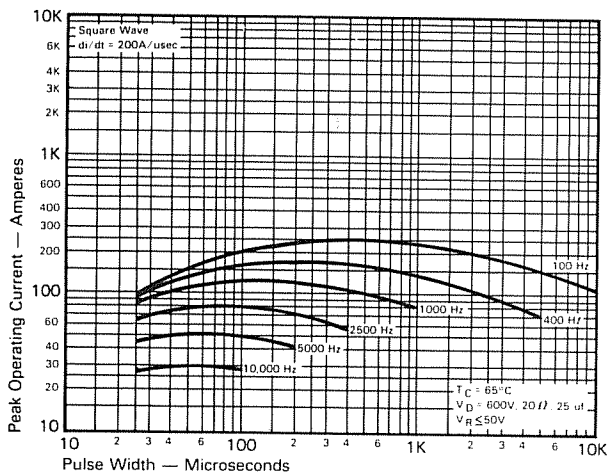
MAXIMUM ALLOWABLE PEAK ON-STATE CURRENT vs. PULSE WIDTH ($di/dt = 50\text{A/usec}$)



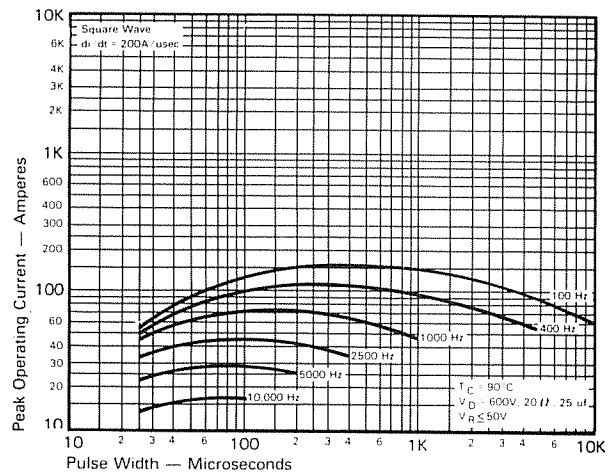
MAXIMUM ALLOWABLE PEAK ON-STATE CURRENT vs. PULSE WIDTH ($di/dt = 100\text{A/usec}$)



MAXIMUM ALLOWABLE PEAK ON-STATE CURRENT vs. PULSE WIDTH ($di/dt = 100\text{A/usec}$)



MAXIMUM ALLOWABLE PEAK ON-STATE CURRENT vs. PULSE WIDTH ($di/dt = 200\text{A/usec}$)



MAXIMUM ALLOWABLE PEAK ON-STATE CURRENT vs. PULSE WIDTH ($di/dt = 200\text{A/usec}$)

FAST SWITCHING THYRISTORS