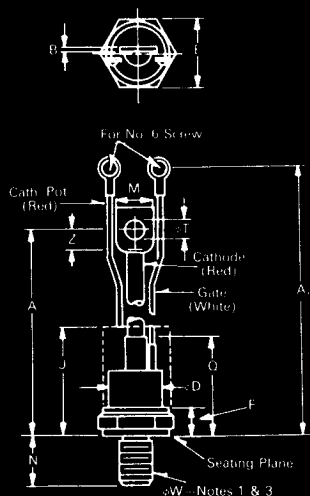


Fast Switching SCR T507_80

**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).

1. Complete threads to extend to within

2½ threads of seating plane.

2. Angular orientation of terminals is

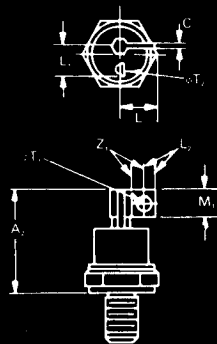
undefined.

3. Pitch diameter of $\frac{1}{2}$ -20 UNF-2A

(coated) threads (ASA B1.1-1960).

4. Dimension "J" denotes seated height with leads bent at right angles.

*for 10 μ sec turn-off,
consult factory

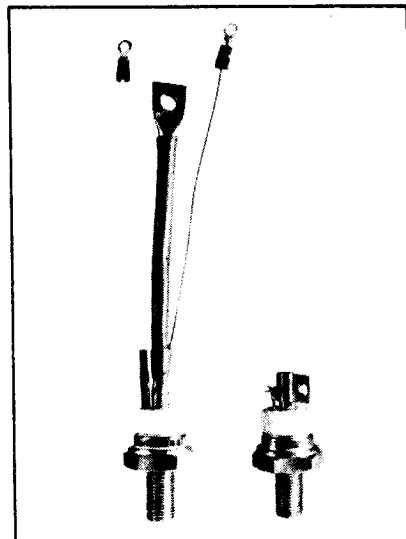


Conforms to TO-83 Outline

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.



Features:

- Center fired di/damic
- High di/dt with soft gate control
- High frequency operation
- Sinusoidal waveform operation to 20 KHz
- Rectangular waveform operation to 20 KHz
- Low dynamic forward voltage drop
- Low switching losses at high frequency
- Lifetime Guarantee

Applications:

- Inverters for UPS
- Induction Heating
- AC Motor Control
- Switching power supplies
- Cycloconverters
- Choppers
- Crowbars

Ordering Information

Type	Voltage		Current		Turn-off		Gate-current		Leads		
Case	V _{ORM} and V _{RRM} (V)	Code	I _{T(av)} (A)	Code	t _q (μsec)	Code	I _{GT} (ma)	Code	Case	Code	
T507	100	01	80	80	10	8	150	4	TO-94	AQ	
	200	02			15	7					
	300	03			20	6					
	400	04			25	5					
	500	05			30	5					
	600	06			40	4					
	700	07			50	3					
	800	08			70	C			TO-83	AB	
	900	09									
	1000	10									
	1100	11									
	1200	12									
	1400	*14									

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 μ sec max. and flex leads—order as:

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

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

**Fast Switching
SCR
T507_80**

Voltage

Blocking State Maximums $\textcircled{2}$ ($T_J = 125^\circ\text{C}$)

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

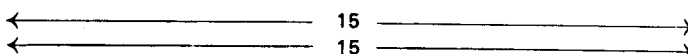
Symbol

V_{DRM}
 V_{RRM}
 V_{RSM}

100	200	300	400	500	600	700	800	900	1000	1100	1200	1400
100	200	300	400	500	600	700	800	900	1000	1100	1200	1400
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
($T_J = 125^\circ\text{C}$)

RMS forward current, A ...
Ave. forward current, A ...
One-half cycle surge current $\textcircled{3}$, A ...
 $I_2 t$ for fusing (for times ≥ 8.3 ms)
A² sec. ...
Forward voltage drop at $I_{TM} = 500$ A
and $T_J = 25^\circ\text{C}$, V ...
Min. repetitive di/dt $\textcircled{1}$ $\textcircled{4}$ $\textcircled{5}$, A/ μ sec ...

Symbol

$I_{T(rms)}$
 $I_{T(av)}$
 I_{TSM}
 $I_2 t$
 V_{TM}
di/dt

T507_80

125
80
1400
8150
3.2
150

Switching

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

Max. turn-off time, $I_T = 50$ A,
 $T_J = 125^\circ\text{C}$, di/dt = 5
A/ μ sec, reapplied dv/dt =
20V/ μ sec linear to 0.8 V_{DRM} , μ sec $\textcircled{1}$ $\textcircled{2}$...
Typ. turn-on time, $I_T = 100$ A,
 $V_D = 100$ V $\textcircled{2}$, μ sec ...
Min. critical dv/dt, exponential to V_{DRM} ,
 $T_J = 125^\circ\text{C}$, V/ μ sec $\textcircled{3}$ $\textcircled{4}$...
Min. di/dt non-repetitive,
A/ μ sec $\textcircled{1}$ $\textcircled{2}$ $\textcircled{5}$...

Symbol

t_q
 t_{on}
dv/dt
di/dt

10 to 50
3.5
200
800

Gate

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

Gate current to trigger at $V_D = 12$ V, mA ...
Gate voltage to trigger at $V_D = 12$ V, V ...
Non-triggering gate voltage, $T_J = 125^\circ\text{C}$,
and rated V_{DRM} , V ...
Peak forward gate current, A ...
Peak reverse gate voltage, V ...
Peak gate power, Watts ...
Average gate power, Watts ...

Symbol

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

150
3
0.15
4
5
16
3

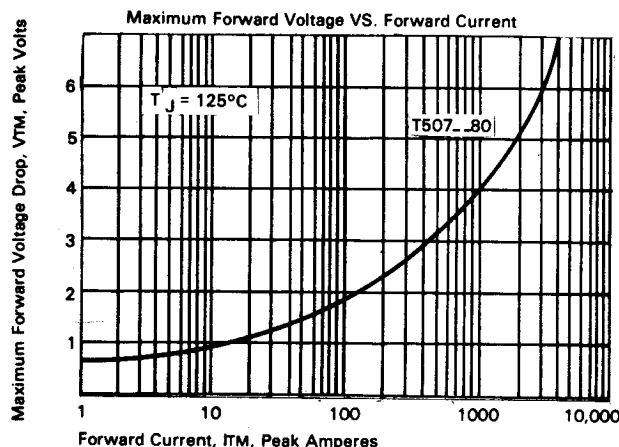
Thermal and Mechanical

Min., Max. oper. junction temp., $^\circ\text{C}$...
Min., Max. storage temp., $^\circ\text{C}$...
Max. mounting torque, in lb. $\textcircled{1}$...
Max. Thermal resistance $\textcircled{1}$
Junction to case, $^\circ\text{C}/\text{Watt}$...
Case to sink, lubricated, $^\circ\text{C}/\text{Watt}$...

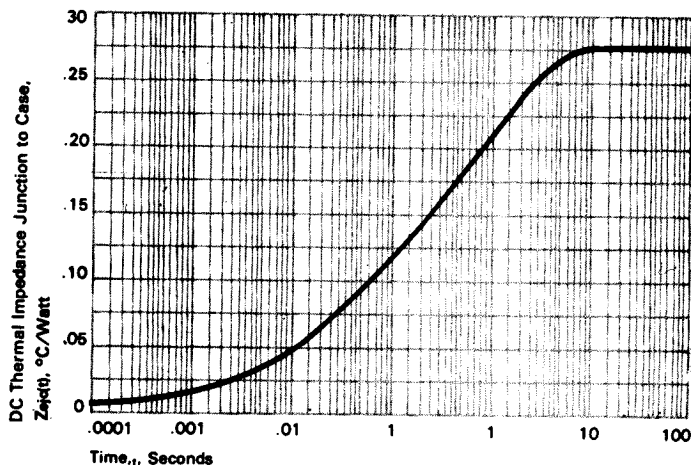
Symbol

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

-40 to +125
-40 to +150
130
.28
.12



Transient Thermal Impedance VS. Time

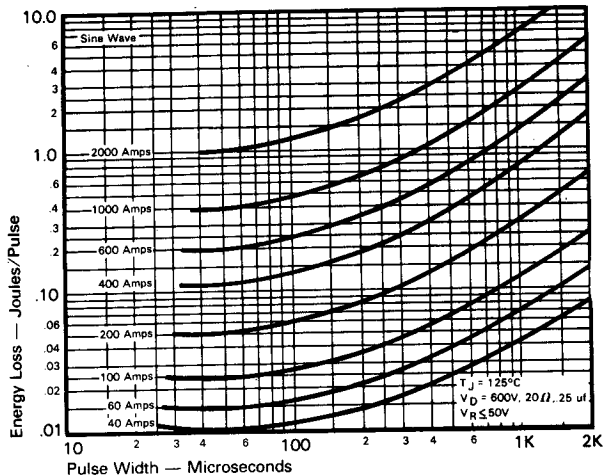


- $\textcircled{1}$ Consult recommended mounting procedures.
- $\textcircled{2}$ Applies for zero or negative gate bias.
- $\textcircled{3}$ Per JEDEC RS-397, 5.2.2.1.
- $\textcircled{4}$ With recommended gate drive.
- $\textcircled{5}$ Higher dv/dt ratings available, consult factory.
- $\textcircled{6}$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

Fast Switching SCR T507_80

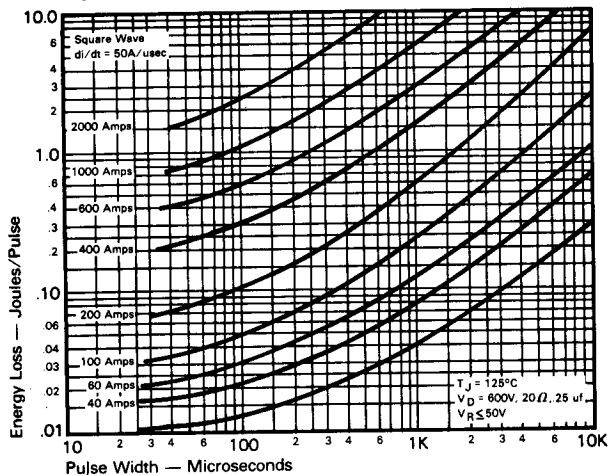
80A Avg.
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10-50 μ s

Sinusoidal Current Data

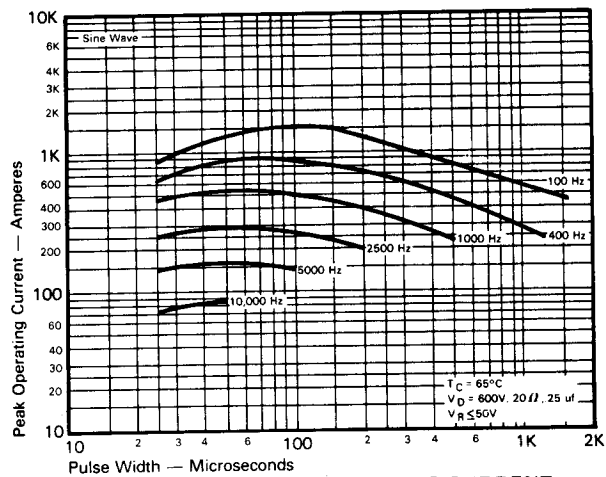


ENERGY PER PULSE FOR SINUSOIDAL PULSES

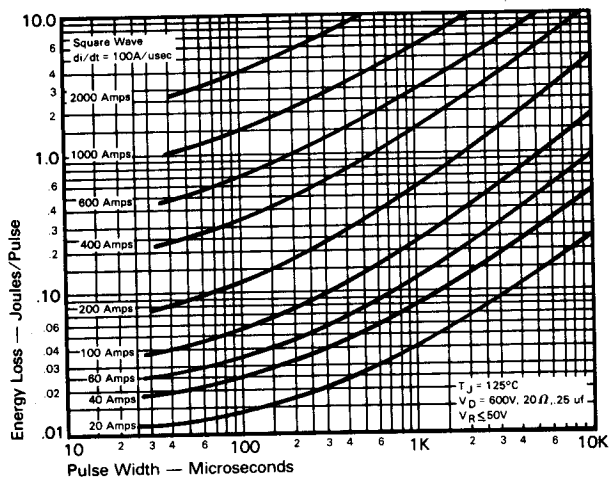
Trapezoidal Wave Current Data



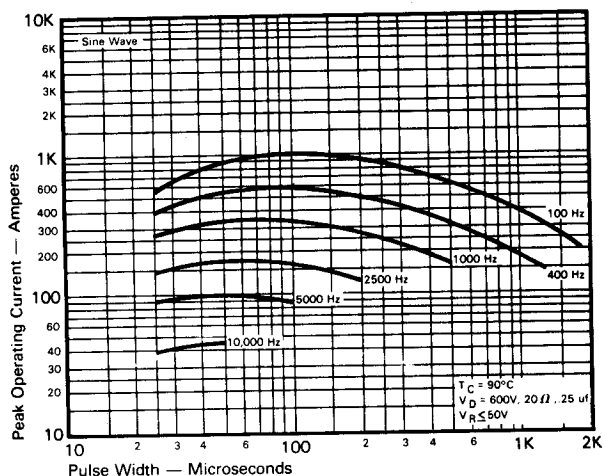
ENERGY PER PULSE FOR TRAPEZOIDAL PULSES
($di/dt = 50\text{A/usec}$)



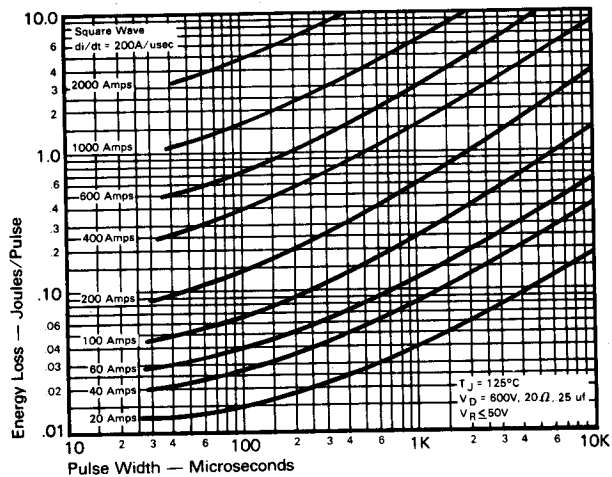
MAXIMUM ALLOWABLE PEAK ON-STATE CURRENT
vs. PULSE WIDTH ($T_C = 65^\circ\text{C}$)



ENERGY PER PULSE FOR TRAPEZOIDAL PULSES
($di/dt = 100\text{A/usec}$)



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

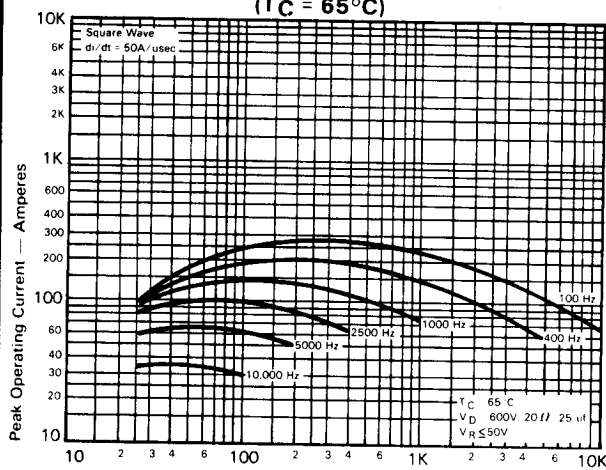


ENERGY PER PULSE FOR TRAPEZOIDAL PULSES
($di/dt = 200\text{A/usec}$)

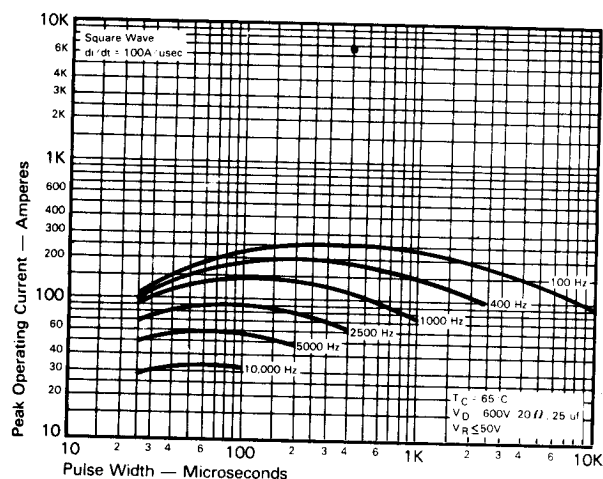
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SCR
T507_80

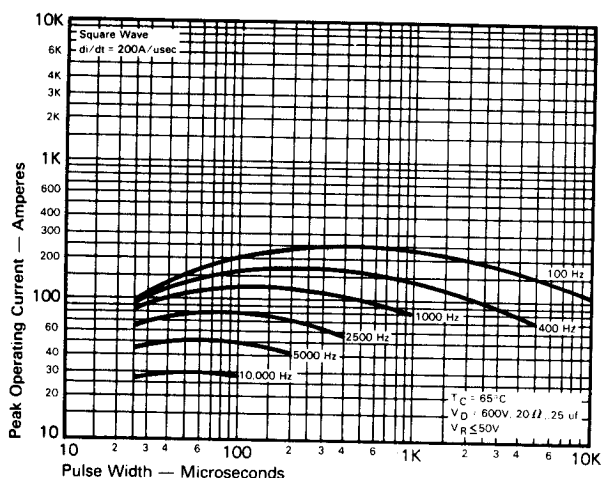
Trapezoidal Wave Current Data ($T_C = 65^\circ\text{C}$)



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

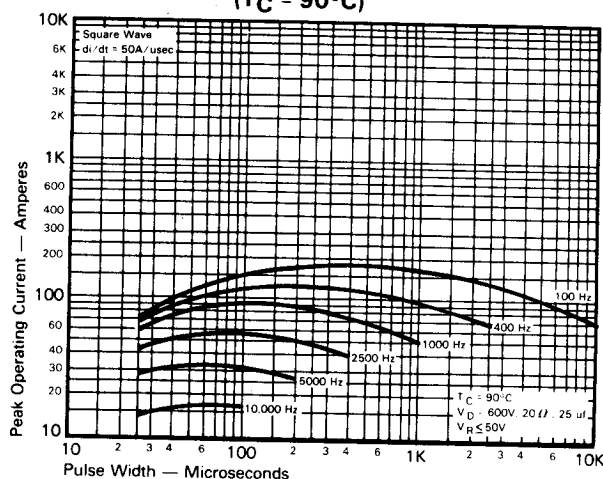


MAXIMUM ALLOWABLE PEAK ON-STATE CURRENT vs. PULSE WIDTH ($dI/dt = 100\text{A}/\mu\text{sec}$)

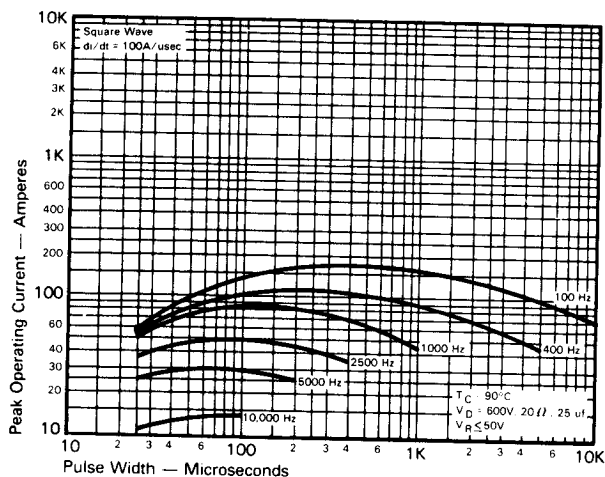


MAXIMUM ALLOWABLE PEAK ON-STATE CURRENT vs. PULSE WIDTH ($dI/dt = 200\text{A}/\mu\text{sec}$)

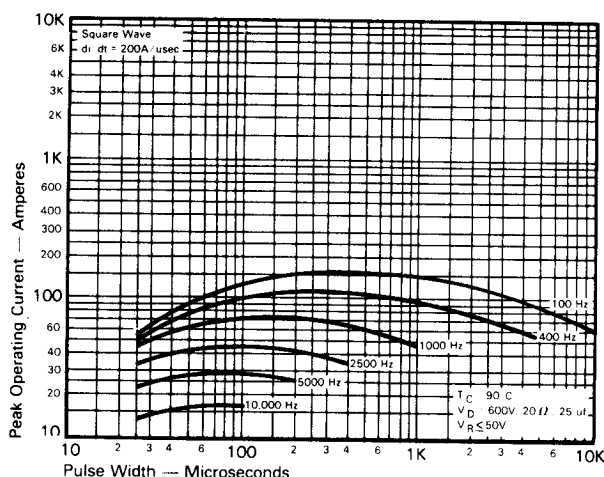
Trapezoidal Wave Current Data ($T_C = 90^\circ\text{C}$)



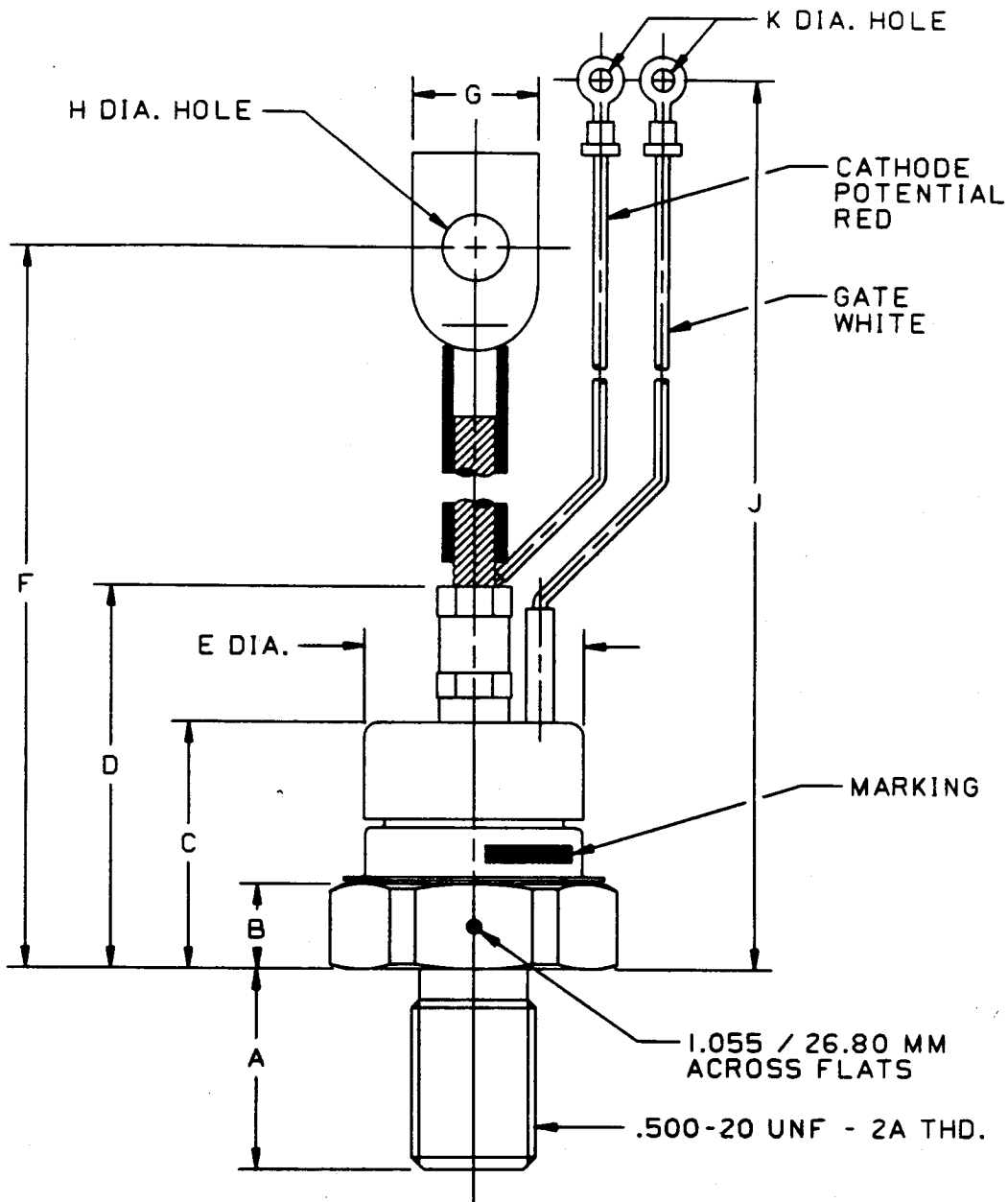
MAXIMUM ALLOWABLE PEAK ON-STATE CURRENT vs. PULSE WIDTH ($dI/dt = 50\text{A}/\mu\text{sec}$)



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



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



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