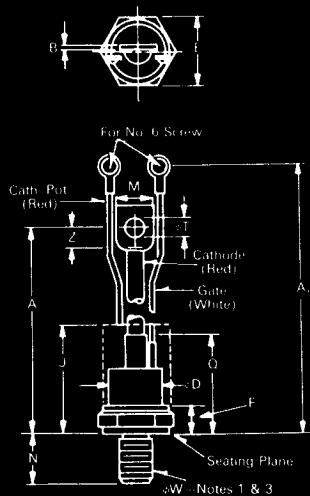


Fast Switching SCR T507_80

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).

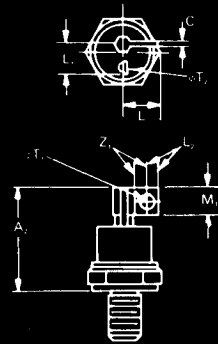
1. Complete threads to extend to within 2½ threads of seating plane.

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

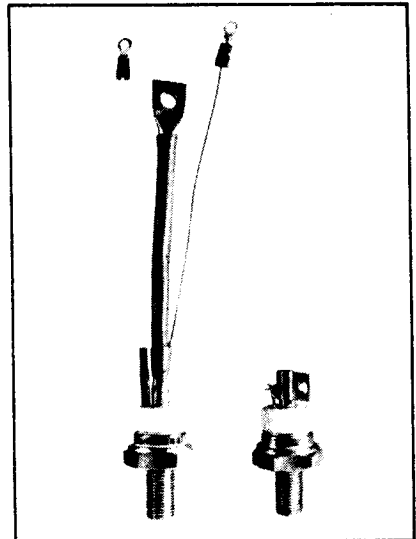


Conforms to TO-83 Outline

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 (μ sec)	Code	I _{GT} (ma)	Code	Case	Code
T507	100	01	80	80	10	8	150	4	TO-94	AQ
	200	02			15					
	300	03			20					
	400	04			25					
	500	05			30					
	600	06			40					
	700	07			50				TO-83	AS
	800	08			70					
	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

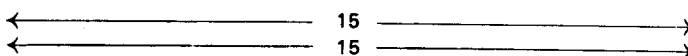
Symbol

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

Symbol

T507_80

RMS forward current, A ...
Ave. forward current, A ...
One-half cycle surge current $\textcircled{3}$, A ...
 I_{2t} for fusing (for times ≥ 8.3 ms)
A 2 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 ...

$I_{T(rms)}$
 $I_{T(av)}$
 I_{TSM}
 I_{2t}
 V_{TM}
di/dt

125
80
1400
8150
3.2
150

Switching

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

Symbol

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 $\textcircled{1}$ $\textcircled{2}$ $\textcircled{5}$...

t_q
 t_{on}
dv/dt
di/dt

10 to 50
3.5
200
800

Gate

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

Symbol

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 ...

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

150
3
0.15
4
5
16
3

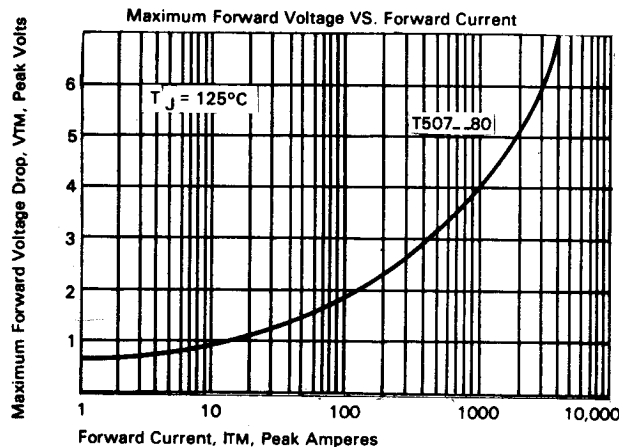
Thermal and Mechanical

Symbol

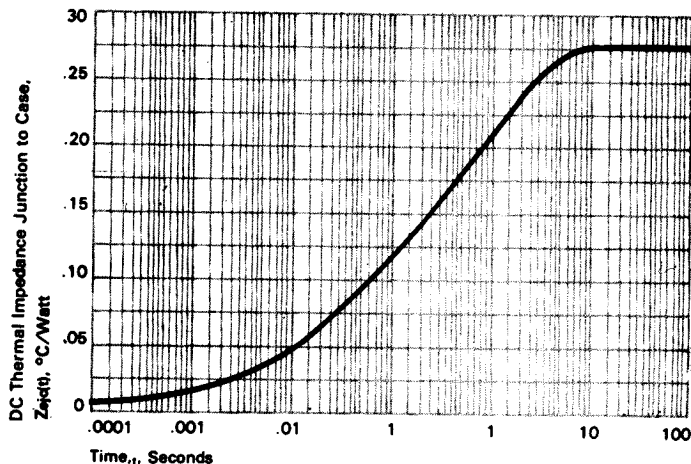
Min., Max. oper. junction temp., $^\circ\text{C}$...
Min., Max. storage temp., $^\circ\text{C}$...
Max. mounting torque, in lb. $\textcircled{1}$...
Max. Thermal resistance $\textcircled{1}$
Junction to case, $^\circ\text{C}/\text{Watt}$...
Case to sink, lubricated, $^\circ\text{C}/\text{Watt}$...

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

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



Transient Thermal Impedance VS. Time

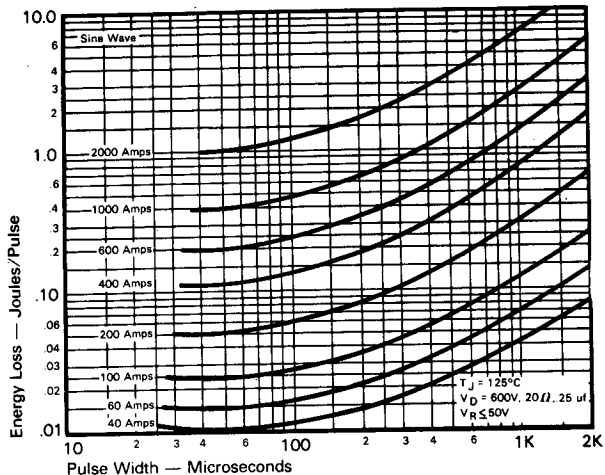


- $\textcircled{1}$ Consult recommended mounting procedures.
- $\textcircled{2}$ Applies for zero or negative gate bias.
- $\textcircled{3}$ Per JEDEC RS-397, 5.2.2.1.
- $\textcircled{4}$ With recommended gate drive.
- $\textcircled{5}$ Higher dv/dt ratings available, consult factory.
- $\textcircled{6}$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

Fast Switching SCR T507_80

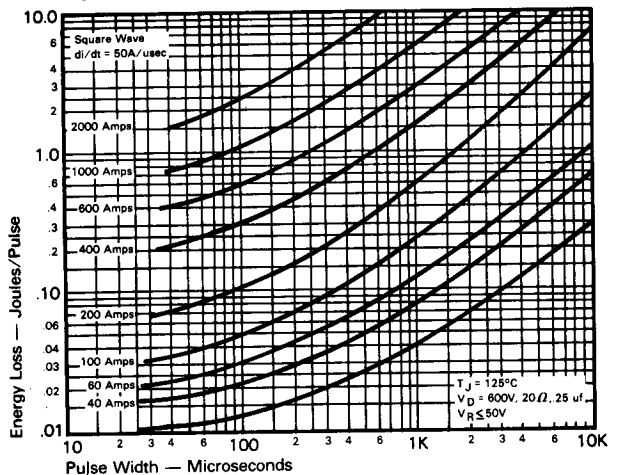
80A Avg.
(125 RMS)
Up to 1400 Volts
10-50 μ s

Sinusoidal Current Data

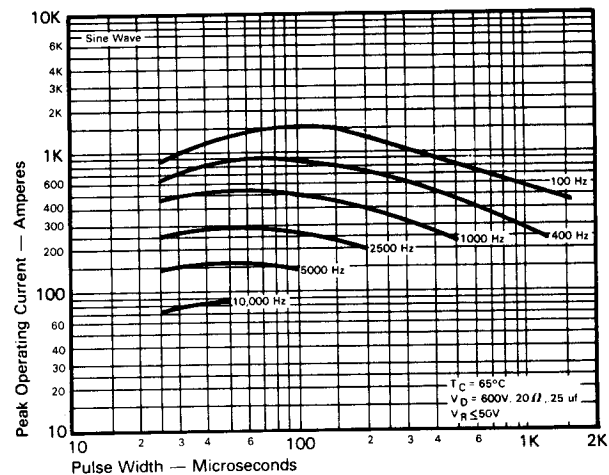


ENERGY PER PULSE FOR SINUSOIDAL PULSES

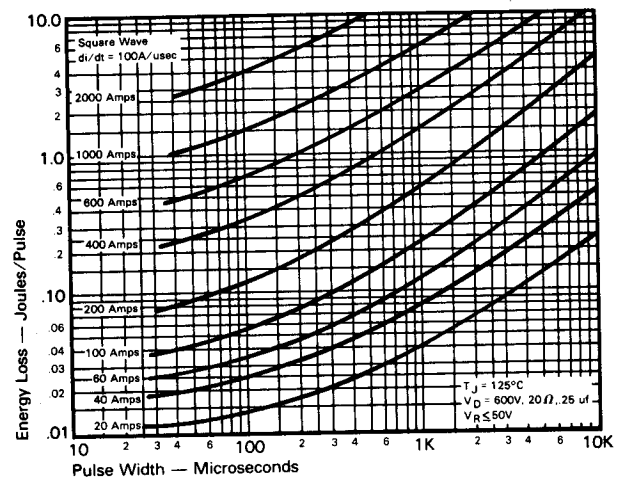
Trapezoidal Wave Current Data



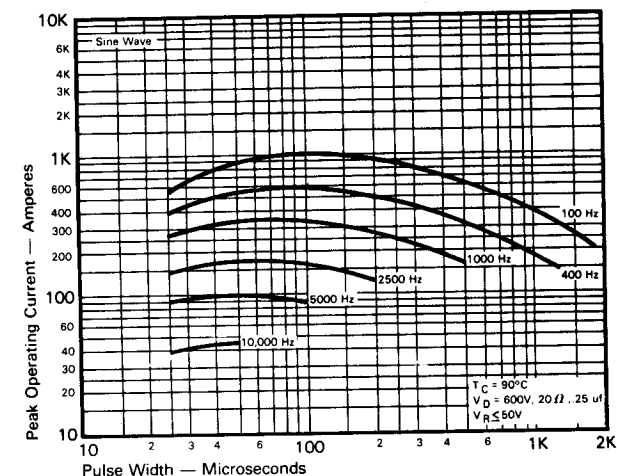
ENERGY PER PULSE FOR TRAPEZOIDAL PULSES
($di/dt = 50\text{A}/\mu\text{sec}$)



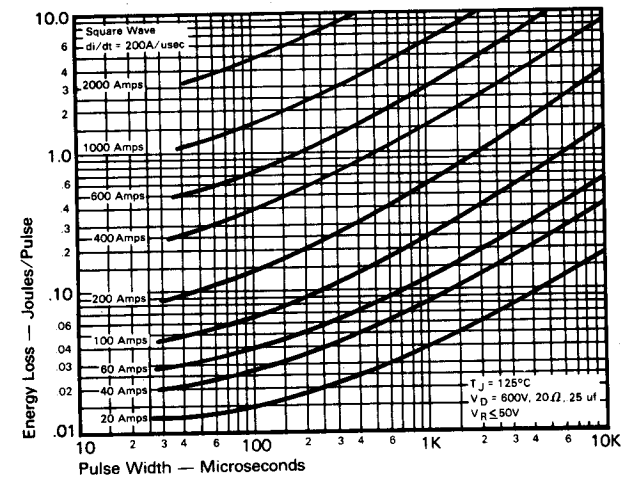
MAXIMUM ALLOWABLE PEAK ON-STATE CURRENT
vs. PULSE WIDTH ($T_C = 65^\circ\text{C}$)



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



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

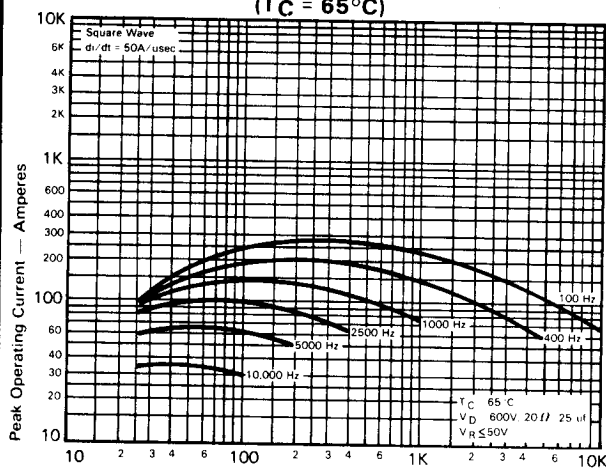


ENERGY PER PULSE FOR TRAPEZOIDAL PULSES
($di/dt = 200\text{A}/\mu\text{sec}$)

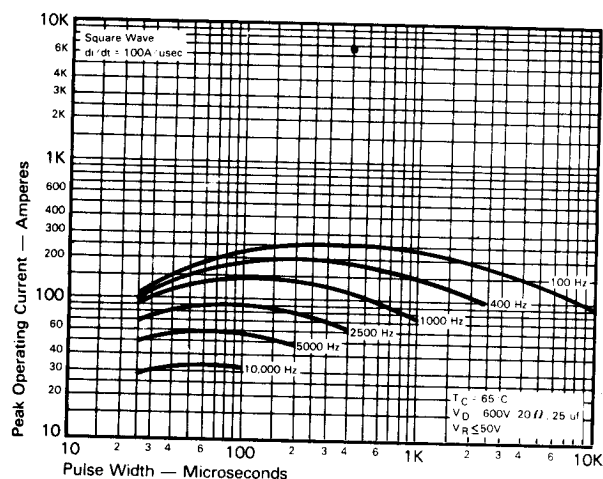
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Fast Switching
SCR
T507_80

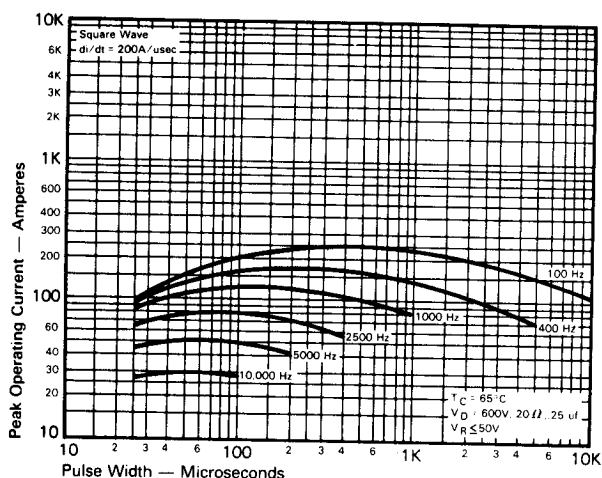
Trapezoidal Wave Current Data ($T_C = 65^\circ\text{C}$)



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

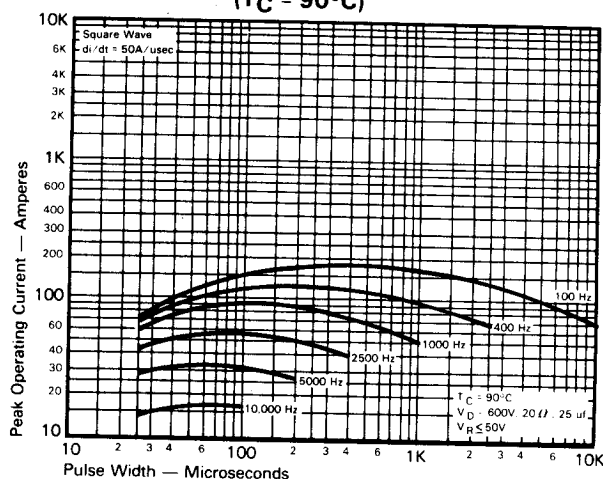


MAXIMUM ALLOWABLE PEAK ON-STATE CURRENT vs. PULSE WIDTH ($di/dt = 100\text{A}/\mu\text{sec}$)

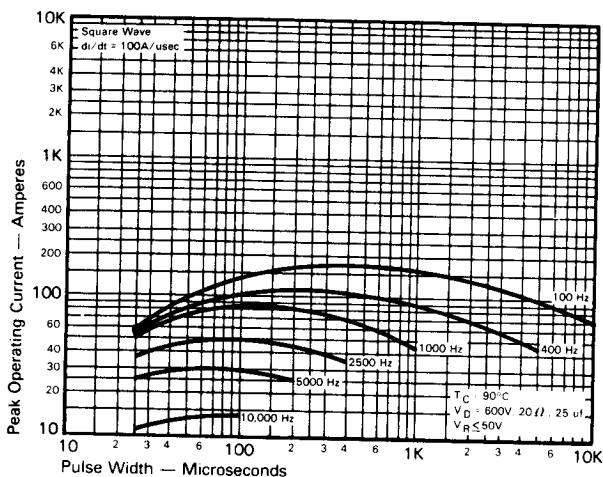


MAXIMUM ALLOWABLE PEAK ON-STATE CURRENT vs. PULSE WIDTH ($di/dt = 200\text{A}/\mu\text{sec}$)

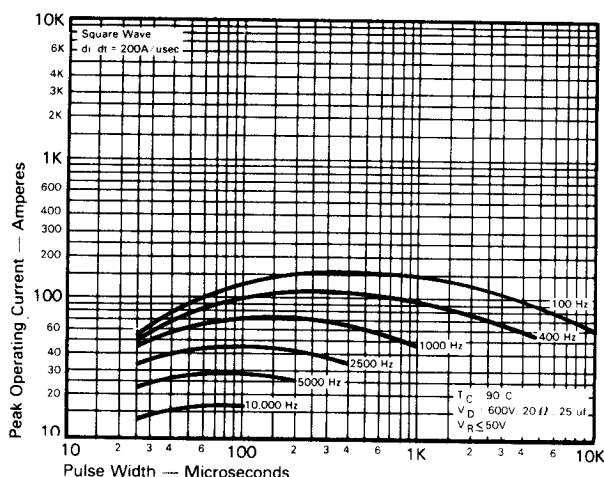
Trapezoidal Wave Current Data ($T_C = 90^\circ\text{C}$)



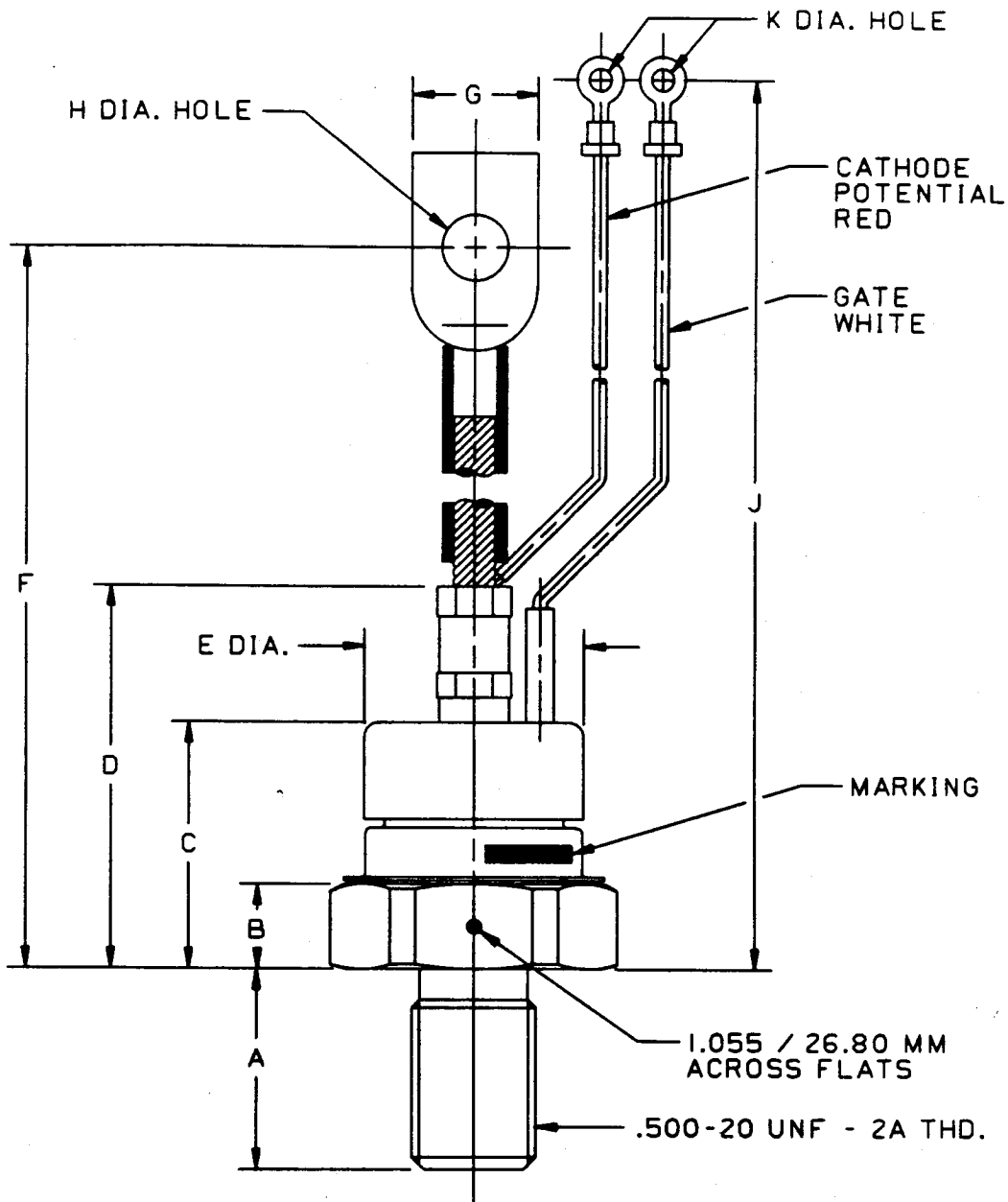
MAXIMUM ALLOWABLE PEAK ON-STATE CURRENT vs. PULSE WIDTH ($di/dt = 50\text{A}/\mu\text{sec}$)



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