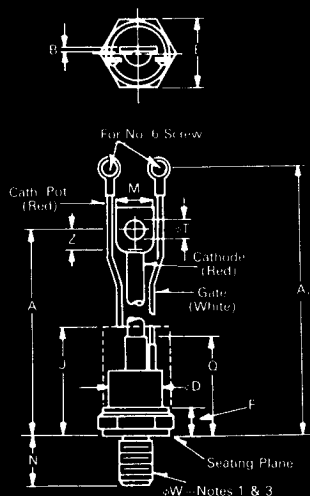


Fast Switching SCR T507_80

**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.

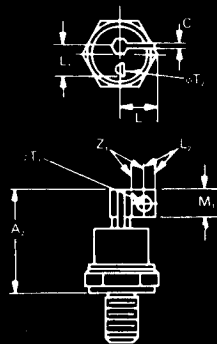
3. Pitch diameter of $\frac{1}{2}$ -20 UNF-2A

(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

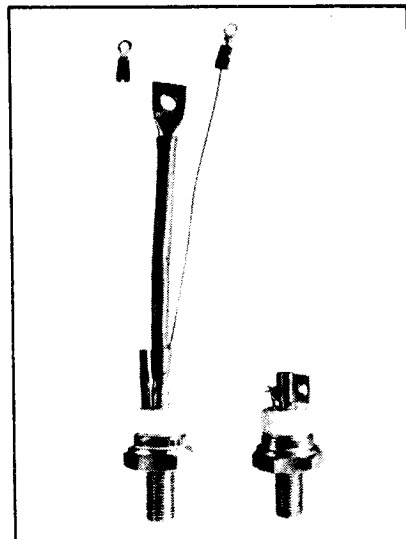


Conforms to TO-83 Outline

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	8				
	500	05			30	5			TO-83	AB
	600	06			40	4				
	700	07			50	3				
	800	08			70	C				
	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}

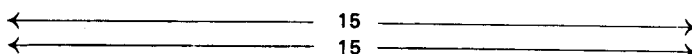
100	200	300	400	500	600	700	800	900	1000	1100	1200	1400
100	200	300	400	500	600	700	800	900	1000	1100	1200	1400
200	300	400	500	600	700	800	900	1000	1100	1200	1300	1500

Forward leakage current, mA peak

I_{DRM}

Reverse leakage current, mA peak

I_{RRM}



Current

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

Symbol

T507_80

RMS forward current, A

$I_{T(rms)}$

125

Ave. forward current, A

$I_{T(av)}$

80

One-half cycle surge current $\textcircled{3}$, A ..

I_{TSM}

1400

I^2t for fusing (for times ≥ 8.3 ms)
A² sec.

I^2t

8150

Forward voltage drop at $I_{TM} = 500$ A
and $T_J = 25^\circ\text{C}$, V

V_{TM}

3.2

Min. repetitive di/dt $\textcircled{1}$ $\textcircled{4}$, A/ μ sec ...

di/dt

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 $\textcircled{1}$ $\textcircled{4}$

t_q

10 to 50

Typ. turn-on time, $I_T = 100$ A,
 $V_D = 100$ V $\textcircled{4}$, μ sec

t_{on}

3.5

Min. critical dv/dt , exponential to V_{DRM} ,
 $T_J = 125^\circ\text{C}$, V/ μ sec $\textcircled{2}$ $\textcircled{4}$

dv/dt

200

Min. di/dt non-repetitive,
A/ μ sec $\textcircled{1}$ $\textcircled{4}$

di/dt

800

Gate

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

Symbol

Gate current to trigger at $V_D = 12$ V, mA

I_{GT}

150

Gate voltage to trigger at $V_D = 12$ V, V

V_{GT}

3

Non-triggering gate voltage, $T_J = 125^\circ\text{C}$,
and rated V_{DRM} , V

V_{GDM}

0.15

Peak forward gate current, A

I_{GTM}

4

Peak reverse gate voltage, V

V_{GRM}

5

Peak gate power, Watts

P_{GM}

16

Average gate power, Watts

$P_{G(av)}$

3

Thermal and Mechanical

Symbol

Min., Max. oper. junction temp., $^\circ\text{C}$

T_J

-40 to +125

Min., Max. storage temp., $^\circ\text{C}$

T_{stg}

-40 to +150

Max. mounting torque, in lb. $\textcircled{1}$

130

Max. Thermal resistance $\textcircled{1}$

$R_{\theta JC}$

.28

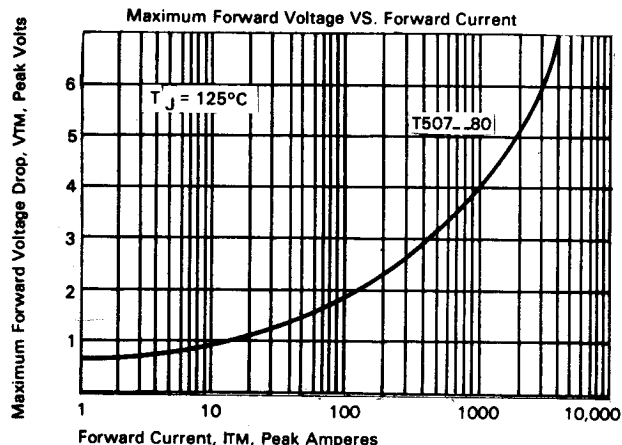
Junction to case, $^\circ\text{C}/\text{Watt}$

$R_{\theta CS}$

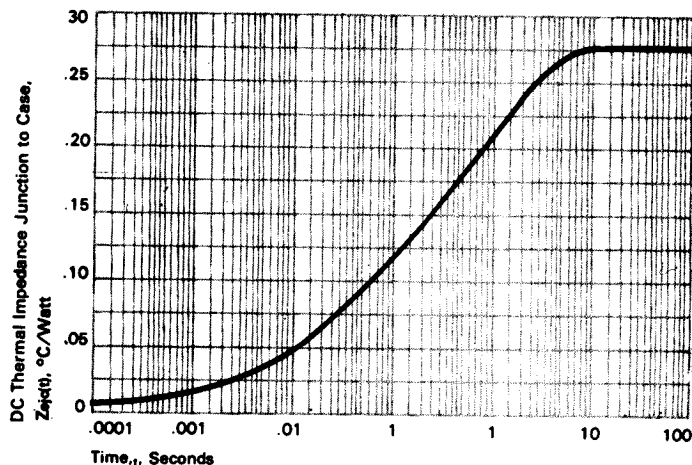
.12

Case to sink, lubricated, $^\circ\text{C}/\text{Watt}$

- $\textcircled{1}$ 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.



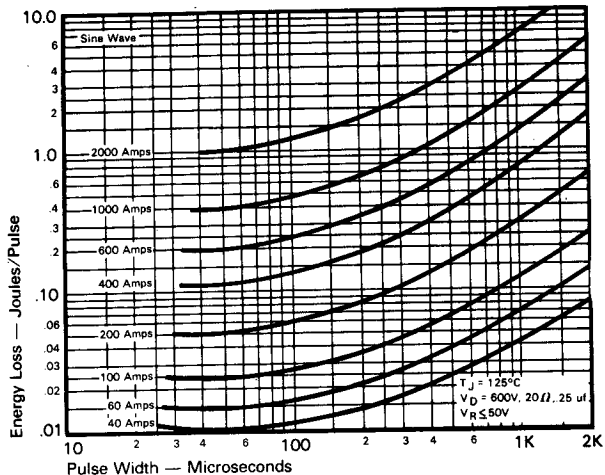
Transient Thermal Impedance VS. Time



Fast Switching SCR T507_80

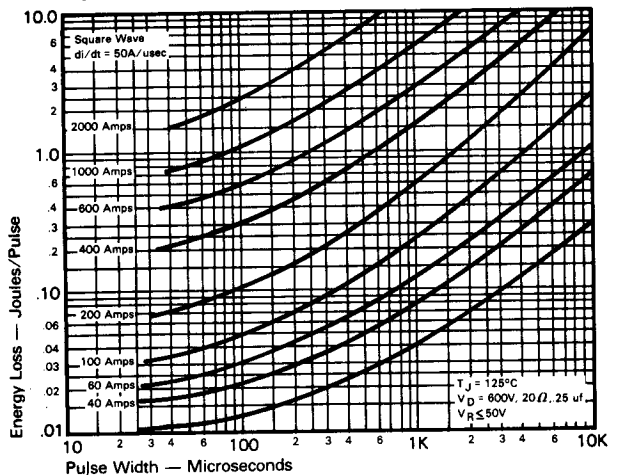
80A Avg.
(125 RMS)
Up to 1400 Volts
10-50 μ s

Sinusoidal Current Data

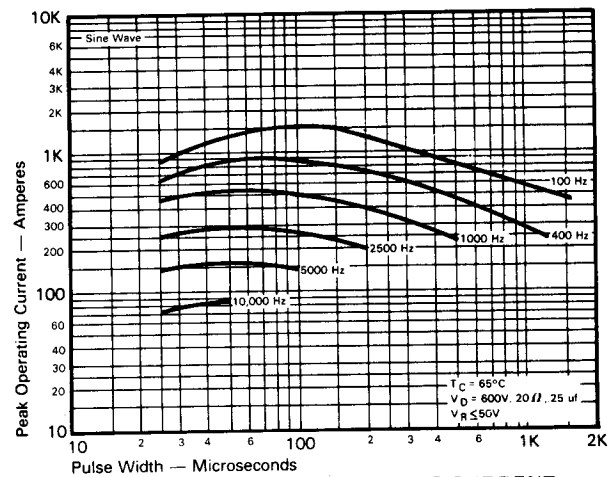


ENERGY PER PULSE FOR SINUSOIDAL PULSES

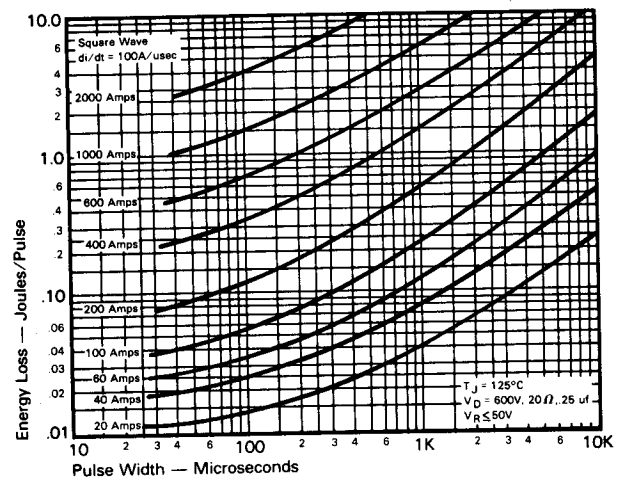
Trapezoidal Wave Current Data



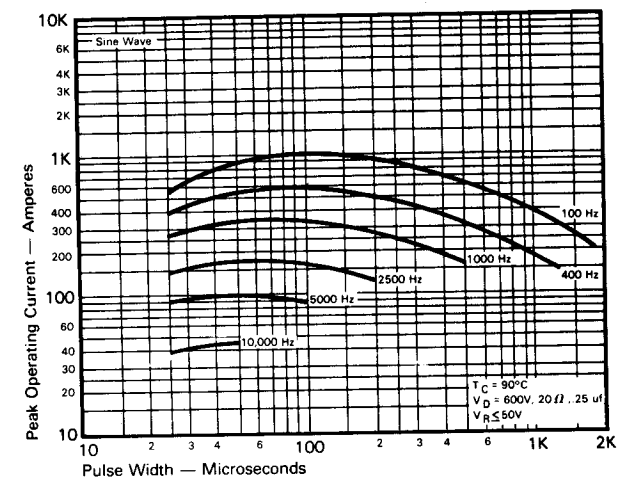
ENERGY PER PULSE FOR TRAPEZOIDAL PULSES
($di/dt = 50\text{A/usec}$)



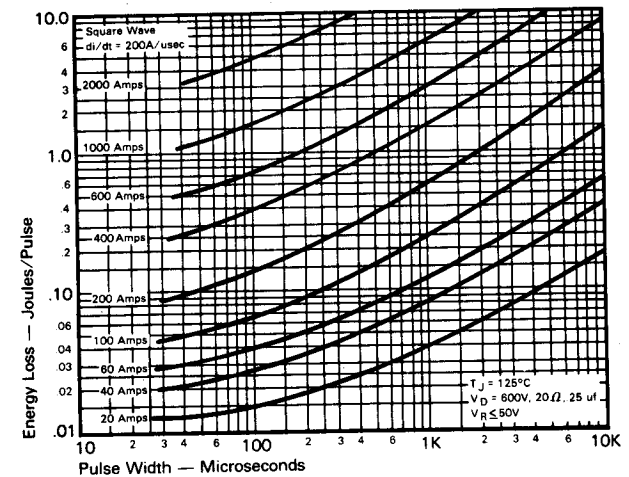
MAXIMUM ALLOWABLE PEAK ON-STATE CURRENT
vs. PULSE WIDTH ($T_C = 65^\circ\text{C}$)



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



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

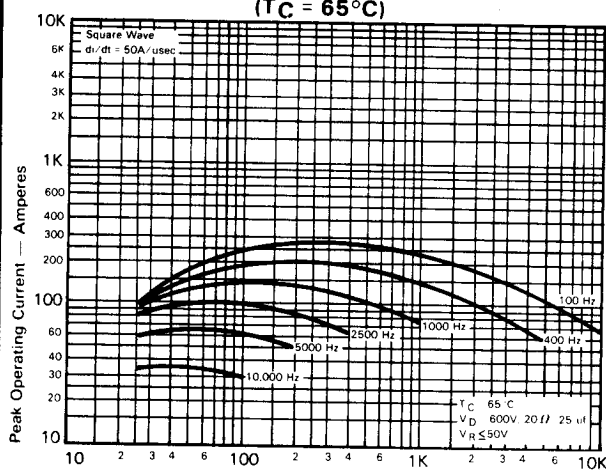


ENERGY PER PULSE FOR TRAPEZOIDAL PULSES
($di/dt = 200\text{A/usec}$)

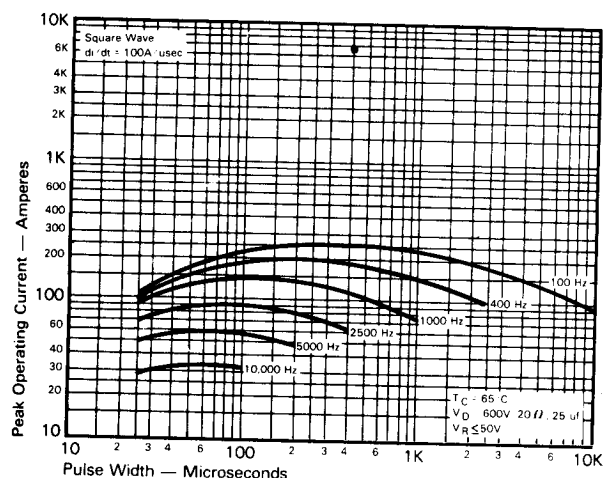
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SCR
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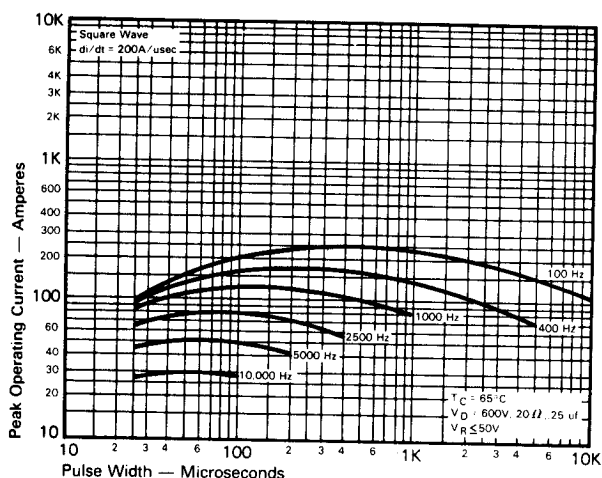
Trapezoidal Wave Current Data ($T_C = 65^\circ\text{C}$)



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

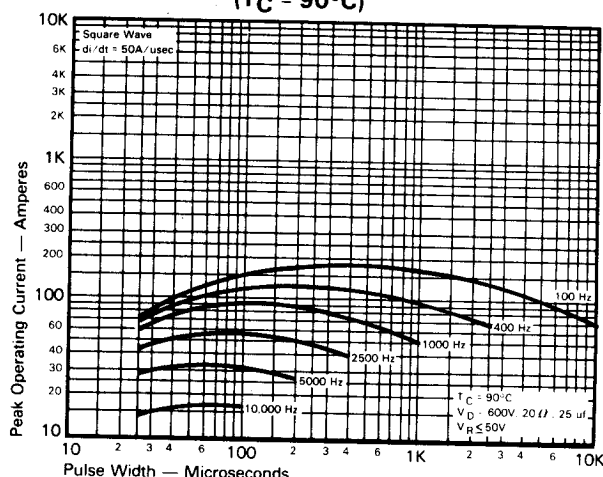


MAXIMUM ALLOWABLE PEAK ON-STATE CURRENT vs. PULSE WIDTH ($di/dt = 100\text{A/usec}$)

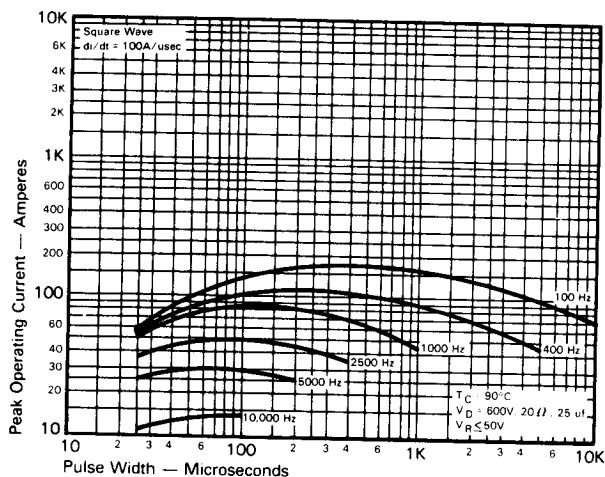


MAXIMUM ALLOWABLE PEAK ON-STATE CURRENT vs. PULSE WIDTH ($di/dt = 200\text{A/usec}$)

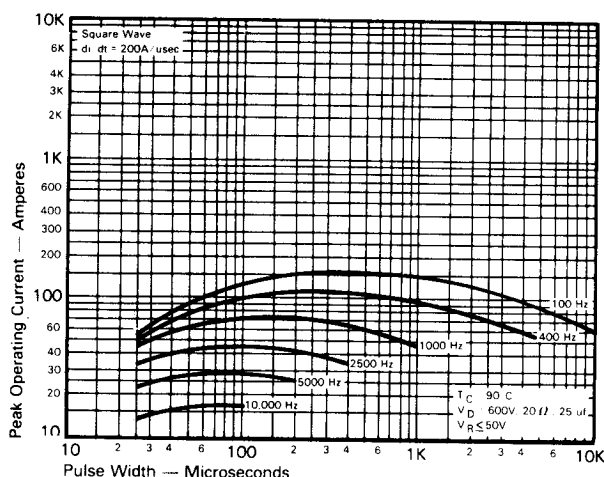
Trapezoidal Wave Current Data ($T_C = 90^\circ\text{C}$)



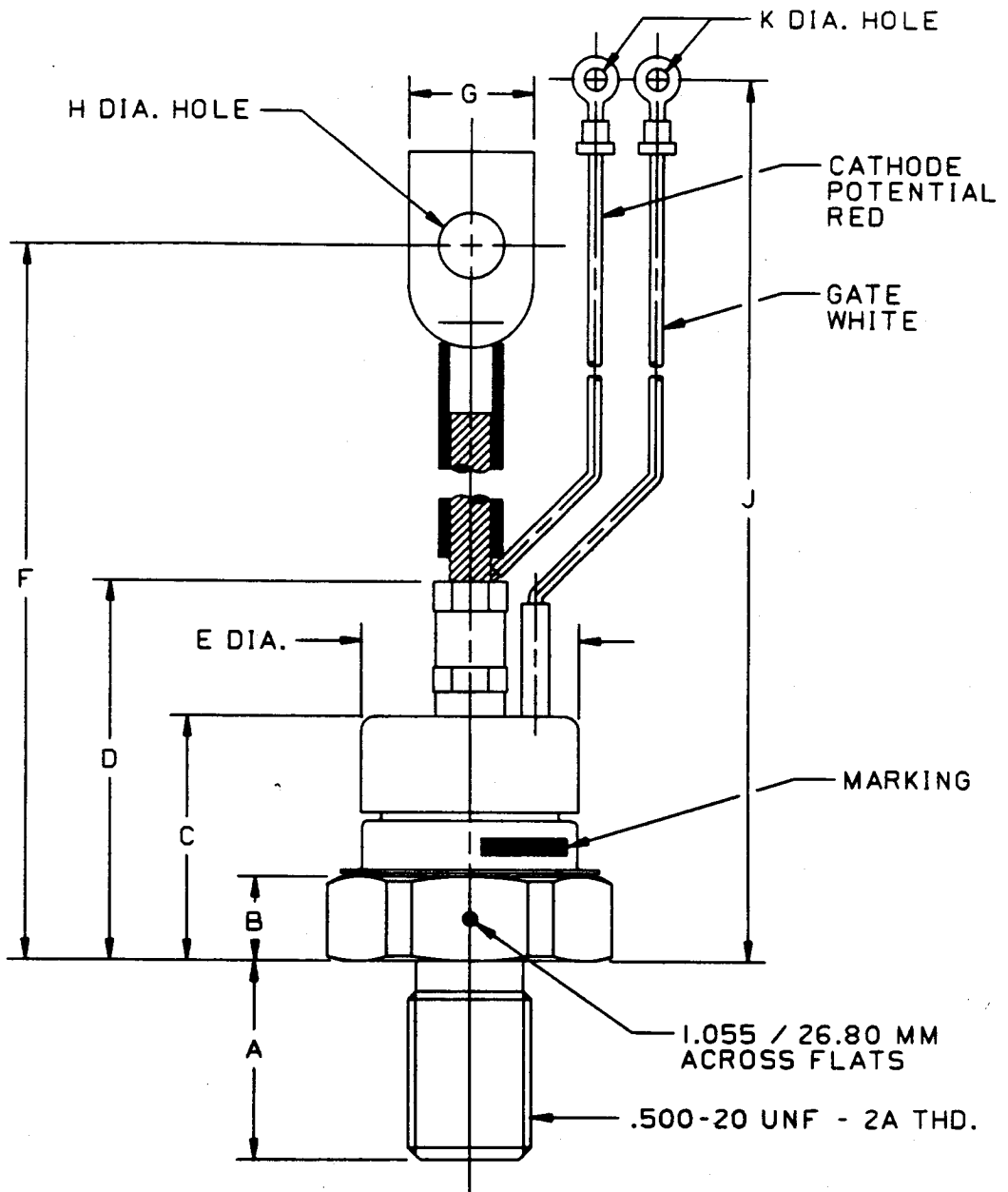
MAXIMUM ALLOWABLE PEAK ON-STATE CURRENT vs. PULSE WIDTH ($di/dt = 50\text{A/usec}$)



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



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



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