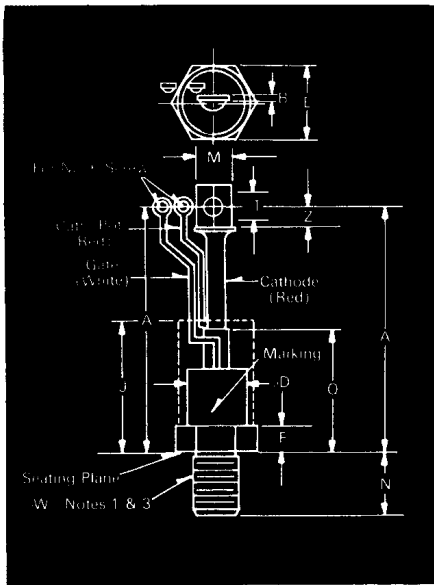


# Fast Switching SCR T707\_28

275A Avg.  
(430 RMS)  
Up to 1000 Volts  
10-50  $\mu$ s



T70 Outline

### Features:

- Center fired di/dynamic gate
- 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
- Westinghouse Lifetime Guarantee

Symbol	Inches		Millimeters	
	Min.	Max.	Min.	Max.
A	9.76	10.00	247.90	254.00
A <sub>1</sub>	10.18	10.42	258.57	264.67
B	.063	.172	1.60	4.37
$\phi$ D		1.490		37.85
E	1.620	1.750	41.15	44.45
F	.430	.810	10.92	20.57
J	4.000		101.60	
M	.530	.755	13.46	19.18
N	1.04	1.08	26.42	27.43
Q		3.100		78.74
$\phi$ T	.330	.350	8.38	8.89
Z	.440		11.18	
$\phi$ W	3/16 UNF-2A			

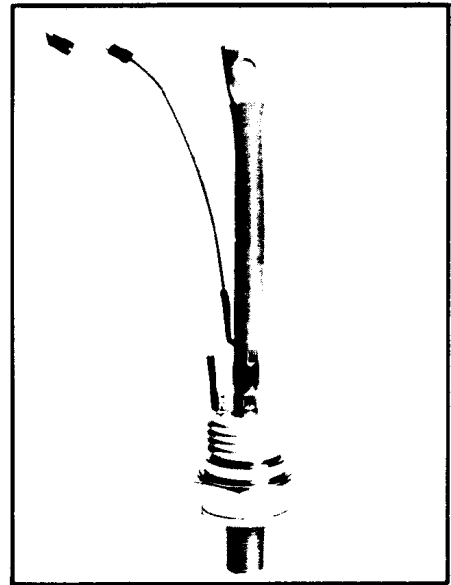
Creep Distance—1.76 in. min. (44.91 mm).  
Strike Distance—.81 in. min. (20.70 mm).  
(In accordance with NEMA standards.)  
Finish—Nickel Plate.

Approx. Weight—16 oz. (454 g).

1. Complete threads to extend to within 2 1/2 threads of seating plane.
2. Angular orientation of terminals is undefined.
3. Pitch diameter of 3/16 UNF-2A (coated) threads (ASA B1.1-1960).
4. Dimension "J" denotes seated height with leads bent at right angles.

### Applications:

- Inverters for UPS
- Induction heating
- AC motor drives
- Cycloconverters
- Choppers
- Crowbar



### Ordering Information

Type	Voltage		Current		Turn-off		Gate Current		Leads	
	V <sub>DRM</sub> and V <sub>R</sub> RM (V)	Code	I <sub>T(av)</sub> (A)	Code	t <sub>q</sub> $\mu$ sec	Code	I <sub>GT</sub> (ma)	Code	Case	Code
T707	100	01	275	28	10	5	150	4	T70	BY
	200	02			15	7				
	300	03			20	5				
	400	04			25	5				
	500	05			30	5				
	600	06			40	4				
	700	07			50	3				
	800	08								
	1000	10								

### Example

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

Type T 707 rated at 275A average with V<sub>DRM</sub> = 600V.

I<sub>GT</sub> = 150 ma, t<sub>q</sub> = 15  $\mu$ sec and standard flex lead — order as

Type	Voltage	Current	Turn Off	Gate Current	Leads
T 7 0 7	0 6	2 8	7	4	B Y

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**Voltage**

Blocking State Maximums<sup>①</sup> ( $T_J = 125^\circ\text{C}$ )

Repetitive peak forward blocking voltage, V ...  $V_{DRM}$   
 Repetitive peak reverse voltage, V ...  $V_{RRM}$   
 Non-repetitive transient peak reverse voltage,  
 $t \leq 5.0$  msec, V ...  $V_{RSM}$   
 Forward leakage current, mA peak ...  $I_{DRM}$   
 Reverse leakage current, mA peak ...  $I_{RRM}$

Symbol

100	200	300	400	500	600	700	800	1000
100	200	300	400	500	600	700	800	1000
200	300	400	500	600	700	800	900	1100
←				30	→			
←				30	→			

**Current**

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

RMS forward current, A ...  $I_{T(rms)}$   
 Ave. forward current, A ...  $I_{T(av)}$   
 One-half cycle surge current<sup>②</sup>, A ...  $I_{TSM}$   
 $I^2t$  for fusing (for times  $\geq 8.3$  ms)  
 A<sup>2</sup> sec. ...  $I^2t$   
 Forward voltage drop at  $I_{TM} = 625$  A  
 and  $T_J = 25^\circ\text{C}$ , V ...  $V_{TM}$   
 Min. repetitive di/dt, A/ $\mu$ sec ...  $di/dt$

Symbol

T707\_28

430  
275  
7000  
205000  
1.50  
300

**Switching**

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

Max. turn-off time,  $I_T = 400$  A,  
 $T_J = 125^\circ\text{C}$ ,  $di_R/dt = 25$   
 A/ $\mu$ sec, reapplied  $dv/dt =$   
 $20$  V/ $\mu$ sec. linear to .8V DRM,  $\mu$ sec<sup>③④</sup> ...  $t_q$   
 Typ. turn-on time,  $I_T = 1000$  A,  
 $V_D = 300$  V<sup>⑤</sup>,  $\mu$ sec ...  $t_{on}$   
 Min. critical  $dv/dt$ , exponential to  $V_{DRM}$ ,  
 $T_J = 125^\circ\text{C}$ , V/ $\mu$ sec<sup>⑥⑦</sup> ...  $dv/dt$   
 Min. di/dt, non-repetitive,<sup>①④⑧</sup>  
 A/ $\mu$ sec ...  $di/dt$

Symbol

10 to 50  
3.0  
300  
800

**Gate**

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

Gate current to trigger at  $V_D = 12$  V, mA ...  $I_{GT}$   
 Gate voltage to trigger at  $V_D = 12$  V, 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 ...  $P_{G(av)}$

Symbol

150  
3  
0.15  
4  
5  
16  
3

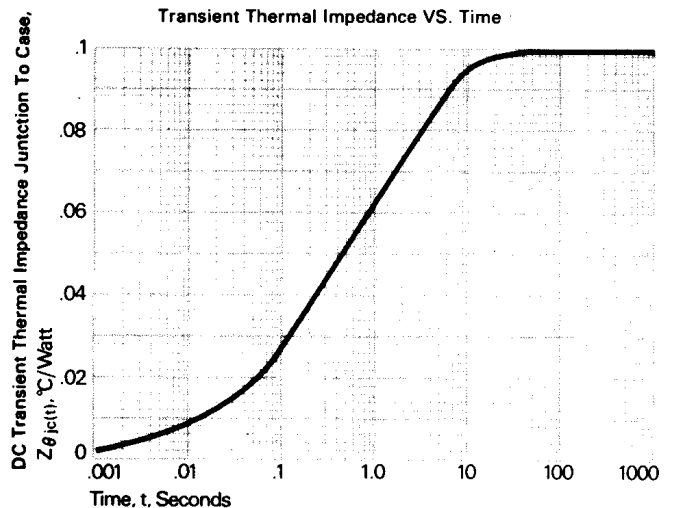
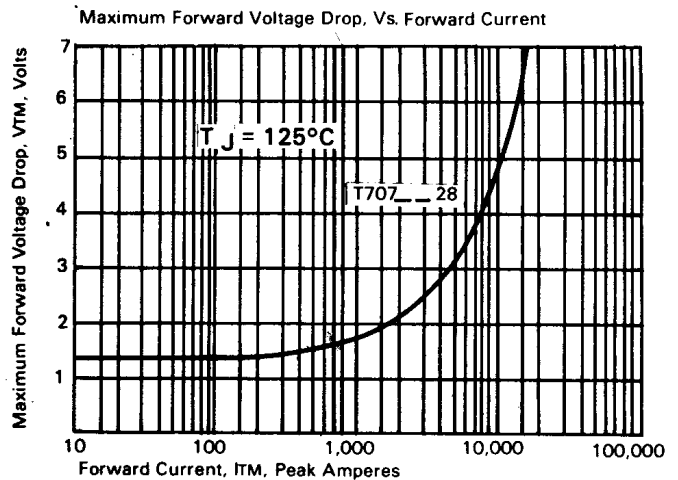
**Thermal and Mechanical**

Min., Max. oper. junction temp.,  $^\circ\text{C}$  ...  $T_J$   
 Min., Max. storage temp.,  $^\circ\text{C}$  ...  $T_{stg}$   
 Max. mounting torque, in lb. <sup>⑨</sup> ... 360  
 Max. Thermal resistance <sup>⑩</sup>  
 Junction to case,  $^\circ\text{C}/\text{Watt}$  ...  $R_{\theta JC}$   
 Case to sink, lubricated,  $^\circ\text{C}/\text{Watt}$  ...  $R_{\theta CS}$

Symbol

-40 to +125  
-40 to +150  
360  
.10  
.05

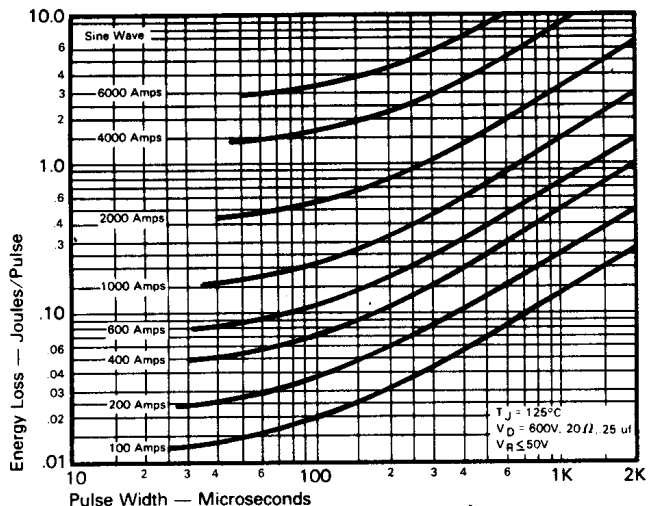
- ① Consult recommended mounting procedures.
- ② Applies for zero or negative gate bias.
- ③ Per JEDEC RS-397, 5.2.2.1.
- ④ With recommended gate drive.
- ⑤ Higher  $dv/dt$  ratings available, consult factory.
- ⑥ Per JEDEC standard RS-397, 5.2.2.6.
- ⑦ For operation with antiparallel diode, consult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



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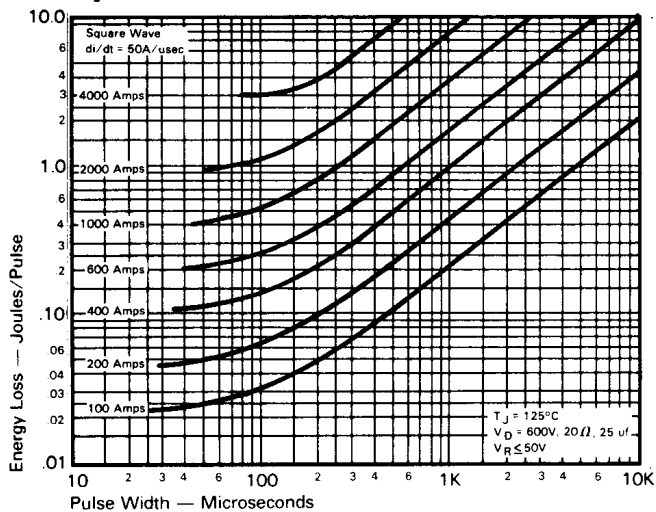
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## Sinusoidal Current Data

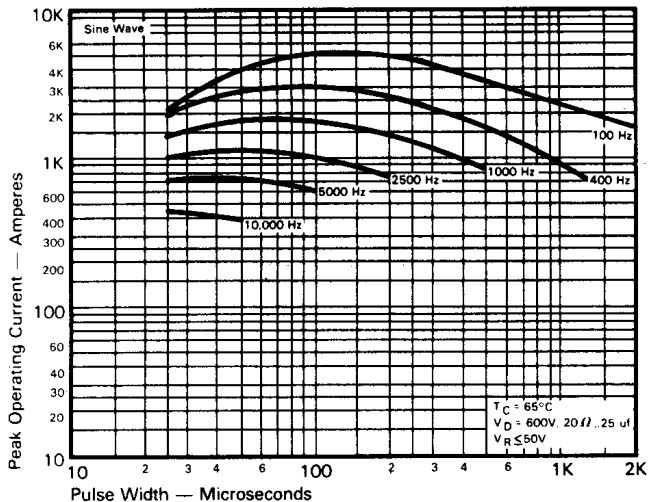


ENERGY PER PULSE FOR SINUSOIDAL PULSES

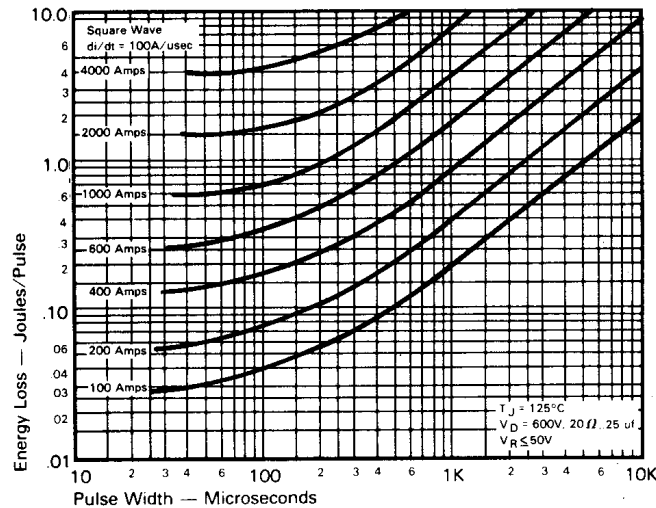
## Trapezoidal Wave Current Data



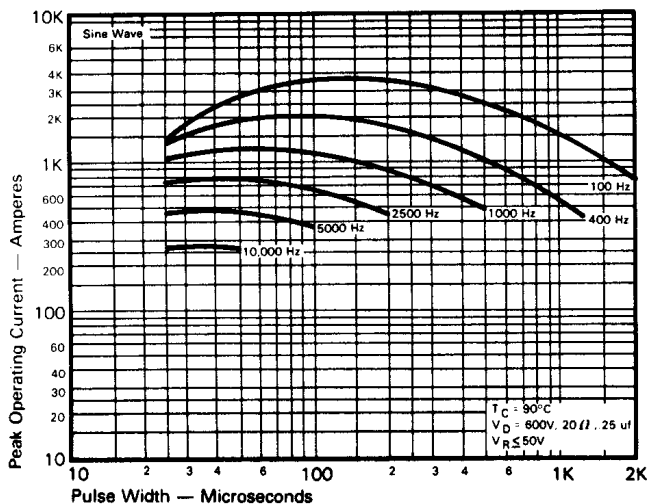
ENERGY PER PULSE FOR TRAPEZOIDAL PULSES  
( $di/dt = 50\text{A/usec}$ )



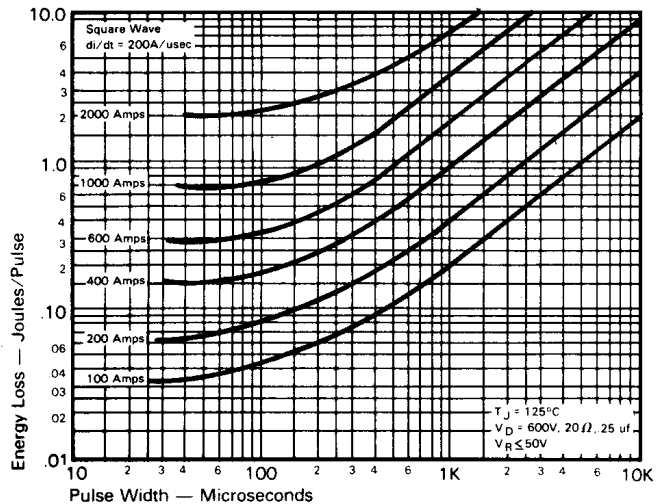
MAXIMUM ALLOWABLE PEAK ON-STATE CURRENT  
vs. PULSE WIDTH ( $T_C = 65^\circ\text{C}$ )



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



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



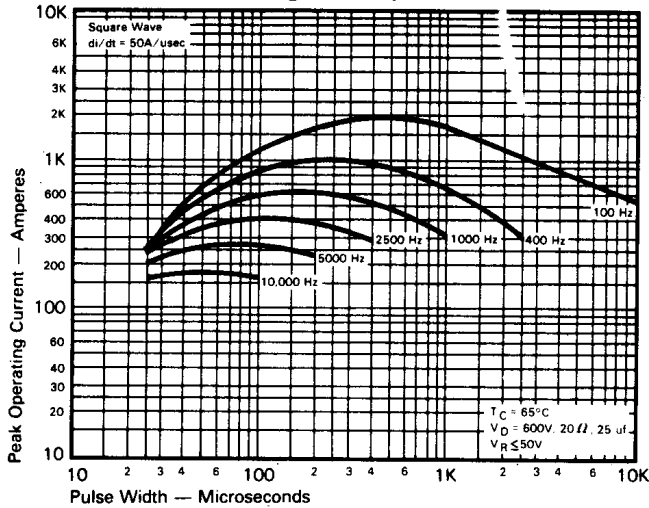
ENERGY PER PULSE FOR TRAPEZOIDAL PULSES  
( $di/dt = 200\text{A/usec}$ )

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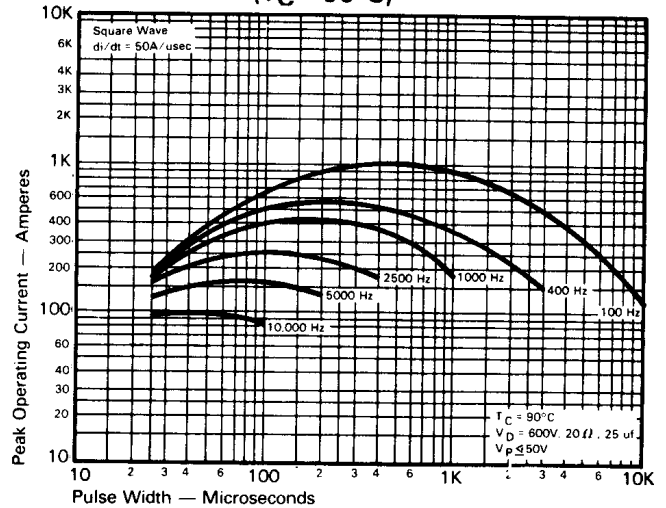
Fast Switching  
SCR  
T707\_28

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

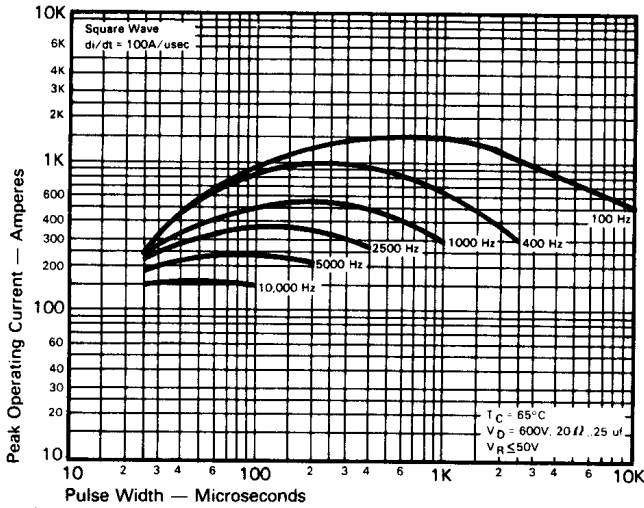


**MAXIMUM ALLOWABLE PEAK ON-STATE CURRENT vs. PULSE WIDTH ( $di/dt = 50\text{A/usec}$ )**

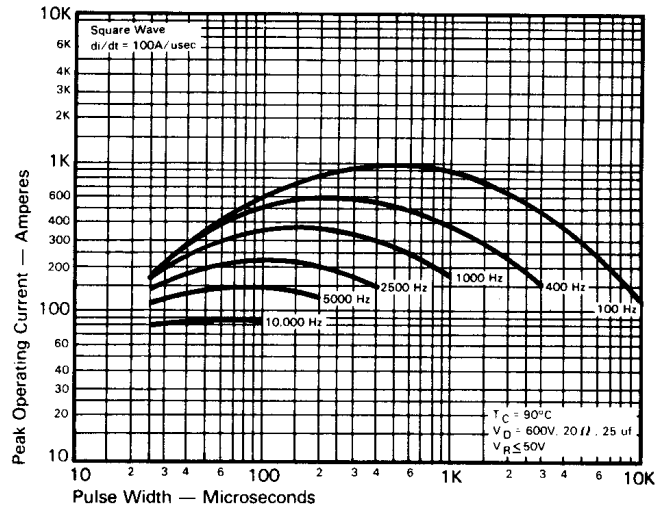
**Trapezoidal Wave Current Data**  
( $T_C = 90^\circ\text{C}$ )



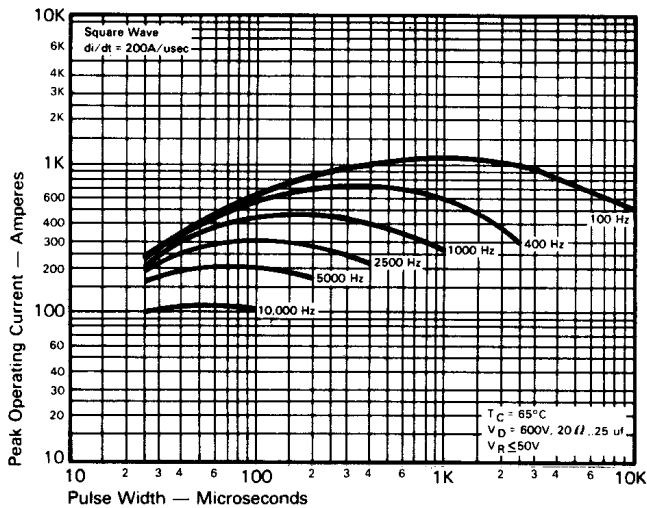
**MAXIMUM ALLOWABLE PEAK ON-STATE CURRENT vs. PULSE WIDTH ( $di/dt = 50\text{A/usec}$ )**



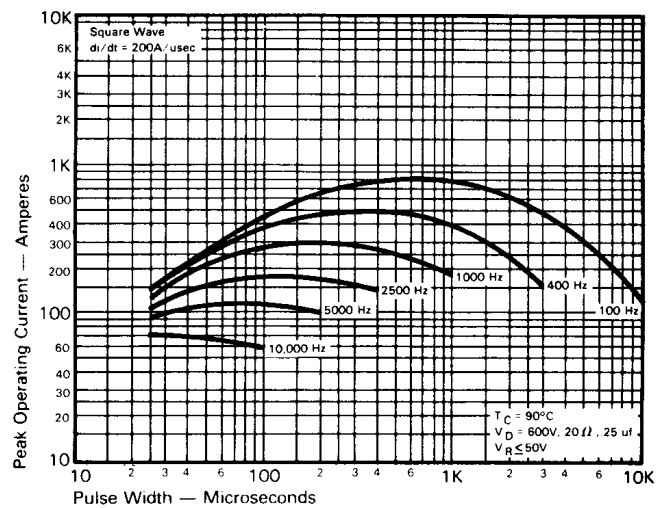
**MAXIMUM ALLOWABLE PEAK ON-STATE CURRENT vs. PULSE WIDTH ( $di/dt = 100\text{A/usec}$ )**



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

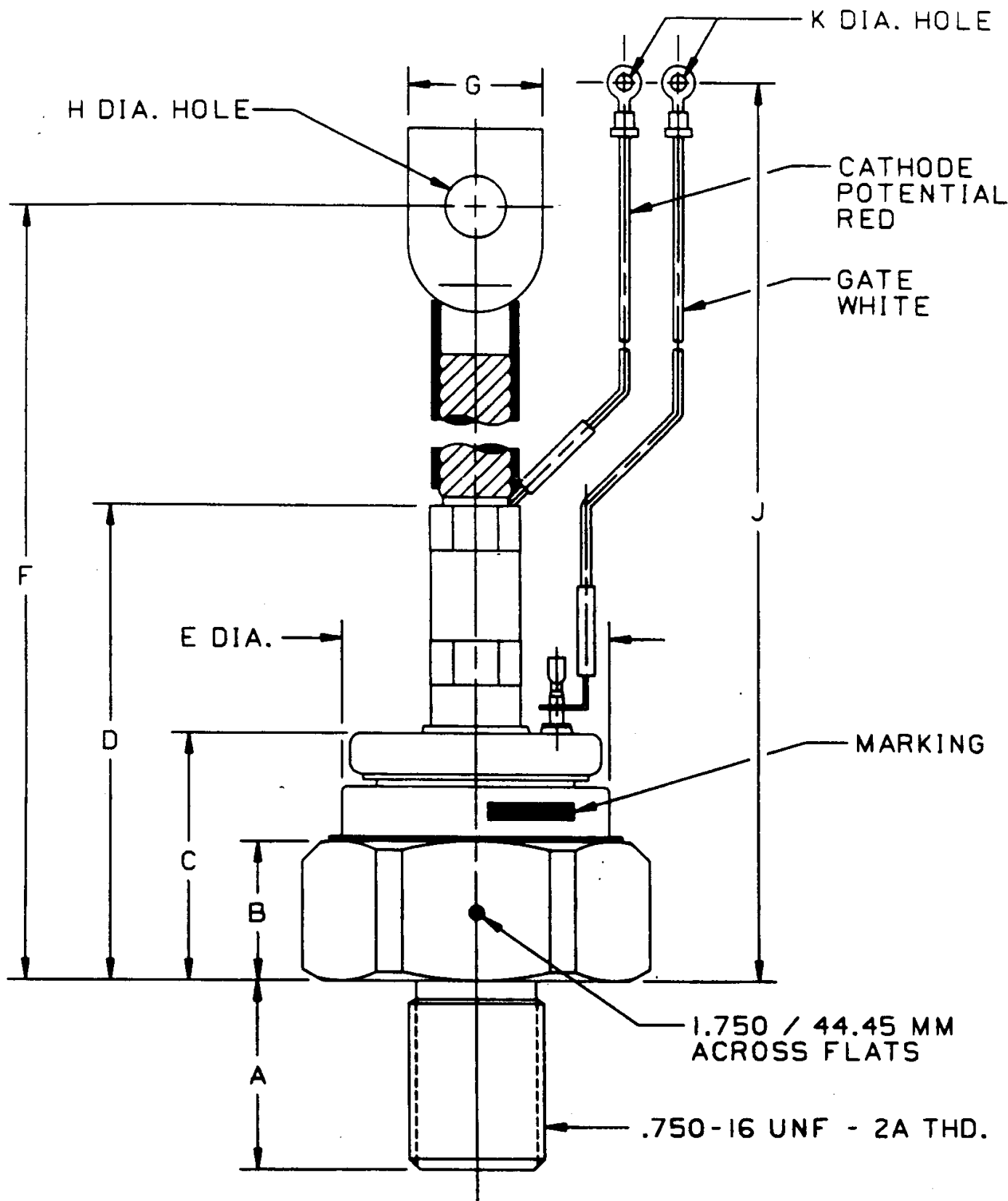


**MAXIMUM ALLOWABLE PEAK ON-STATE CURRENT vs. PULSE WIDTH ( $di/dt = 200\text{A/usec}$ )**



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

FAST SWITCHING  
THYRISTORS



CASE NUMBER T70  
 NOMINAL DIMENSIONS

STRIKE DISTANCE = .43 INCH / 10.9 MM MIN.  
 CREEPAGE DISTANCE = .43 INCH / 10.9 MM MIN.

SYM.	A	B	C	D	E	F	G	H	J	K
INCHES	1.06	.78	1.41	2.74	1.49	9.66	.73	.343	10.06	.146
MM	26.9	19.8	35.8	69.6	37.8	245.4	18.5	8.71	255.5	3.71

ALL DIMENSIONS ARE REFERENCE