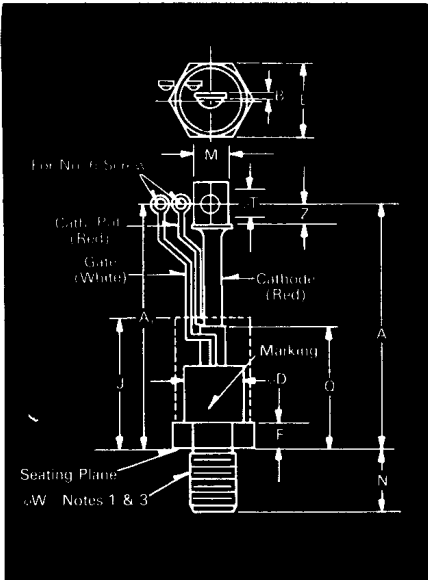


Fast Switching SCR T707-30

300A Avg.
(475 RMS)
Up to 1400 Volts
25-60 μ 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 ₁	10.18	10.42	258.57	264.67
B	.063	.172	1.60	4.37
ϕ 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
ϕ T	.330	.350	8.38	8.89
Z	.440		11.18	
ϕ W	3/16 UNF-2A			

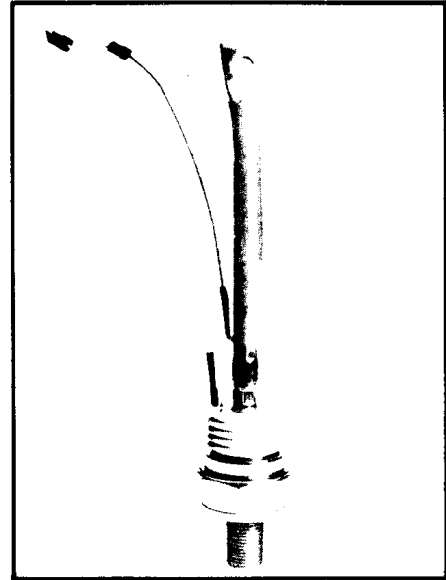
Creep Distance—1.76 in. min. (44.91 mm).
Strike Distance—.81 in. min. (20.70 mm).
(In accordance with NEMA standards.)
Finish—Nickel Plate.

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	
Code	V _{DRM} and V _{RRM} (V)	Code	I _{T(av)} (A)	Code	t _q μ sec	Code	I _{GT} (ma)	Code	Case	Code
T707	100	01	300	30	25	150	4	T70	BY	
	200	02			30					
	300	03			40					
	400	04			50					
	500	05			60					
	600	06			15					
	700	07								
	800	08								
	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 707 rated at 300 A average with V_{DRM} = 800V. I_{GT} = 150 ma, t_q = 40 μ sec and standard flex lead — order as

Type	Voltage	Current	Turn Off	Gate Current	Leads
T 7 0 7	0 8	3 0	4	4	B Y

FAST SWITCHING THYRISTORS

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SCR
T707_30**

Voltage

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

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

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
←							30	→				
←							30	→				

Current

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

	Symbol	T707_30
RMS forward current, A	$I_{T(rms)}$	475
Ave. forward current, A	$I_{T(av)}$	300
One-half cycle surge current ^③ , A	I_{TSM}	8000
I^2t for fusing (for times $\geq 8.3 \text{ ms}$) A ² sec.	I^2t	265,000
Forward voltage drop at $I_{TM} = 625 \text{ A}$ and $T_J = 25^\circ\text{C}$, V	V_{TM}	1.45
Min. repetitive di/dt , A/ μ sec	di/dt	400

Switching

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

	Symbol	
Max. turn-off time, $I_T = 400 \text{ A}$, $T_J = 125^\circ\text{C}$, $di/dt = 25 \text{ A}/\mu\text{sec}$, reapplied $dv/dt = 20 \text{ V}/\mu\text{sec}$, linear to 0.8 V_{DRM} , μsec ^{④⑤}	t_q	25 to 60
Typ. turn-on time, $I_T = 1000 \text{ A}$, $V_D = 300 \text{ V}$, μsec	t_{on}	3.0
Min. critical dv/dt , exponential to V_{DRM} , $T_J = 125^\circ\text{C}$, V/ μsec ^{⑥⑦}	dv/dt	300
Min. di/dt , non-repetitive, μsec ^{①④⑥}	di/dt	800

Gate

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

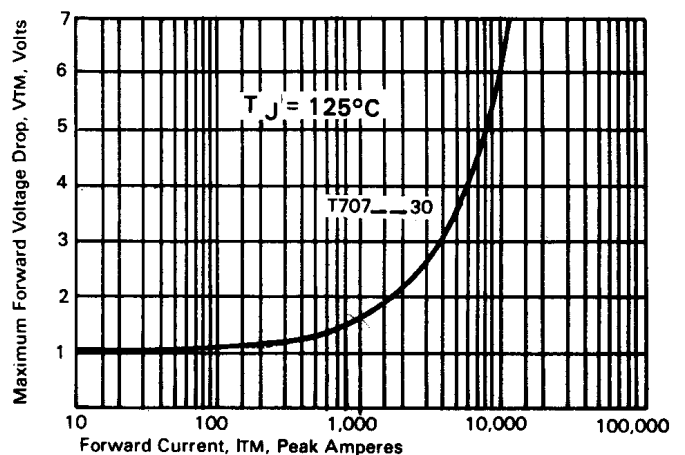
	Symbol	
Gate current to trigger at $V_D = 12 \text{ V}$, mA	I_{GT}	150
Gate voltage to trigger at $V_D = 12 \text{ V}$, V	V_{GT}	3
Non-triggering gate voltage, $T_J = 125^\circ\text{C}$, and rated V_{DRM} , V	V_{GDM}	0.15
Peak forward gate current, A	I_{GTM}	4
Peak reverse gate voltage, V	V_{GRM}	5
Peak gate power, Watts	P_{GM}	16
Average gate power, Watts	$P_{G(av)}$	3

Thermal and Mechanical

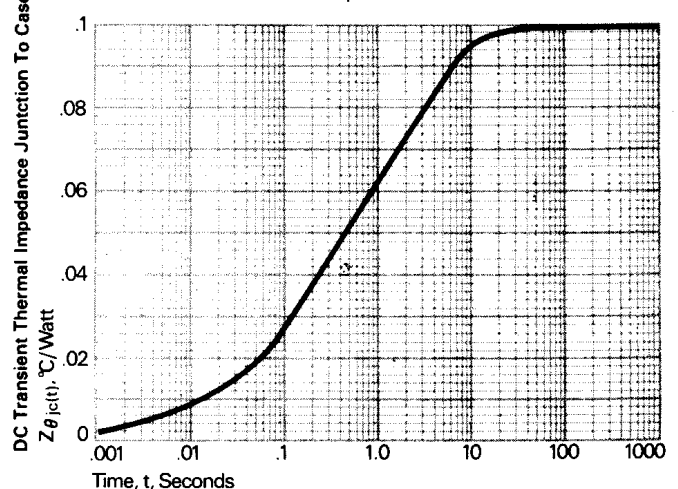
	Symbol	
Min., Max. oper. junction temp., $^\circ\text{C}$	T_J	-40 to +125
Min., Max. storage temp., $^\circ\text{C}$	T_{stg}	-40 to +15C
Max. mounting torque, in lb. ^①		360
Max. Thermal resistance ^①		
Junction to case, $^\circ\text{C}/\text{Watt}$	$R_{\theta JC}$.10
Case to sink, lubricated, $^\circ\text{C}/\text{Watt}$	$R_{\theta CS}$.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.

Maximum Forward Voltage Drop, Vs. Forward Current



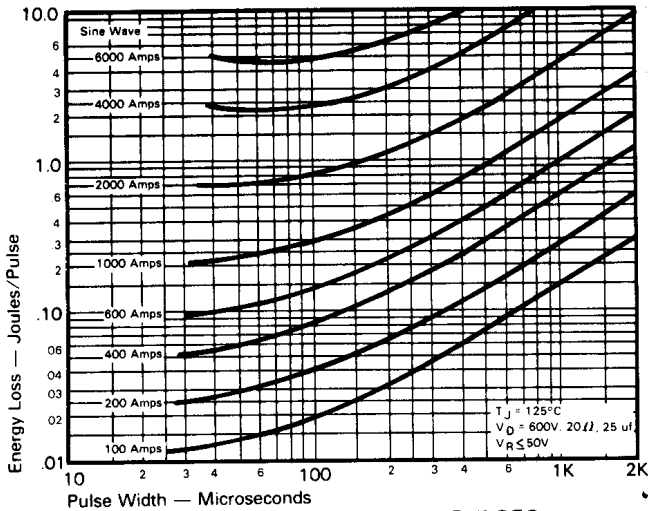
Transient Thermal Impedance VS. Time



Fast Switching SCR T707_30

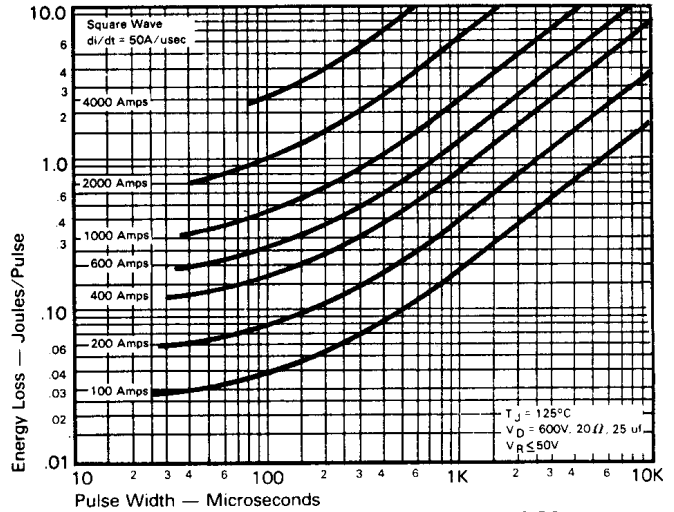
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Sinusoidal Current Data

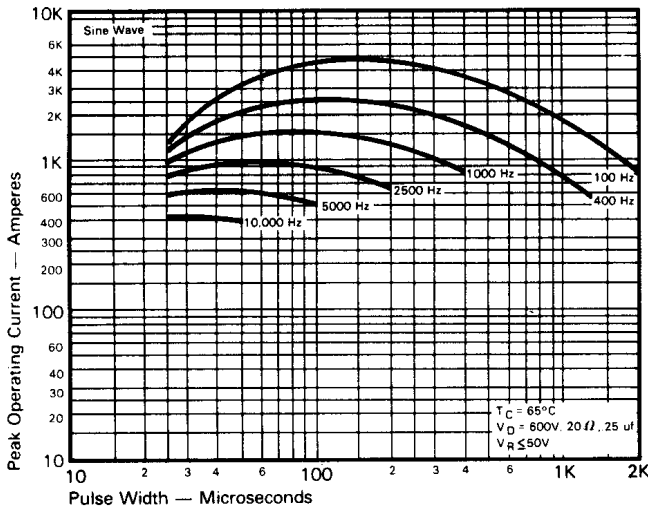


ENERGY PER PULSE FOR SINUSOIDAL PULSES

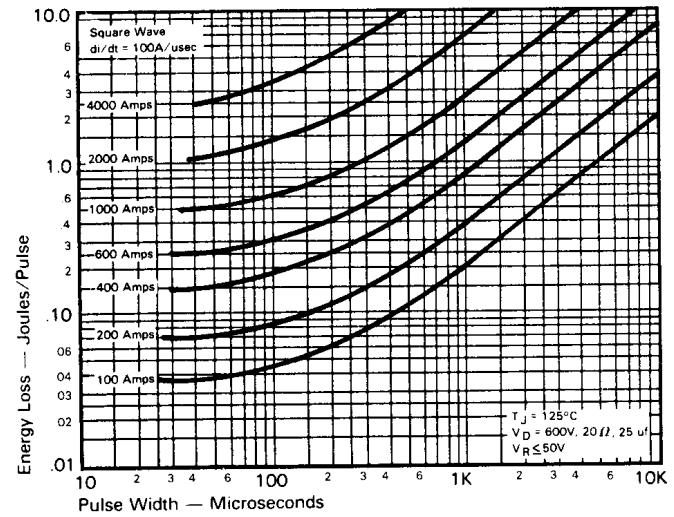
Trapezoidal Wave Current Data



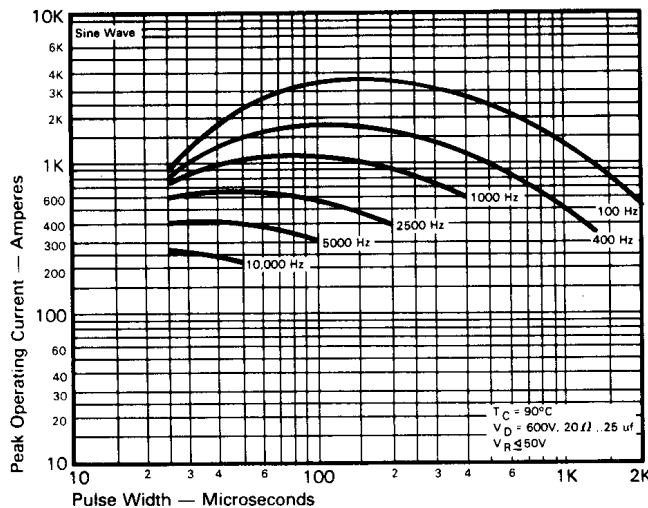
ENERGY PER PULSE FOR TRAPEZOIDAL PULSES
($di/dt = 50\text{A}/\mu\text{sec}$)



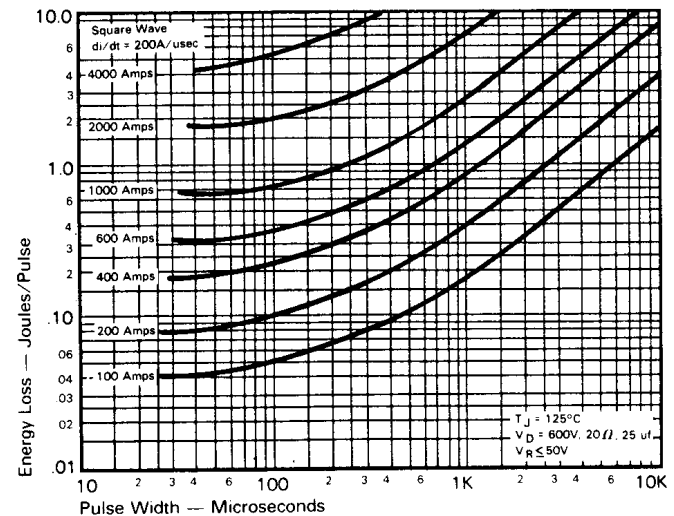
MAXIMUM ALLOWABLE PEAK ON-STATE CURRENT
vs. PULSE WIDTH ($T_C = 65^\circ\text{C}$)



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



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



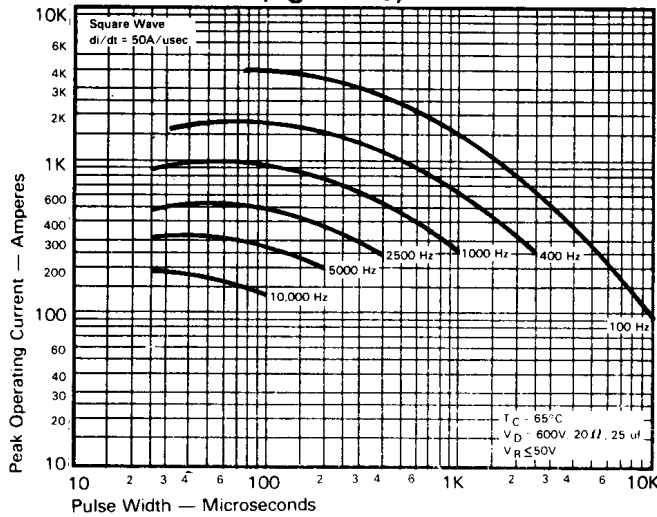
ENERGY PER PULSE FOR TRAPEZOIDAL PULSES
($di/dt = 200\text{A}/\mu\text{sec}$)

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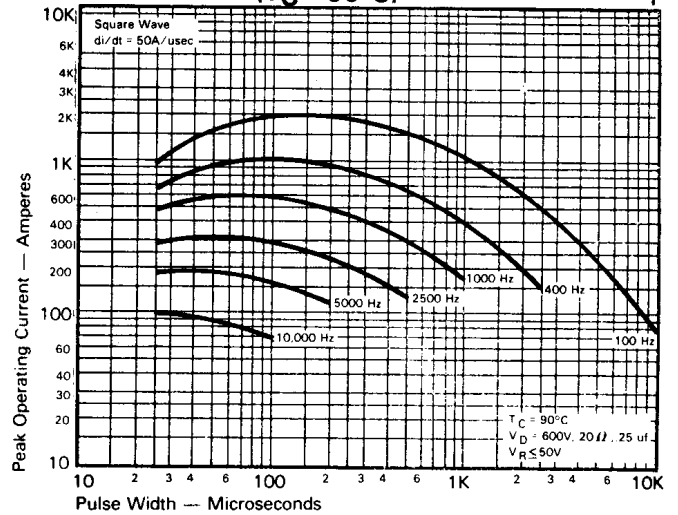
**Fast Switching
SCR
T707_30**

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

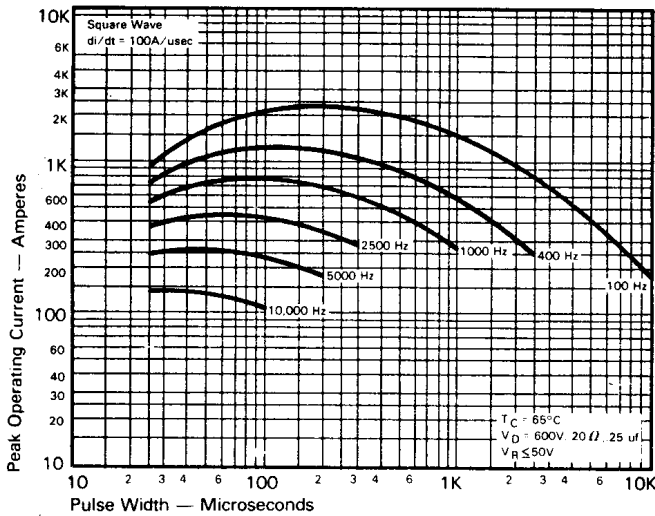


MAXIMUM ALLOWABLE PEAK ON-STATE CURRENT vs. PULSE WIDTH ($di/dt = 50A/usec$)

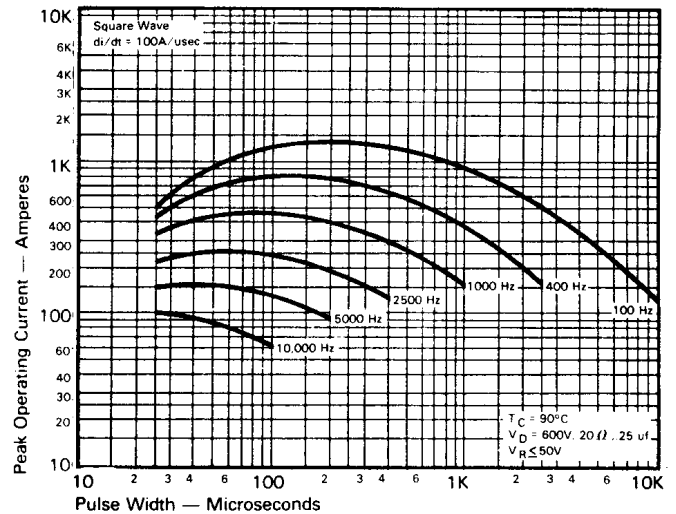
**Trapezoidal Wave Current Data
($T_C = 90^\circ\text{C}$)**



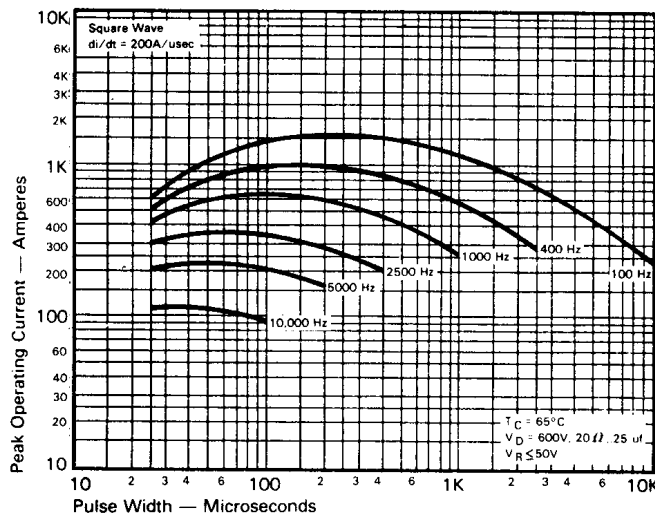
MAXIMUM ALLOWABLE PEAK ON-STATE CURRENT vs. PULSE WIDTH ($di/dt = 50A/usec$)



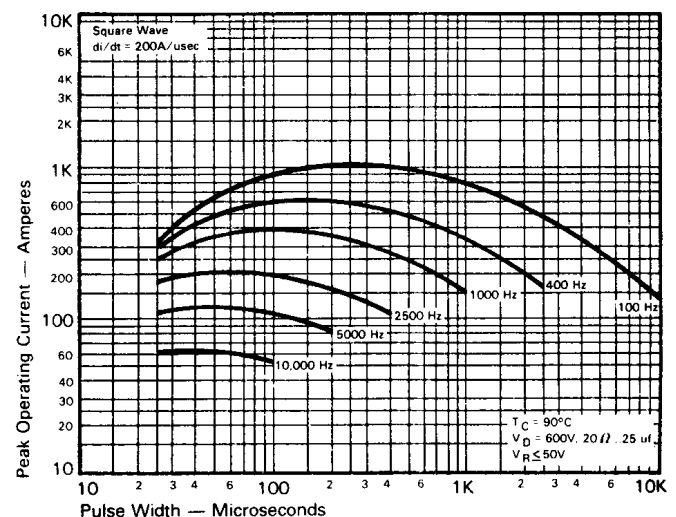
MAXIMUM ALLOWABLE PEAK ON-STATE CURRENT vs. PULSE WIDTH ($di/dt = 100A/usec$)



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

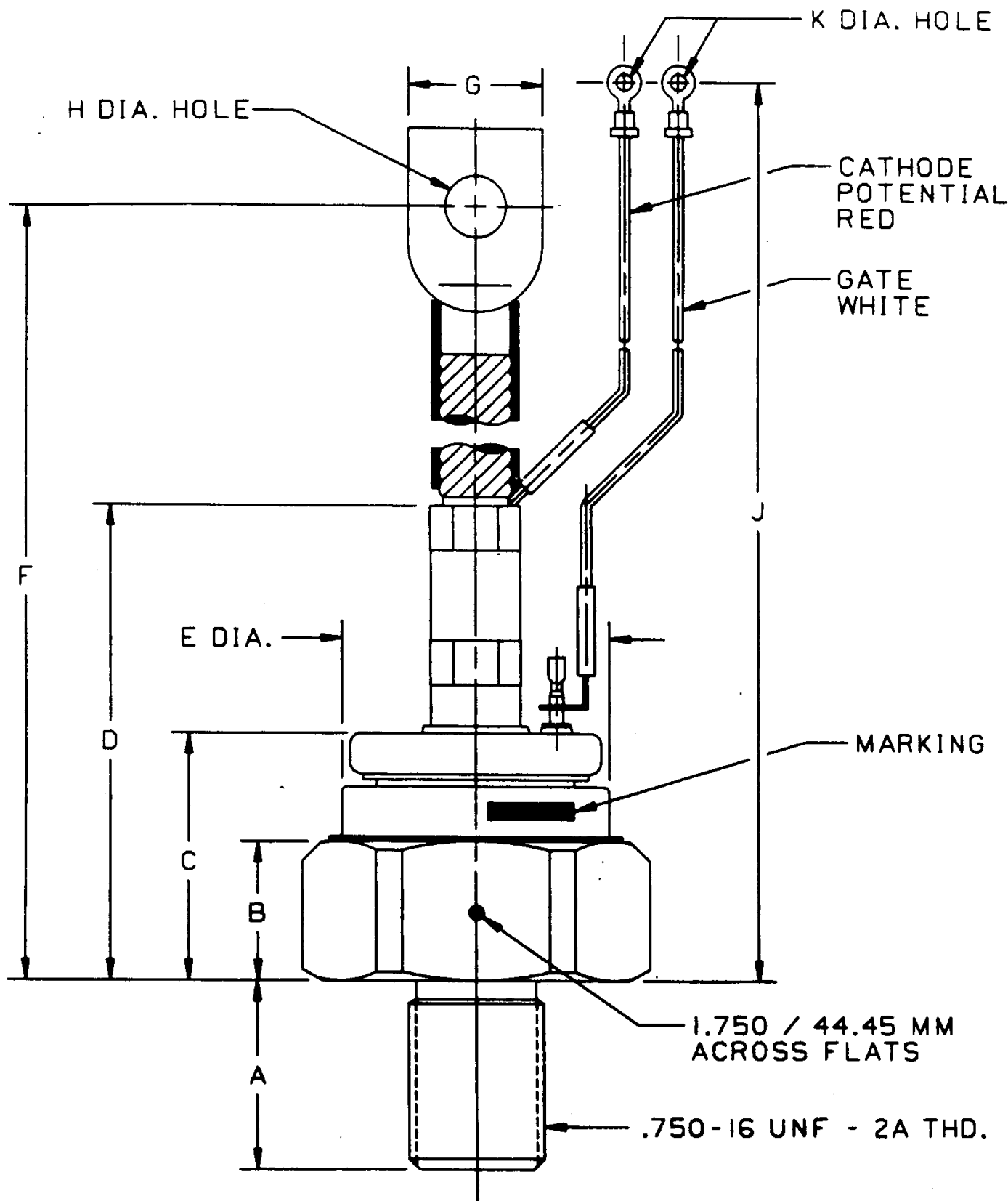


MAXIMUM ALLOWABLE PEAK ON-STATE CURRENT vs. PULSE WIDTH ($di/dt = 200A/usec$)



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

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