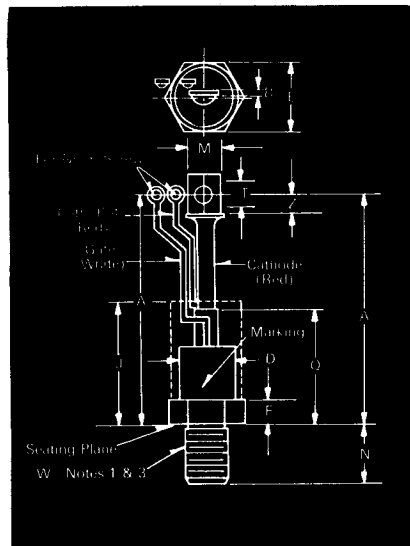


Fast Switching SCR T707_33

325A Avg.
(500 RMS)
Up to 800 Volts
10-50 μ s



T70 Outline

Features:

- Center fired di/namic 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.)

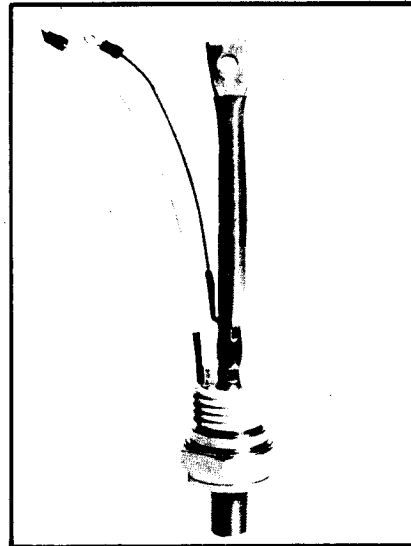
Finish—Nickel Plate.

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 usec	Code	I _{GT} (ma)	Code	Case	Code
T707	100	01	325	33	10	8	150	4	T70	BY
	200	02			15					
	300	03			20					
	400	04			25					
	500	05			30					
	600	06			40					
	700	07			50					
	800	08								

Example

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

Type T 707 rated at 325A average with V_{DRM} = 700V.
I_{GT} = 150 ma, t_q = 10 μ sec and standard flex lead — order as

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

**325A Avg.
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10-50 μ s**

**Fast Switching
SCR
T707_33**

Voltage

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

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

Symbol

V_{DRM}	100	200	300	400	500	600	700	800
V_{RRM}	100	200	300	400	500	600	700	800
V_{RSM}	200	300	400	500	600	700	800	900
I_{DRM}					30			
I_{RRM}					30			

Current

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

RMS forward current, A ...
Ave. forward current, A ...
One-half cycle surge current^③, A ...
 I^2t for fusing (for times $\geq 8.3 \text{ ms}$)
A² sec. ...
Forward voltage drop at $I_T = 625 \text{ A}$
and $T_J = 25^\circ\text{C}$, V ...
Min. repetitive di/dt , A/ μ sec ...
^{①②④}

Symbol

T707_33

$I_{T(rms)}$	500
$I_{T(av)}$	325
I_{TSM}	8000
I^2t	265000
V_{TM}	1.40
di/dt	400

Switching

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

Max. turn-off time, $I_T = 400 \text{ A}$,
 $T_J = 125^\circ\text{C}$, $di_R/dt = 25$
A/ μ sec, reappplied $dv/dt =$
20V/ μ sec. linear to .8V V_{DRM} , μ sec^{①②} ...
Typ. turn-on time, $I_T = 1000 \text{ A}$,
 $V_D = 300 \text{ V}$, μ sec ...
Min. critical dv/dt , exponential to V_{DRM} ,
 $T_J = 125^\circ\text{C}$, V/ μ sec^{②④} ...
Min. di/dt , non-repetitive,^{①②④}
A/ μ sec ...

Symbol

t_q	10 to 50
t_{on}	3.0
dv/dt	300
di/dt	800

Gate

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

Gate current to trigger at $V_D = 12 \text{ V}$, mA ...
Gate voltage to trigger at $V_D = 12 \text{ V}$, 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}	150
V_{GT}	3
V_{GDM}	0.15
I_{GTM}	4
V_{GRM}	5
P_{GM}	16
$P_{G(av)}$	3

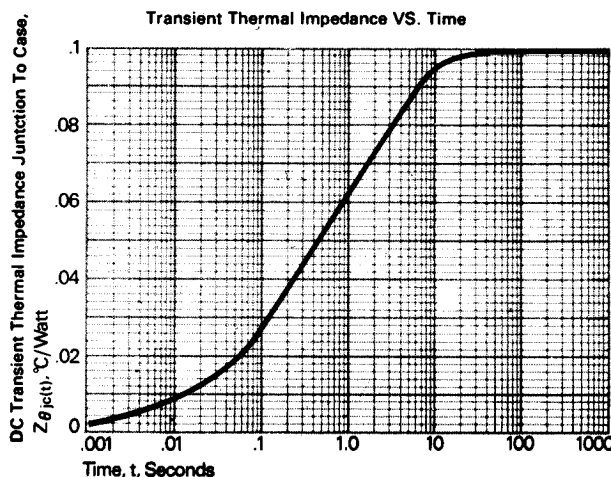
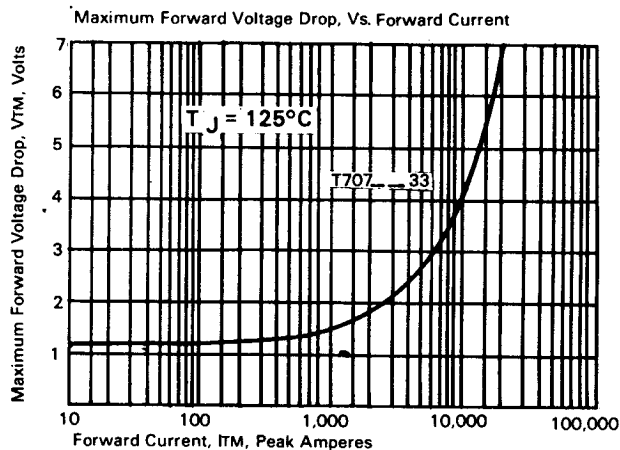
Thermal and Mechanical

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

Symbol

T_J	-40 to +125
T_{stg}	-40 to +150
	360
$R_{\theta JC}$	.10
$R_{\theta CS}$	.05

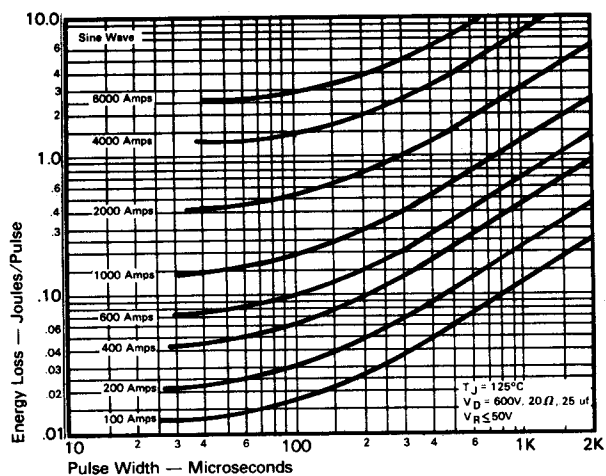
- ① Consult recommended mounting procedures.
- ② Applies for zero or negative gate bias.
- ③ Per JEDEC RS-397, 5.2.2.1.
- ④ With recommended gate drive.
- ⑤ Higher dv/dt ratings available, consult factory.
- ⑥ Per JEDEC standard RS-397, 5.2.2.6.
- ⑦ For operation with antiparallel diode, consult factory.



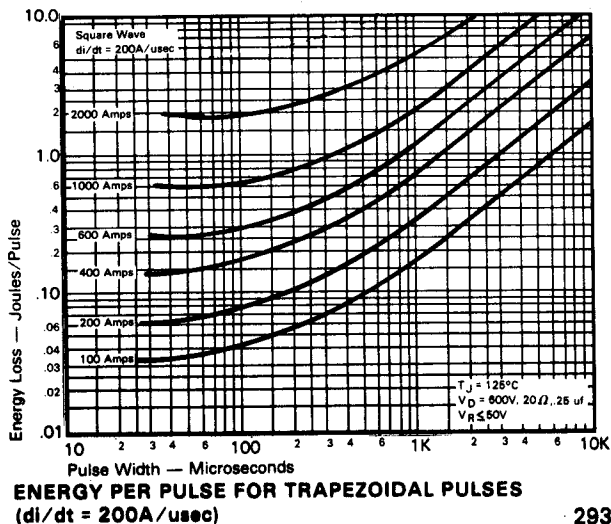
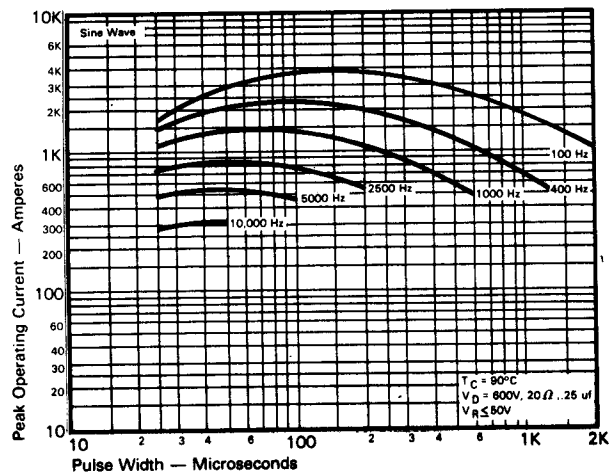
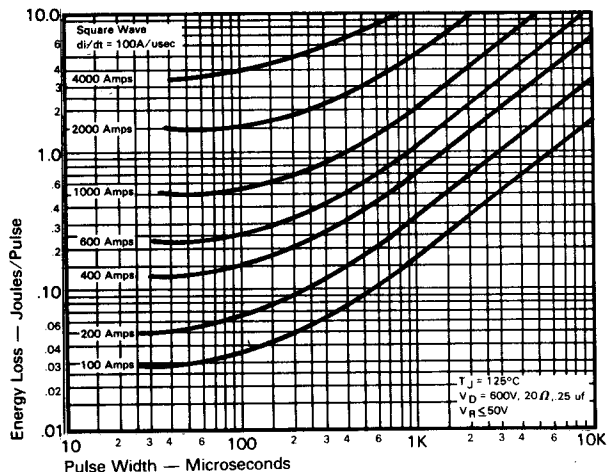
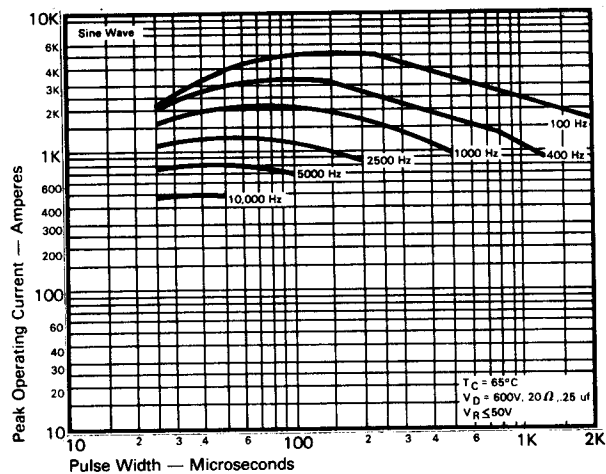
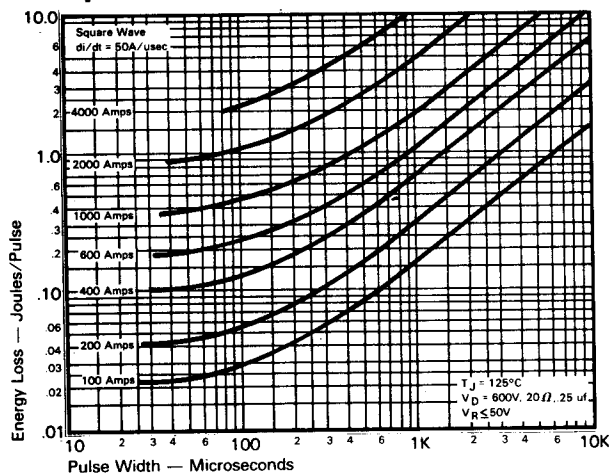
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Sinusoidal Current Data



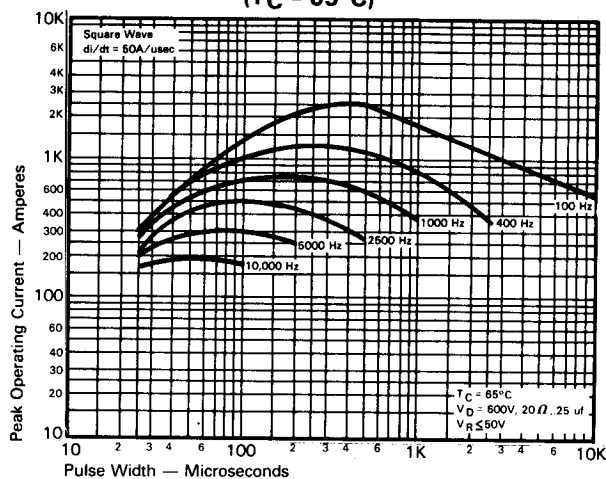
Trapezoidal Wave Current Data



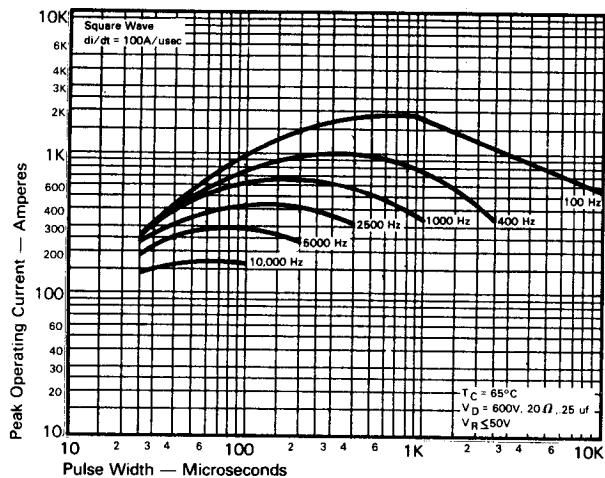
**325A Avg.
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10-50 μ s**

**Fast Switching
SCR
T707-33**

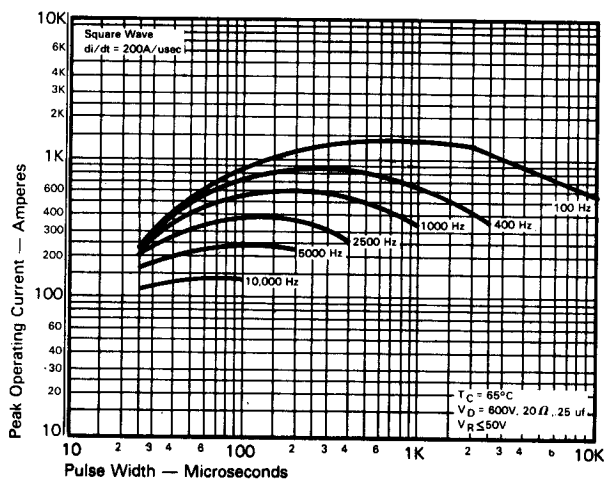
**Trapezoidal Wave Current Data
($T_C = 65^\circ\text{C}$)**



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

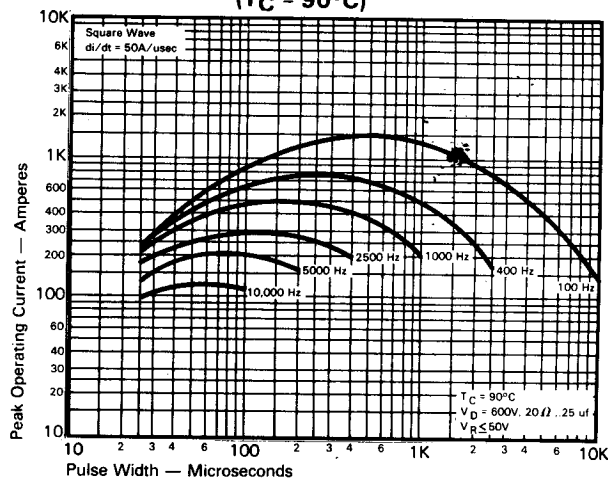


**MAXIMUM ALLOWABLE PEAK ON-STATE CURRENT
vs. PULSE WIDTH ($di/dt = 100\text{A}/\mu\text{sec}$)**

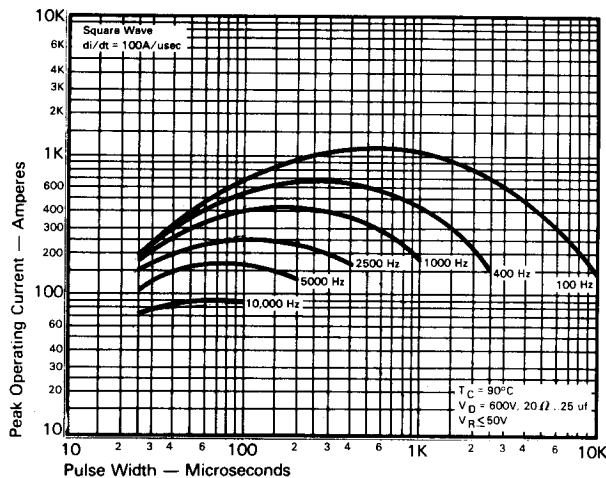


**MAXIMUM ALLOWABLE PEAK ON-STATE CURRENT
vs. PULSE WIDTH ($di/dt = 200\text{A}/\mu\text{sec}$)**

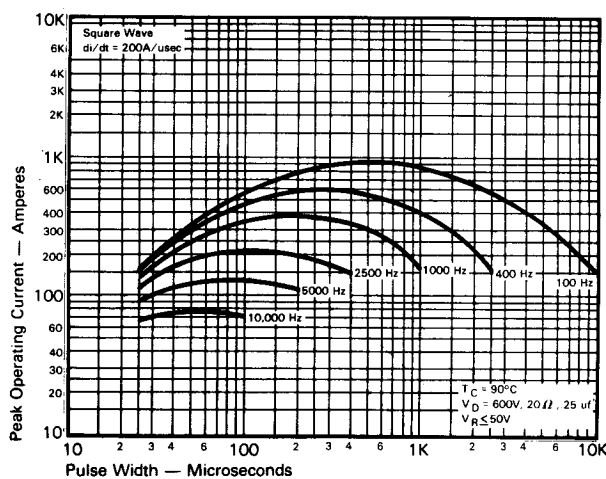
**Trapezoidal Wave Current Data
($T_C = 90^\circ\text{C}$)**



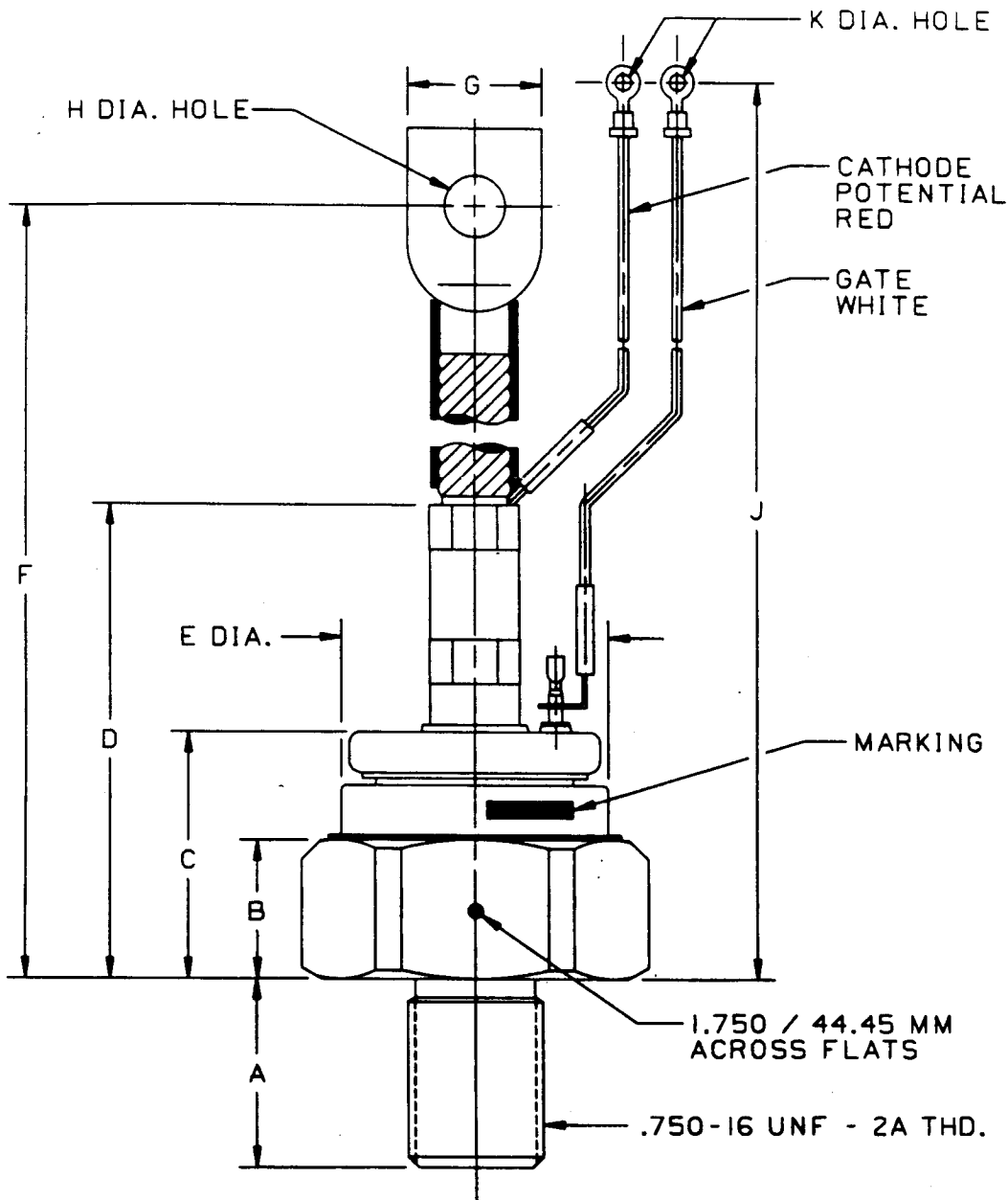
**MAXIMUM ALLOWABLE PEAK ON-STATE CURRENT
vs. PULSE WIDTH ($di/dt = 50\text{A}/\mu\text{sec}$)**



**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 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