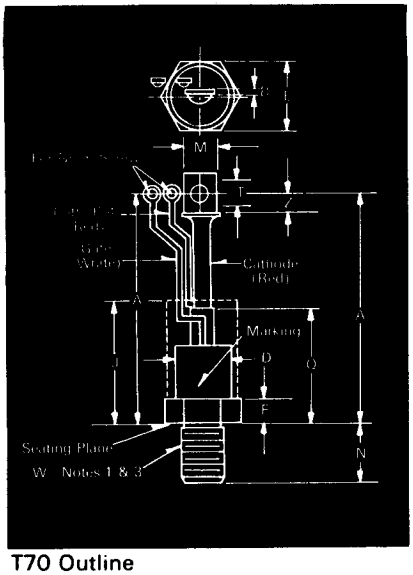
Fast Switching SCR T707_ _33

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

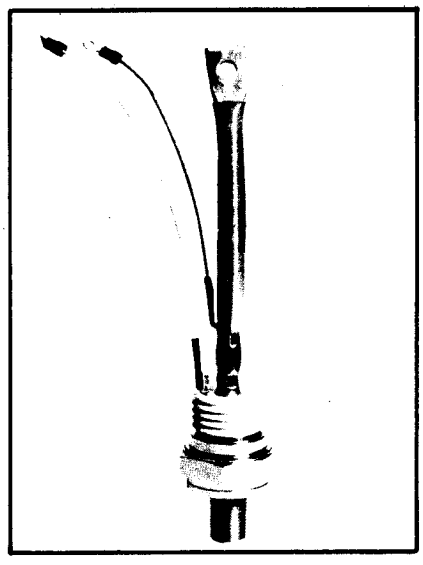


T70 Outline

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
φD		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
φT	.330	.350	8.38	8.89
Z	.440		11.18	
φW	¾-16 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 2½ threads of seating plane.
2. Angular orientation of terminals is undefined.
3. Pitch diameter of ¾-16 UNF-2A (coated) threads (ASA B1.1-1960).
4. Dimension "J" denotes seated height with leads bent at right angles.



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

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	tq usec	Code	I_{GT} (ma)	Code	Case	Code
T707	100	01	325	33	10	8	150	4	T70	BY
	200	02			15	7				
	300	03			20	6				
	400	04			25	5				
	500	05			30	5				
	600	06			40	4				
	700	07			50	3				
	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, tq = 10 μsec 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

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Voltage

Blocking State Maximums ② (T_J = 125°C)	Symbol								
Repetitive peak forward blocking voltage, V	V_{DRM}	100	200	300	400	500	600	700	800
Repetitive peak reverse voltage V	V_{RRM}	100	200	300	400	500	600	700	800
Non-repetitive transient peak reverse voltage, t ≤ 5.0 msec, V	V_{RSM}	200	300	400	500	600	700	800	900
Forward leakage current, mA peak	I_{DRM}	←				30			→
Reverse leakage current, mA peak	I_{RRM}	←				30			→

Current

Conducting State Maximums (T_J = 125°C)	Symbol	T707_ _ 33
RMS forward current, A	$I_{T(rms)}$	500
Ave. forward current, A	$I_{T(av)}$	325
One-half cycle surge current ③, A	I_{TSM}	8000
I^2t for fusing (for times ≥ 8.3 ms) A^2 sec.	I^2t	265000
Forward voltage drop at ITM = 625 A and TJ = 25°C, V	V_{TM}	1.40
Min. repetitive di/dt, A/μsec ①④⑥	di/dt	400

Switching

(T_J = 25°C)	Symbol	
Max. turn-off time, I_T = 400A, T_J = 125°C, di_R/dt = 25 A/μsec, reapplied dv/dt = 20V/μsec. linear to .8V DRM, μsec ⑤①	t_q	10 to 50
Typ. turn-on-time, I_T = 1000A V_D = 300V ④, μsec	t_{on}	3.0
Min. critical dv/dt, exponential to V_{DRM}, T_J = 125°C, V/μsec ②⑤	dv/dt	300
Min. di/dt, non-repetitive, ① ④ ⑥ A/μsec	di/dt	800

Gate

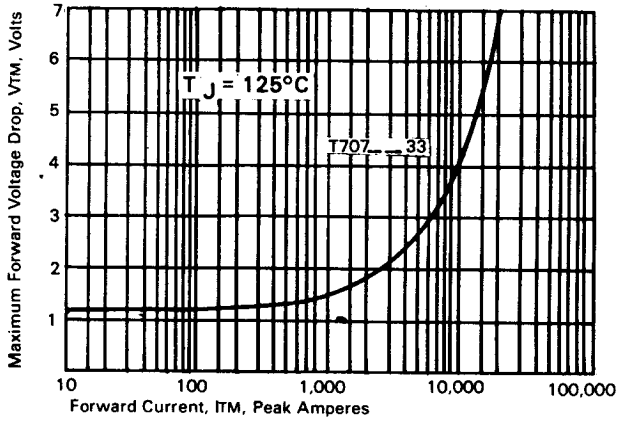
Maximum Parameters (T_J = 25°C)	Symbol	
Gate current to trigger at V_D = 12V, mA	I_{GT}	150
Gate voltage to trigger at V_D = 12V, V	V_{GT}	3
Non-triggering gate voltage, T_J = 125°C, and rated V_{DRM}, V	V_{GDM}	0.15
Peak forward gate current, A	I_{GTM}	4
Peak reverse gate voltage, V	V_{GRM}	5
Peak gate power, Watts	P_{GM}	16
Average gate power, Watts	$P_{G(av)}$	3

Thermal and Mechanical

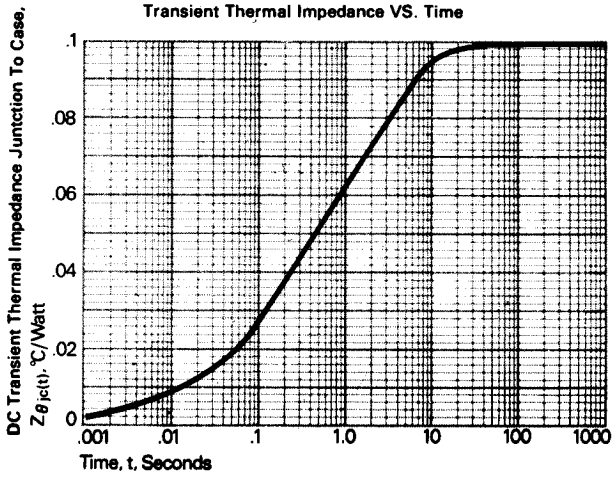
	Symbol	
Min., Max. oper. junction temp., °C	T_J	−40 to +125
Min., Max. storage temp., °C	Tstg	−40 to +150
Max. mounting torque, in lb. ①		360
Max. Thermal resistance ①		
Junction to case, °C/Watt	$R_{\theta JC}$	.10
Case to sink, lubricated, °C/Watt	$R_{\theta CS}$	.05

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

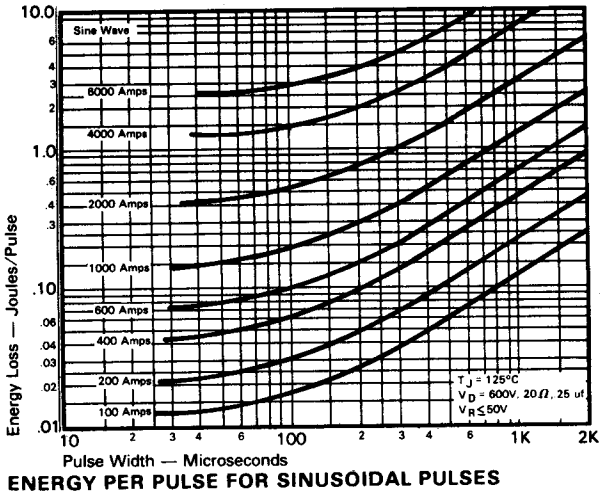


FAST SWITCHING THYRISTORS

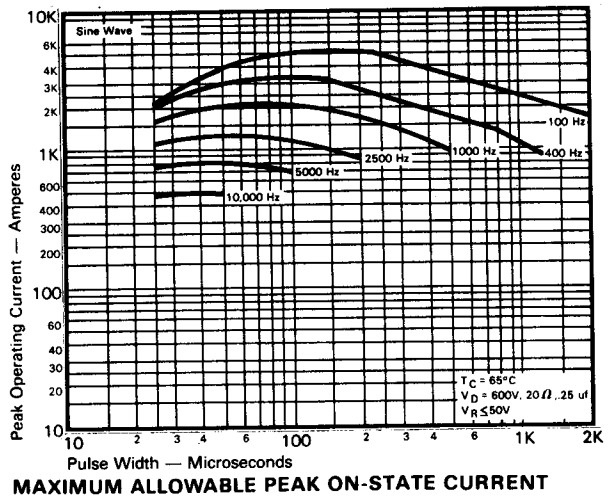
Fast Switching SCR T707_ _33

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

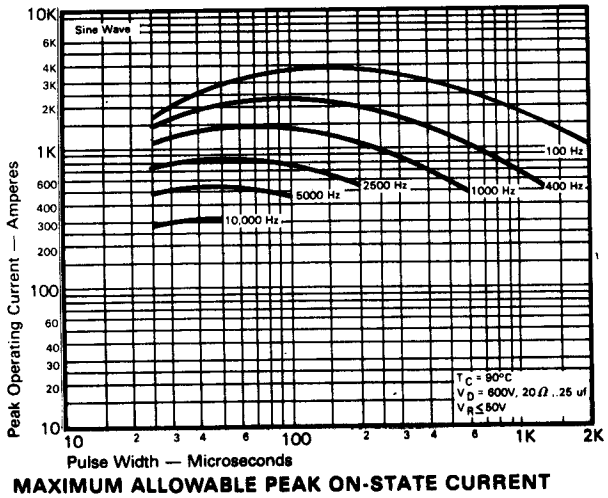
Sinusoidal Current Data



ENERGY PER PULSE FOR SINUSOIDAL PULSES

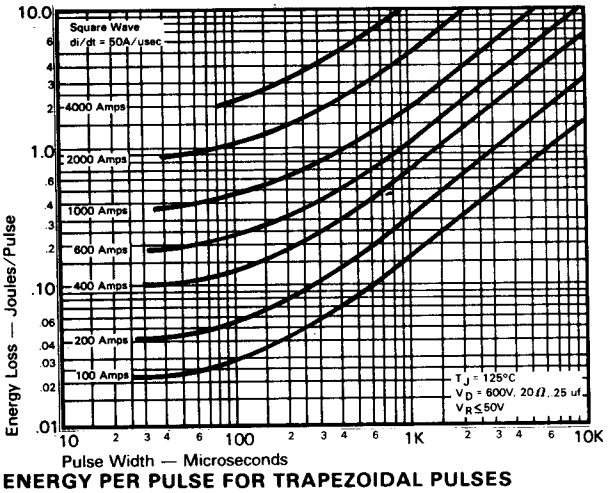


MAXIMUM ALLOWABLE PEAK ON-STATE CURRENT vs. PULSE WIDTH (T_C = 65°C)

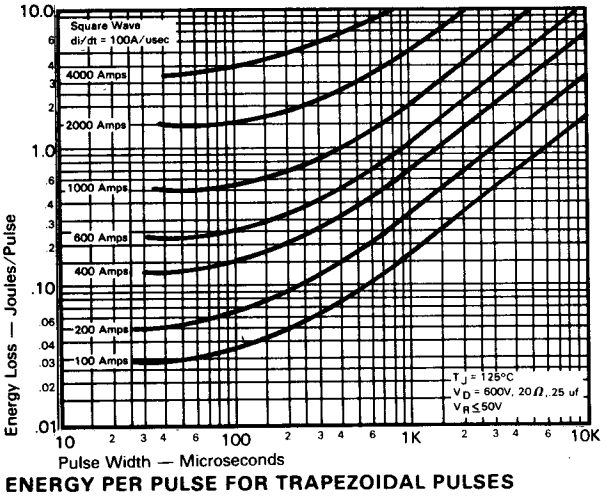


MAXIMUM ALLOWABLE PEAK ON-STATE CURRENT vs. PULSE WIDTH (T_C = 90°C)

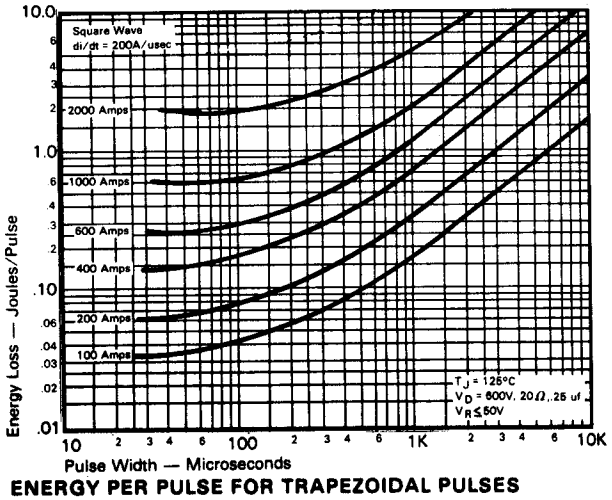
Trapezoidal Wave Current Data



ENERGY PER PULSE FOR TRAPEZOIDAL PULSES (di/dt = 50A/usec)



ENERGY PER PULSE FOR TRAPEZOIDAL PULSES (di/dt = 100A/usec)

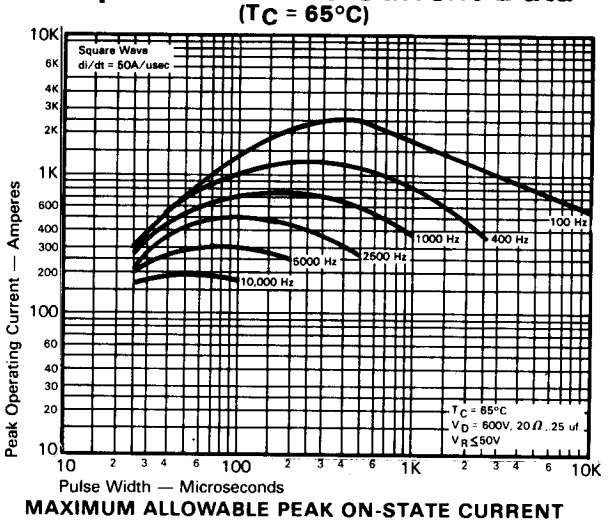


ENERGY PER PULSE FOR TRAPEZOIDAL PULSES (di/dt = 200A/usec)

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

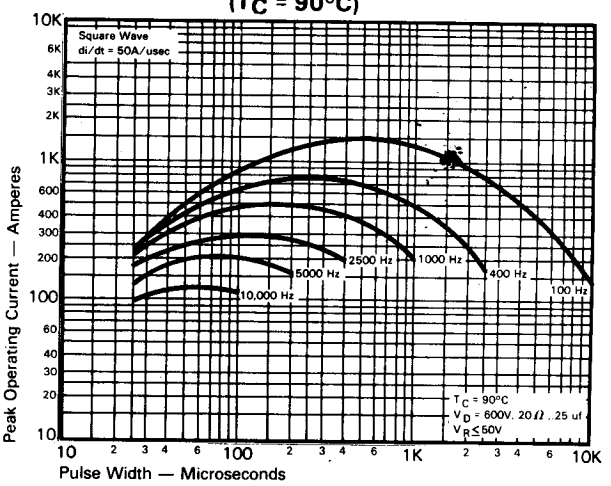
Fast Switching SCR T707_ _33

Trapezoidal Wave Current Data (T_C = 65°C)

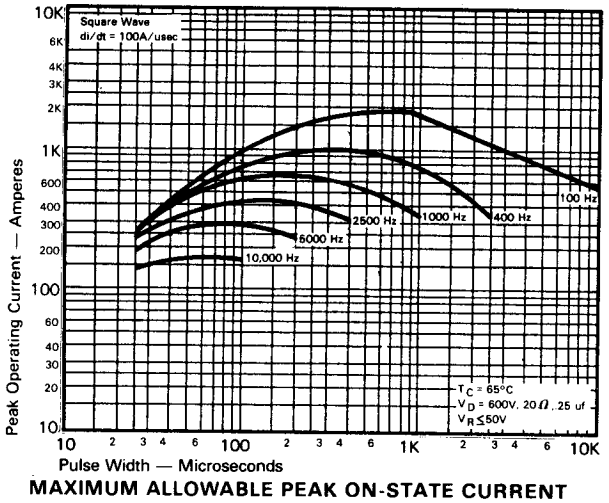


MAXIMUM ALLOWABLE PEAK ON-STATE CURRENT vs. PULSE WIDTH (di/dt = 50A/usec)

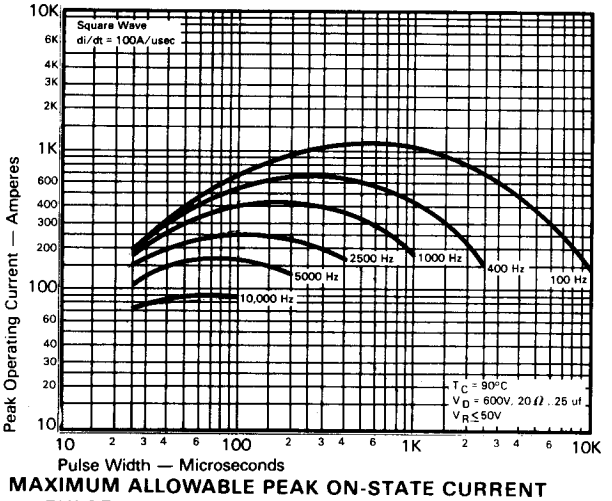
Trapezoidal Wave Current Data (T_C = 90°C)



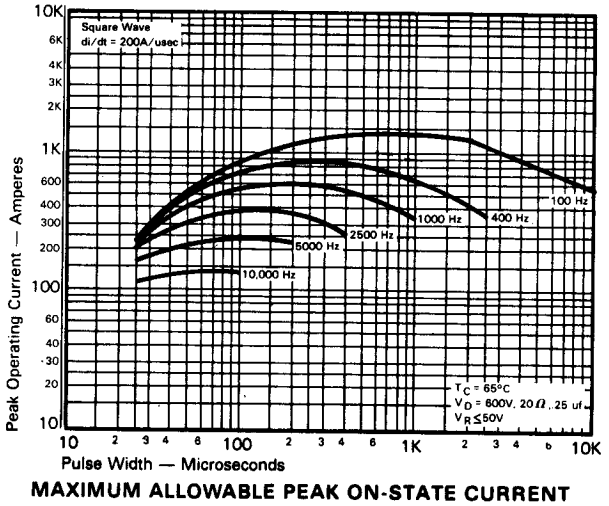
MAXIMUM ALLOWABLE PEAK ON-STATE CURRENT vs. PULSE WIDTH (di/dt = 50A/usec)



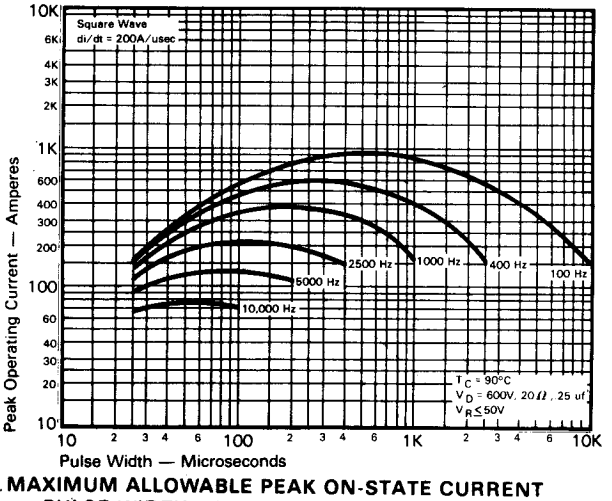
MAXIMUM ALLOWABLE PEAK ON-STATE CURRENT vs. PULSE WIDTH (di/dt = 100A/usec)



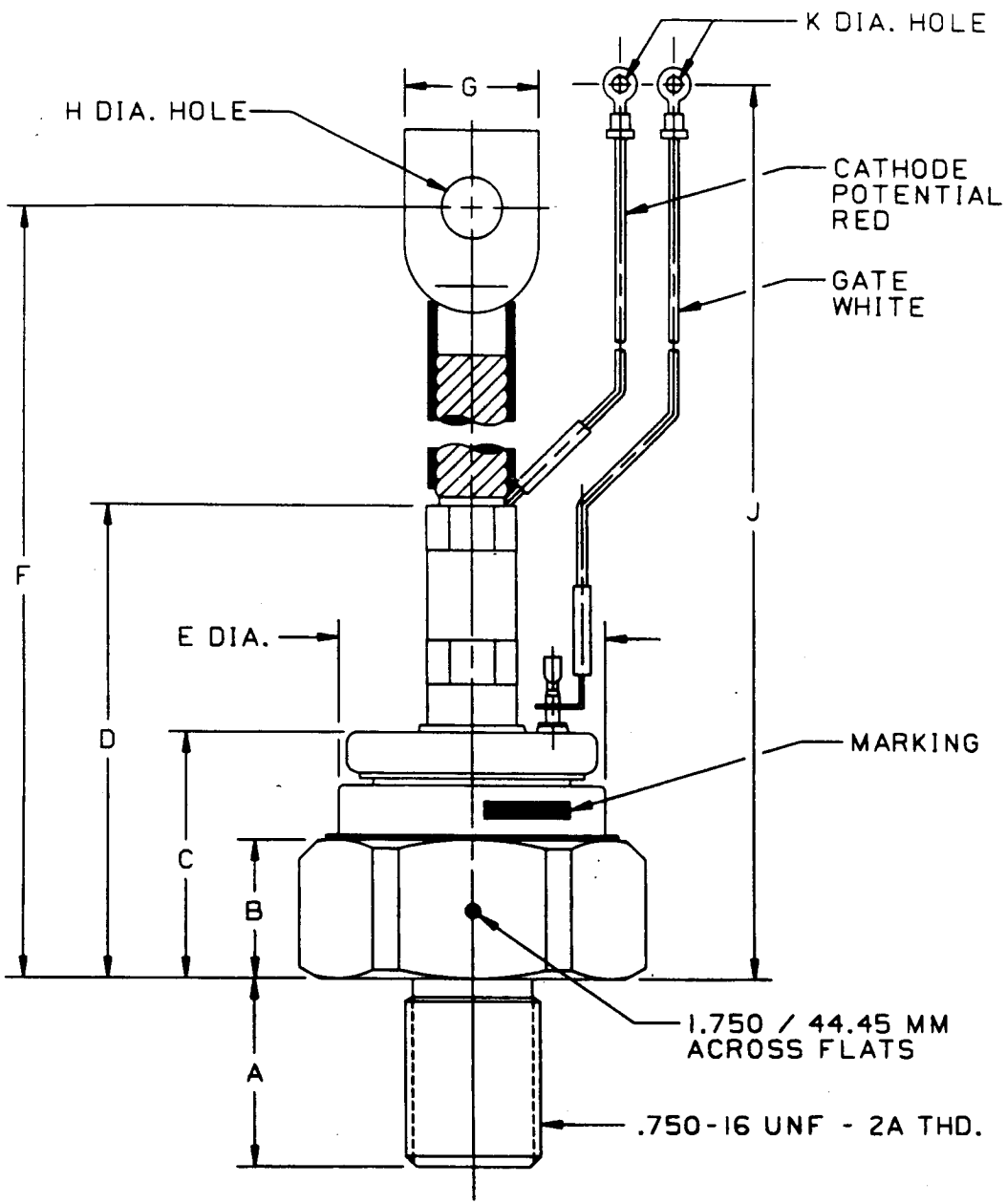
MAXIMUM ALLOWABLE PEAK ON-STATE CURRENT vs. PULSE WIDTH (di/dt = 100A/usec)



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)



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