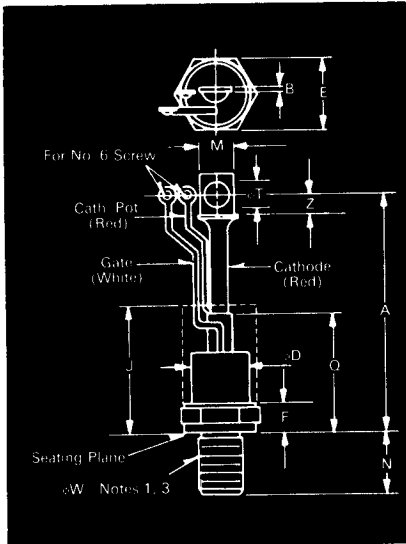


Fast Switching SCR T607_18

175A Avg.
(275 RMS)
Up to 1200 Volts
10-50 μ s



Conforms to TO-93 Outline

Features:

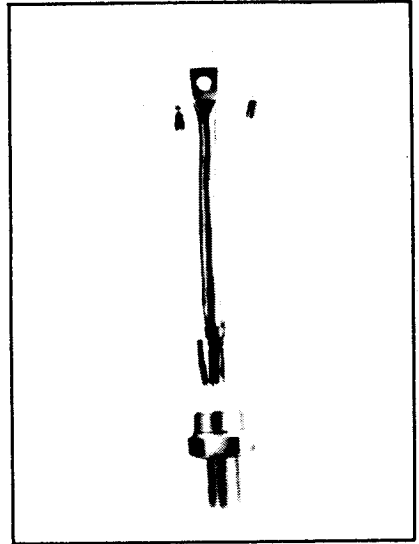
- Center fire, di/namic gate
- High di/dt with soft gate control
- High frequency operation
- Sinusoidal waveform operation to 20 KHz
- Rectangular waveform operation to 20 KHz
- Low dynamic forward voltage drop
- Low switching losses at high frequency
- Westinghouse Lifetime Guarantee

Symbol	Inches		Millimeters	
	Min.	Max.	Min.	Max.
A	7.750	8.100	196.85	205.74
A ₁	7.750	8.100	196.85	205.74
B	.063	.172	1.60	4.37
ϕ D	.980	1.090	24.89	27.69
E	1.212	1.250	30.78	31.75
F	.250	.630	6.35	16.00
J	3.25		82.55	
M	.530	.755	13.46	19.18
N	1.040	1.077	26.42	27.36
Q		2.250		57.15
ϕ T	.260	.290	6.60	7.37
Z	.340		8.64	
ϕ W	¼-16 UNF-2A			

Creep Distance—75 in. min. (19.05 mm).
Strike Distance—69 in. min. (17.53 mm).
(In accordance with NEMA standards.)
Finish—Nickel Plate.
Approx. Weight—8 oz. (227 g).
1. Complete threads to extend to within 2½ threads of seating plane.
2. Angular orientation of terminals is undefined.
3. Pitch diameter of ¼-16 UNF-2A (coated) threads (ASA B1.1—1960).
4. Dimension "J" denotes seated height with leads bent at right angles.

Applications:

- Inverters for UPS
- AC motor control
- Induction heating
- Cycloconverters
- Choppers



Ordering Information

Type	Voltage		Current		Turn-off		Gate Current		Leads		
	Code	V _{DRM} and V _{RRM} (V)	I _{T(av)} (A)	Code	t _q μ sec	Code	I _{GT} (ma)	Code	Case	Code	
T607		100	175	18	10	8	150	4	TO-93	BT	
		200			15						7
		300			20						6
		400			25						5
		500			30						5
		600			40						4
		700			50						3
		800									
		900									
		1000									
		1100									
		1200			*12						

Example

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

Type T 607 rated at 175A average with V_{DRM} = 1000V, I_{GT} = 150 ma, t_q = 30 μ sec and standard flex lead — order as

*for 10 μ sec turn-off, consult factory

Type	Voltage	Current	Turn Off	Gate Current	Leads
T 6 0 7	1 0	1 8	5	4	B T

FAST SWITCHING THYRISTORS

**175A Avg.
(275 RMS)
Up to 1200 Volts
10-50 μ s**

**Fast Switching
SCR
T607_18**

Voltage

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

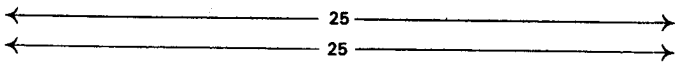
Repetitive peak forward blocking voltage, V_{DRM} ...
 Repetitive peak reverse voltage, V_{RRM} ...
 Non-repetitive transient peak reverse voltage,
 $t \leq 5.0$ m sec, V_{RSM} ...

Symbol

V_{DRM}	100	200	300	400	500	600	700	800	900	1000	1100	1200
V_{RRM}	100	200	300	400	500	600	700	800	900	1000	1100	1200
V_{RSM}	200	300	400	500	600	700	800	900	1000	1100	1200	1300

Forward leakage current, mA peak ...
 Reverse leakage current, mA peak ...

Symbol
 I_{DRM}
 I_{RRM}



Current

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

Symbol

T607_18

RMS forward current, $I_T(rms)$...
 Ave. forward current, $I_T(av)$...
 One-half cycle surge current $\textcircled{3}$, I_{TSM} ...
 I^2t for fusing (for times ≥ 8.3 ms),
 $A^2 \cdot \text{sec}$, I^2t_f ...
 Forward voltage drop at $I_{TM} = 625A$
 and $T_J = 25^\circ\text{C}$, V_{TM} ...
 Min. repetitive di/dt $\textcircled{4}$ $\textcircled{5}$, $A/\mu\text{sec}$...

$I_T(rms)$	275
$I_T(av)$	175
I_{TSM}	4500
I^2t_f	84,000
V_{TM}	1.85
di/dt	300

Switching

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

Symbol

Max. turn-off time, $I_T = 150A$,
 $T_J = 125^\circ\text{C}$, $di/dt = 12.5$
 $A/\mu\text{sec}$, reapplied $dv/dt =$
 $20V/\mu\text{sec}$ linear to $.8V_{DRM}$, μsec $\textcircled{6}$ $\textcircled{7}$, t_q ...
 Typ. turn-on time, $I_T = 100A$,
 $V_D = 100V$ $\textcircled{8}$, μsec ...
 Min. critical dv/dt , exponential to V_{DRM} ,
 $T_J = 125^\circ\text{C}$, $V/\mu\text{sec}$ $\textcircled{9}$ $\textcircled{10}$, dv/dt ...
 Min. di/dt non-repetitive,
 $\textcircled{11}$ $\textcircled{12}$, $A/\mu\text{sec}$...

t_q	10 to 50
t_{on}	3.5
dv/dt	300
di/dt	800

Gate

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

Symbol

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

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

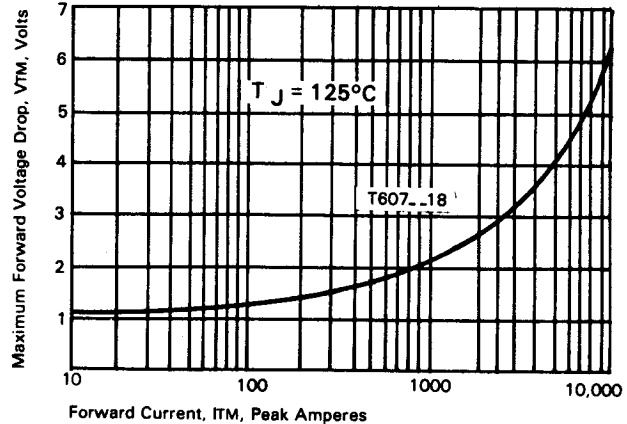
Symbol

Min., Max. oper. junction temp., $^\circ\text{C}$...
 Min., Max. storage temp., $^\circ\text{C}$...
 Max. mounting torque, in lb $\textcircled{13}$...
 Max. Thermal resistance $\textcircled{14}$
 Junction to case, $^\circ\text{C}/\text{Watt}$...
 Case to sink, lubricated, $^\circ\text{C}/\text{Watt}$...

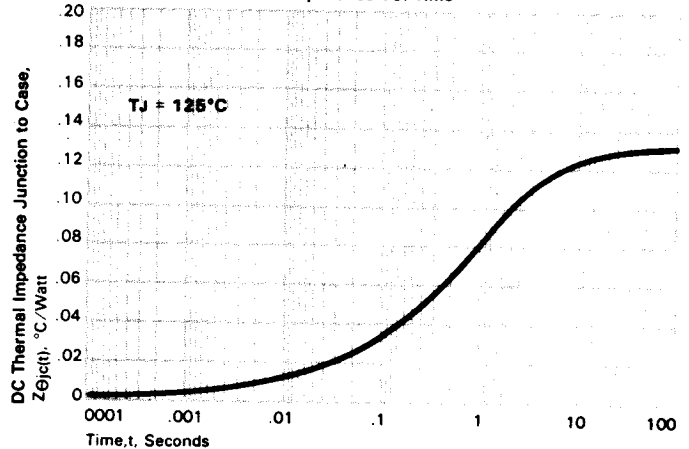
T_J	-40 to +125
T_{stg}	-40 to +150
	300
$R_{\theta JC}$.13
$R_{\theta CS}$.08

- $\textcircled{1}$ 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.

Maximum Forward Voltage VS. Forward Current



Transient Thermal Impedance VS. Time

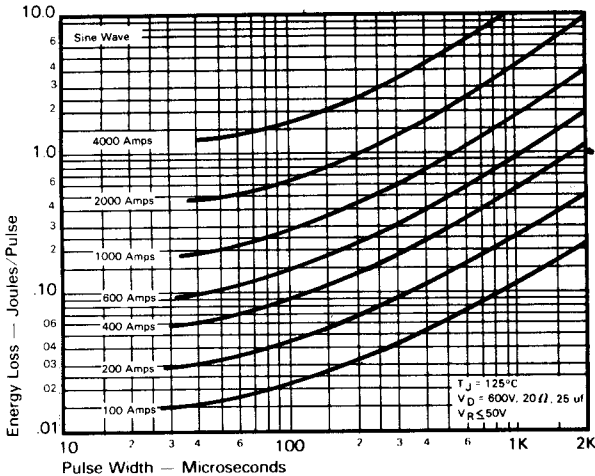


FAST SWITCHING
THYRISTORS

Fast Switching SCR T607-18

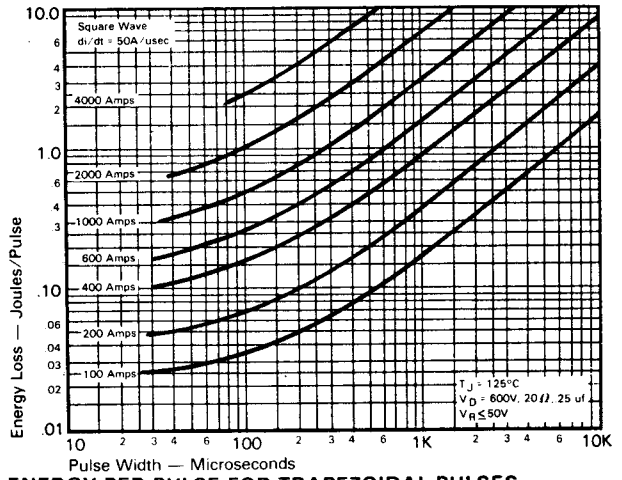
175A Avg.
(275 RMS)
Up to 1200 Volts
10-50 μ s

Sinusoidal Current Data

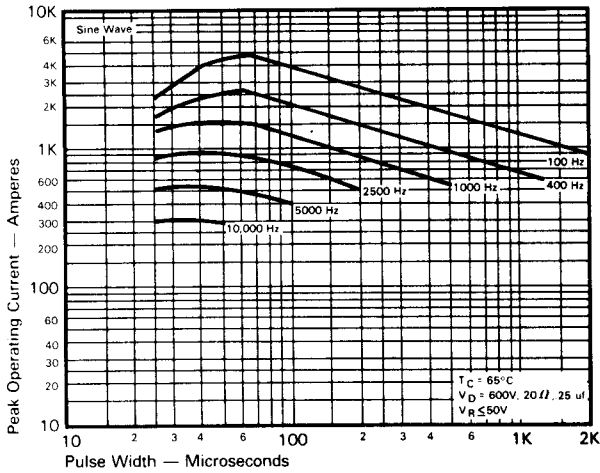


ENERGY PER PULSE FOR SINUSOIDAL PULSES

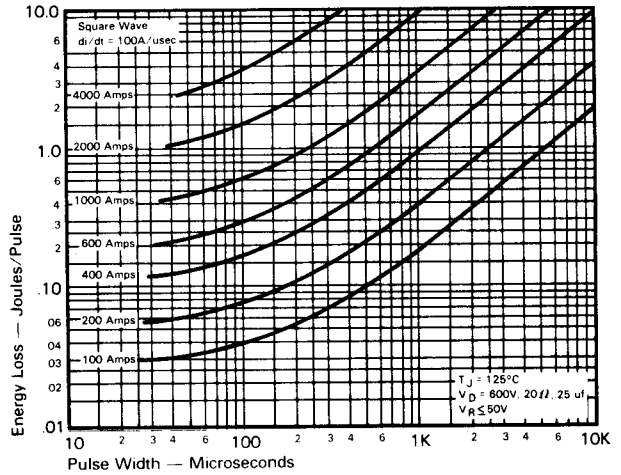
Trapezoidal Wave Current Data



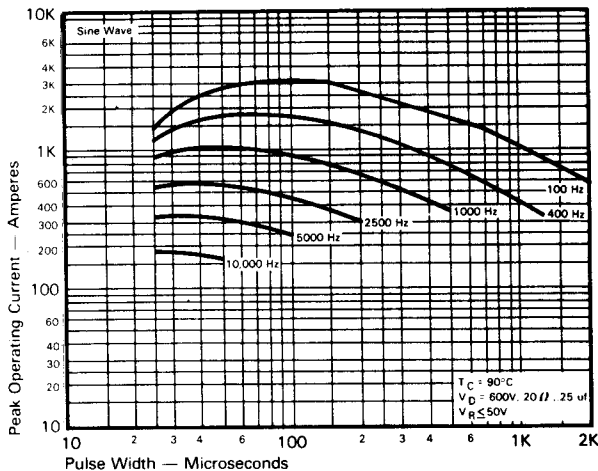
ENERGY PER PULSE FOR TRAPEZOIDAL PULSES
($di/dt = 50\text{A}/\mu\text{sec}$)



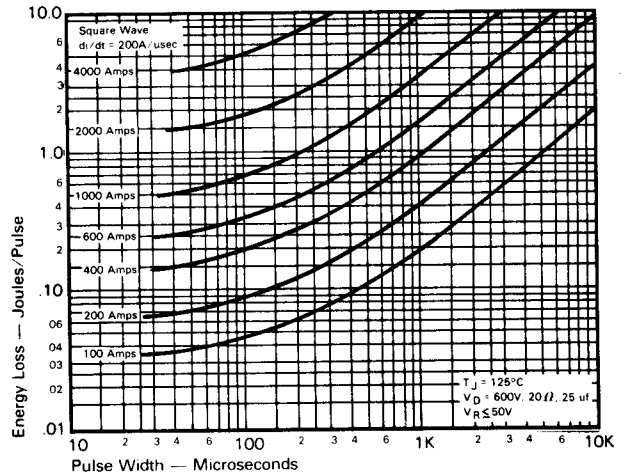
MAXIMUM ALLOWABLE PEAK ON-STATE CURRENT
vs. PULSE WIDTH ($T_C = 65^\circ\text{C}$)



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



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

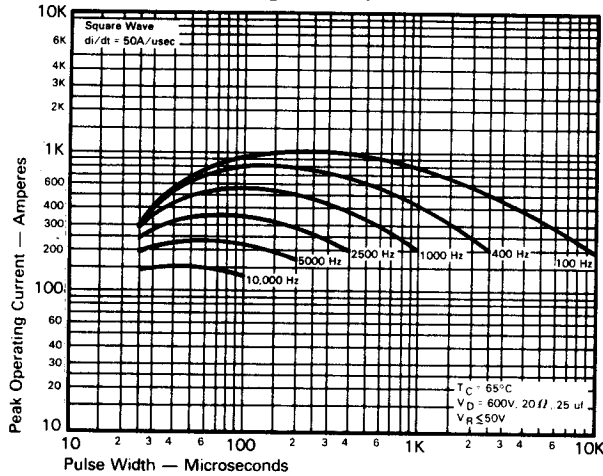


ENERGY PER PULSE FOR TRAPEZOIDAL PULSES
($di/dt = 200\text{A}/\mu\text{sec}$)

175A Avg.
(275 RMS)
Up to 1200 Volts
10-50 μ s

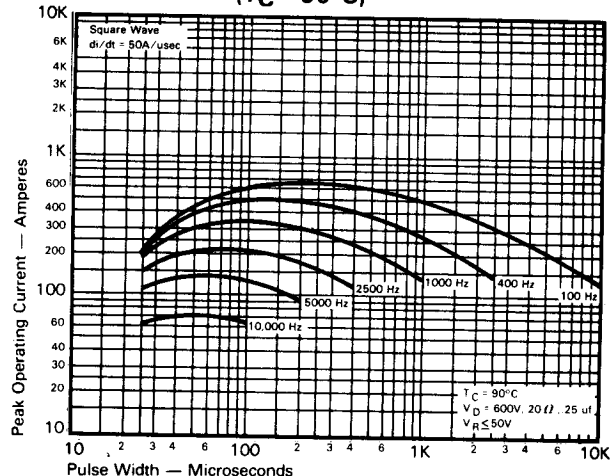
Fast Switching
SCR
T607_18

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

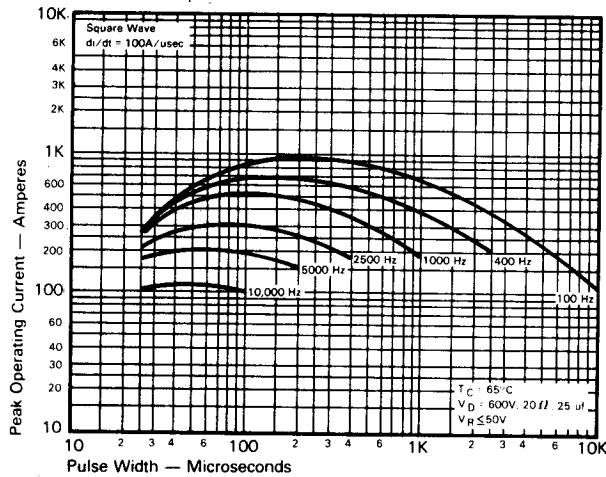


MAXIMUM ALLOWABLE PEAK ON-STATE CURRENT vs. PULSE WIDTH ($di/dt = 50A/us$)

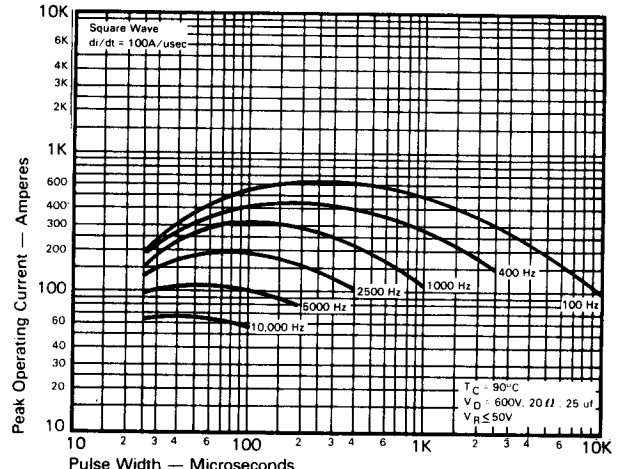
Trapezoidal Wave Current Data
($T_C = 90^\circ\text{C}$)



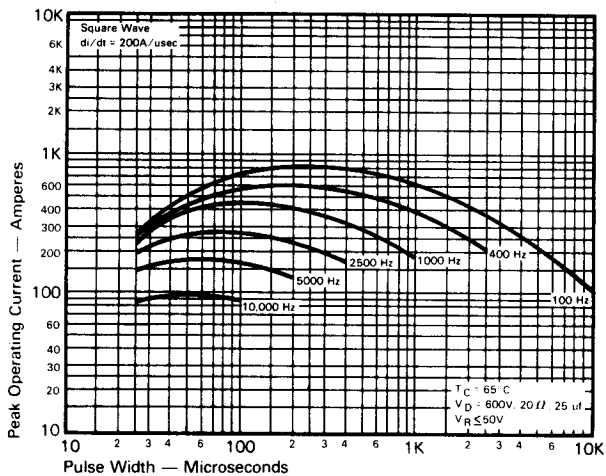
MAXIMUM ALLOWABLE PEAK ON-STATE CURRENT vs. PULSE WIDTH ($di/dt = 50A/us$)



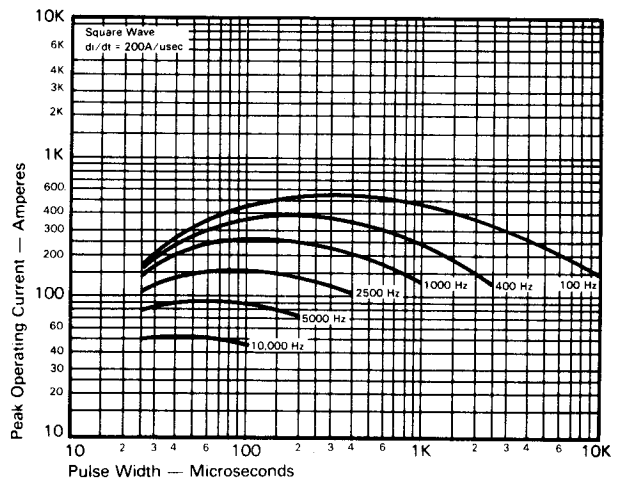
MAXIMUM ALLOWABLE PEAK ON-STATE CURRENT vs. PULSE WIDTH ($di/dt = 100A/us$)



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

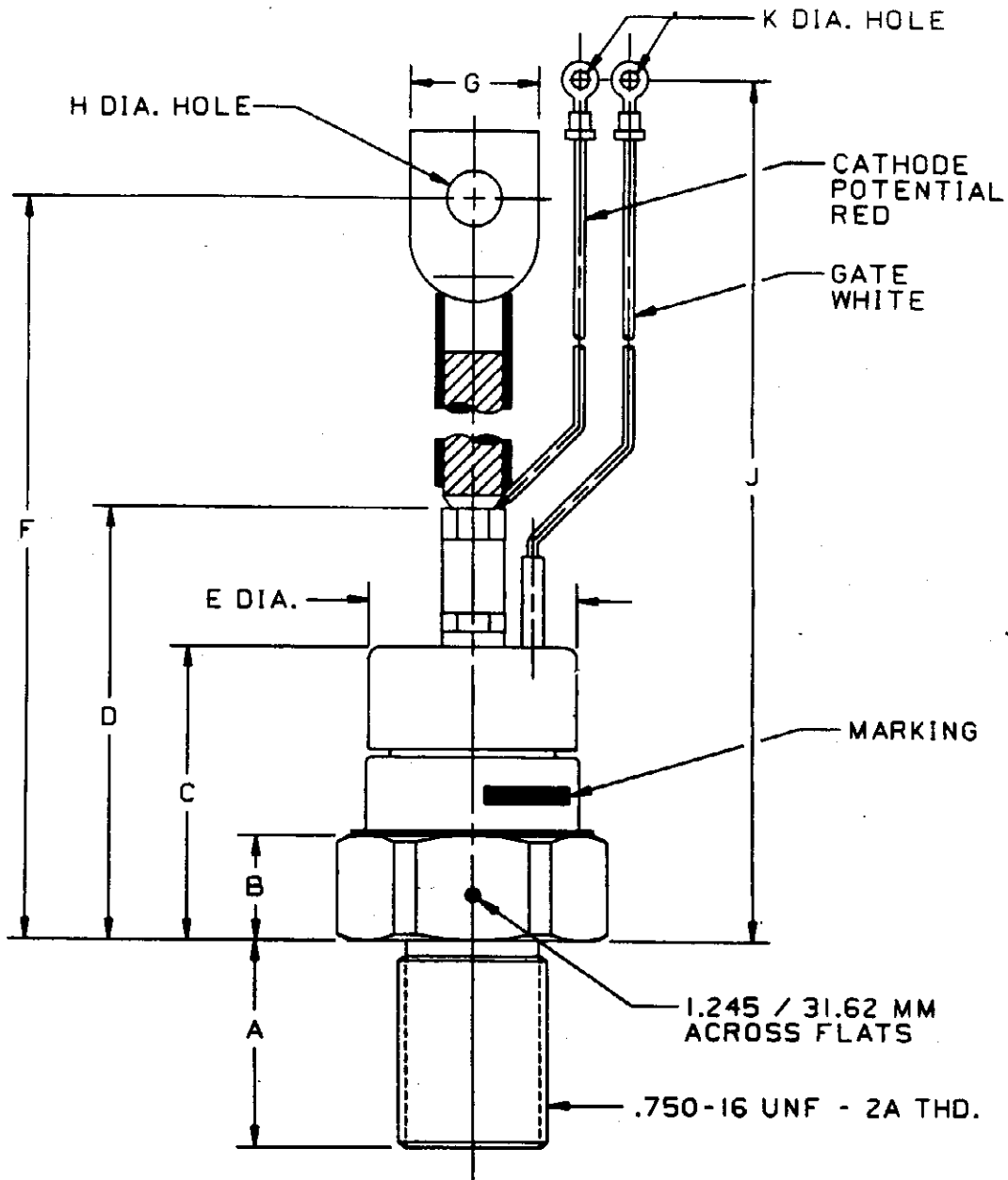


MAXIMUM ALLOWABLE PEAK ON-STATE CURRENT vs. PULSE WIDTH ($di/dt = 200A/us$)



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

FAST SWITCHING
THYRISTORS



CASE NUMBER T60
 NOMINAL DIMENSIONS

STRIKE DISTANCE = .65 INCH / 16.5 MM MIN.
 CREEPAGE DISTANCE = .65 INCH / 16.5 MM MIN.

SYM.	A	B	C	D	E	F	G	H	J	K
INCHES	1.06	.55	1.50	2.25	1.07	7.91	.63	.281	7.91	.146
MM	26.9	14.0	38.1	57.2	27.2	200.9	16.0	7.14	200.9	3.71

ALL DIMENSIONS ARE REFERENCE