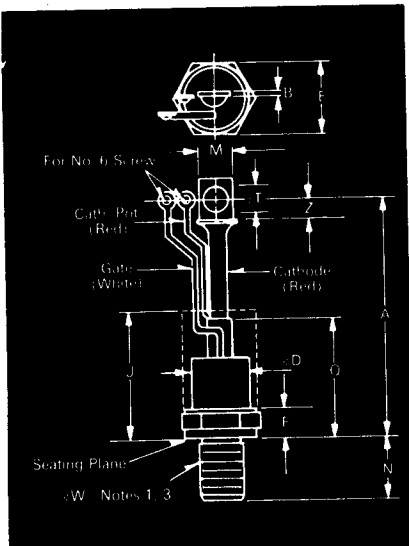


# Fast Switching SCR T607\_\_15

150A Avg.  
(235 RMS)  
Up to 1200 Volts  
10-50  $\mu$ 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 <sub>1</sub>	7.750	8.100	196.85	205.74
B	.063	.172	1.60	4.37
$\phi$ 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
$\phi$ T	.260	.290	6.60	7.37
Z	.340		8.64	

$\phi$ W  $\frac{3}{4}$ -16 UNF-2A

Creep Distance—.75 in. min. (19.05 mm).

Strike Distance—.69 in. min. (17.53 mm).

(In accordance with NEMA standards.)

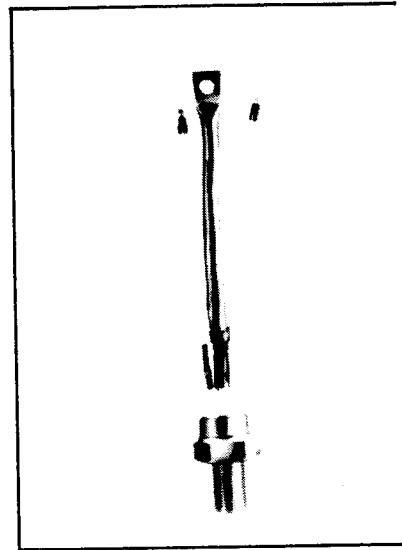
Finish—Nickel Plate.

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  $\frac{3}{4}$ -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 <sub>DRM</sub> and V <sub>RRM</sub> (V)	I <sub>T(av)</sub> (A)	t <sub>q</sub> $\mu$ sec	I <sub>GT</sub> (ma)	Case Code
T607	100 200 300 400 500 600 700 800 900 1000 1100 1200	150	10 15 20 25 30 40 50	150	TO-93 BT

### Example

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

Type T 607 rated at 150A average with V<sub>DRM</sub> = 1000V, I<sub>GT</sub> = 150 ma, t<sub>q</sub> = 30  $\mu$ sec and standard flex lead — order as

\*for 10  $\mu$ sec turn-off, consult factory

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

**150A Avg.  
(235 RMS)  
Up to 1200 Volts  
10-50  $\mu$ s**

**Fast Switching  
SCR  
T607\_15**

**Voltage**

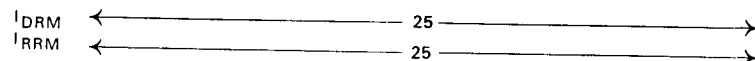
Blocking State Maximums  $\textcircled{2}$  ( $T_J = 125^\circ\text{C}$ )

Repetitive peak forward blocking voltage, V  $\dots V_{DRM}$   
 Repetitive peak reverse voltage, V  $\dots V_{RRM}$   
 Non-repetitive transient peak reverse voltage,  
 $t \leq 5.0$  msec, V  $\dots V_{RSM}$

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  $\dots I_{DRM}$   
 Reverse leakage current, mA peak  $\dots I_{RRM}$



**Current**

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

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

Symbol **T607\_15**

$I_T(\text{rms})$	235
$I_T(\text{av})$	150
$I_{TSM}$	4000
$I^2t$	65,000
$V_{TM}$	2.1
$di/dt$	250

**Switching**

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

Max. turn-off time,  $I_T = 150\text{A}$ ,  
 $T_J = 125^\circ\text{C}$ ,  $di/dt = 12.5$   
 $\text{A}/\mu\text{sec}$ , reapplied  $dv/dt =$   
 $20\text{V}/\mu\text{sec}$  linear to .8V DRM,  $\mu\text{sec}$   $\textcircled{4}$   $\textcircled{5}$   $\dots t_q$   
 Typ. turn-on-time,  $I_T = 100\text{A}$ ,  
 $V_D = 100\text{V}$ ,  $\mu\text{sec} \dots t_{on}$   
 Min. critical  $dv/dt$ , exponential to  $V_{DRM}$ ,  
 $T_J = 125^\circ\text{C}$ , V/ $\mu\text{sec}$   $\textcircled{4}$   $\textcircled{5}$   $\dots dv/dt$   
 Min.  $di/dt$  non-repetitive,  
 $\textcircled{4}$   $\textcircled{5}$ , A/ $\mu\text{sec} \dots di/dt$

Symbol

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

**Gate**

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

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

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**

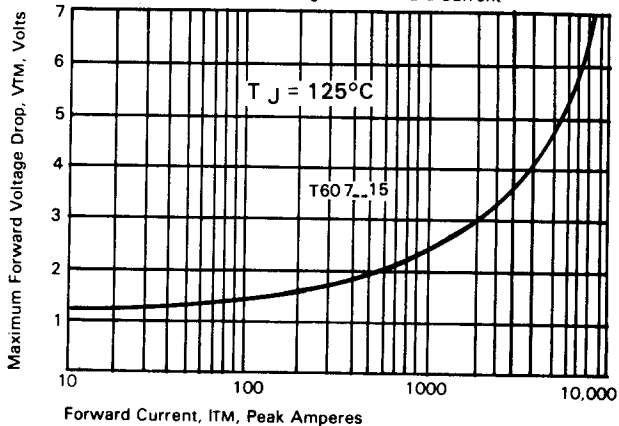
Min., Max. oper. junction temp.,  $^\circ\text{C} \dots T_J$   
 Min., Max. storage temp.,  $^\circ\text{C} \dots T_{stg}$   
 Max. mounting torque, in lb.  $\textcircled{6}$   $\dots$   
 Max. Thermal resistance  $\textcircled{7}$   
 Junction to case,  $^\circ\text{C}/\text{Watt} \dots R_{\theta JC}$   
 Case to sink, lubricated,  $^\circ\text{C}/\text{Watt} \dots R_{\theta CS}$

Symbol

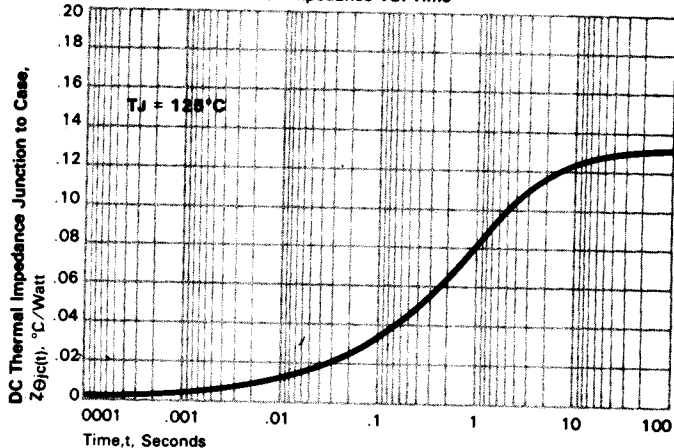
$T_J$	-40 to +125
$T_{stg}$	-40 to +150
$R_{\theta JC}$	.13
$R_{\theta CS}$	.08

- $\textcircled{1}$  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

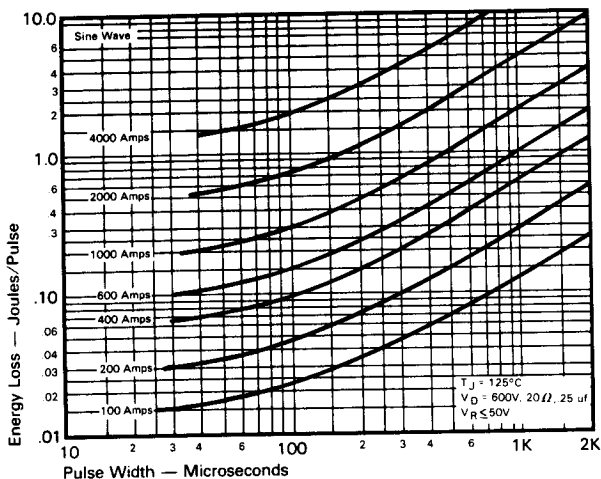


FAST SWITCHING THYRISTORS

# Fast Switching SCR T607-15

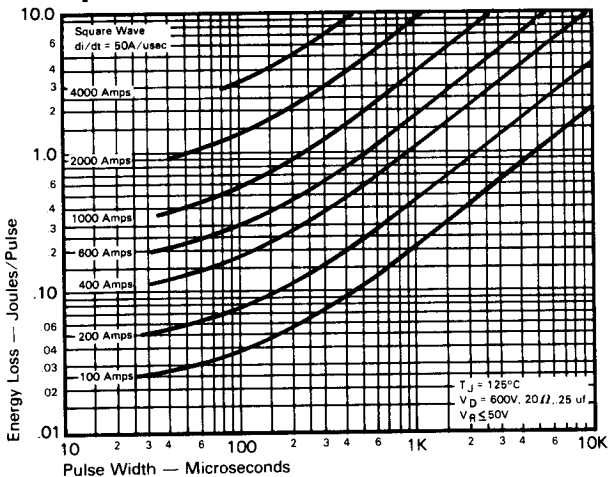
150A Avg.  
(235 RMS)  
Up to 1200 Volts  
10-50  $\mu$ s

## Sinusoidal Current Data

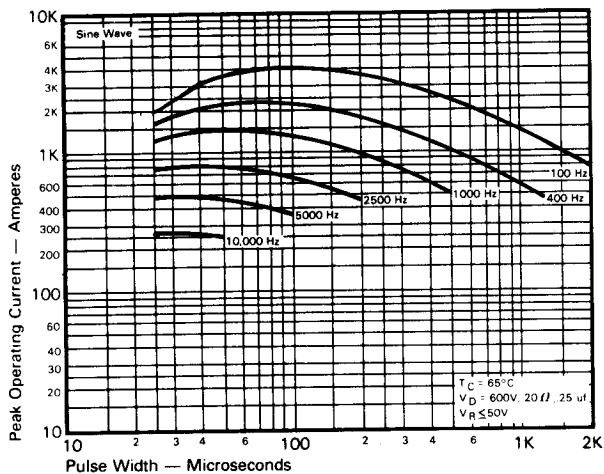


ENERGY PER PULSE FOR SINUSOIDAL PULSES

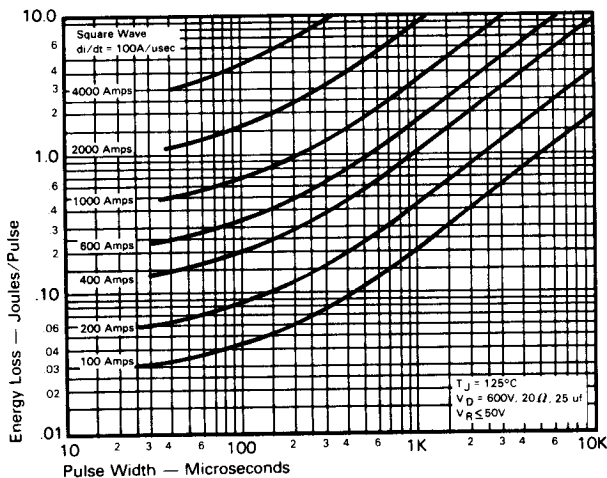
## Trapezoidal Wave Current Data



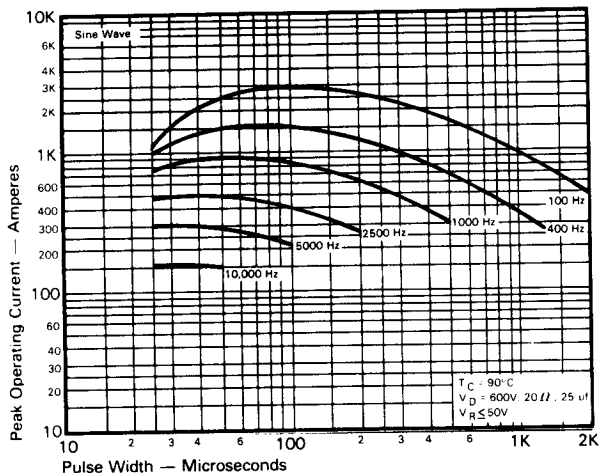
ENERGY PER PULSE FOR TRAPEZOIDAL PULSES  
(di/dt = 50A/usec)



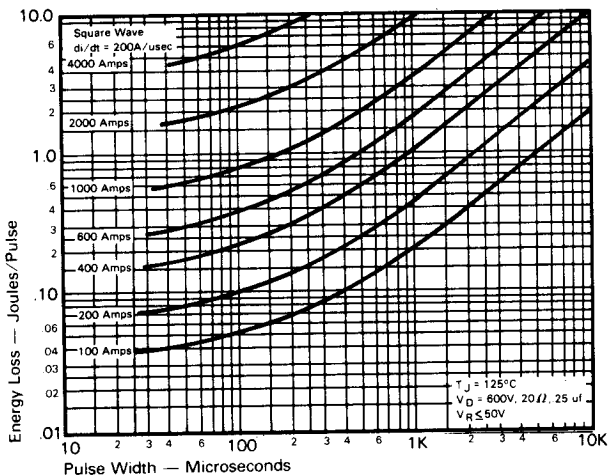
MAXIMUM ALLOWABLE PEAK ON-STATE CURRENT  
vs. PULSE WIDTH ( $T_C = 65^\circ C$ )



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



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

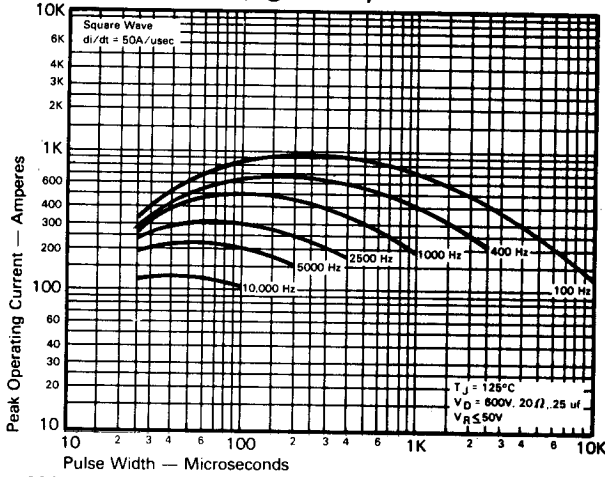


ENERGY PER PULSE FOR TRAPEZOIDAL PULSES  
(di/dt = 200A/usec)

150A Avg.  
(235 RMS)  
Up to 1200 Volts  
10-50  $\mu$ s

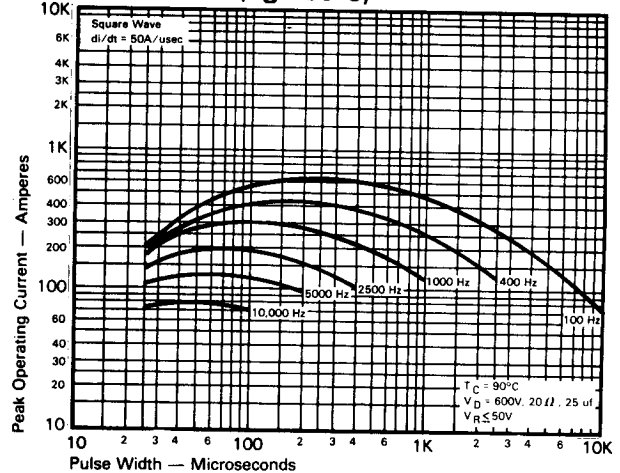
Fast Switching  
SCR  
T607\_15

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

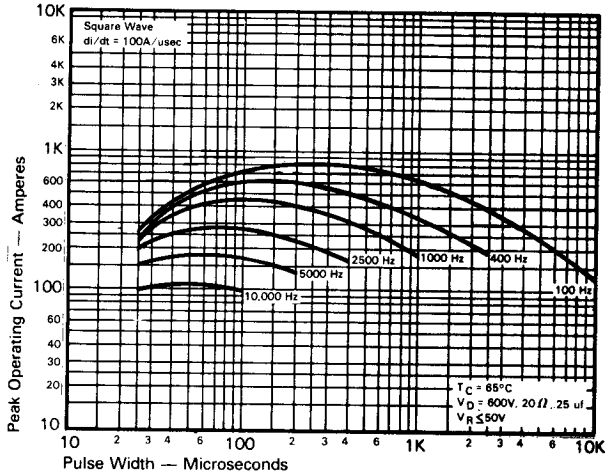


**MAXIMUM ALLOWABLE PEAK ON-STATE CURRENT vs. PULSE WIDTH ( $di/dt = 50A/usec$ )**

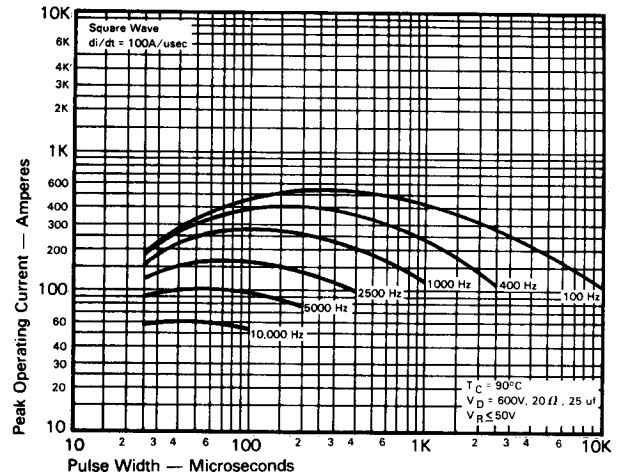
**Trapezoidal Wave Current Data**  
( $T_C = 90^\circ\text{C}$ )



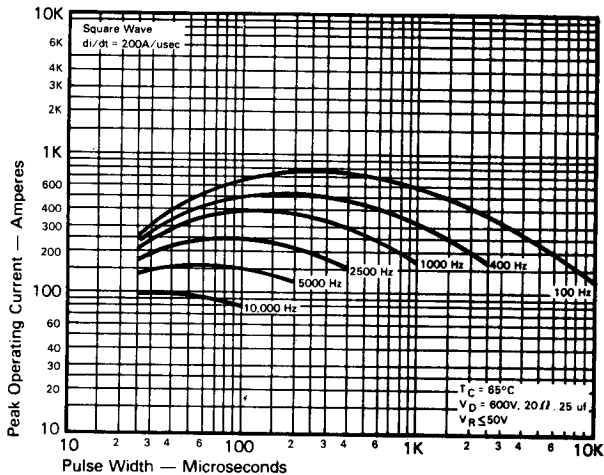
**MAXIMUM ALLOWABLE PEAK ON-STATE CURRENT vs. PULSE WIDTH ( $di/dt = 50A/usec$ )**



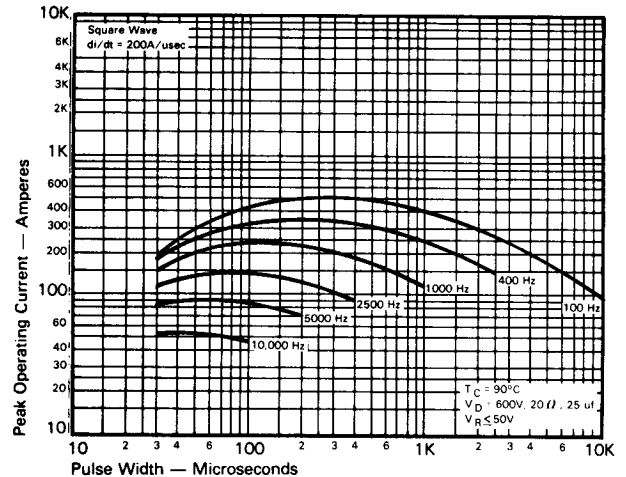
**MAXIMUM ALLOWABLE PEAK ON-STATE CURRENT vs. PULSE WIDTH ( $di/dt = 100A/usec$ )**



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

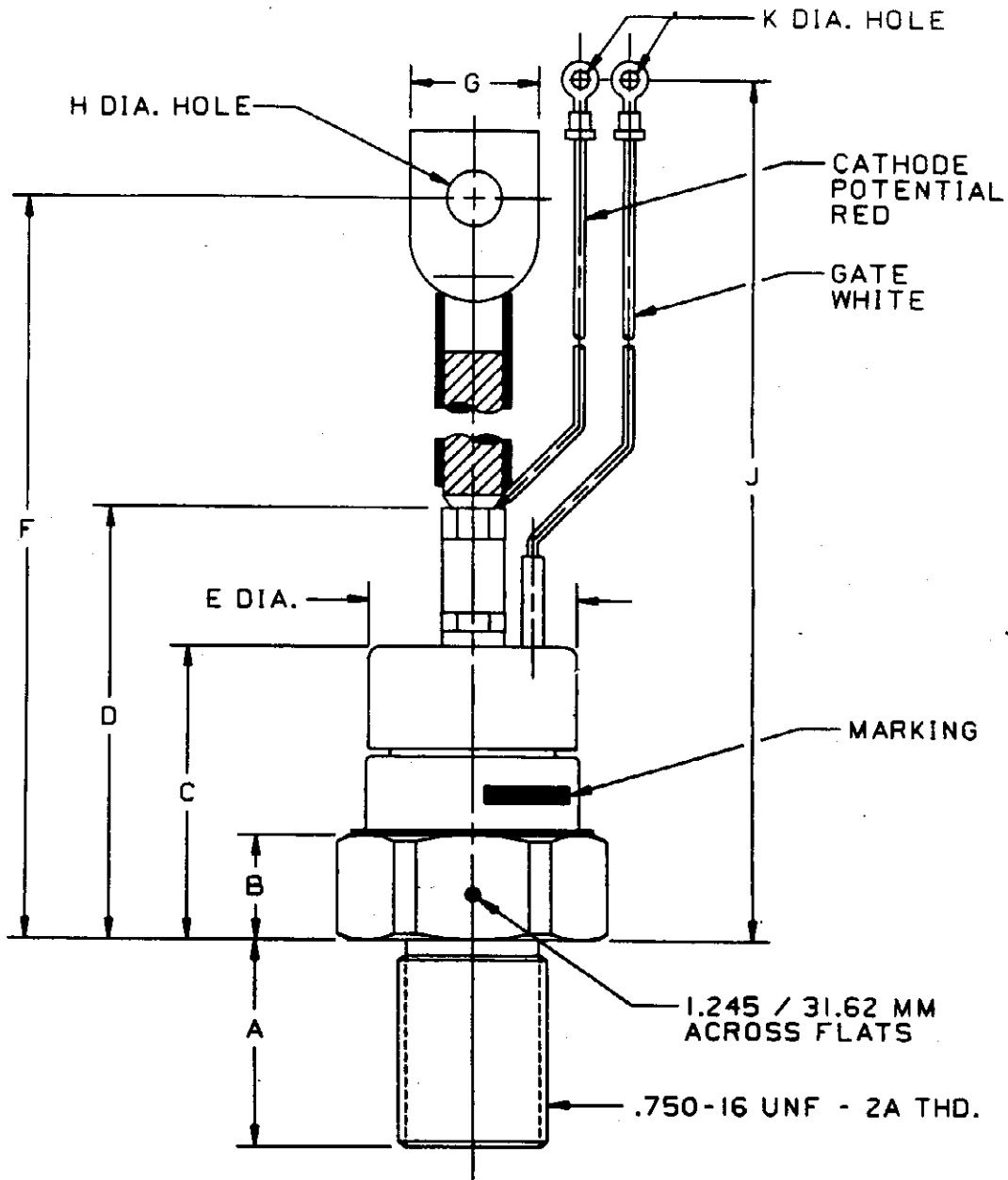


**MAXIMUM ALLOWABLE PEAK ON-STATE CURRENT vs. PULSE WIDTH ( $di/dt = 200A/usec$ )**



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

FAST SWITCHING THYRISTORS



CASE NUMBER 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