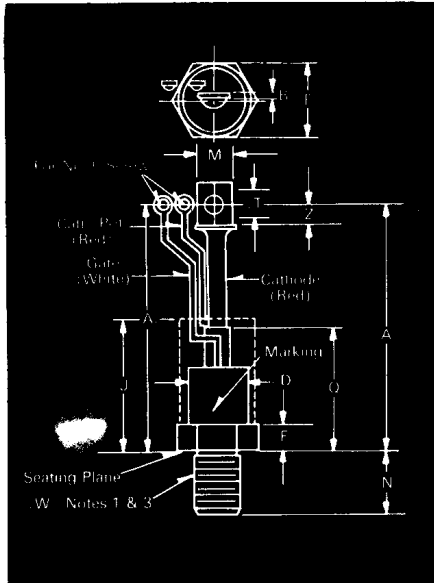


Fast Switching SCR T707_25

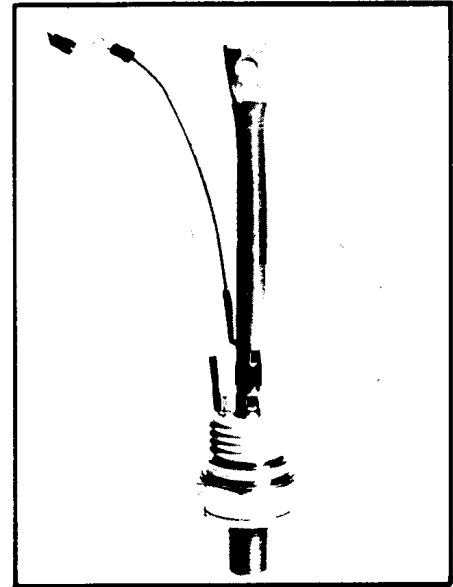
250A Avg.
(400 RMS)
Up to 1200 Volts
25-60 μ s



| 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.



T70 Outline

Features:

- Center fired di/damic 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 | t _q usec | Code | I _{GT} (ma) | Case | Code |
| T707 | 100 | 01 | 250 | 25 | 25 | B | 150 | 4 | T70 | BY |
| | 200 | 02 | | | 30 | | | | | |
| | 300 | 03 | | | 40 | | | | | |
| | 400 | 04 | | | 50 | | | | | |
| | 500 | 05 | | | 60 | | | | | |
| | 600 | 06 | | | | | | | | |
| | 700 | 07 | | | | | | | | |
| | 800 | 08 | | | | | | | | |
| | 900 | 09 | | | | | | | | |
| | 1000 | 10 | | | | | | | | |
| | 1100 | 11 | | | | | | | | |
| | 1200 | 12 | | | | | | | | |

Example

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

Type T 707 rated at 250 A average with V_{DRM} = 1000V, I_{GT} = 150 ma, t_q = 30 μ sec and standard flex lead — order as

| Type | Voltage | Current | Turn Off | Gate Current | Leads |
|---------|---------|---------|----------|--------------|-------|
| T 7 0 7 | 1 0 | 2 0 | 5 | 4 | B Y |

FAST SWITCHING
THYRISTORS

**250A Avg.
(400 RMS)
Up to 1200 Volts
25-60 μ s**

**Fast Switching
SCR
T707_25**

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, $t \leq 5.0$ 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 | |
| 100 | 200 | 300 | 400 | 500 | 600 | 700 | 800 | 900 | 1000 | 1100 | 1200 | |
| 200 | 300 | 400 | 500 | 600 | 700 | 800 | 900 | 1000 | 1100 | 1200 | 1300 | |
| | | | | | | | 30 | | | | | |
| | | | | | | | 30 | | | | | |

Current

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

| | Symbol | T707_25 |
|---|-------------------|---------|
| RMS forward current, A | $I_T(\text{rms})$ | 400 |
| Ave. forward current, A | $I_T(\text{av})$ | 250 |
| One-half cycle surge current ^③ , A | I_{TSM} | 7000 |
| I^2t for fusing (for times ≥ 8.3 ms) A ² sec. | I^2t | 205,000 |
| Forward voltage drop at $I_{TM} = 625$ A and $T_J = 25^\circ\text{C}$, V | V_{TM} | 1.65 |
| Min. repetitive di/dt , A/ μ sec | di/dt | 300 |

Switching

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

| | Symbol | |
|---|----------|----------|
| Max. turn-off time, $I_T = 400$ A, $T_J = 125^\circ\text{C}$, $di/dt = 25$ A/ μ sec, reapplied $dv/dt = 20$ V/ μ sec. linear to .8V DRM, μ sec | t_q | 25 to 60 |
| Typ. turn-on-time, $I_T = 1000$ A, $V_D = 300$ V, μ sec | t_{on} | 3.0 |
| Min. critical dv/dt , exponential to V_{DRM} , $T_J = 125^\circ\text{C}$, V/ μ sec | dv/dt | 300 |
| Min. di/dt , non-repetitive, A/ μ sec | di/dt | 800 |

Gate

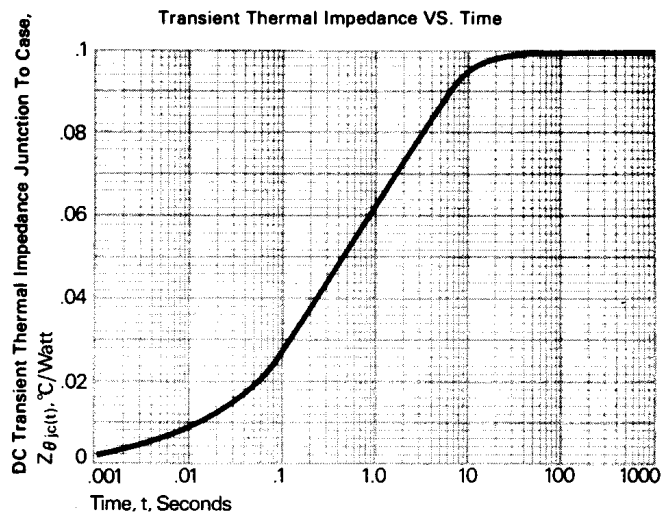
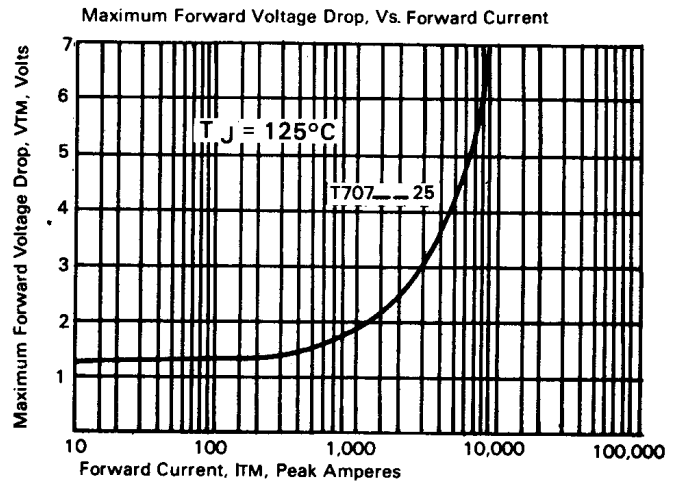
Maximum Parameters ($T_J = 25^\circ\text{C}$)

| | Symbol | |
|--|-------------|------|
| Gate current to trigger at $V_D = 12$ V, mA | I_{GT} | 150 |
| Gate voltage to trigger at $V_D = 12$ 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 +150 |
| Max. mounting torque, in lb | | 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 |

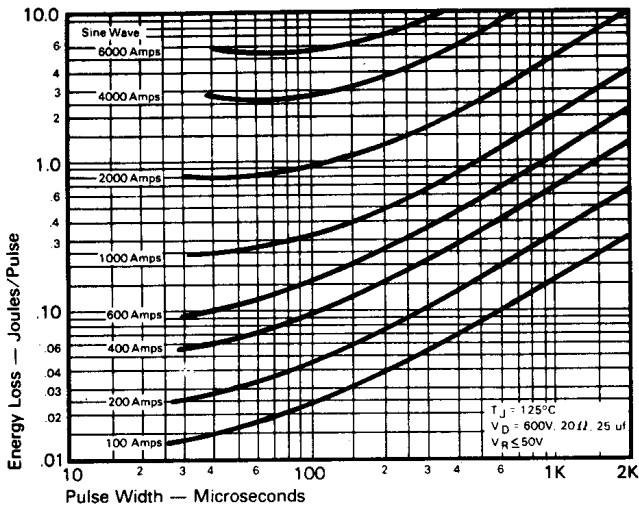
- ① Consult recommended mounting procedures.
- ② Applies for zero or negative gate bias.
- ③ Per JEDEC RS-397, 5.2.2.1.
- ④ With recommended gate drive.
- ⑤ Higher dv/dt ratings available, consult factory.
- ⑥ Per JEDEC standard RS-397, 5.2.2.6.
- ⑦ For operation with antiparallel diode, consult factory.



Fast Switching SCR T707_25

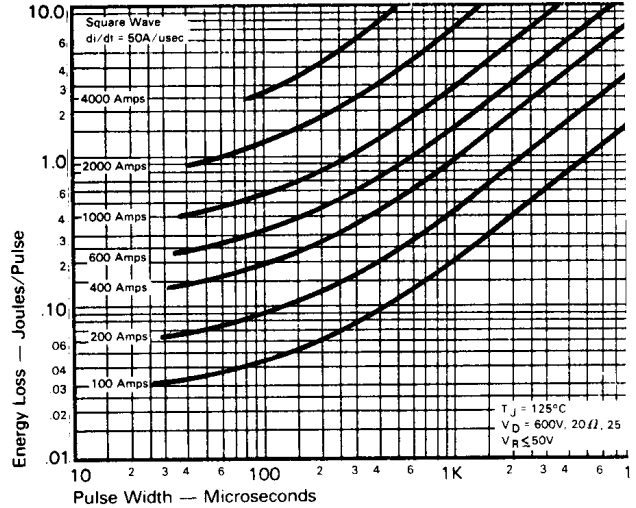
250A Avg.
(400 RMS)
Up to 1200 Volts
25-60 μ s

Sinusoidal Current Data

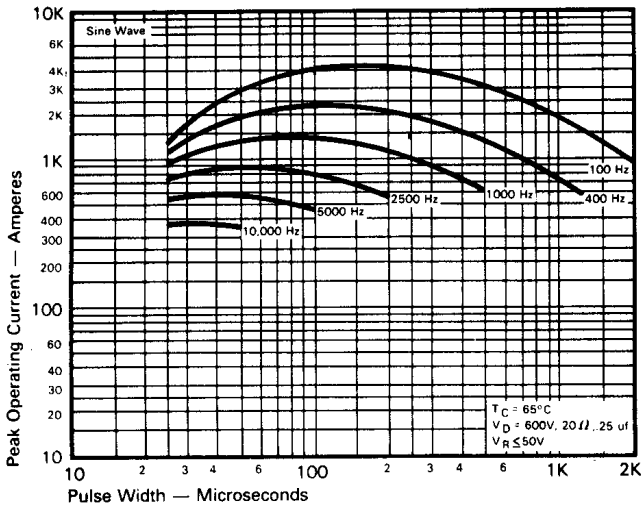


ENERGY PER PULSE FOR SINUSOIDAL PULSES

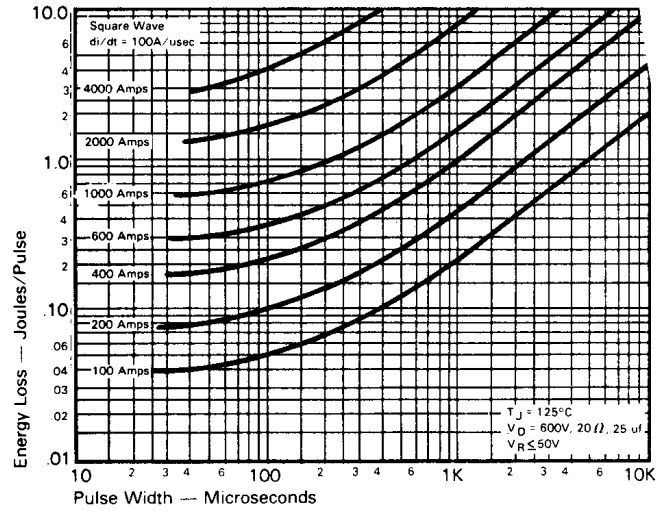
Trapezoidal Wave Current Data



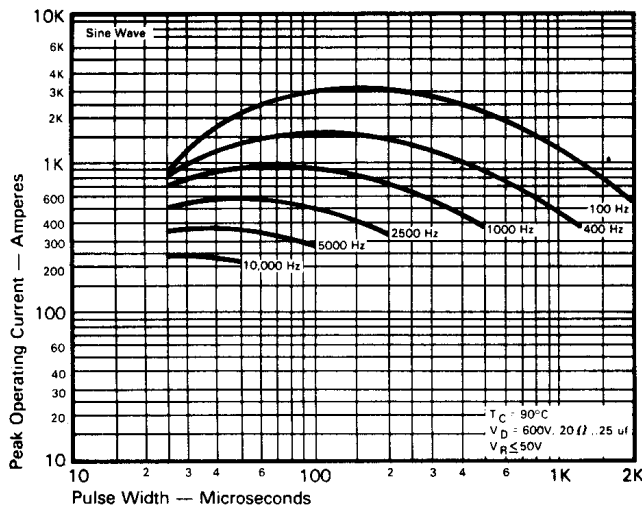
ENERGY PER PULSE FOR TRAPEZOIDAL PULSES
(di/dt = 50A/usec)



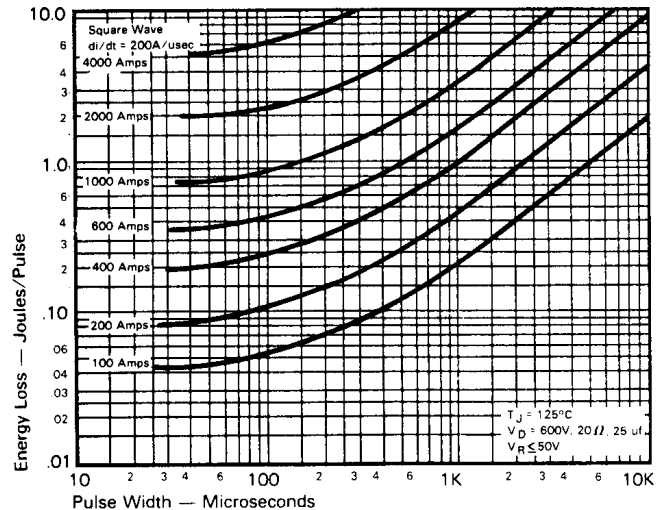
MAXIMUM ALLOWABLE PEAK ON-STATE CURRENT
vs. PULSE WIDTH ($T_C = 65^\circ\text{C}$)



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



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



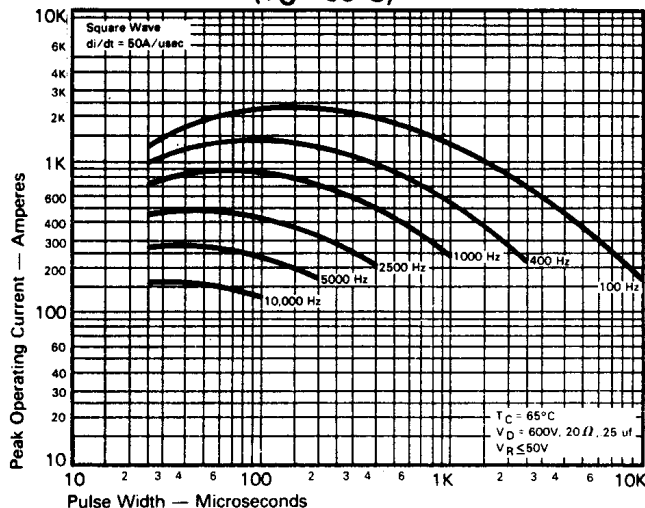
ENERGY PER PULSE FOR TRAPEZOIDAL PULSES
(di/dt = 200A/usec)

FAST SWITCHING
THYRISTORS

250A Avg.
(400 RMS)
Up to 1200 Volts
25-60 μ s

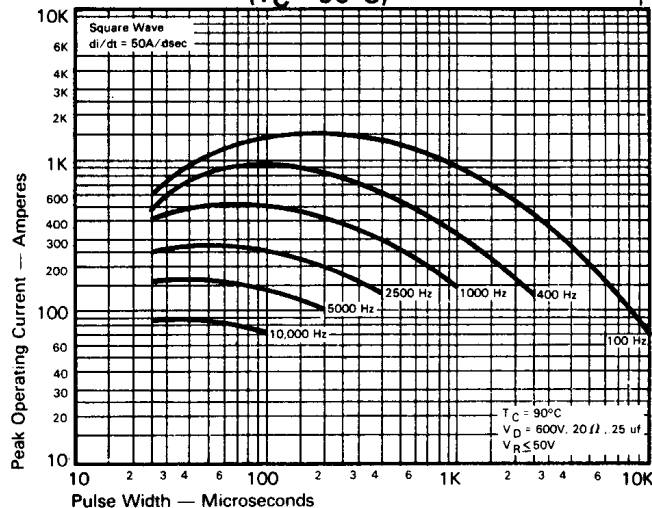
Fast Switching
SCR
T707_25

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

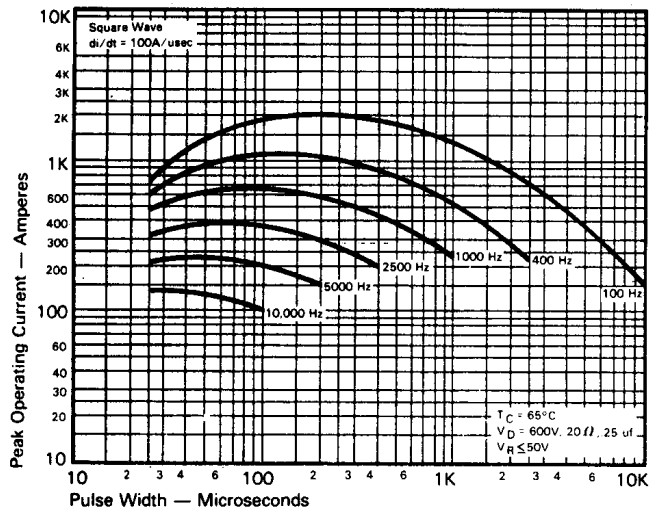


MAXIMUM ALLOWABLE PEAK ON-STATE CURRENT vs. PULSE WIDTH ($di/dt = 50A/usec$)

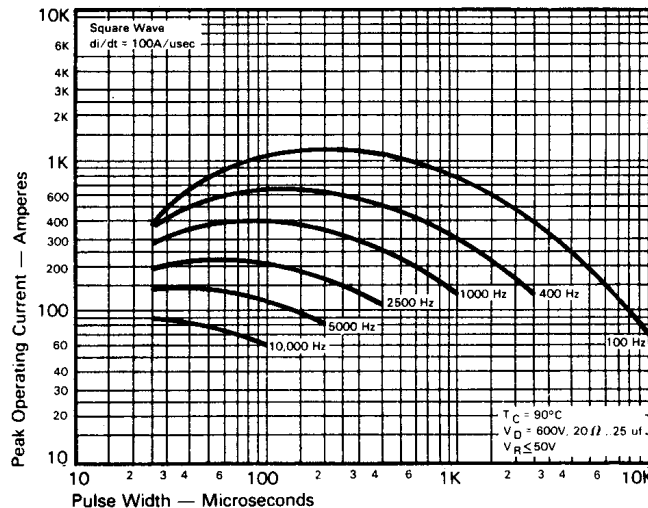
Trapezoidal Wave Current Data
($T_C = 90^\circ\text{C}$)



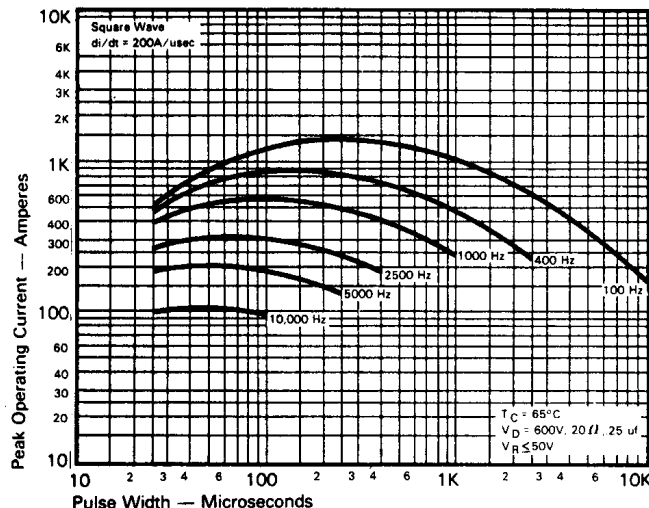
MAXIMUM ALLOWABLE PEAK ON-STATE CURRENT vs. PULSE WIDTH ($di/dt = 50A/usec$)



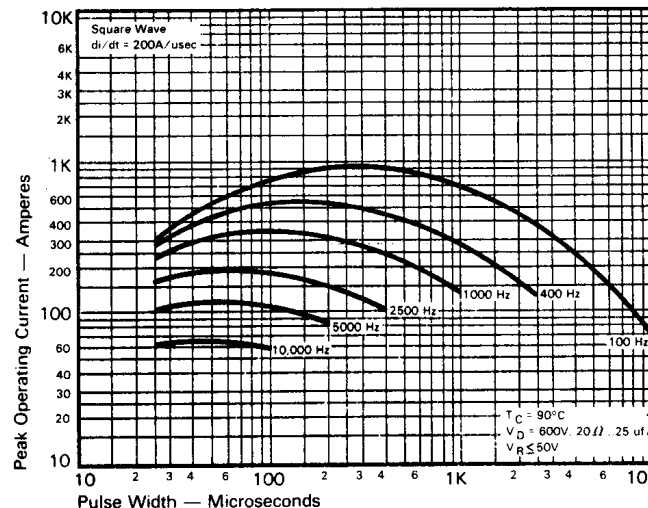
MAXIMUM ALLOWABLE PEAK ON-STATE CURRENT vs. PULSE WIDTH ($di/dt = 100A/usec$)



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

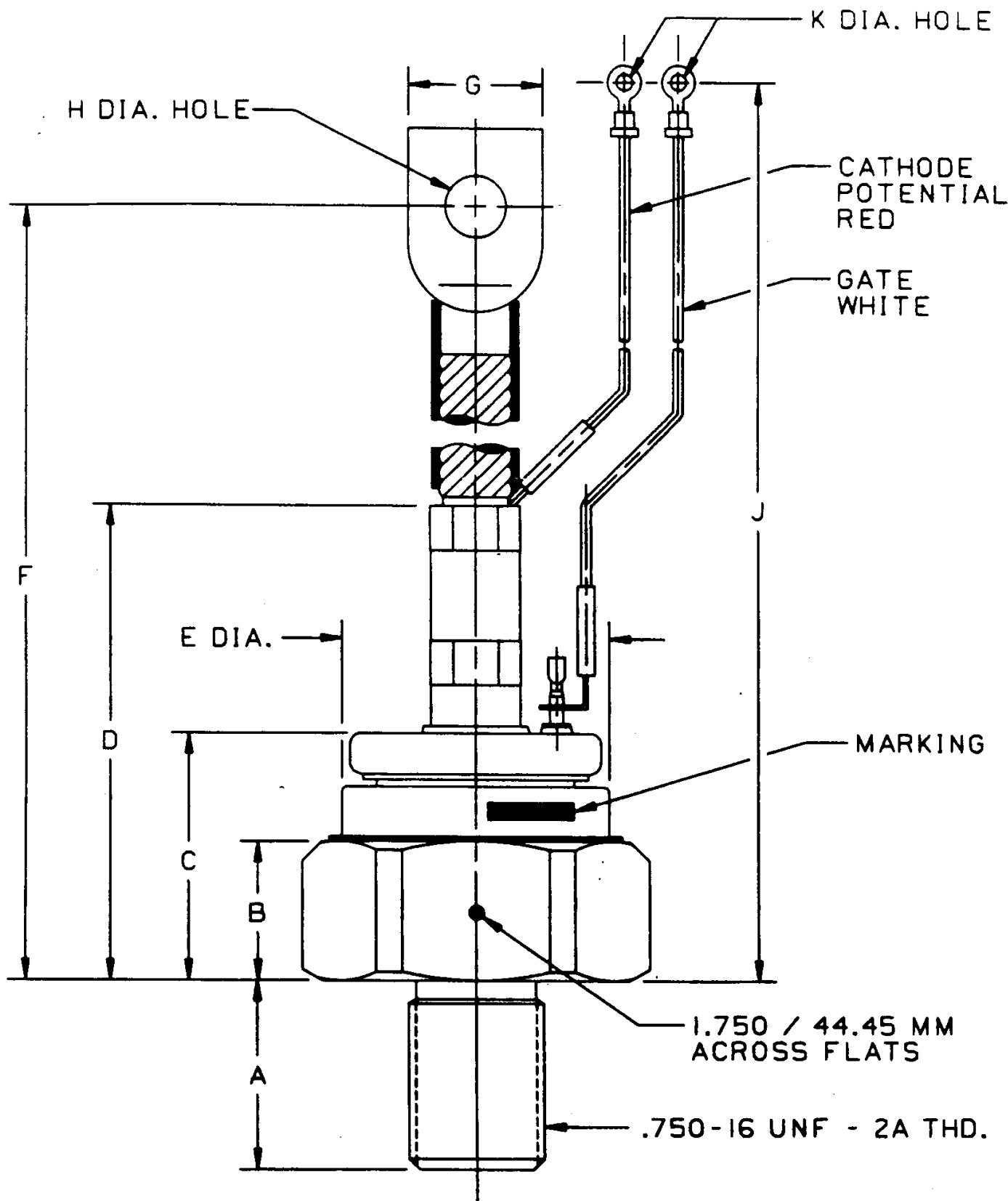


MAXIMUM ALLOWABLE PEAK ON-STATE CURRENT vs. PULSE WIDTH ($di/dt = 200A/usec$)



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