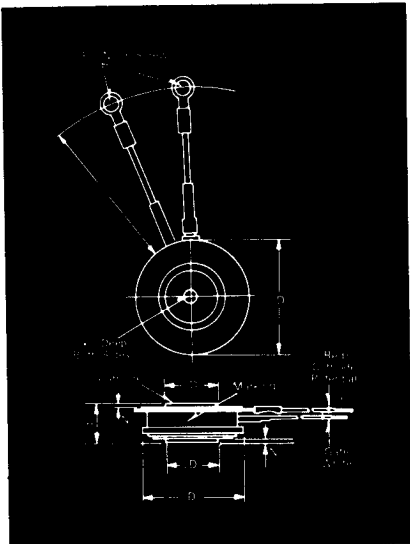


# Fast Switching SCR T627..25

250A Avg.  
(400 RMS)  
Up to 1200 Volts  
10-50  $\mu$ s



T62 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

| Symbol                | Inches |       | Millimeters |        |
|-----------------------|--------|-------|-------------|--------|
|                       | Min.   | Max.  | Min.        | Max.   |
| $\phi$ D              | 1.610  | 1.650 | 40.89       | 41.91  |
| $\phi$ D <sub>1</sub> | .745   | .755  | 18.92       | 19.18  |
| $\phi$ D <sub>2</sub> | 1.420  | 1.460 | 36.07       | 37.08  |
| H                     | .500   | .560  | 12.70       | 14.22  |
| $\phi$ J              | .135   | .145  | 3.43        | 3.68   |
| J <sub>1</sub>        | .072   | .082  | 1.83        | 2.08   |
| L                     | 7.75   | 8.50  | 196.85      | 215.90 |
| N                     | .030   |       | .76         |        |

Creep Distance—.34 in. min. (8.64 mm).

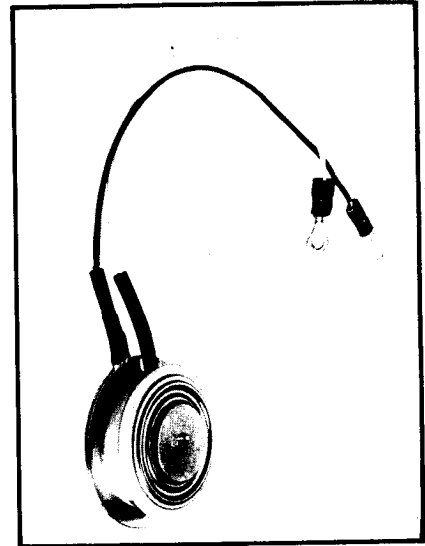
Strike Distance—.26 in. min. (6.60 mm).

(In accordance with NEMA standards.)

Finish—Nickel Plate.

Approx. Weight—2.3 oz. (66 g).

1. Dimension "H" is clamped dimension.



**Applications:**

- Inverters for
  - Ups
  - Induction Heating
  - Motor Control
- Choppers
- Crowbars

**Ordering Information**

| Type | Voltage                                   |      | Current                |      | Turn-off                 |      | Gate Current         |      | Leads |      |
|------|---|------|------------------------|------|--------------------------|------|----------------------|------|-------|------|
|      | V <sub>DRM</sub> and V <sub>RRM</sub> (V) | Code | I <sub>T(av)</sub> (A) | Code | t <sub>q</sub> $\mu$ sec | Code | I <sub>GT</sub> (ma) | Code | Case  | Code |
| T627 | 100                                       | 01   | 250                    | 25   | 10                       | D    | 150                  | 4    | T62   | DN   |
|      | 200                                       | 02   |                        |      |                          |      |                      |      |       |      |
|      | 300                                       | 03   |                        |      |                          |      |                      |      |       |      |
|      | 400                                       | 04   |                        |      |                          |      |                      |      |       |      |
|      | 500                                       | 05   |                        |      |                          |      |                      |      |       |      |
|      | 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 T627 rated at 250A average with V<sub>DRM</sub> = 1000V, I<sub>GT</sub> = 150 ma, t<sub>q</sub> = 20  $\mu$ sec max. and flex leads—order as:

| Type    | Voltage | Current | Turn Off | Gate Current | Leads |
|---------|---------|---------|----------|--------------|-------|
| T 6 2 7 | 1 0     | 2 5     | 6        | 4            | D N   |

FAST SWITCHING THYRISTORS

**250A Avg.  
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**Fast Switching  
SCR  
T627\_\_25**

**Voltage**

**Blocking State Maximums** (T<sub>J</sub> = 125°C)

| Symbol  | 100    | 200 | 300 | 400 | 500 | 600 | 700 | 800 | 900  | 1000 | 1100 | 1200 |
|---|--------|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|
| Repetitive peak forward blocking voltage, V ... V <sub>DRM</sub>      | 100    | 200 | 300 | 400 | 500 | 600 | 700 | 800 | 900  | 1000 | 1100 | 1200 |
| Repetitive peak reverse voltage, V ... V <sub>RRM</sub>               | 100    | 200 | 300 | 400 | 500 | 600 | 700 | 800 | 900  | 1000 | 1100 | 1200 |
| Non-repetitive transient peak reverse voltage, V ... V <sub>RSM</sub> | 200    | 300 | 400 | 500 | 600 | 700 | 800 | 900 | 1000 | 1100 | 1200 | 1300 |
| Forward leakage current, mA peak ... I <sub>DRM</sub>                 | ← 25 → |     |     |     |     |     |     |     |      |      |      |      |
| Reverse leakage current, mA peak ... I <sub>RRM</sub>                 | ← 25 → |     |     |     |     |     |     |     |      |      |      |      |

**Current**

**Conducting State Maximums**  
(T<sub>J</sub> = 125°C)

| Symbol   | T627__25 |
|--|----------|
| RMS forward current, A ... I <sub>T(rms)</sub>   | 400      |
| Ave. forward current, A ... I <sub>T(av)</sub>   | 250      |
| One-half cycle surge current, A ... I <sub>TSM</sub>   | 4500     |
| I <sup>2</sup> t for fusing (for times ≥ 8.3 ms)<br>A <sup>2</sup> sec. ... I <sup>2</sup> t       | 84,000   |
| Forward voltage drop at I <sub>TM</sub> = 625A<br>and T <sub>J</sub> = 25°C, V ... V <sub>TM</sub> | 1.85     |
| Min. repetitive di/dt, A/ $\mu$ sec ... di/dt  | 300      |

**Switching**

(T<sub>J</sub> = 25°C)

| Symbol   | 10 to 50 |
|--|----------|
| Max. turn-off time, I <sub>T</sub> = 150A,<br>T <sub>J</sub> = 125°C, di/dt = 12.5 A/ $\mu$ sec,<br>reapplied dv/dt = 20V/ $\mu$ sec linear to 0.8 V <sub>DRM</sub> , $\mu$ sec ... t <sub>q</sub> | 10 to 50 |
| Typ. turn-on time, I <sub>T</sub> = 100A,<br>V <sub>D</sub> = 100V, $\mu$ sec ... t <sub>on</sub>  | 3.5      |
| Min. critical dv/dt, exponential to V <sub>DRM</sub> ,<br>T <sub>J</sub> = 125°C, V/ $\mu$ sec ... dv/dt   | 300      |
| Min. di/dt, A/ $\mu$ sec ... di/dt   | 800      |

**Gate**

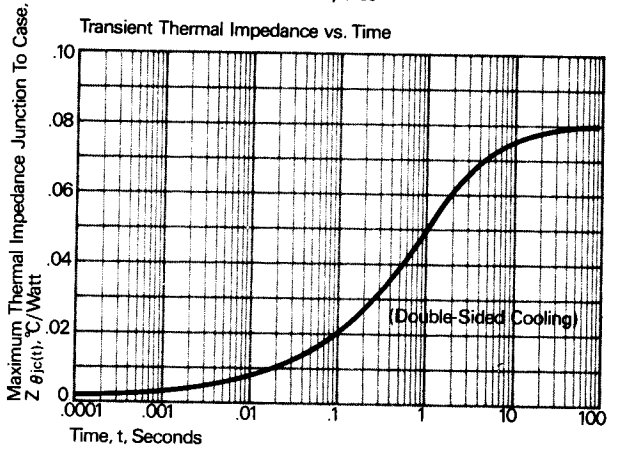
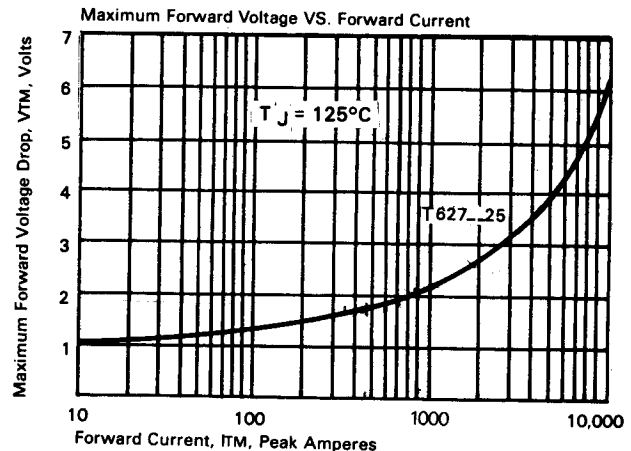
**Maximum Parameters**  
(T<sub>J</sub> = 25°C)

| Symbol  | 150  |
|---|------|
| Gate current to trigger at V <sub>D</sub> = 12V, mA ... I <sub>GT</sub>                                     | 150  |
| Gate voltage to trigger at V <sub>D</sub> = 12V, V ... V <sub>GT</sub>                                      | 3    |
| Non-triggering gate voltage, T <sub>J</sub> = 125°C,<br>and rated V <sub>DRM</sub> , V ... V <sub>GDM</sub> | 0.15 |
| Peak forward gate current, A ... I <sub>GTM</sub>   | 4    |
| Peak reverse gate voltage, V ... V <sub>GRM</sub>   | 5    |
| Peak gate power, Watts ... P <sub>GM</sub>  | 16   |
| Average gate power, Watts ... P <sub>G(av)</sub>  | 3    |

**Thermal and Mechanical**

| Symbol  | -40 to +125  |
|---|--------------|
| Min., Max. oper. junction temp., °C ... T <sub>J</sub>  | -40 to +125  |
| Min., Max. storage temp., °C ... T <sub>stg</sub>   | -40 to +150  |
| Min., Max. Mounting Force, lb. ...  | 1000 to 1400 |
| Max. thermal resistance, Double side cooled<br>Junction to case, °C/Watt ... R <sub>θJC</sub> | .08          |
| Case to sink, lubricated, °C/Watt ... R <sub>θCS</sub>  | .02          |

- 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.

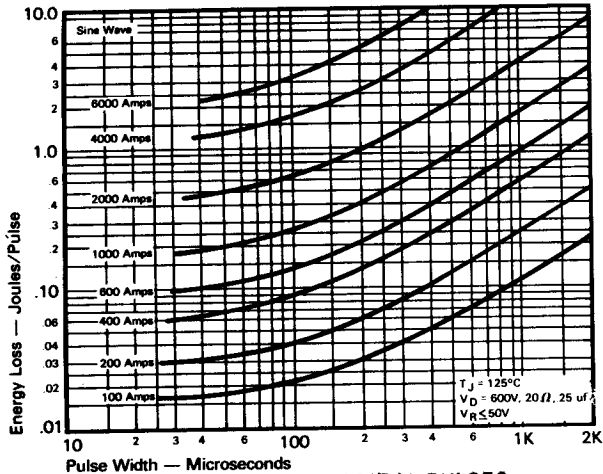


FAST SWITCHING THYRISTORS

# Fast Switching SCR T627..25

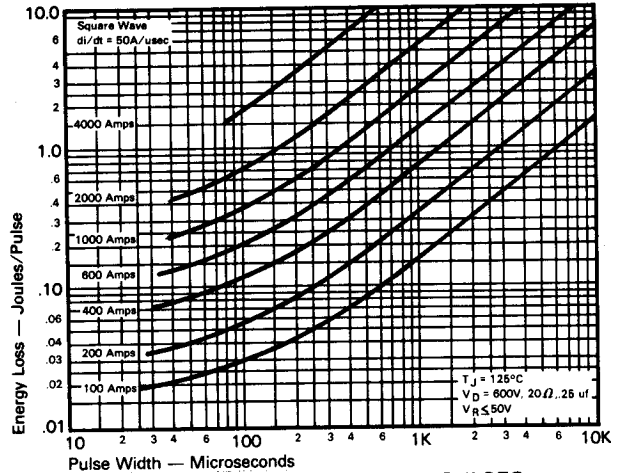
250A Avg.  
(400 RMS)  
Up to 1200 Volts  
10-50  $\mu$ s

## Sinusoidal Current Data

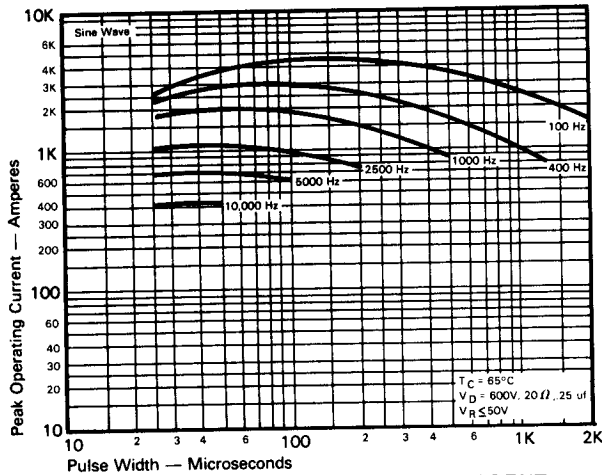


ENERGY PER PULSE FOR SINUSOIDAL PULSES

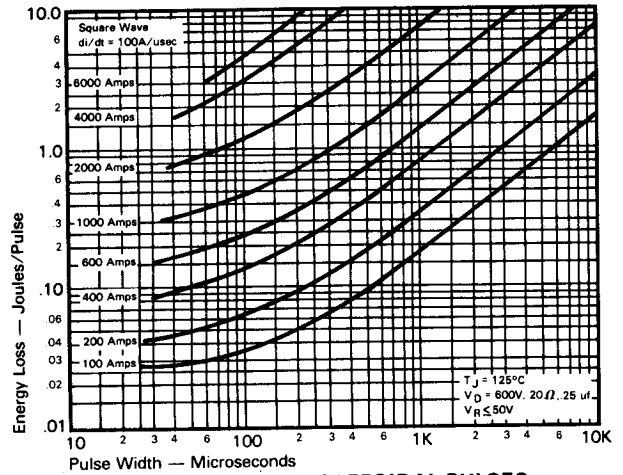
## Trapezoidal Wave Current Data



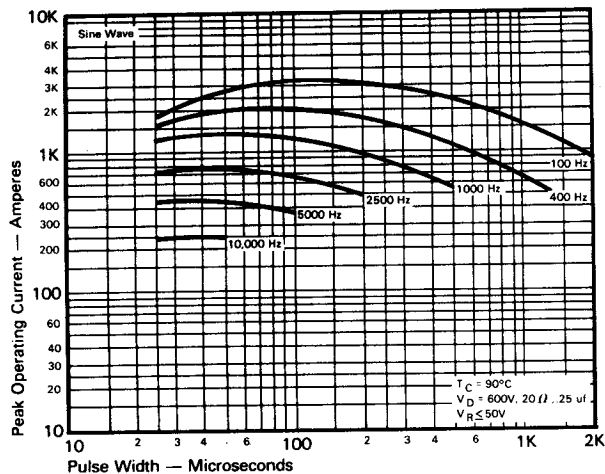
ENERGY PER PULSE FOR TRAPEZOIDAL PULSES  
( $di/dt = 50\text{A}/\mu\text{sec}$ )



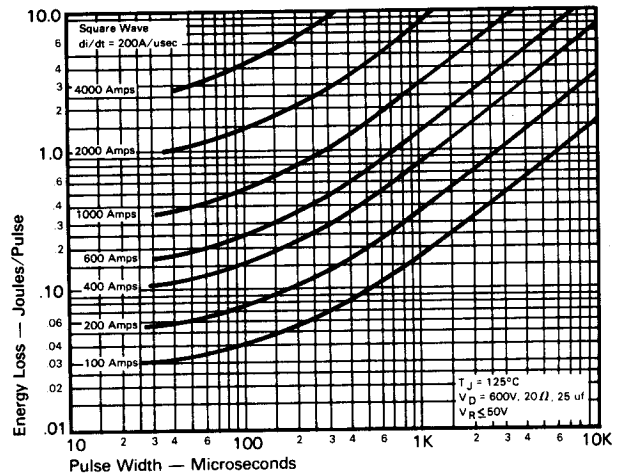
MAXIMUM ALLOWABLE PEAK ON-STATE CURRENT  
vs. PULSE WIDTH ( $T_C = 65^\circ\text{C}$ )



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



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

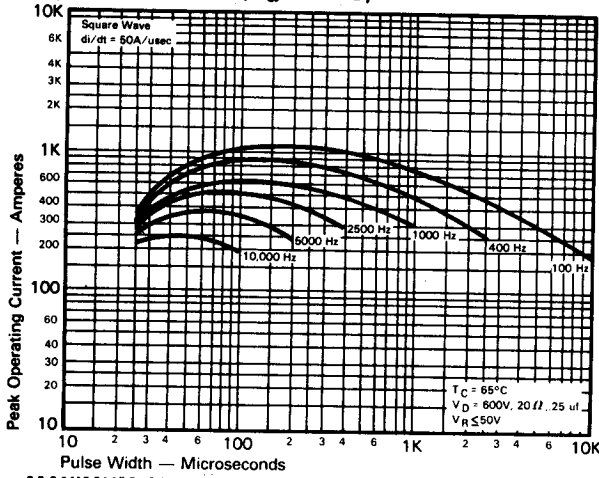


ENERGY PER PULSE FOR TRAPEZOIDAL PULSES  
( $di/dt = 200\text{A}/\mu\text{sec}$ )

250A Avg.  
(400 RMS)  
Up to 1200 Volts  
10-50  $\mu$ s

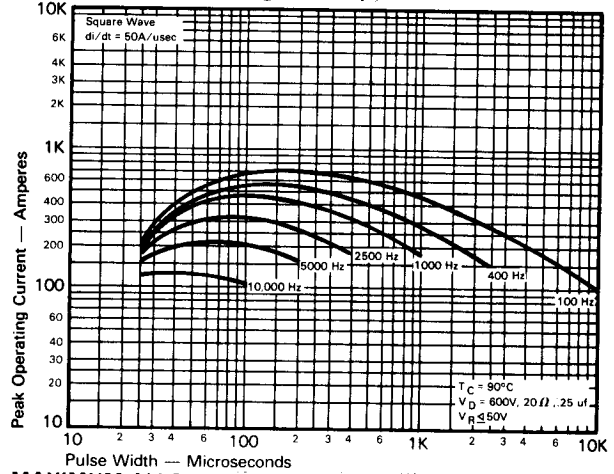
Fast Switching  
SCR  
T627\_25

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

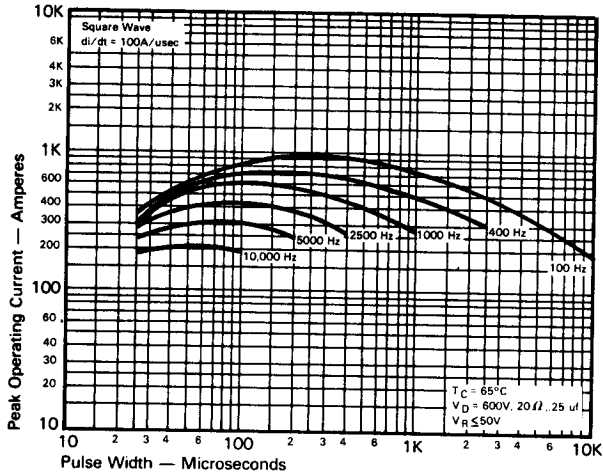


**MAXIMUM ALLOWABLE PEAK ON-STATE CURRENT vs. PULSE WIDTH ( $di/dt = 50A/usec$ )**

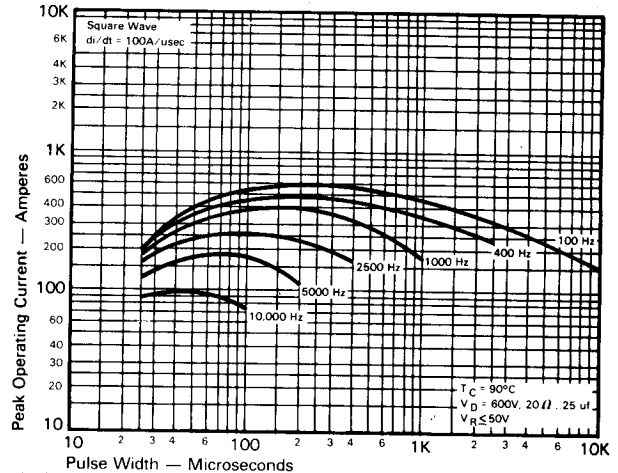
**Trapezoidal Wave Current Data**  
( $T_C = 90^\circ\text{C}$ )



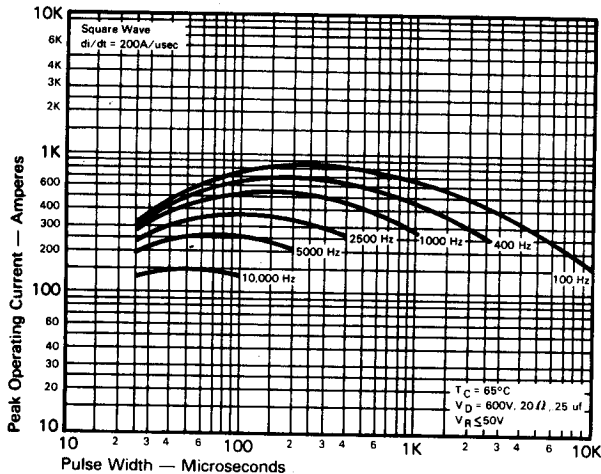
**MAXIMUM ALLOWABLE PEAK ON-STATE CURRENT vs. PULSE WIDTH ( $di/dt = 50A/usec$ )**



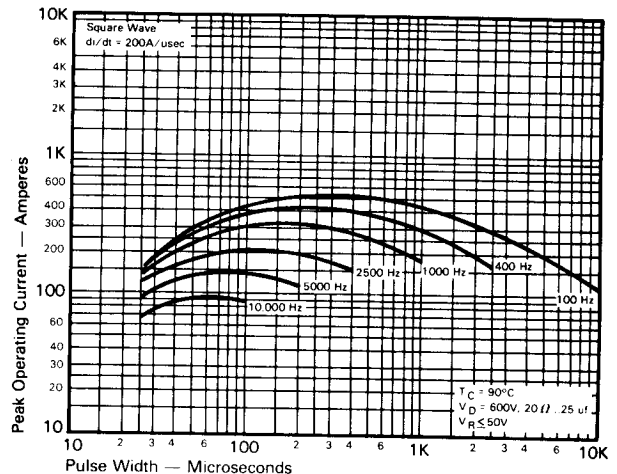
**MAXIMUM ALLOWABLE PEAK ON-STATE CURRENT vs. PULSE WIDTH ( $di/dt = 100A/usec$ )**



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

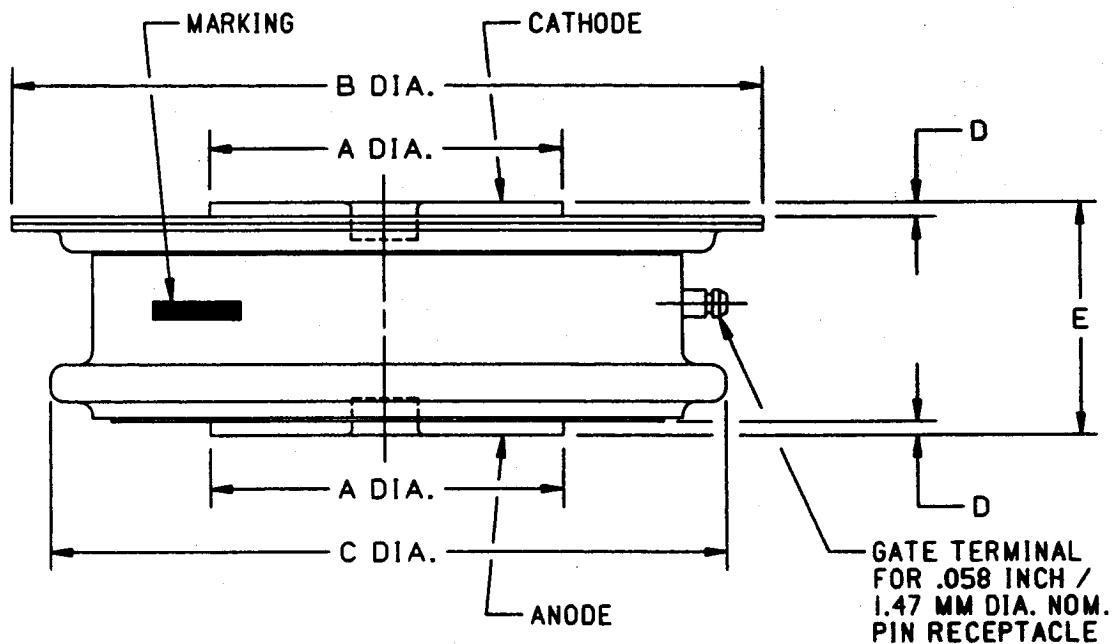
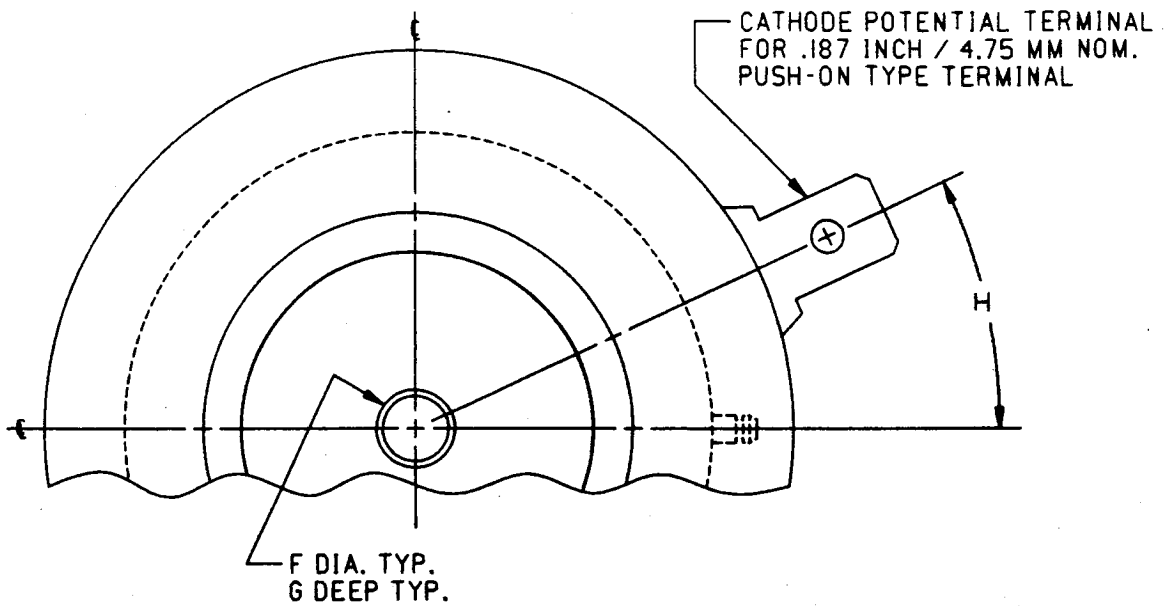


**MAXIMUM ALLOWABLE PEAK ON-STATE CURRENT vs. PULSE WIDTH ( $di/dt = 200A/usec$ )**



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

FAST SWITCHING THYRISTORS



CASE NUMBER T62  
NOMINAL DIMENSIONS

STRIKE DISTANCE = .21 INCH / 5.3 MM MIN.  
CREEPAGE DISTANCE = .34 INCH / 8.6 MM MIN.

| SYM.   | A    | B    | C    | D    | E           | F    | G    | H   |
|--------|------|------|------|------|-------------|------|------|-----|
| INCHES | .75  | 1.63 | 1.44 | .030 | .500/.565   | .140 | .080 | 25° |
| MM     | 19.0 | 41.4 | 36.6 | 0.76 | 12.70/14.35 | 3.56 | 2.03 | 25° |

ALL DIMENSIONS ARE REFERENCE