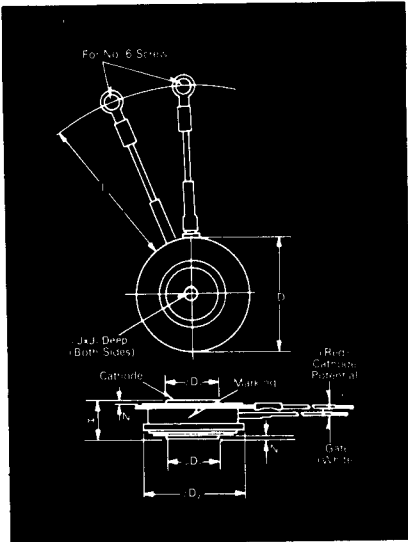


# Fast Switching SCR T627\_\_20

200A Avg.  
(315 RMS)  
Up to 1200 Volts  
10-50  $\mu$ s



| Symbol     | Inches |       | Millimeters |        |
|------------|--------|-------|-------------|--------|
|            | Min.   | Max.  | Min.        | Max.   |
| $\phi D$   | 1.610  | 1.650 | 40.89       | 41.91  |
| $\phi D_1$ | .745   | .755  | 18.92       | 19.18  |
| $\phi D_2$ | 1.420  | 1.460 | 36.07       | 37.08  |
| H          | .500   | .560  | 12.70       | 14.22  |
| $\phi J$   | .135   | .145  | 3.43        | 3.68   |
| $J_1$      | .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).

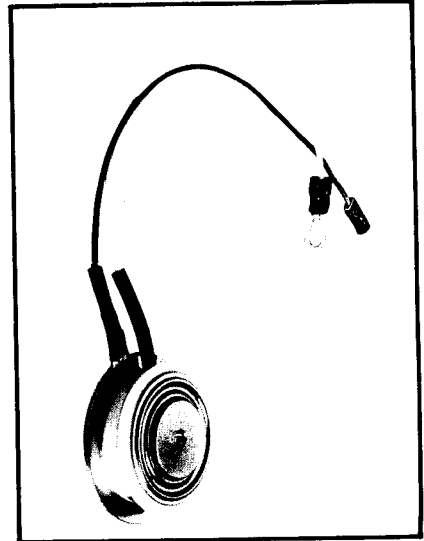
Strike Distance—.26 in. min. (6.60 mm).

(In accordance with NEMA standards.)

Finish—Nickel Plate.

Approx. Weight—2.3 oz. (66 g).

1. Dimension "H" is clamped dimension.



## T62 Outline

### Features:

- Center fired di/dynamic 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

### Applications:

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

## Ordering Information

| Type | Voltage                     |      | Current         |      | Turn-off        |      | Gate Current  |      | Leads |      |
|------|-----------------------------|------|-----------------|------|-----------------|------|---------------|------|-------|------|
| Code | $V_{DRM}$ and $V_{RRM}$ (V) | Code | $I_{T(av)}$ (A) | Code | $t_q$ $\mu$ sec | Code | $I_{GT}$ (ma) | Code | Case  | Code |
| T627 | 100                         | 01   | 200             | 20   | 10              | 6    | 150           | 4    | T62   | DN   |
|      | 200                         | 02   |                 |      | 15              | 7    |               |      |       |      |
|      | 300                         | 03   |                 |      | 20              | 8    |               |      |       |      |
|      | 400                         | 04   |                 |      | 30              | 8    |               |      |       |      |
|      | 500                         | 05   |                 |      | 40              | 4    |               |      |       |      |
|      | 600                         | 06   |                 |      | 50              | 3    |               |      |       |      |
|      | 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 200A average with  $V_{DRM} = 1000V$ ,  $I_{GT} = 150$  ma,  $t_q = 20 \mu$ sec max. and flex leads—order as:

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

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

**200A Avg.  
(315 RMS)  
Up to 1200 Volts  
10-50  $\mu$ s**

**Fast Switching  
SCR  
T627\_\_20**

## Voltage

**Blocking State Maximums** ① ( $T_J = 125^\circ\text{C}$ )

Repetitive peak forward blocking voltage, V ...  
Repetitive peak reverse voltage, V ...  
Non-repetitive transient peak reverse voltage,  
 $t \leq 5.0$  msec, V ...

Symbol

$V_{DRM}$   
 $V_{RRM}$   
 $V_{RSM}$

|     |     |     |     |     |     |     |     |      |      |      |      |
|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|
| 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 |

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

$I_{DRM}$   
 $I_{RRM}$

|   |    |   |
|---|----|---|
| ← | 25 | → |
| ← | 25 | → |

## Current

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

Symbol

**T627\_\_20**

RMS forward current, A ...  
Ave. forward current, A ...  
One-half cycle surge current③, A ...  
 $I^2t$  for fusing (for times  $\geq 8.3$  ms)  
A<sup>2</sup> sec. ...  
Forward voltage drop at  $I_{TM} = 625\text{A}$   
and  $T_J = 25^\circ\text{C}$ , V ...  
Min. repetitive  $di/dt$ ④, A/ $\mu$ sec①④⑤

$I_{T(rms)}$   
 $I_{T(av)}$   
 $I_{TSM}$   
 $I^2t$   
 $V_{TM}$   
 $di/dt$

315  
200  
4000  
65,000  
2.1  
250

## Switching

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

Symbol

Max. turn-off time,  $I_T = 150\text{A}$ ,  
 $T_J = 125^\circ\text{C}$ ,  $di_R/dt = 12.5$  ①  
A/ $\mu$ sec, reapplied  $dv/dt =$   
20V/ $\mu$ sec ⑤ linear to  $0.8 V_{DRM}$ ,  $\mu$  sec. ...  
Typ. turn-on time,  $I_T = 100\text{A}$   
 $V_D = 100\text{V}$  ⑥,  $\mu$ sec ...  
Min. critical  $dv/dt$ , exponential to  $V_{DRM}$ ,  
 $T_J = 125^\circ\text{C}$ , V/ $\mu$ sec②⑥ ...  
Min.  $di/dt$  A/ $\mu$ sec ①④⑤

$t_q$   
 $t_{on}$   
 $dv/dt$   
 $di/dt$

10 to 50  
3.5  
300  
800

## Gate

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

Symbol

Gate current to trigger at  $V_D = 12\text{V}$ , mA ...  
Gate voltage to trigger at  $V_D = 12\text{V}$ , V ...  
Non-triggering gate voltage,  $T_J = 125^\circ\text{C}$ ,  
and rated  $V_{DRM}$ , V ...  
Peak forward gate current, A ...  
Peak reverse gate voltage, V ...  
Peak gate power, Watts ...  
Average gate power, Watts ...

$I_{GT}$   
 $V_{GT}$   
 $V_{GDM}$   
 $I_{GTM}$   
 $V_{GRM}$   
 $P_{GM}$   
 $P_{G(av)}$

150  
3  
0.15  
4  
5  
16  
3

## Thermal and Mechanical

Symbol

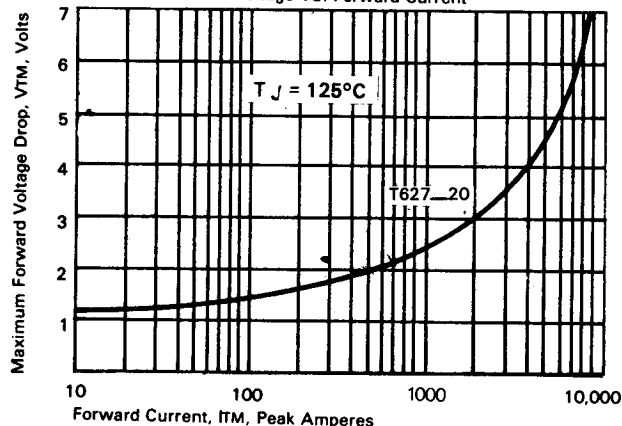
Min., Max. oper. junction temp.,  $^\circ\text{C}$  ...  
Min., Max. storage temp.,  $^\circ\text{C}$  ...  
Min., Max. Mounting Force, lb. ① ...  
Max. thermal resistance, Double side cooled  
Junction to case,  $^\circ\text{C}/\text{Watt}$  ...  
Case to sink, lubricated,  $^\circ\text{C}/\text{Watt}$  ...

$T_J$   
 $T_{stg}$   
 $R_{\theta JC}$   
 $R_{\theta CS}$

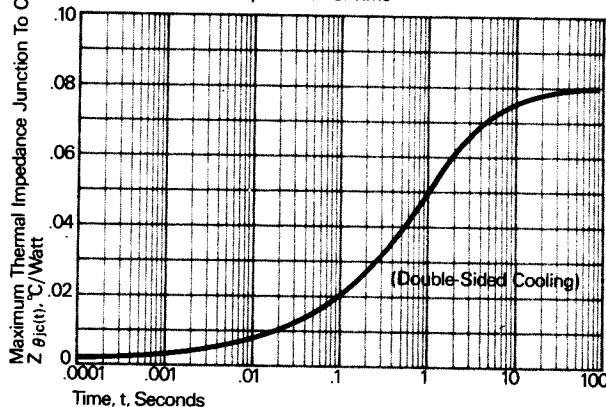
-40 to +125  
-40 to +150  
1000 to 1400  
.08  
.02

- 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.

Maximum Forward Voltage VS. Forward Current



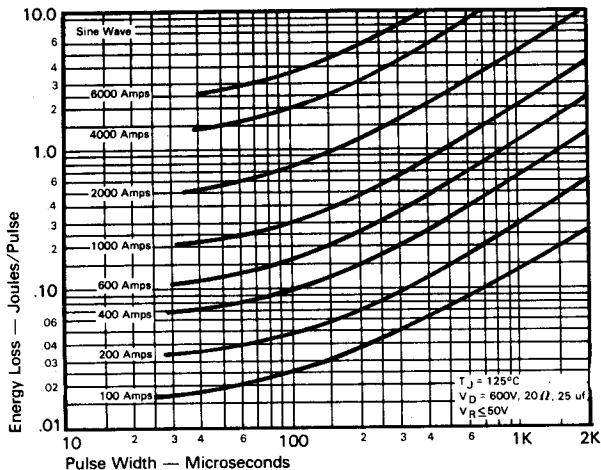
Transient Thermal Impedance vs. Time



# Fast Switching SCR T627-20

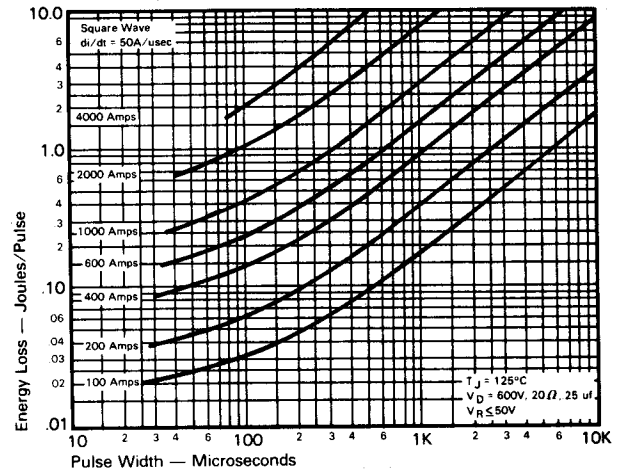
200A Avg.  
(315 RMS)  
Up to 1200 Volts  
10-50  $\mu$ s

## Sinusoidal Current Data

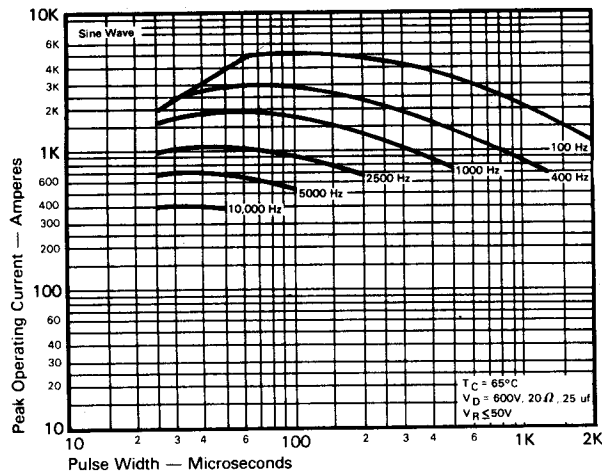


ENERGY PER PULSE FOR SINUSOIDAL PULSES

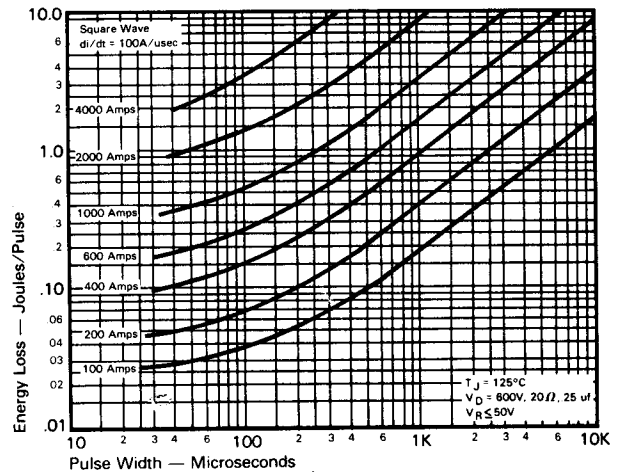
## Trapezoidal Wave Current Data



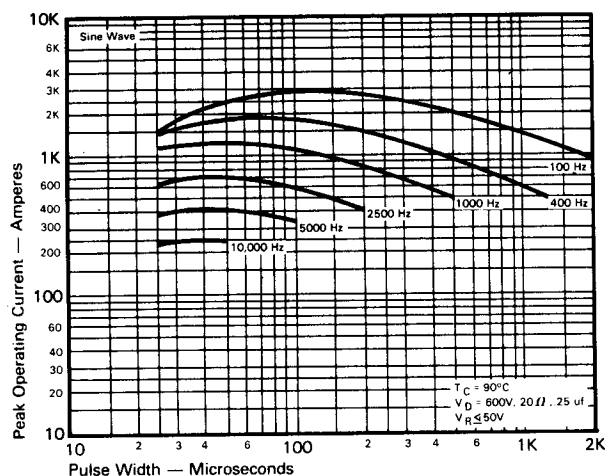
ENERGY PER PULSE FOR TRAPEZOIDAL PULSES  
( $di/dt = 50\text{A/usec}$ )



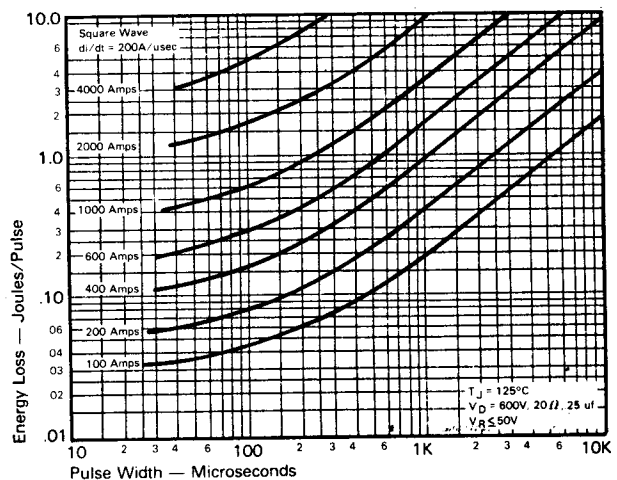
MAXIMUM ALLOWABLE PEAK ON-STATE CURRENT  
vs. PULSE WIDTH ( $T_C = 65^\circ\text{C}$ )



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



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

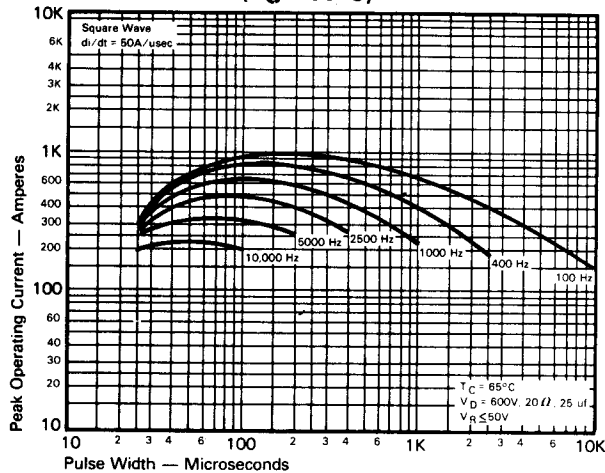


ENERGY PER PULSE FOR TRAPEZOIDAL PULSES  
( $di/dt = 200\text{A/usec}$ )

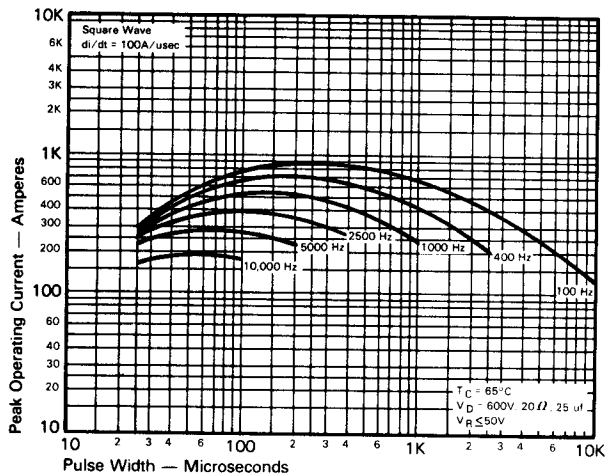
200A Avg.  
(315 RMS)  
Up to 1200 Volts  
10-50  $\mu$ s

Fast Switching  
SCR  
T627-20

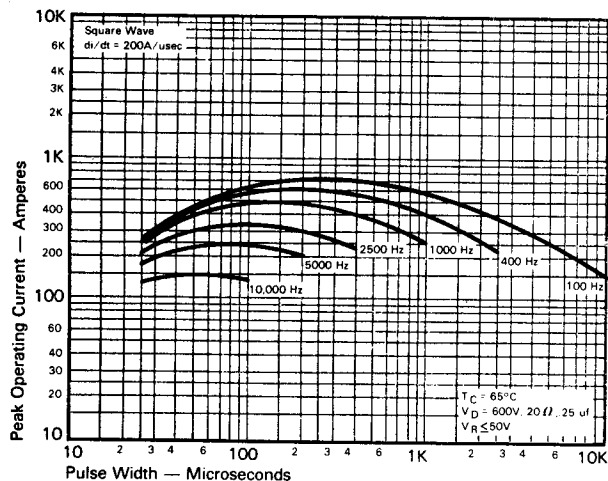
**Trapezoidal Wave Current Data**  
( $T_C = 65^\circ\text{C}$ )



**MAXIMUM ALLOWABLE PEAK ON-STATE CURRENT vs. PULSE WIDTH ( $di/dt = 50\text{A}/\mu\text{sec}$ )**

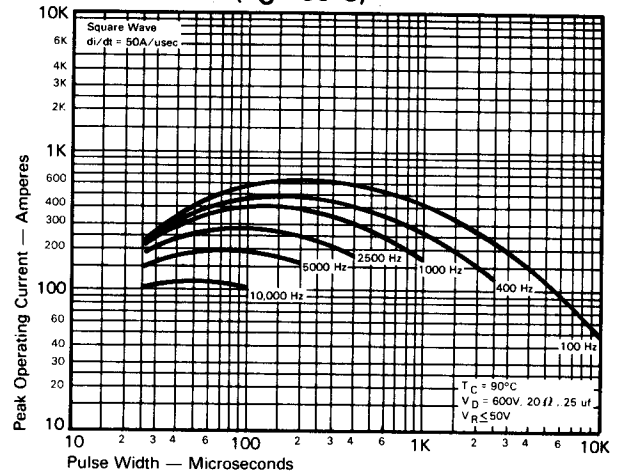


**MAXIMUM ALLOWABLE PEAK ON-STATE CURRENT vs. PULSE WIDTH ( $di/dt = 100\text{A}/\mu\text{sec}$ )**

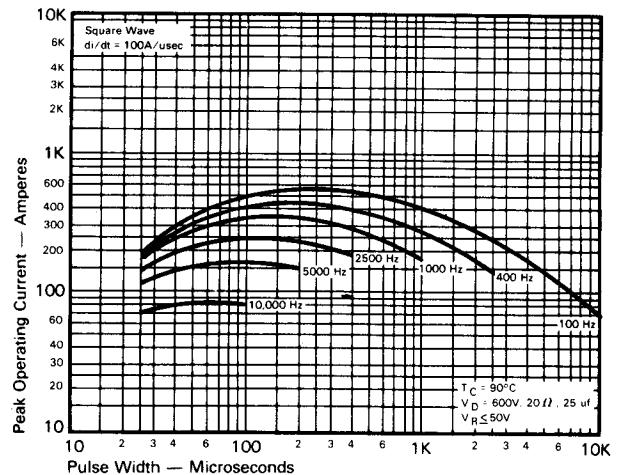


**MAXIMUM ALLOWABLE PEAK ON-STATE CURRENT vs. PULSE WIDTH ( $di/dt = 200\text{A}/\mu\text{sec}$ )**

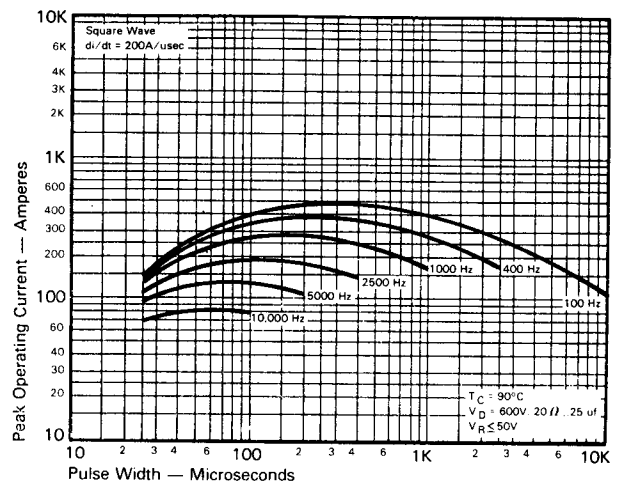
**Trapezoidal Wave Current Data**  
( $T_C = 90^\circ\text{C}$ )



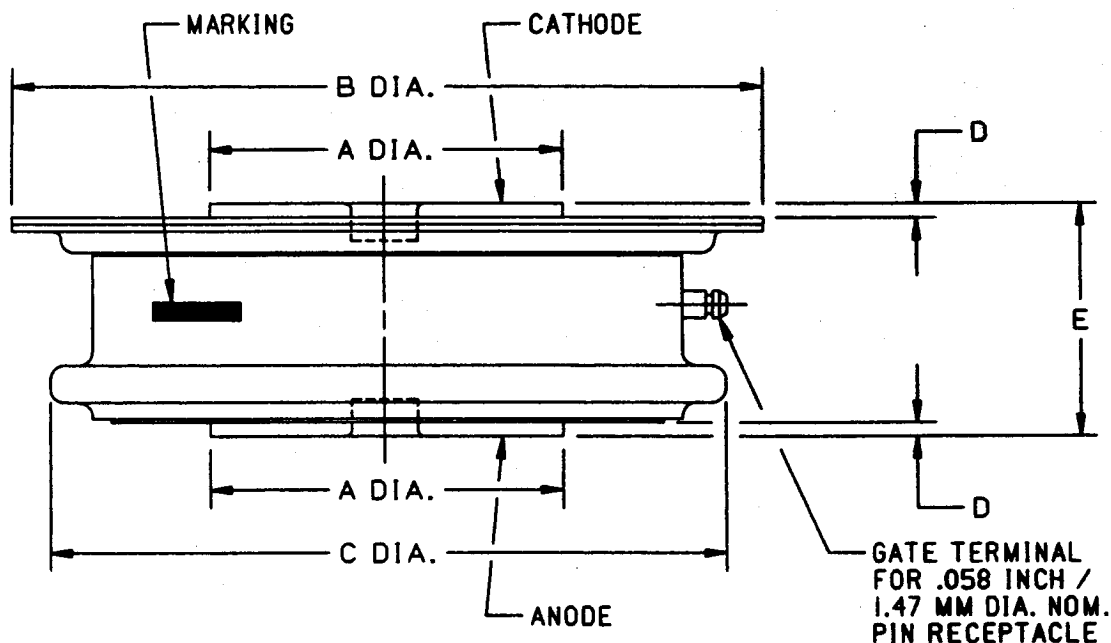
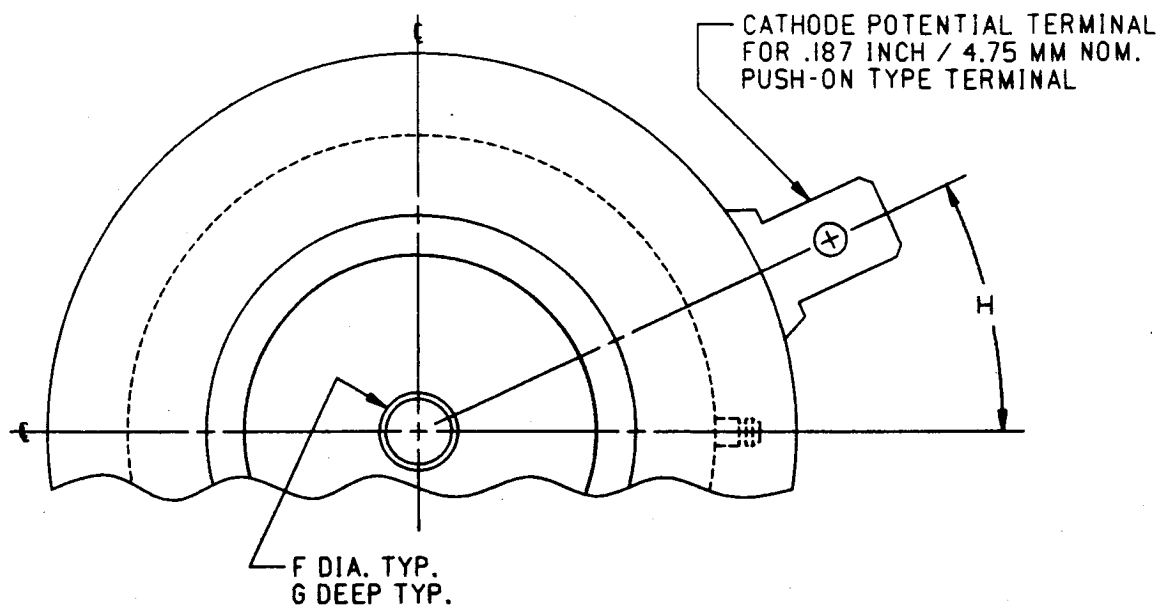
**MAXIMUM ALLOWABLE PEAK ON-STATE CURRENT vs. PULSE WIDTH ( $di/dt = 50\text{A}/\mu\text{sec}$ )**



**MAXIMUM ALLOWABLE PEAK ON-STATE CURRENT vs. PULSE WIDTH ( $di/dt = 100\text{A}/\mu\text{sec}$ )**



**MAXIMUM ALLOWABLE PEAK ON-STATE CURRENT vs. PULSE WIDTH ( $di/dt = 200\text{A}/\mu\text{sec}$ )**



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