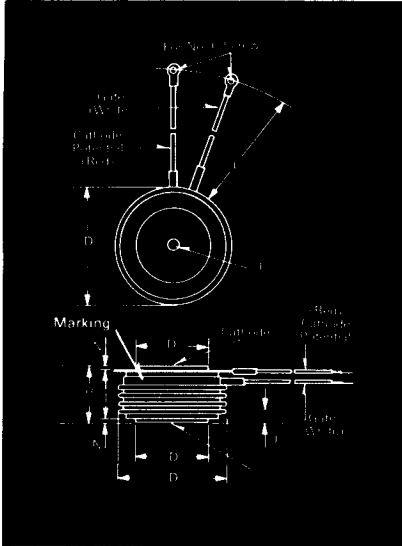


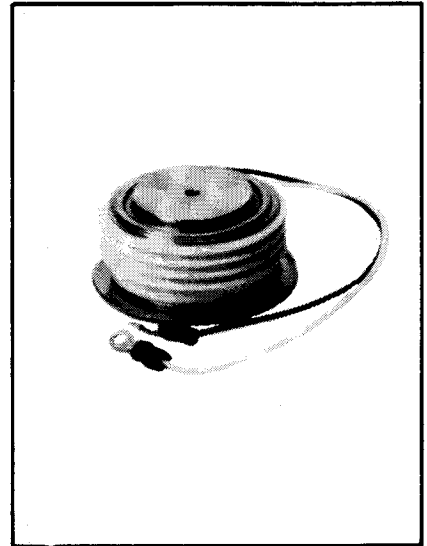
# Fast Switching SCR T727\_35

350A Avg.  
(550 RMS)  
Up to 1200 Volts  
15-60  $\mu$ s



Symbol	Inches		Millimeters	
	Min.	Max.	Min.	Max.
$\phi D$	2.250	2.290	57.15	58.17
$\phi D_1$	1.333	1.343	33.86	34.11
$\phi D_2$	2.030	2.090	51.56	53.09
H	1.020	1.060	25.91	26.92
$\phi J$	.135	.145	3.43	3.68
$J_1$	.075	.090	1.91	2.29
L	7.75	8.50	196.85	215.90
N	.040		1.02	

Creep Distance—1.00 in. min. (25.40 mm).  
Strike Distance—.69 in. min. (17.53 mm).  
(In accordance with NEMA standards.)  
Finish—Nickel Plate.  
Approx. Weight—8 oz. (227 g).  
1. Dimension "H" is a clamped dimension.



## T72 Outline

### Features:

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

### Applications:

- Inverters
  - UPS
  - Induction heating
  - AC motor drives
- Cycloconverters
- 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
T727	100	01	350	35	15	7	150	4	T72	DN
	200	02			20	8				
	300	03			25	9				
	400	04			30	8				
	500	05			40	4				
	600	06			50	3				
	700	07			60	2				
	800	08								
	900	09								
	1000	10								
	1100	11								
	1200	12								
	1400	14								

## Example

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

Type T727 rated at 350 A average with  $V_{DRM} = 900V$ .  
 $I_{GT} = 150$  ma,  $t_q = 30 \mu$ sec max. and standard control leads—order as:

Type	Voltage	Current	Turn Off	Gate Current	Leads
T 7 2 7	0 9	3 5	5	4	D N

\*for 15 and 20  $\mu$ sec  $V_F$  data, consult factory

# 350A Avg. (550 RMS) Up to 1200 Volts 15-60 $\mu$ s

# Fast Switching SCR T727\_35

## Voltage

Blocking State Maximums <sup>Ⓢ</sup> ( $T_J = 125^\circ\text{C}$ )

	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	1400
100	200	300	400	500	600	700	800	900	1000	1100	1200	1400
200	300	400	500	600	700	800	900	1000	1100	1200	1300	1500
						← 30						
						← 30						

## Current

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

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

## T727—35

$I_T(\text{rms})$	550
$I_T(\text{av})$	350
$I_{TSM}$	7000
$I^2t$	205,000
$V_{TM}$	1.65
$di/dt$	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/ $\mu$ sec, reapplied $dv/dt =$ 20V/ $\mu$ sec linear to 0.8 $V_{DRM}$ , $\mu$ sec <sup>Ⓢ</sup> Ⓢ	$t_q$
Typ. turn-on time, $I_T = 1000$ A $V_D = 300$ V, $\mu$ sec <sup>Ⓢ</sup>	$t_{on}$
Min. critical $dv/dt$ , exponential to $V_{DRM}$ $T_J = 125^\circ\text{C}$ , V/ $\mu$ sec <sup>Ⓢ</sup>	$dv/dt$
Min. $di/dt$ non-repetitive, A/ $\mu$ sec <sup>Ⓢ</sup> ⓈⓈ	$di/dt$

$t_q$	15 to 60
$t_{on}$	3.0
$dv/dt$	300
$di/dt$	800

## Gate

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

	Symbol
Gate current to trigger at $V_D = 12$ V, mA	$I_{GT}$
Gate voltage to trigger at $V_D = 12$ V, V	$V_{GT}$
Non-triggering gate voltage, $T_J = 125^\circ\text{C}$ , and rated $V_{DRM}$ , V	$V_{GDM}$
Peak forward gate current, A	$I_{GTM}$
Peak reverse gate voltage, V	$V_{GRM}$
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

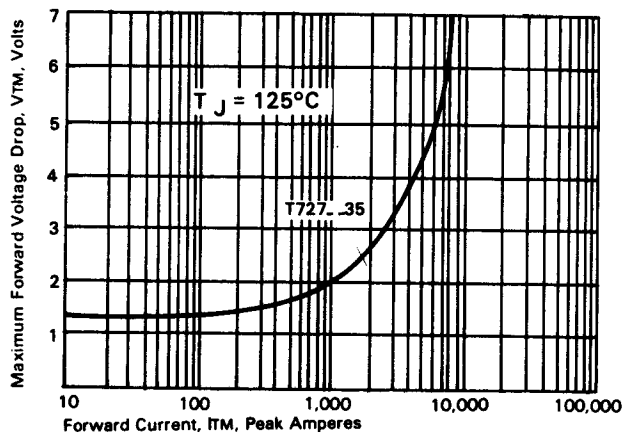
## Thermal and Mechanical

	Symbol
Min., Max. oper. junction temp., $^\circ\text{C}$	$T_J$
Min., Max. storage temp., $^\circ\text{C}$	$T_{stg}$
Max. mounting torque, in lb. <sup>Ⓢ</sup>	
Max. Thermal resistance <sup>Ⓢ</sup> Double side cooled Junction to case, $^\circ\text{C}/\text{Watt}$	$R_{\theta JC}$
Case to sink, lubricated, $^\circ\text{C}/\text{Watt}$	$R_{\theta CS}$

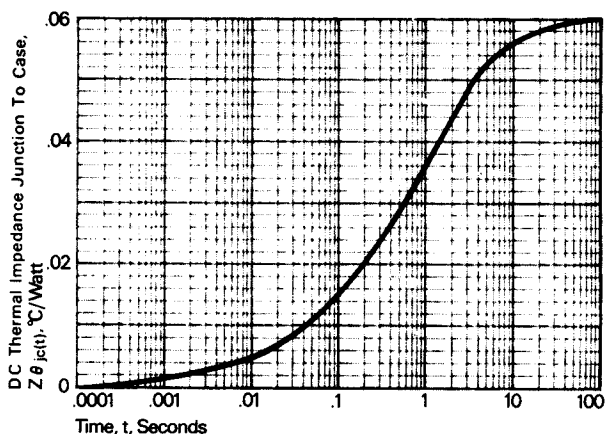
$T_J$	-40 to +125
$T_{stg}$	-40 to +150
	2000 to 2400
$R_{\theta JC}$	.06
$R_{\theta CS}$	.02

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

Maximum Forward Voltage Drop VS Forward Current



Transient Thermal Impedance VS. Time

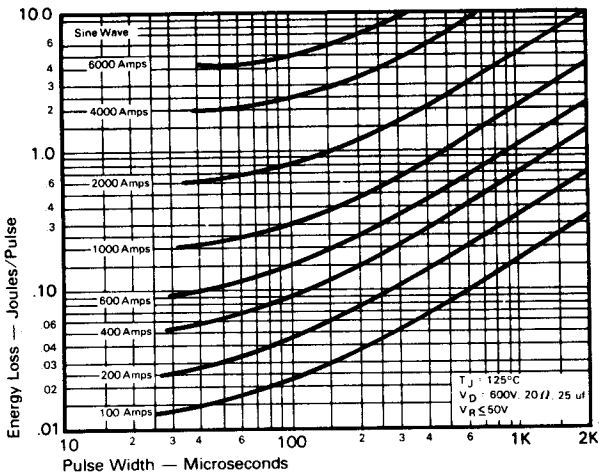


FAST SWITCHING  
THYRISTORS

# Fast Switching SCR T727\_35

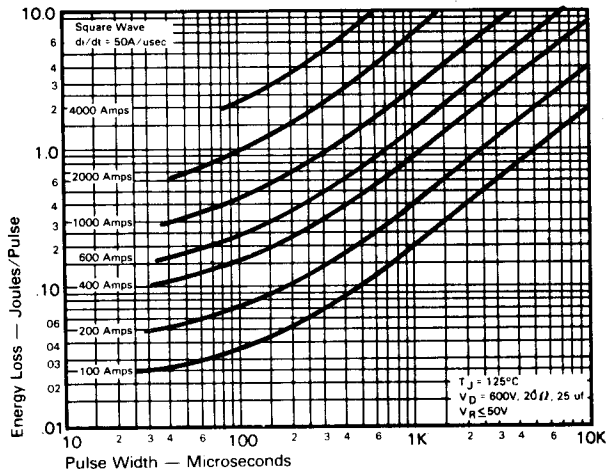
350A Avg.  
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## Sinusoidal Current Data

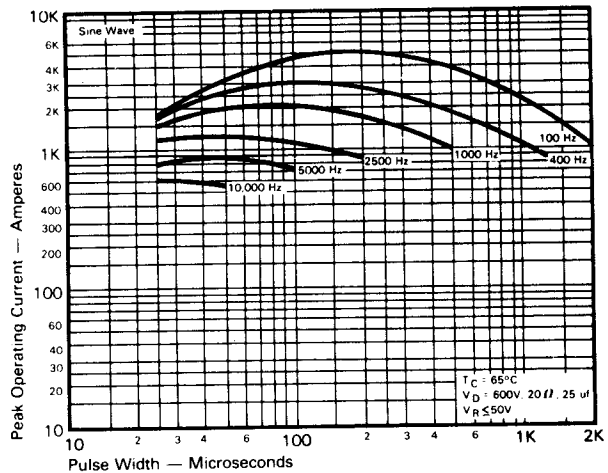


ENERGY PER PULSE FOR SINUSOIDAL PULSES

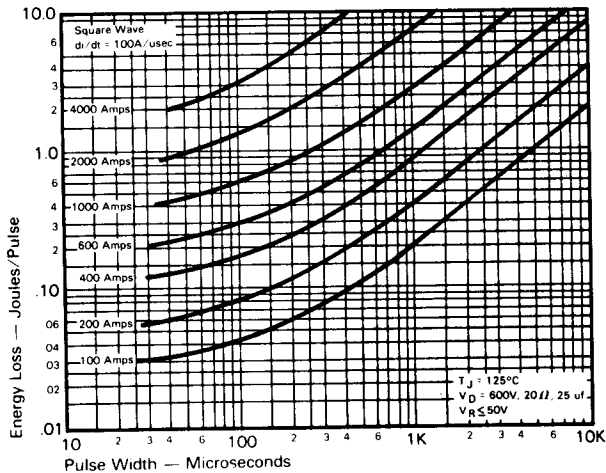
## Trapezoidal Wave Current Data



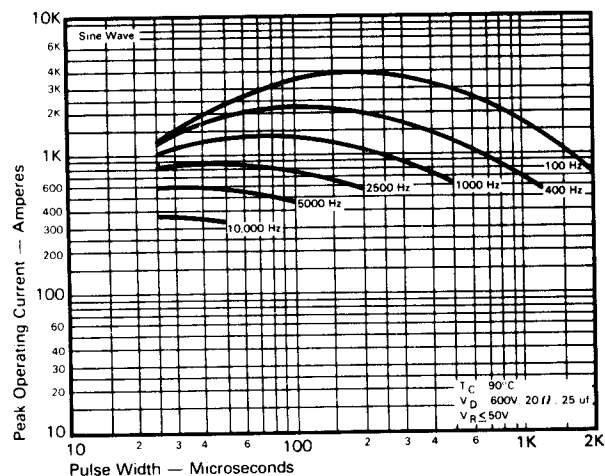
ENERGY PER PULSE FOR TRAPEZOIDAL PULSES  
( $di/dt = 50\text{A/usec}$ )



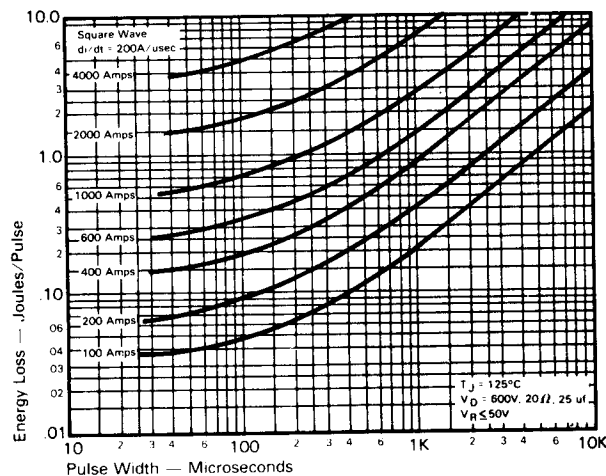
MAXIMUM ALLOWABLE PEAK ON-STATE CURRENT  
vs. PULSE WIDTH ( $T_C = 65^\circ\text{C}$ )



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



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

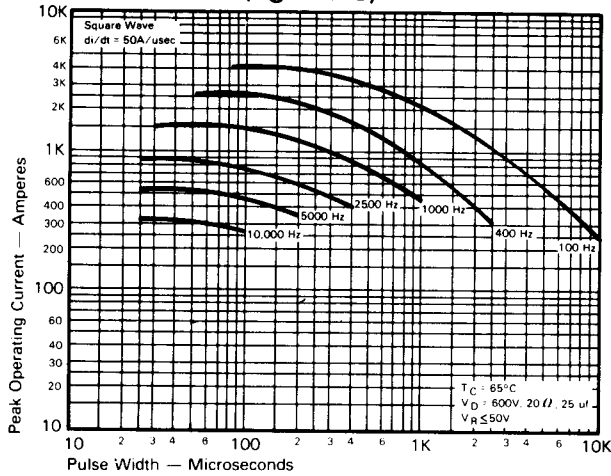


ENERGY PER PULSE FOR TRAPEZOIDAL PULSES  
( $di/dt = 200\text{A/usec}$ )

**350A Avg.  
(550 RMS)  
Up to 1200 Volts  
15-60  $\mu$ s**

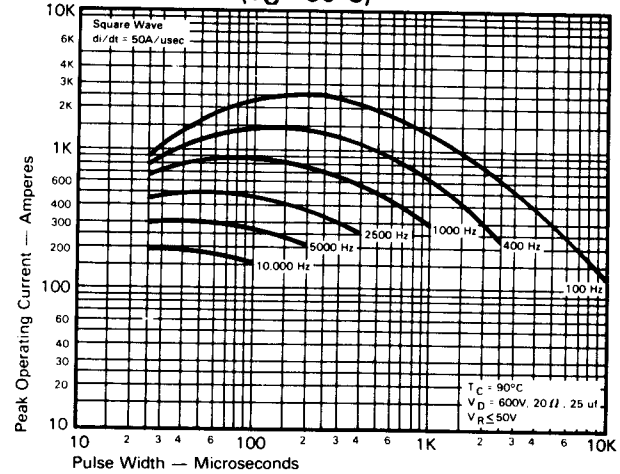
**Fast Switching  
SCR  
T727\_35**

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

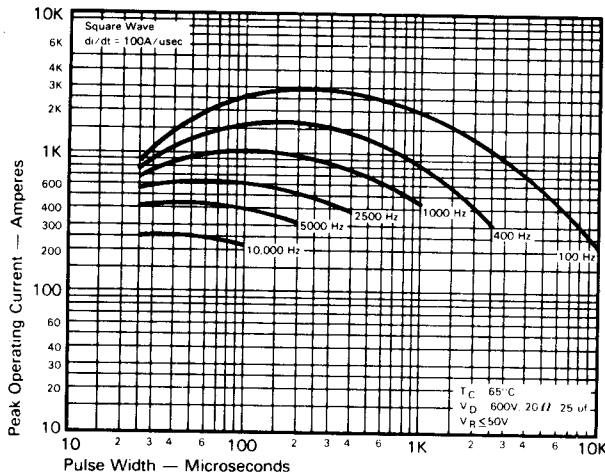


**MAXIMUM ALLOWABLE PEAK ON-STATE CURRENT vs. PULSE WIDTH ( $di/dt = 50\text{A/usec}$ )**

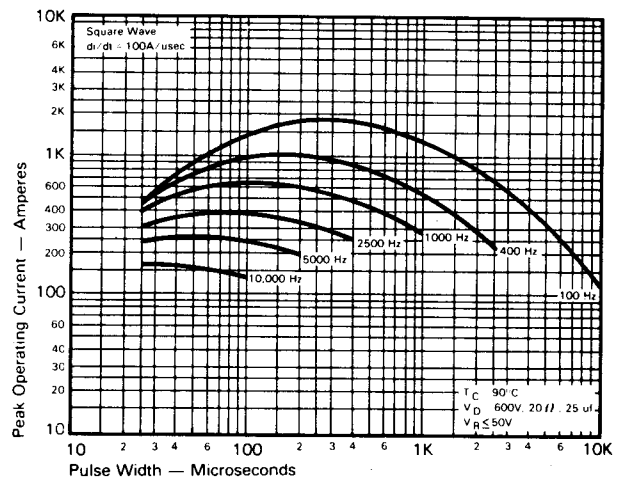
**Trapezoidal Wave Current Data  
( $T_C = 90^\circ\text{C}$ )**



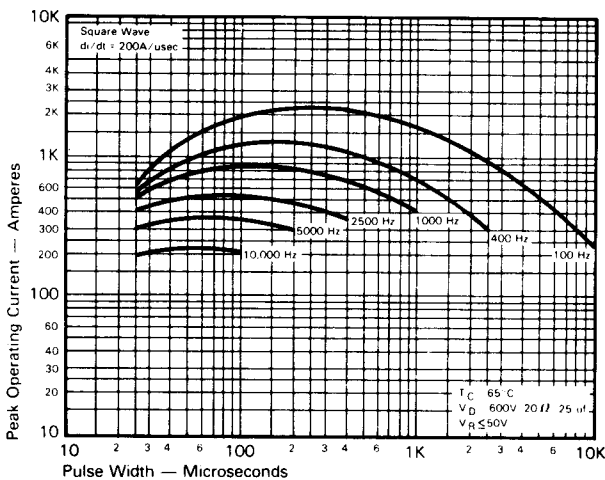
**MAXIMUM ALLOWABLE PEAK ON-STATE CURRENT vs. PULSE WIDTH ( $di/dt = 50\text{A/usec}$ )**



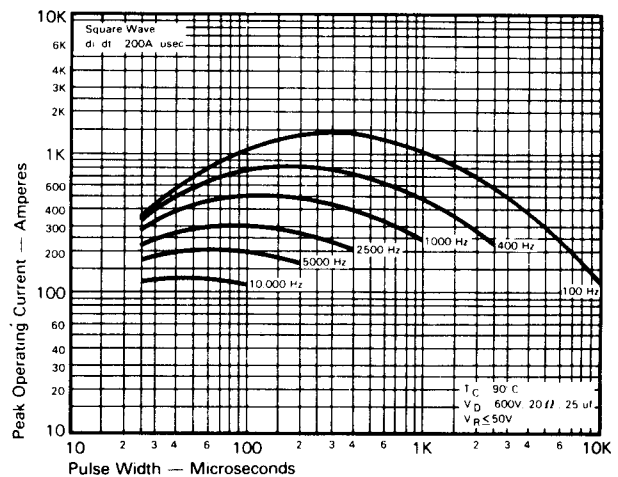
**MAXIMUM ALLOWABLE PEAK ON-STATE CURRENT vs. PULSE WIDTH ( $di/dt = 100\text{A/usec}$ )**



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

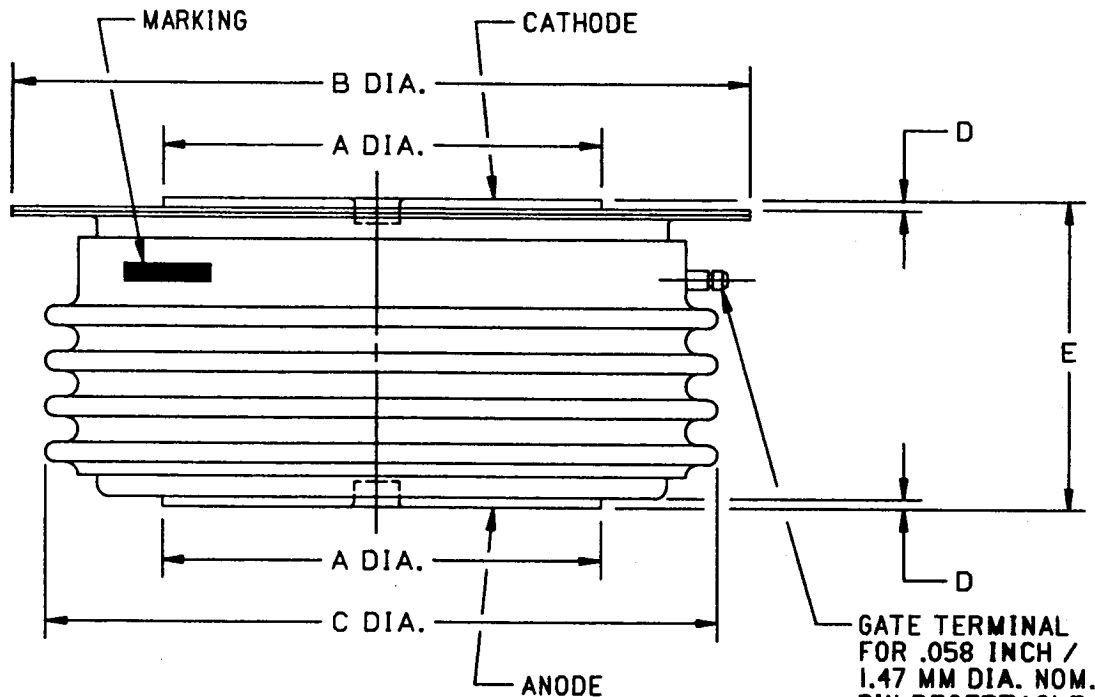
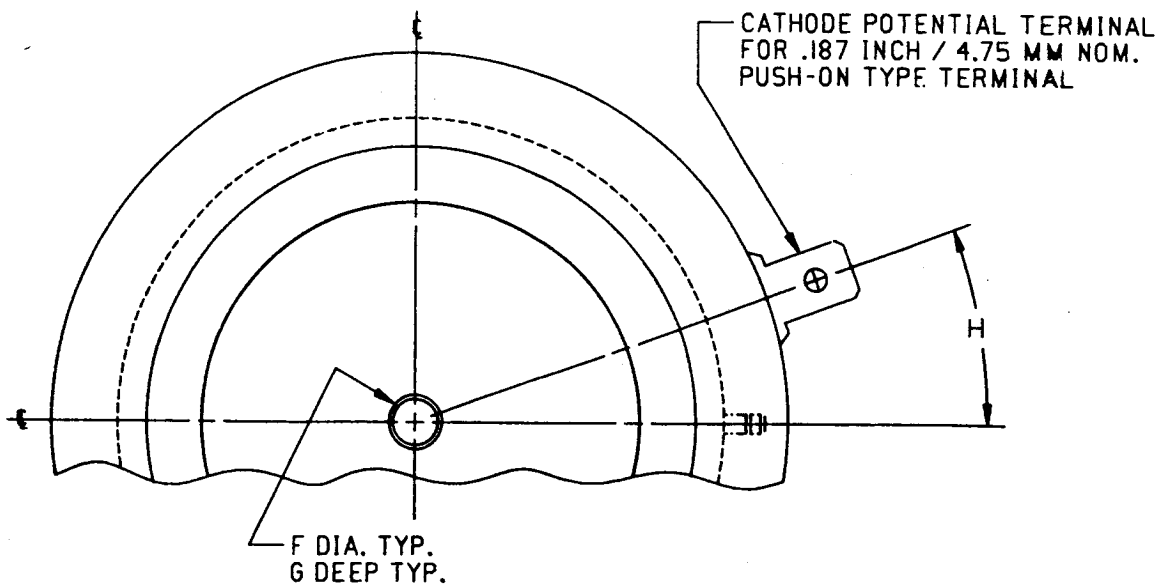


**MAXIMUM ALLOWABLE PEAK ON-STATE CURRENT vs. PULSE WIDTH ( $di/dt = 200\text{A/usec}$ )**



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

FAST SWITCHING THYRISTORS



CASE NUMBER T72  
 NOMINAL DIMENSIONS

STRIKE DISTANCE = .58 INCH / 14.7 MM MIN.  
 CREEPAGE DISTANCE = 1.00 INCH / 25.4 MM MIN.

SYM.	A	B	C	D	E	F	G	H
INCHES	1.34	2.28	2.05	.030	1.020/1.060	.140	.080	20°
MM	34.0	57.9	52.1	0.76	25.91/26.92	3.56	2.03	20°

ALL DIMENSIONS ARE REFERENCE