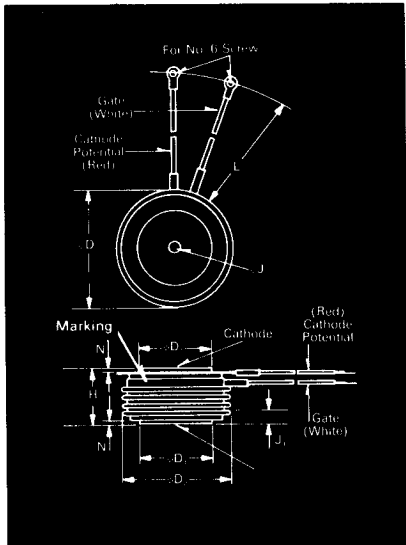


Fast Switching SCR T72_45

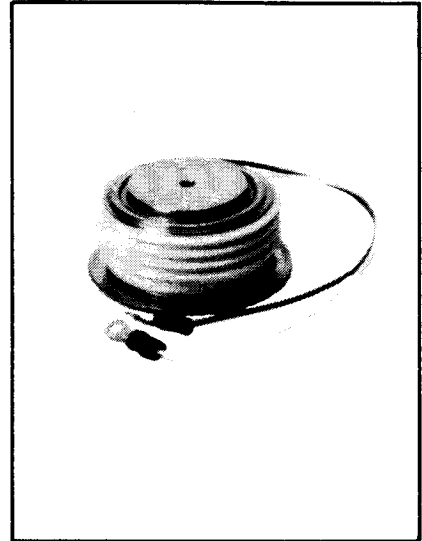
450A Avg.
(700 RMS)
Up to 1200 Volts
15-60 μ s



Symbol	Inches		Millimeters	
	Min.	Max.	Min.	Max.
ϕD	2.250	2.290	57.15	58.17
ϕD_1	1.333	1.343	33.86	34.11
ϕD_2	2.030	2.090	51.56	53.09
H	1.020	1.060	25.91	26.92
ϕJ	.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/namic 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	tq μ sec	Code	I_{GT} (ma)	Code	Case	Code
T727	100	01	450	45	15	7	150	4	T72	DN
	200	02			20	6				
	300	03			25	8				
	400	04			30	5				
	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 450 A average with $V_{DRM} = 1000V$,
 $I_{GT} = 150$ ma, tq = 30 μ sec max. and standard control leads—order as:

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

*for 15 and 20 μ sec V F data,
consult factory

450A Avg. (700 RMS) Up to 1200 Volts 15-60 μ s

Fast Switching SCR T727_45

Voltage

Blocking State Maximums [ⓐ] ($T_J = 125^\circ\text{C}$)

Symbol	Value
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

\leftarrow 30 \rightarrow
 \leftarrow 30 \rightarrow

Current

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

Symbol	T727--45
RMS forward current, A	$I_T(\text{rms})$
Ave. forward current, A	$I_T(\text{av})$
One-half cycle surge current [ⓐ] , A	I_{TSM}
I^2t for fusing (for times ≥ 8.3 ms) A ² 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/ μ sec	di/dt

Switching

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

Symbol	Value
Max. turn-off time, $I_T = 400$ A, $T_J = 125^\circ\text{C}$, di/dt = 25 A/ μ sec, reappplied dv/dt = 20V/ μ sec linear to 0.8 V_{DRM} , μ sec	t_q
Typ. turn-on time, $I_T = 1000$ A, $V_D = 300$ V	t_{on}
Min. critical dv/dt, exponential to V_{DRM} , $T_J = 125^\circ\text{C}$, V/ μ sec	dv/dt
Min. di/dt non-repetitive, A/ μ sec	di/dt

Gate

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

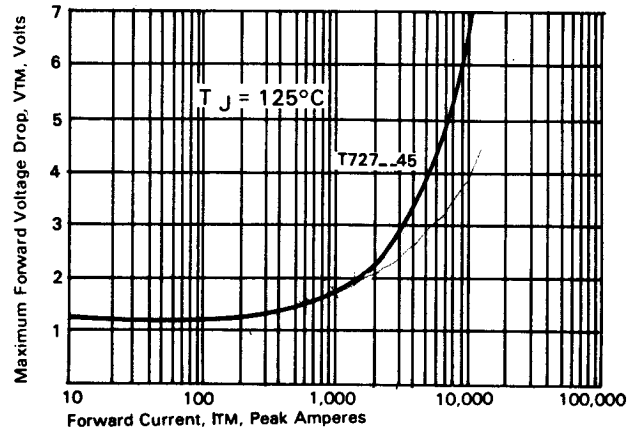
Symbol	Value
Gate current to trigger at $V_D = 12$ V, mA	I_{GT}
Gate voltage to trigger at $V_D = 12$ V, V	V_{GT}
Non-triggering gate voltage, $T_J = 125^\circ\text{C}$, and rated V_{DRM} , V	V_{GDM}
Peak forward gate current, A	I_{GTM}
Peak reverse gate voltage, V	V_{GRM}
Peak gate power, Watts	P_{GM}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

Thermal and Mechanical

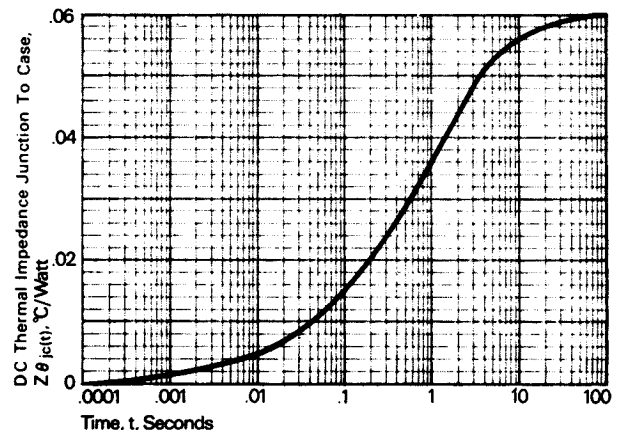
Symbol	Value
Min., Max. oper. junction temp., $^\circ\text{C}$	T_J
Min., Max. storage temp., $^\circ\text{C}$	T_{stg}
Max. mounting torque, in lb.	2000 to 2400
Max. thermal resistance [ⓐ] Double side cooled Junction to case, $^\circ\text{C}/\text{Watt}$	$R_{\theta JC}$
Case to sink, lubricated, $^\circ\text{C}/\text{Watt}$	$R_{\theta CS}$

- ⓐ 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



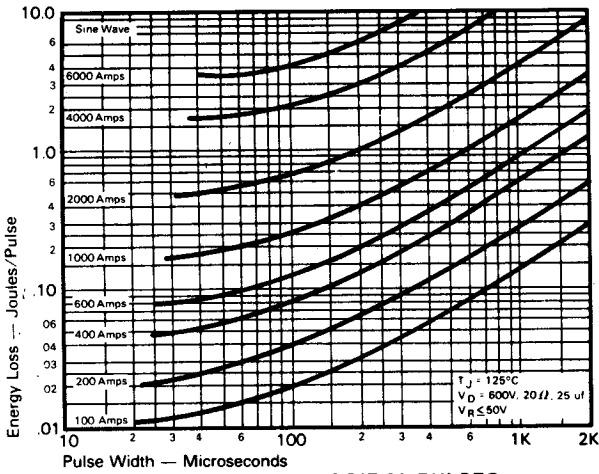
Transient Thermal Impedance VS. Time



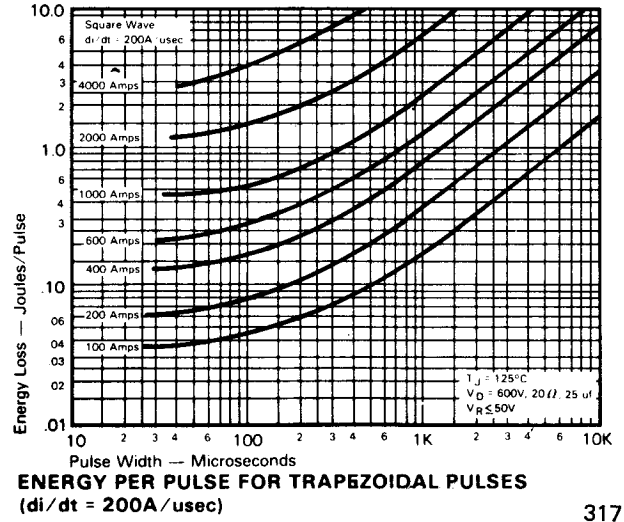
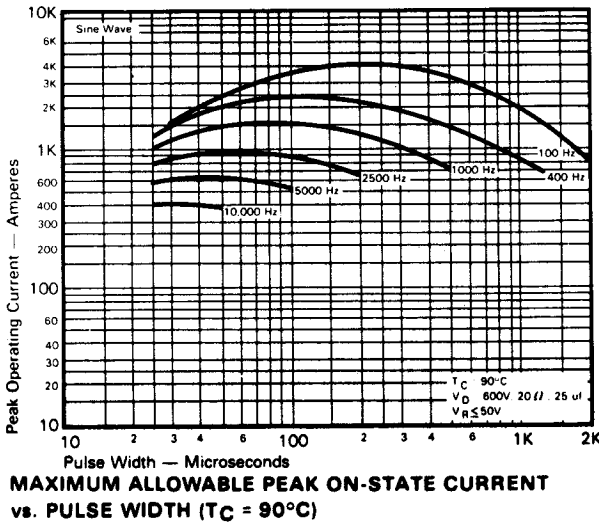
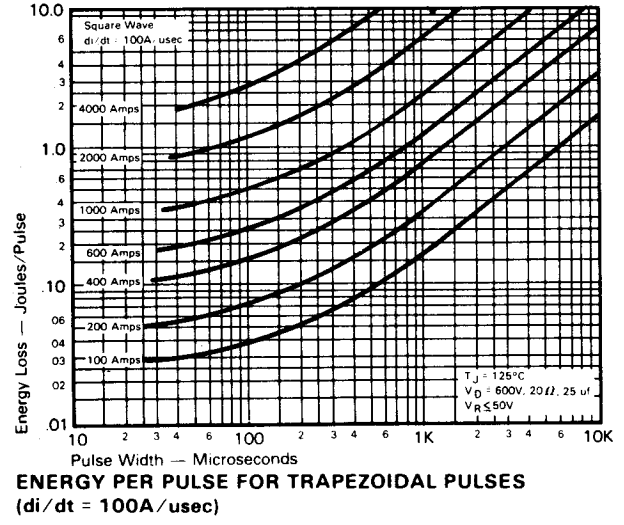
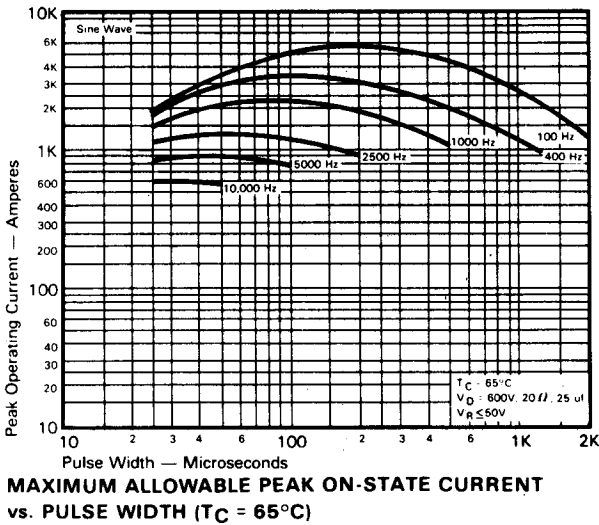
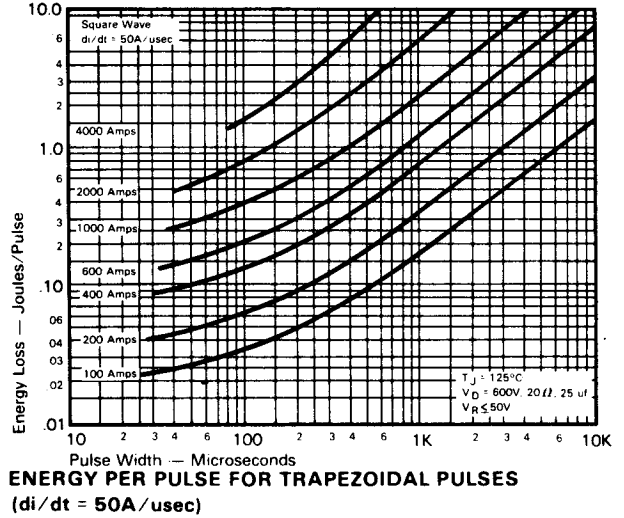
Fast Switching SCR T727_45

450A Avg.
(700 RMS)
Up to 1200 Volts
15-60 μ s

Sinusoidal Current Data



Trapezoidal Wave Current Data

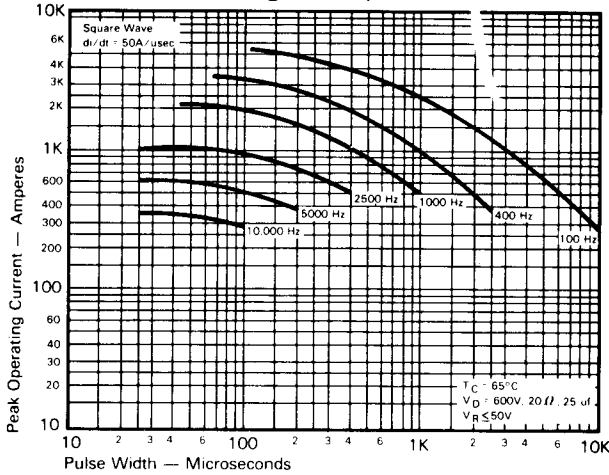


FAST SWITCHING
THYRISTORS

450A Avg.
(700 RMS)
Up to 1200 Volts
15-60 μ s

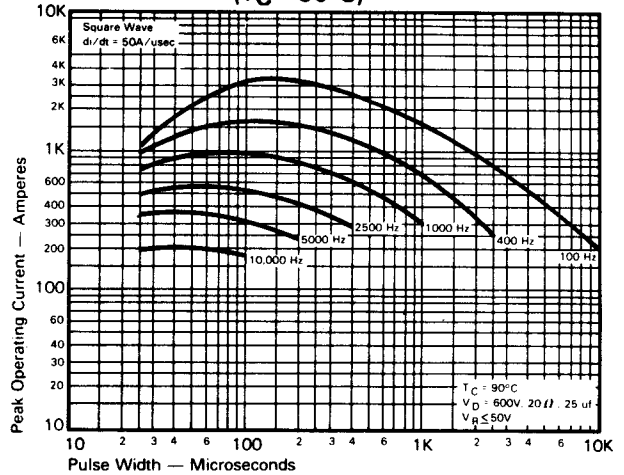
Fast Switching
SCR
T727_45

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

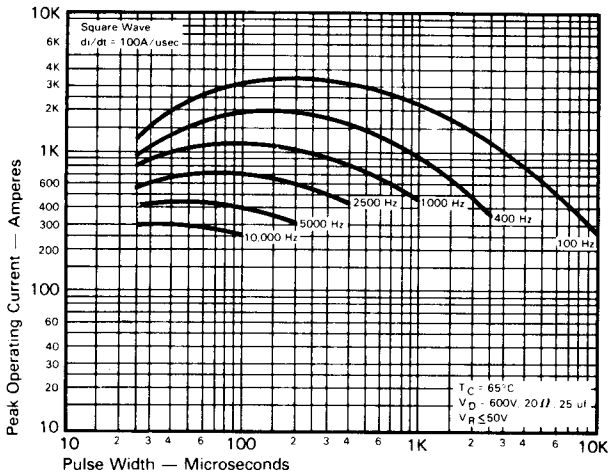


MAXIMUM ALLOWABLE PEAK ON-STATE CURRENT vs. PULSE WIDTH ($di/dt = 50\text{A}/\mu\text{sec}$)

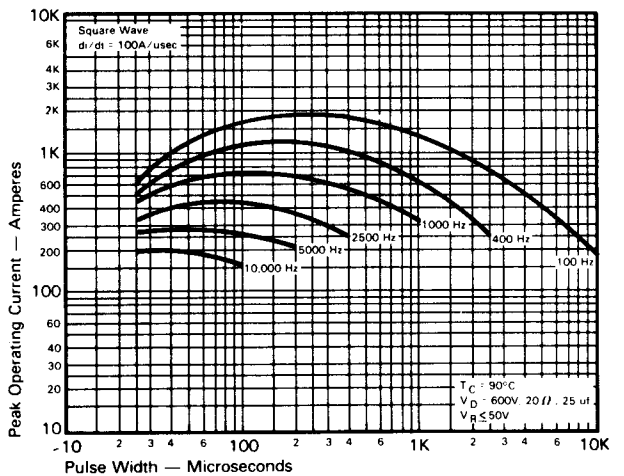
Trapezoidal Wave Current Data
($T_C = 90^\circ\text{C}$)



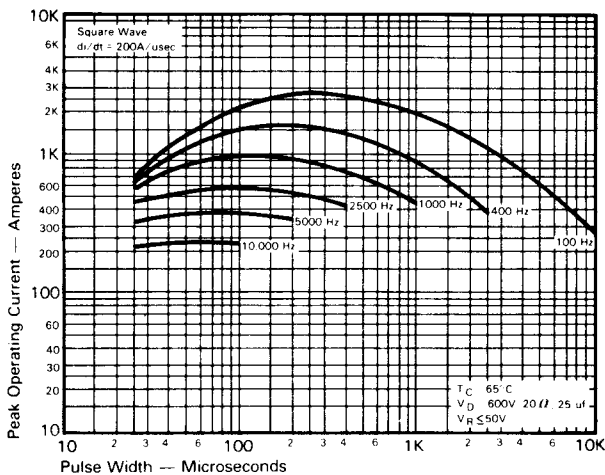
MAXIMUM ALLOWABLE PEAK ON-STATE CURRENT vs. PULSE WIDTH ($di/dt = 50\text{A}/\mu\text{sec}$)



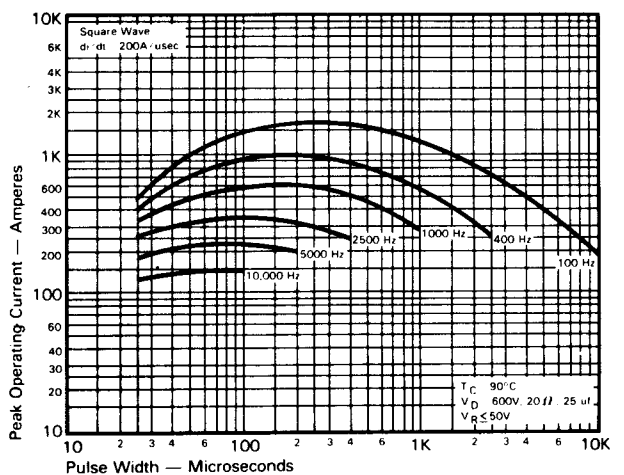
MAXIMUM ALLOWABLE PEAK ON-STATE CURRENT vs. PULSE WIDTH ($di/dt = 100\text{A}/\mu\text{sec}$)



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

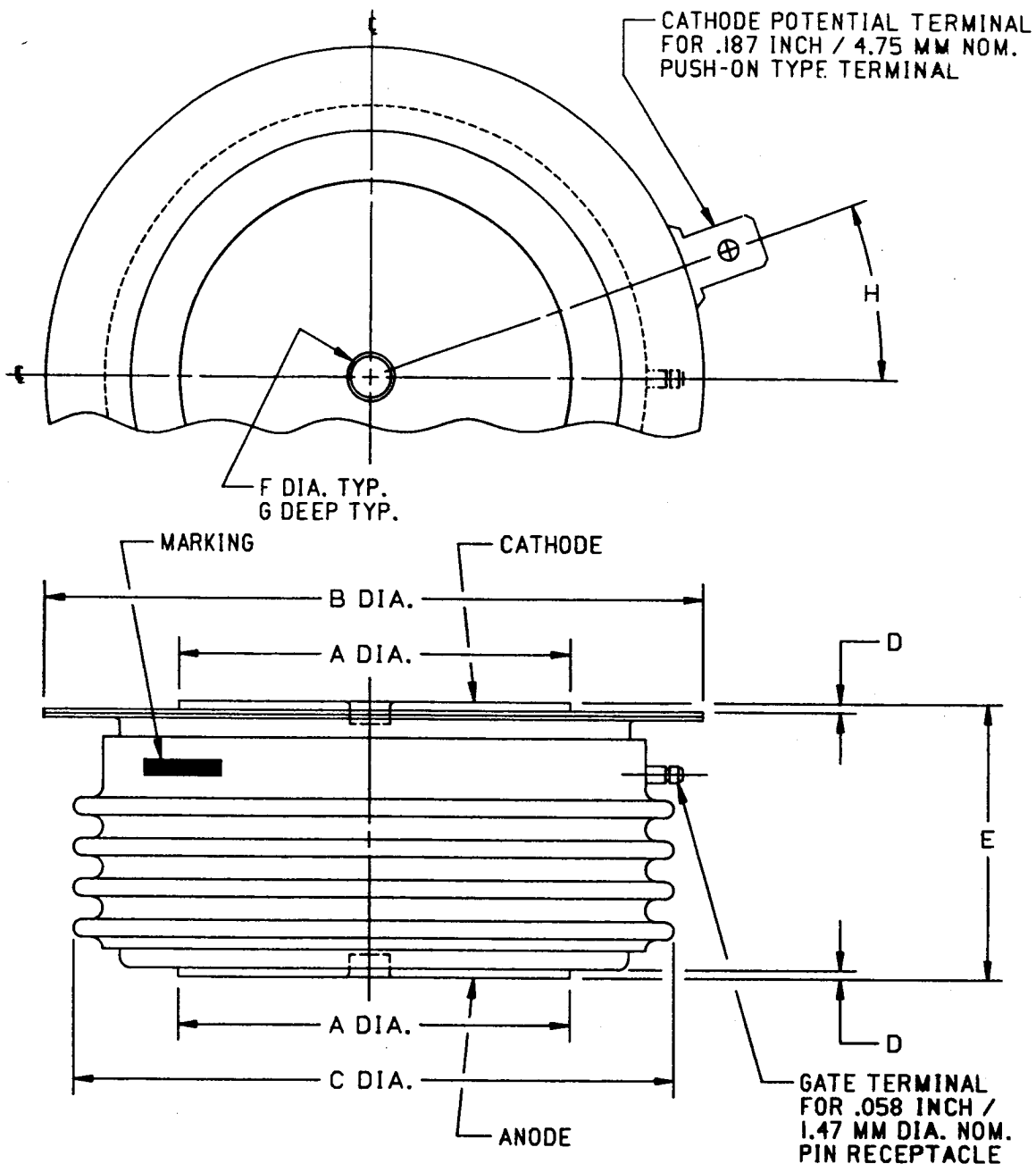


MAXIMUM ALLOWABLE PEAK ON-STATE CURRENT vs. PULSE WIDTH ($di/dt = 200\text{A}/\mu\text{sec}$)



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

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