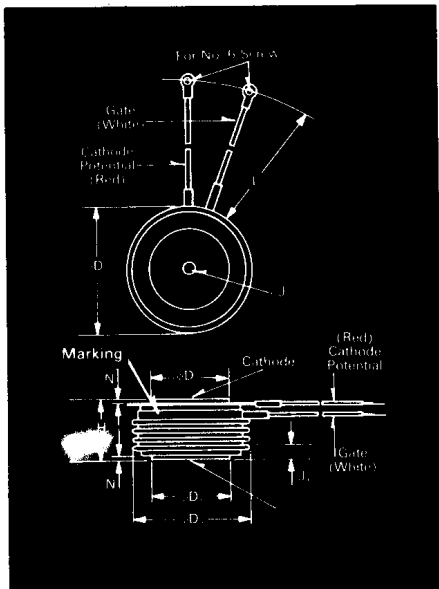


Fast Switching SCR T727_40

400A Avg.
(625 RMS)
Up to 800 Volts
10-50 μ s



T72 Outline

Features:

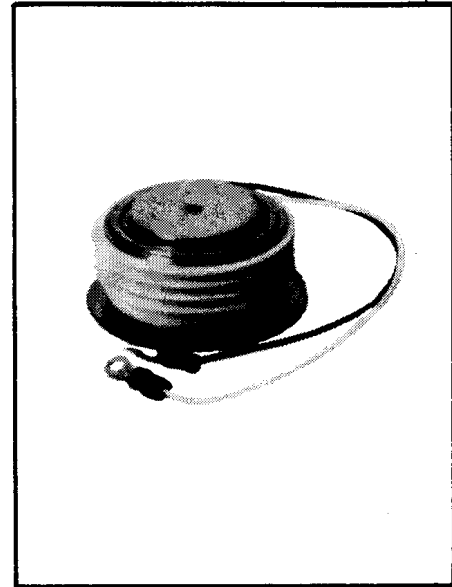
- Center fired di/namic gate
- High di/dt with soft gate control
- High frequency operation
- Sinusoidal waveform operation to 20KHz
- Rectangular waveform operation to 20KHz
- Low dynamic forward voltage drop
- Low switching losses at high frequency
- Lifetime Guarantee

Applications:

- Inverters
- UPS
- Induction heating
- AC motor drives
- Cycloconverters
- Choppers
- Crowbars

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.



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)	Code	Case	Code
T727	100	01	400	40	10	8	150	4	T72	DN
	200	02			15					
	300	03			20					
	400	04			25					
	500	05			30					
	600	06			40					
	700	07			50					
	800	08								

Example

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

Type T727 rated at 400 A average with V_{DRM} = 300V.
I_{GT} = 150 ma, t_q = 10 μ sec max. and standard leads control—order as:

Type	Voltage	Current	Turn Off	Gate Current	Leads
T 7 2 7	0 3	4 0	8	4	D N

FAST SWITCHING THYRISTORS

**400A Avg.
(625 RMS)
Up to 800 Volts
10-50 μ s**

**Fast Switching
SCR
T727_40**

Voltage

Blocking State Maximums ^② ($T_J = 125^\circ\text{C}$)

	Symbol	100	200	300	400	500	600	700	800
Repetitive peak forward blocking voltage, V	V_{DRM}	100	200	300	400	500	600	700	800
Repetitive peak reverse voltage, V	V_{RRM}	100	200	300	400	500	600	700	800
Non-repetitive transient peak reverse voltage, $t \leq 5.0$ msec, V	V_{RSM}	200	300	400	500	600	700	800	900
Forward leakage current, mA peak	I_{DRM}	30							
Reverse leakage current, mA peak	I_{RRM}	30							

Current

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

Symbol	T727--40	
RMS forward current, A	$I_T(\text{rms})$	625
Ave. forward current, A	$I_T(\text{av})$	400
One-half cycle surge current ^③ , A	I_{TSM}	7000
I^2t for fusing (for times ≥ 8.3 ms) $A^2 \text{ sec.}$	I^2t	205,000
Forward voltage drop at $I_{TM} = 625$ A and $T_J = 25^\circ\text{C}$, V	V_{TM}	1.50
Min. repetitive di/dt A/ μsec	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/ μsec , reappplied $dv/dt = 20$ V/ μsec linear to $0.8 V_{DRM}$, μsec	t_q	10 to 50
Typ. turn-on-time, $I_T = 1000$ A $V_D = 300$ V, μsec	t_{on}	3.0
Min. critical dv/dt , exponential to V_{DRM} , $T_J = 125^\circ\text{C}$, V/ μsec	dv/dt	300
Min. di/dt non-repetitive, A/ μsec	di/dt	800

Gate

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

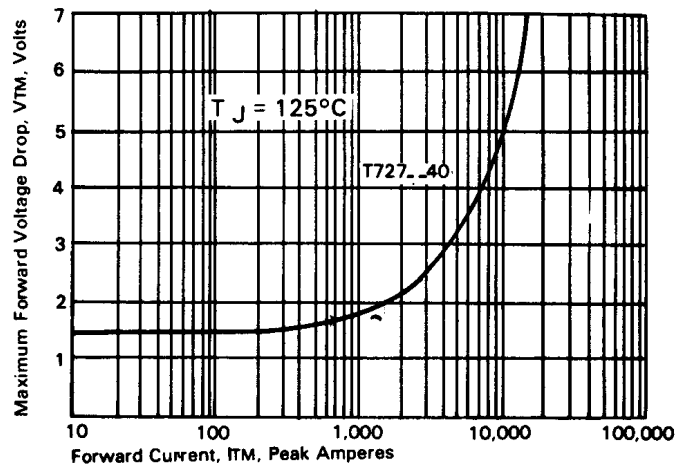
Symbol		
Gate current to trigger at $V_D = 12$ V, mA	I_{GT}	150
Gate voltage to trigger at $V_D = 12$ V, V	V_{GT}	3
Non-triggering gate voltage, $T_J = 125^\circ\text{C}$, and rated V_{DRM} , V	V_{GDM}	0.15
Peak forward gate current, A	I_{GTM}	4
Peak reverse gate voltage, V	V_{GRM}	5
Peak gate power, Watts	P_{GM}	16
Average gate power, Watts	$P_{G(av)}$	3

Thermal and Mechanical

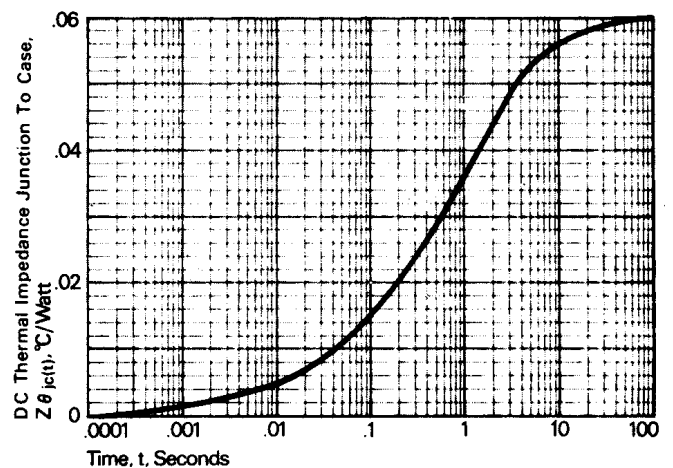
Symbol		
Min., Max. oper. junction temp., $^\circ\text{C}$	T_J	-40 to +125
Min., Max. storage temp., $^\circ\text{C}$	T_{stg}	-40 to +150
Max. mounting torque, in lb.		2000 to 2400
Max. thermal resistance ^① Double side cooled Junction to case, $^\circ\text{C}/\text{Watt}$	$R_{\theta JC}$.06
Case to sink, lubricated, $^\circ\text{C}/\text{Watt}$	$R_{\theta CS}$.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 Drop VS Forward Current



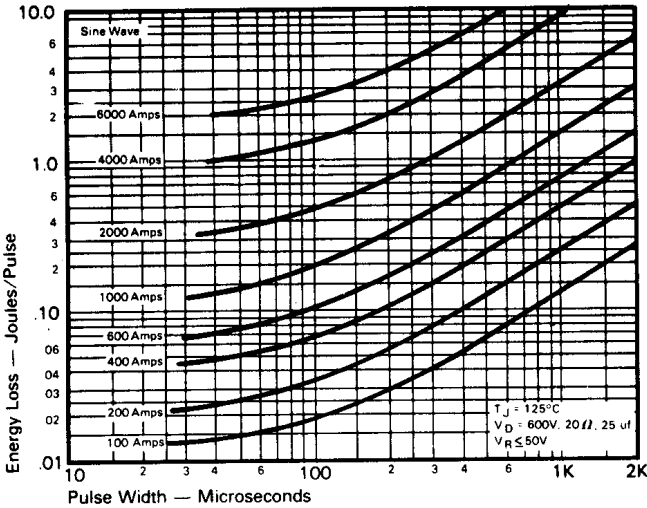
Transient Thermal Impedance VS. Time



Fast Switching SCR T727_40

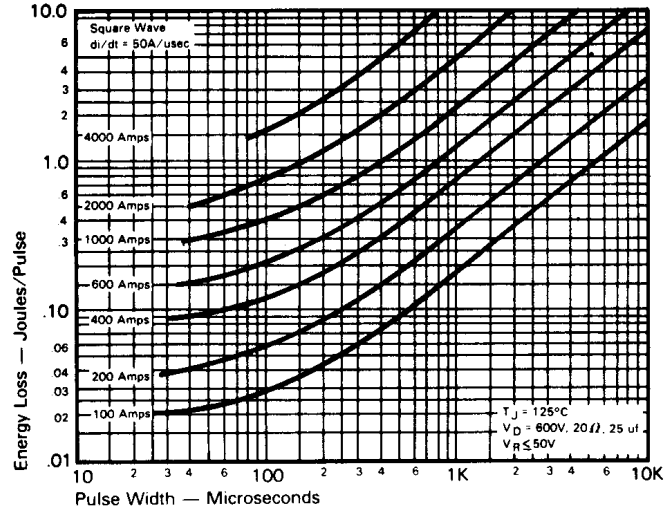
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Sinusoidal Current Data

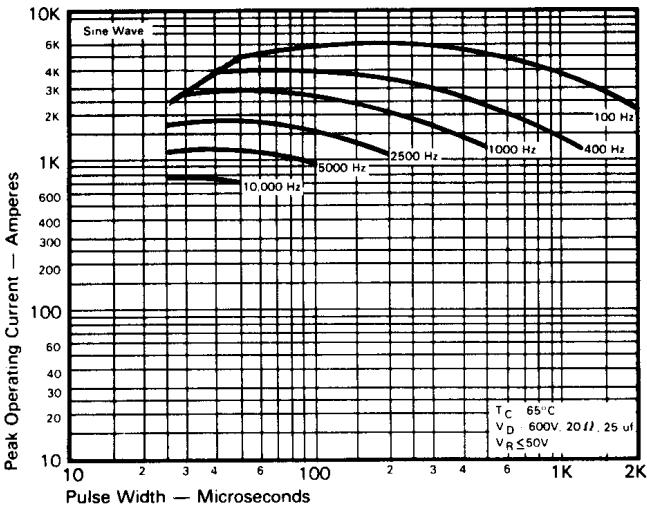


ENERGY PER PULSE FOR SINUSOIDAL PULSES

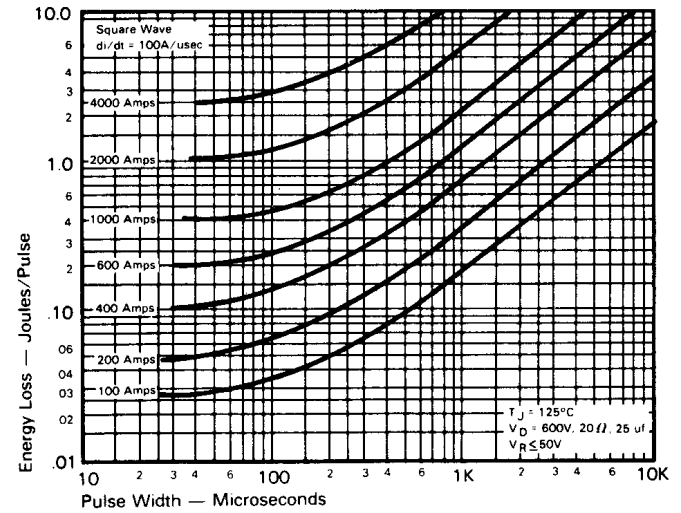
Trapezoidal Wave Current Data



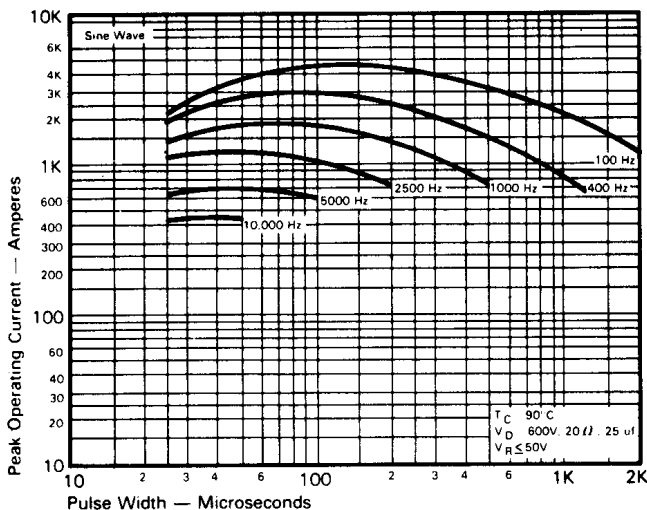
ENERGY PER PULSE FOR TRAPEZOIDAL PULSES
($di/dt = 50\text{A}/\mu\text{sec}$)



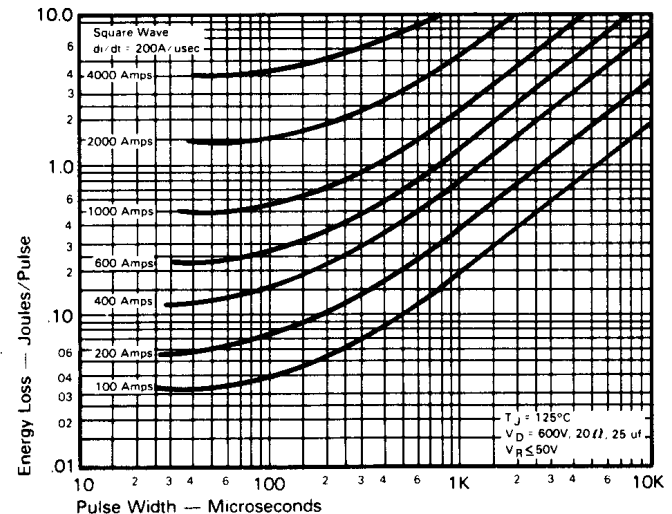
MAXIMUM ALLOWABLE PEAK ON-STATE CURRENT
vs. PULSE WIDTH ($T_C = 65^\circ\text{C}$)



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



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



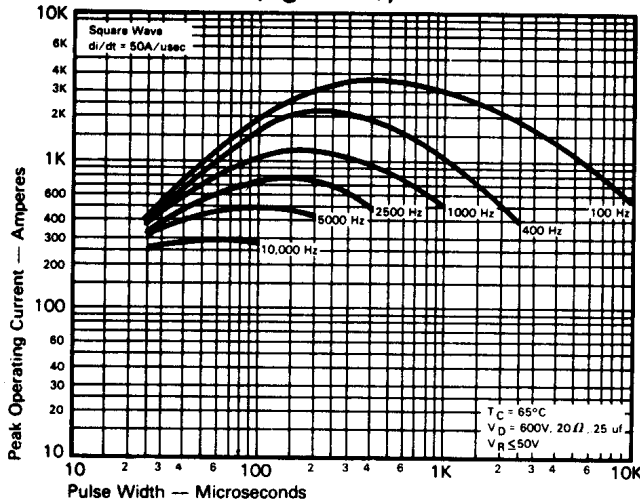
ENERGY PER PULSE FOR TRAPEZOIDAL PULSES
($di/dt = 200\text{A}/\mu\text{sec}$)

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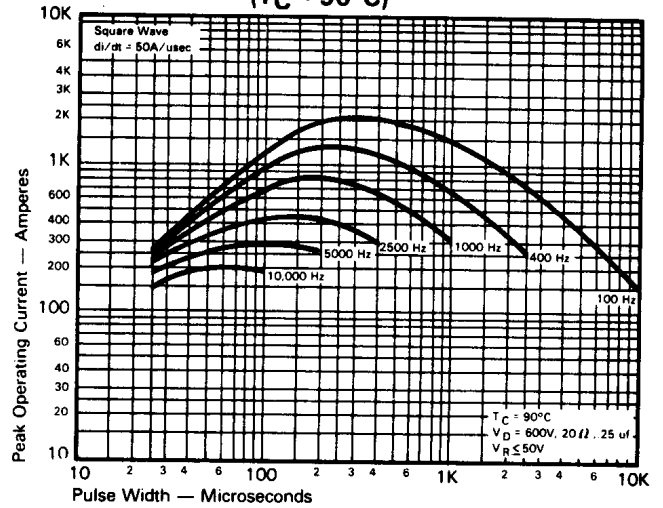
Fast Switching
SCR
T727_40

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

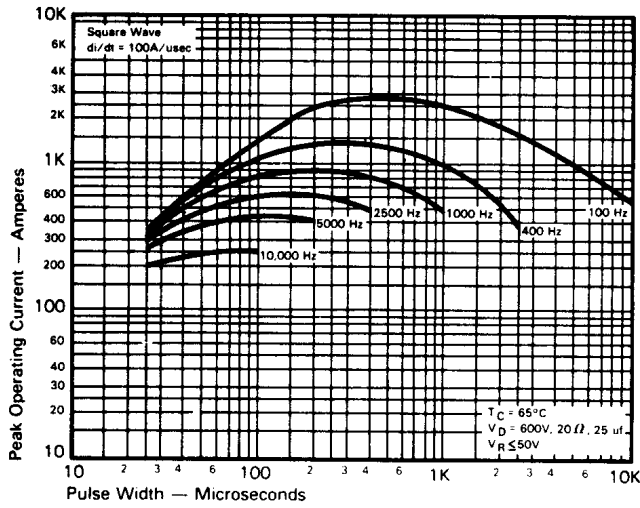


MAXIMUM ALLOWABLE PEAK ON-STATE CURRENT vs. PULSE WIDTH ($di/dt = 50\text{A}/\mu\text{s}$)

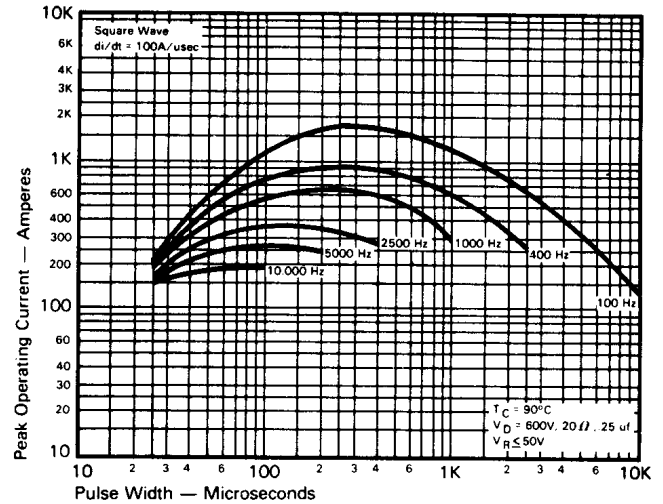
Trapezoidal Wave Current Data
($T_C = 90^\circ\text{C}$)



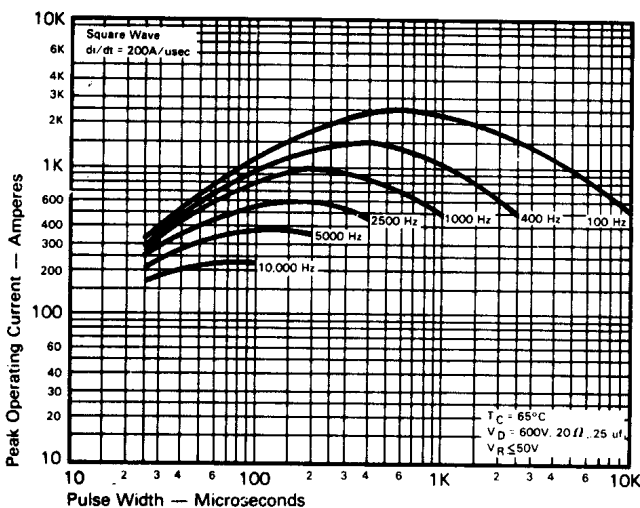
MAXIMUM ALLOWABLE PEAK ON-STATE CURRENT vs. PULSE WIDTH ($di/dt = 50\text{A}/\mu\text{s}$)



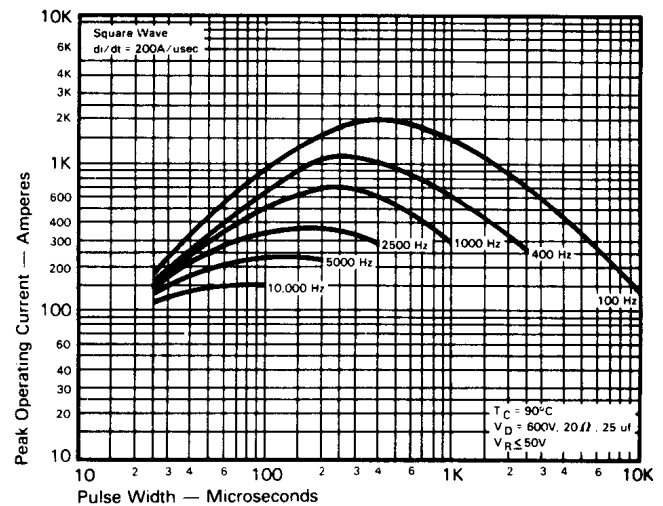
MAXIMUM ALLOWABLE PEAK ON-STATE CURRENT vs. PULSE WIDTH ($di/dt = 100\text{A}/\mu\text{s}$)



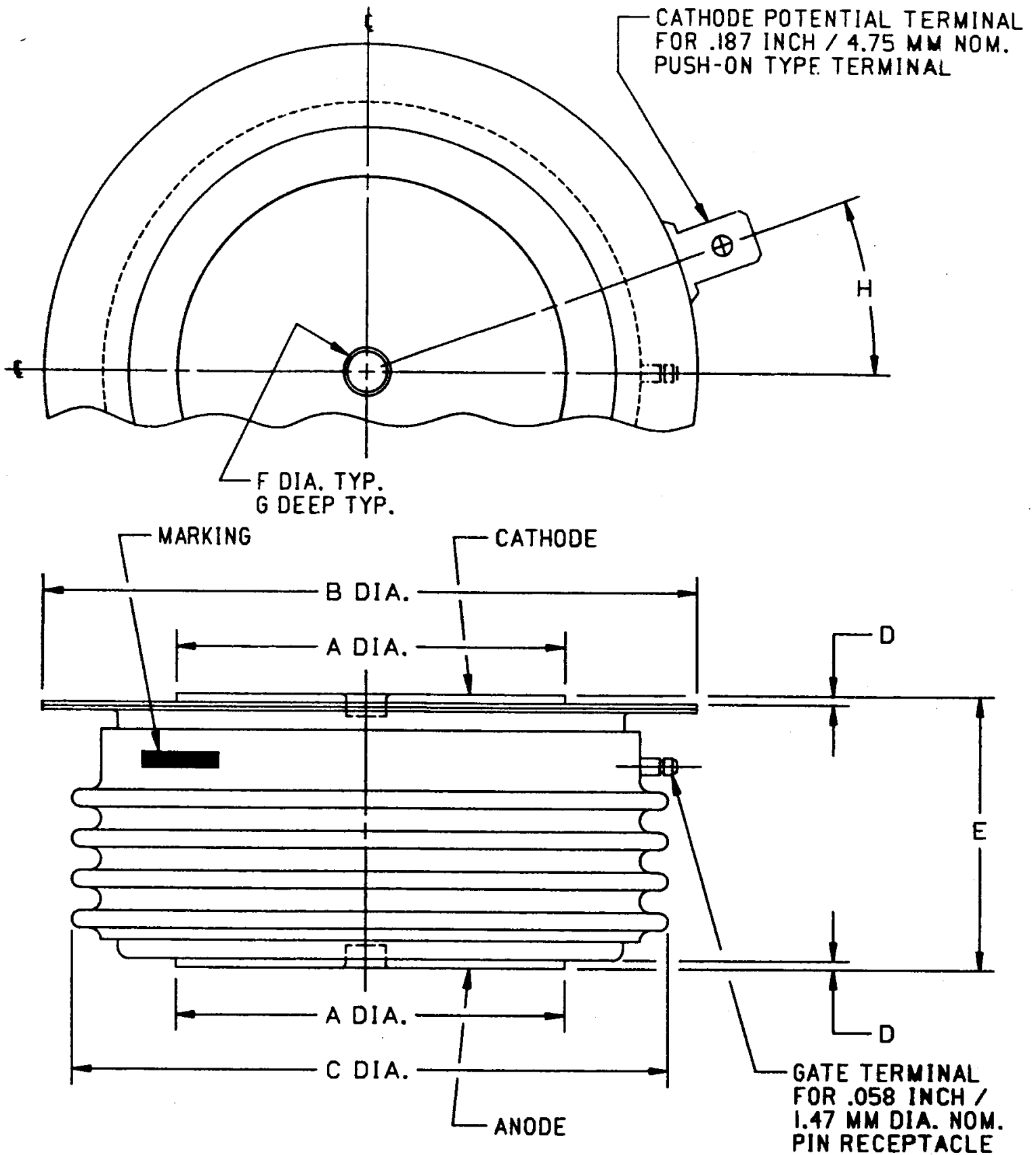
MAXIMUM ALLOWABLE PEAK ON-STATE CURRENT vs. PULSE WIDTH ($di/dt = 100\text{A}/\mu\text{s}$)



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



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



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