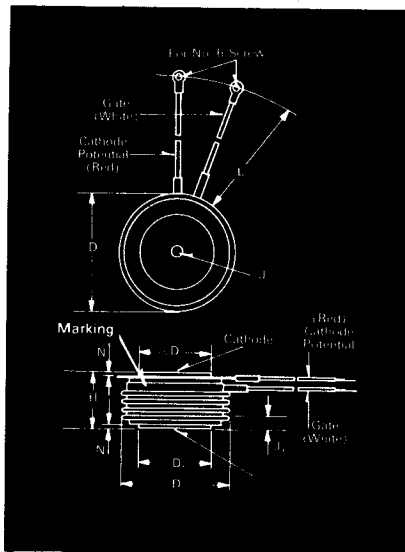


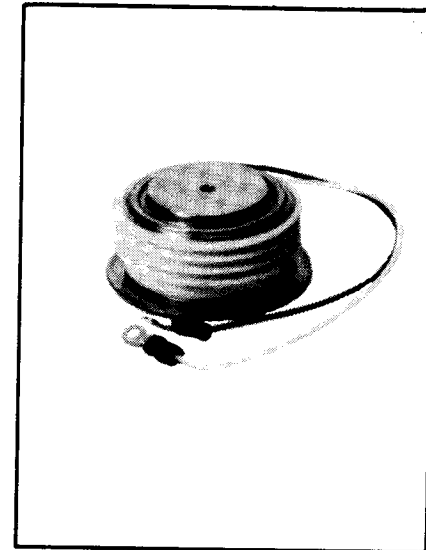
Fast Switching SCR T727_48

475A Avg.
(750 RMS)
Up to 800 Volts
10-50 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	t _q μ sec	Code	I _{GT} (ma)	Code	Case	Code
T727	100	01	475	48	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 475 A average with V_{DRM} = 600V.
I_{GT} = 150 ma, t_q = 30 μ sec max. and standard control leads—order as:

Type	Voltage	Current	Turn Off	Gate Current	Leads
T 7 2 7	0 6	4 8	5	4	D N

FAST SWITCHING
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Voltage

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

Repetitive peak forward blocking voltage, V ...
Repetitive peak reverse voltage, V ...
Non-repetitive transient peak reverse voltage,
 $t \leq 5.0$ msec, V ...
Forward leakage current, mA peak ...
Reverse leakage current, mA peak ...

Symbol

V_{DRM}
 V_{RRM}
 V_{RSM}
 I_{DRM}
 I_{RRM}

100	200	300	400	500	600	700	800
100	200	300	400	500	600	700	800
200	300	400	500	600	700	800	900
				30			
				30			

Current

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

RMS forward current, A ...
Ave. forward current, A ...
One-half cycle surge current^③, A ...
 I^2t for fusing (for times ≥ 8.3 ms)
A² sec. ...
Forward voltage drop at $I_{TM} = 3000A$
and $T_J = 25^\circ\text{C}$, V ...
Min. repetitive di/dt A/ μ sec ... ①④⑤

Symbol

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

T727—48

750
475
8000
265,000
2.30
400

Switching

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

Max. turn-off time, $I_T = 400A$
 $T_J = 125^\circ\text{C}$, $di/dt = 25$
A/ μ sec, reappplied $dv/dt =$
20V/ μ sec linear to 0.8 V_{DRM} , μ sec ... ③④
Typ. turn-on time, $I_T = 1000A$
 $V_D = 300V$ ④, μ sec ...
Min. critical dv/dt , exponential to V_{DRM}
 $T_J = 125^\circ\text{C}$, V/ μ sec ③④
Min. di/dt non-repetitive,
A/ μ sec ①④⑤

Symbol

t_q
 t_{on}
 dv/dt
 di/dt

10 to 50
3.0
300
800

Gate

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

Gate current to trigger at $V_D = 12V$, mA ...
Gate voltage to trigger at $V_D = 12V$, 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 ...

Symbol

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

Min., Max. oper. junction temp., $^\circ\text{C}$...
Min., Max. storage temp., $^\circ\text{C}$...
Max. mounting torque, in lb. ① ...
Max. Thermal resistance ① Double side cooled
junction to case, $^\circ\text{C}/\text{Watt}$...
Case to sink, lubricated, $^\circ\text{C}/\text{Watt}$...

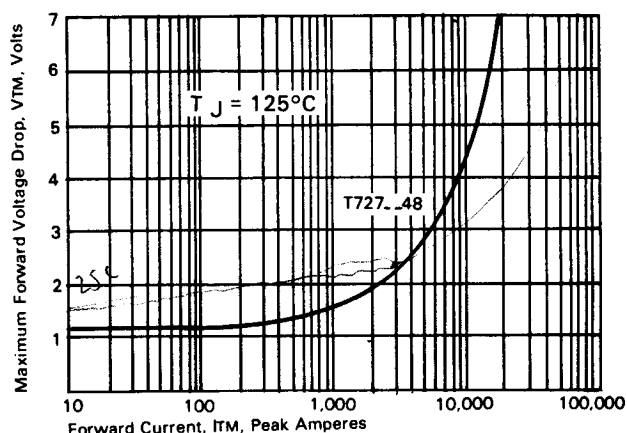
Symbol

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

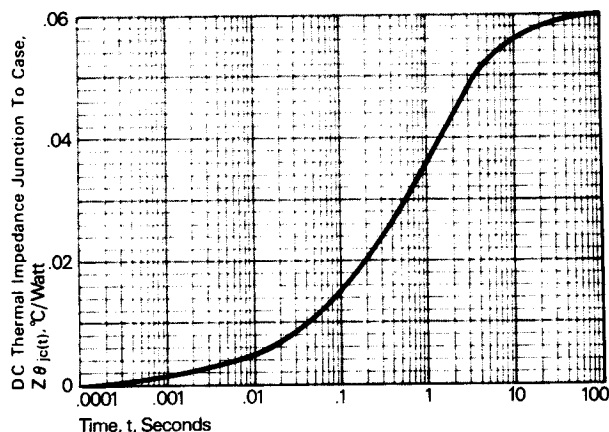
-40 to +125
-40 to +150
2000 to 2400
.06
.02

- 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



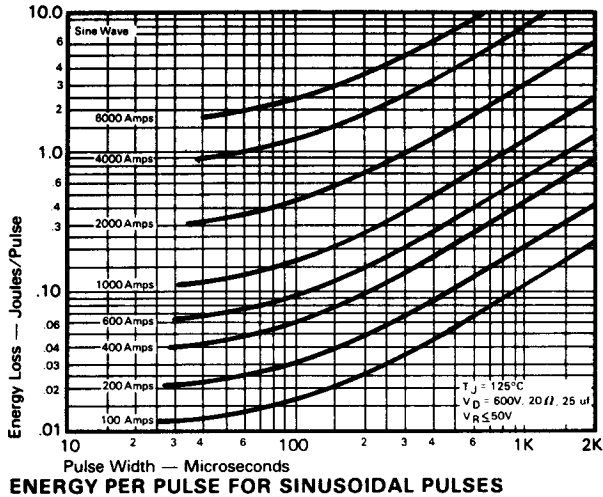
Transient Thermal Impedance VS. Time



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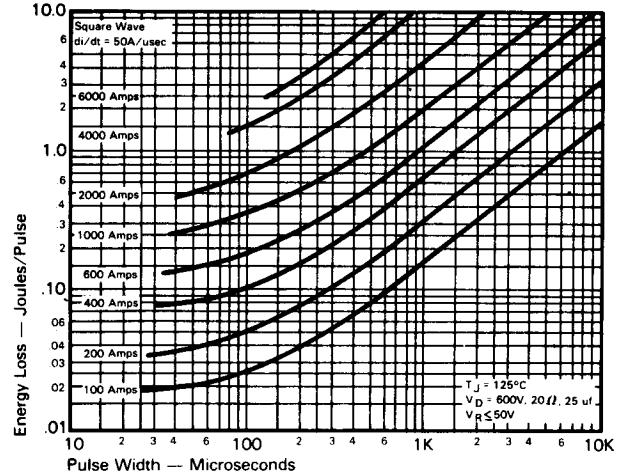
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Sinusoidal Current Data

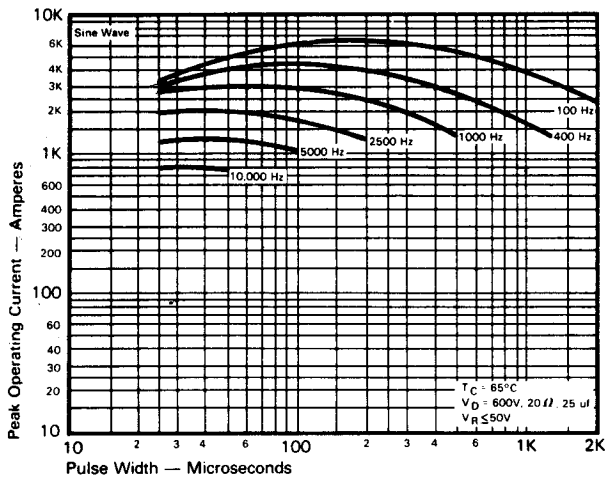


ENERGY PER PULSE FOR SINUSOIDAL PULSES

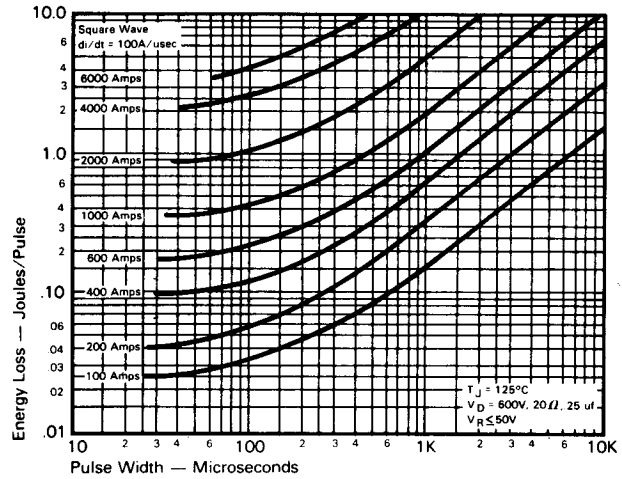
Trapezoidal Wave Current Data



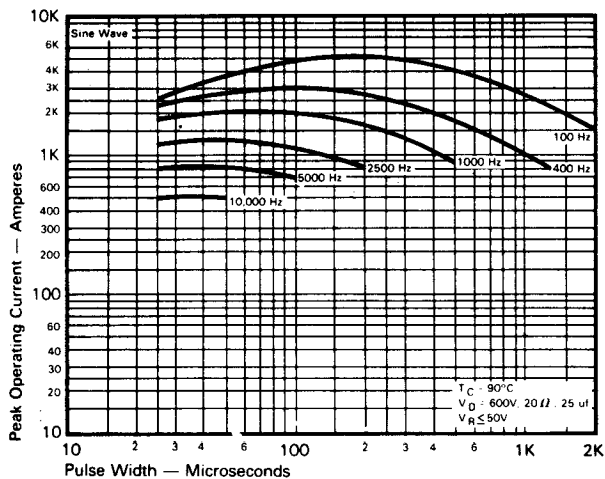
ENERGY PER PULSE FOR TRAPEZOIDAL PULSES
($di/dt = 50\text{A}/\mu\text{sec}$)



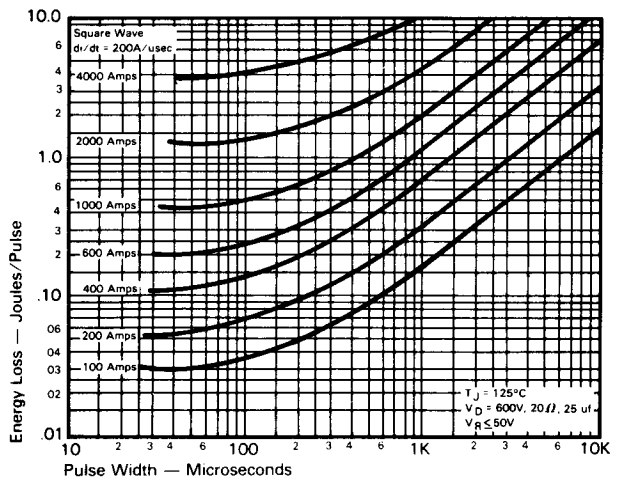
MAXIMUM ALLOWABLE PEAK ON-STATE CURRENT
vs. PULSE WIDTH ($T_C = 65^\circ\text{C}$)



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



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



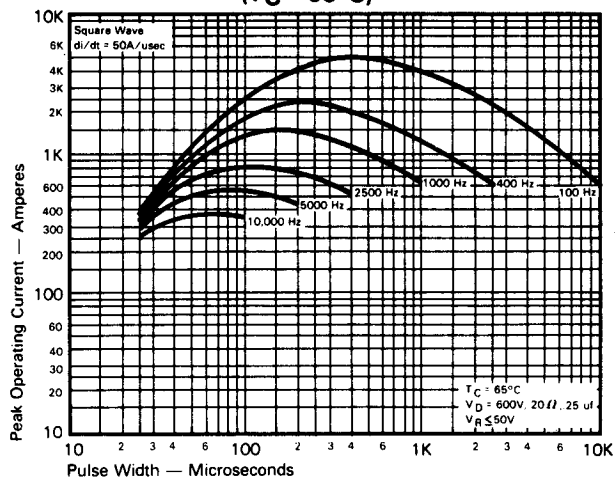
ENERGY PER PULSE FOR TRAPEZOIDAL PULSES
($di/dt = 200\text{A}/\mu\text{sec}$)

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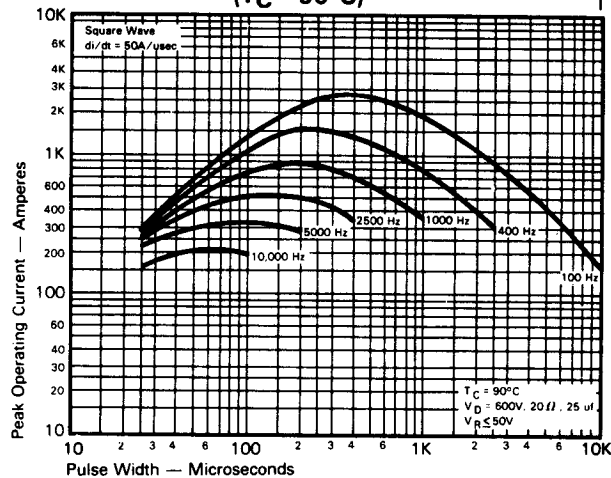
Fast Switching
SCR
T727_48

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

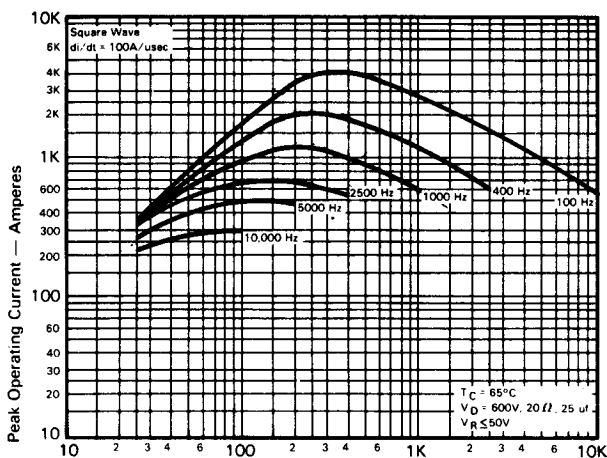


MAXIMUM ALLOWABLE PEAK ON-STATE CURRENT vs. PULSE WIDTH ($di/dt = 50\text{A/us}$)

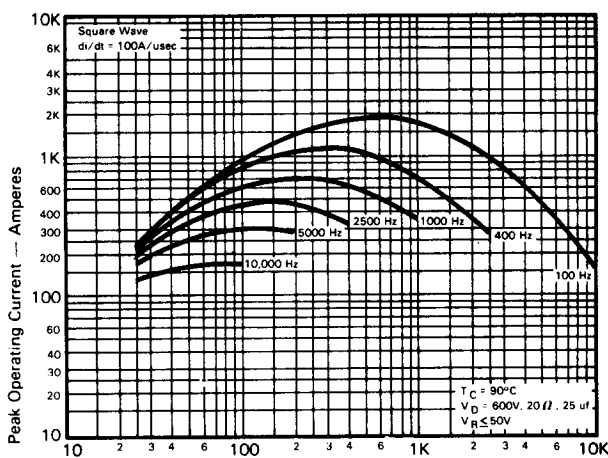
Trapezoidal Wave Current Data ($T_C = 90^\circ\text{C}$)



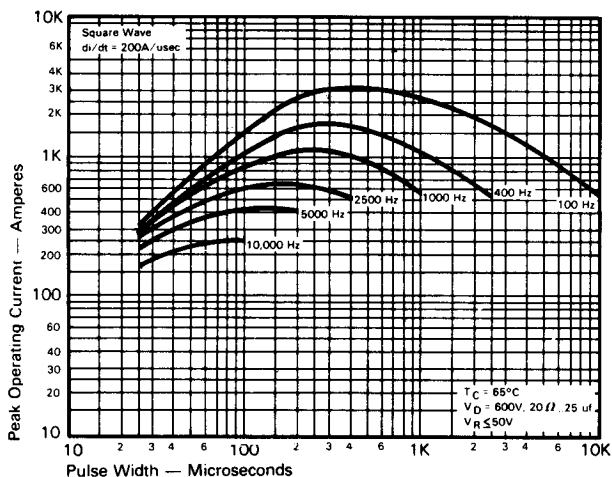
MAXIMUM ALLOWABLE PEAK ON-STATE CURRENT vs. PULSE WIDTH ($di/dt = 50\text{A/us}$)



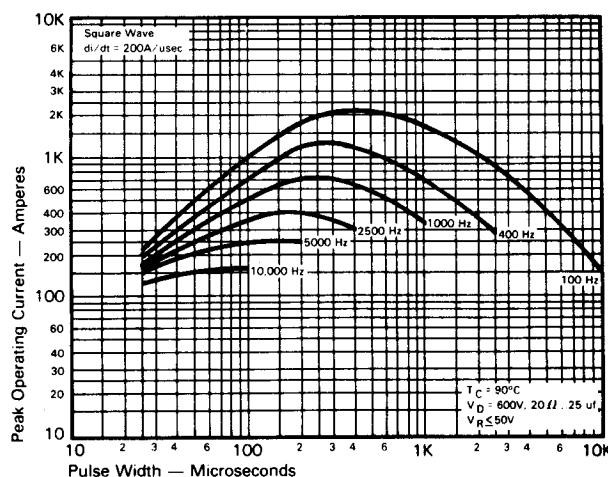
MAXIMUM ALLOWABLE PEAK ON-STATE CURRENT vs. PULSE WIDTH ($di/dt = 100\text{A/us}$)



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



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



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

FAST SWITCHING
THYRISTORS