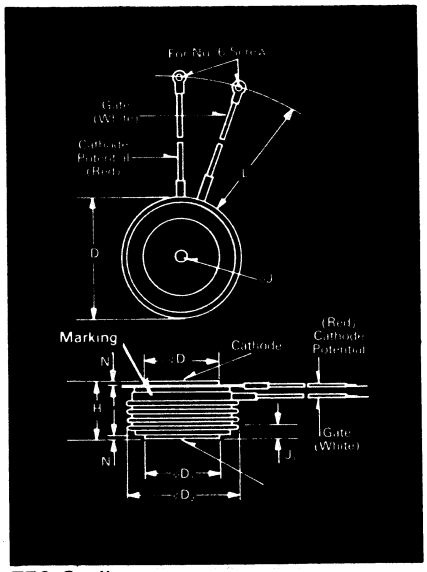
Fast Switching SCR T72H_ _48

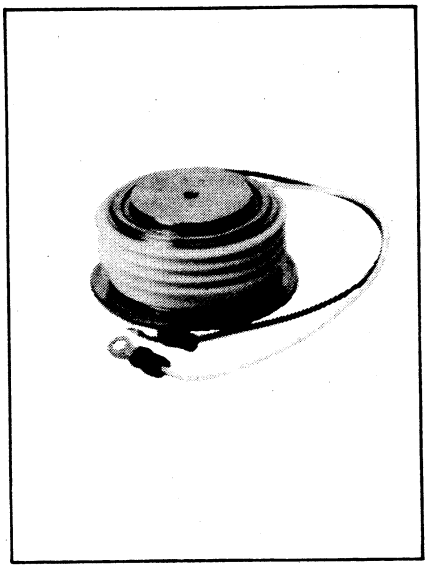
475A Avg. (750 RMS) Up to 800 Volts 20-40 μs



T72 Outline

Symbol	Inches		Millimeters	
	Min.	Max.	Min.	Max.
φD	2.250	2.290	57.15	58.17
φD1	1.333	1.343	33.86	34.11
φD2	2.030	2.090	51.56	53.09
H	1.020	1.060	25.91	26.92
φJ	.135	.145	3.43	3.68
J1	.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.



Features:
- Interdigitated, di/namic Gate structure
- Hard Commutation Turn-Off
- Forward Blocking Voltage Capabilities to 800 Volts
- Low Switching Losses at High Frequency
- Soft Commutation (Feedback Diode) Testing Available
- High di/dt with soft gate control

Applications:
- Induction Heating
- Transportation
- Inverters

Ordering Information

Type	Voltage		Current		Turn-off		Gate current		Leads	
Code	V_{DRM} and V_{RRM} (V)	Code	$I_{T(av)}$ (A)	Code	tq usec	Code	I_{GT} (ma)	Code	Case	Code
T72H	100	01	475	48	20	6	150	4	T72	DN
	200	02			25	B				
	300	03			30	5				
	400	04			40	4				
	500	05								
	600	06								
	700	07								
	800	08								

Example

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

Type T72H rated at 475 A average with V_{DRM} = 400V
I_{GT} = 150 ma, tq = 30 μsec max. and leads—order as:

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

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Voltage ①

Blocking State Maximums (T_J = 125°C)	Symbol								
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 ≤ 5.0 msec, V	V_{RSM}	200	300	400	500	600	700	800	900
Forward leakage current, mA peak	I_{DRM}	← 35 →							
Reverse leakage current, mA peak	I_{RRM}	← 35 →							

Current

Conducting State Maximums (T_J = 125°C)	Symbol	T72H_ _48
RMS forward current, A	$I_{T(rms)}$	750
Ave. forward current, A	$I_{T(av)}$	475
One-half cycle surge current③, A	I_{TSM}	8000
I^2t for fusing (for times ≥ 8.3 ms) A^2 sec.	I^2t	265,000
Forward voltage drop at ITM = 1500A and TJ = 25°C, V	V_{TM}	1.55
Min. repetitive di/dt ①④⑥ A/μsec	di/dt	600

Switching

(T_J = 25°C)	Symbol	
Max. turn-off time, IT = 400A, TJ = 125°C tp = 100 μsec. dirR/dt = 25 A/μsec., reapplied dv/dt = 200V/μsec. linear tc 0.8 VDRM, μsec ⑤①	tq	20 to 40
Typ. delay time, ITM = 1000A TD = .8 VDRM①, μsec	td	.5
Typ turn-on-time I_{TM} = 1000A, μsec	ton	3.0
Min. critical dv/dt exponential to .8 VDRM, TJ = 125°C, V/μsec ②⑤	dv/dt	300
Min. di/dt, non-repetitive, A/μsec ①④⑥	di/dt	1200

Gate

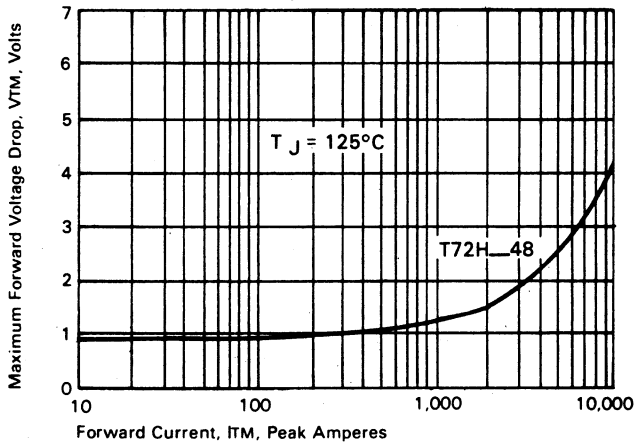
Maximum Parameters (T_J = 25°C)	Symbol	
Gate current to trigger at V_D = 12V, mA	I_{GT}	150
Gate voltage to trigger at V_D = 12V, V	V_{GT}	3
Non-triggering gate voltage, T_J = 125°C, and rated V_{DRM}, V	V_{GDM}	.25
Peak forward gate current, A	I_{GTM}	4
Peak reverse gate voltage, V	V_{GRM}	5
Peak gate power, Watts	P_{GM}	16
Average gate power, Watts	$P_{G(av)}$	3

Thermal and Mechanical

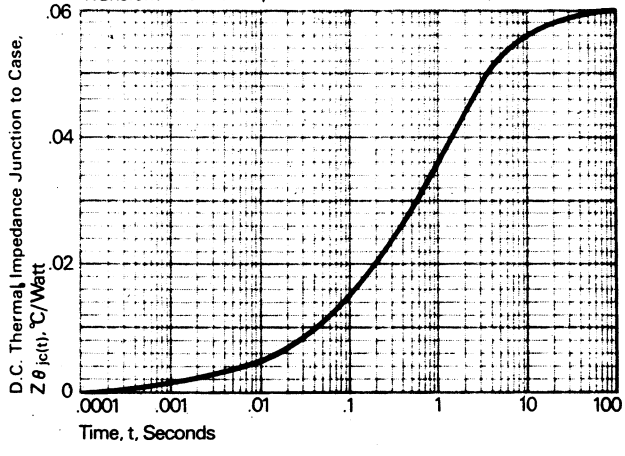
	Symbol	
Min., Max. oper. junction temp., °C	T_J	−40 to +125
Min., Max. storage temp., °C	Tstg	−40 to +150
Max. mounting force, lb. ... ①		2000 to 2400
Thermal resistance①, double-side cooling, junction to case, °C/Watt	$R_{\theta JC}$	.06
Case to sink, lubricated, °C/Watt	$R_{\theta CS}$	.02

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 VS. Forward Current



Transient Thermal Impedance VS. Time

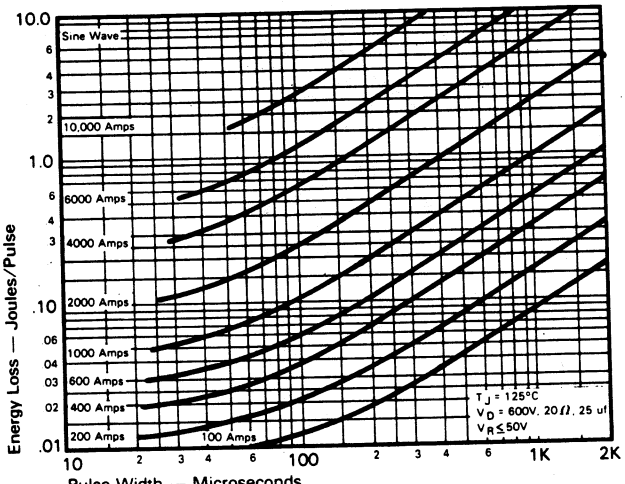


FAST SWITCHING THYRISTORS

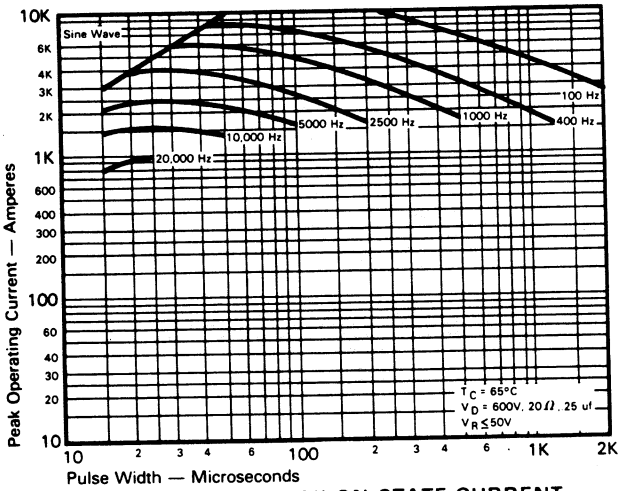
Fast Switching SCR T72H_ _48

475A Avg.
(750 RMS)
Up to 800 Volts
20-40 μs

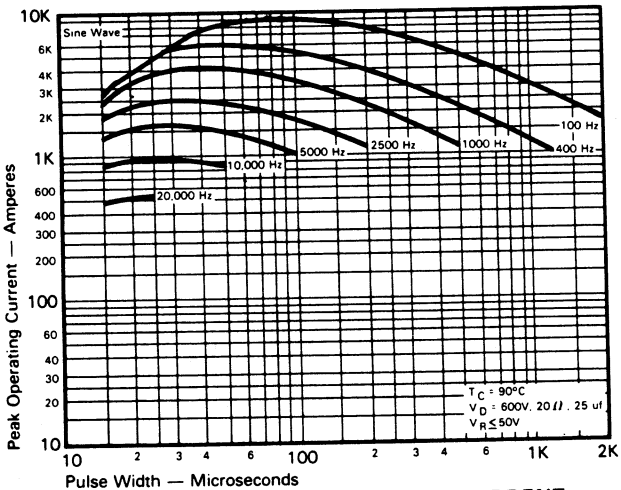
Sinusoidal Current Data



ENERGY PER PULSE FOR SINUSOIDAL PULSES

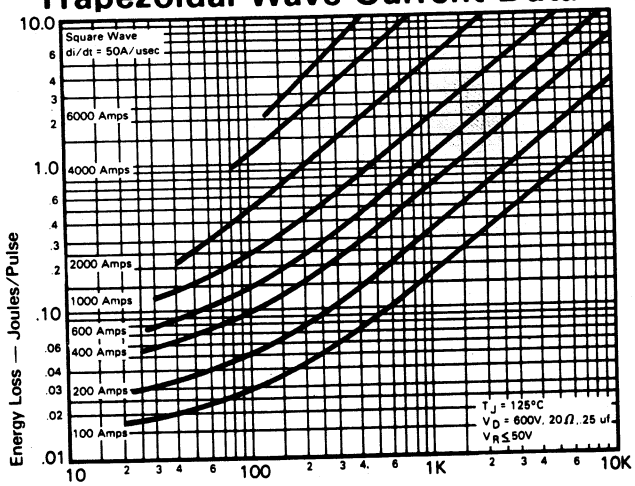


MAXIMUM ALLOWABLE PEAK ON-STATE CURRENT vs. PULSE WIDTH (T_C = 65°C)

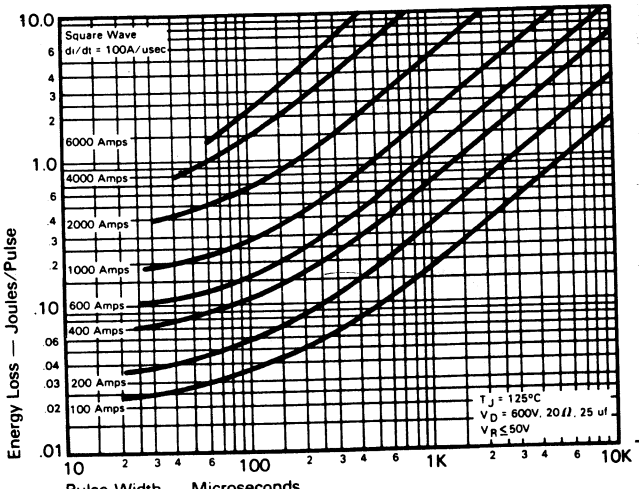


MAXIMUM ALLOWABLE PEAK ON-STATE CURRENT vs. PULSE WIDTH (T_C = 90°C)

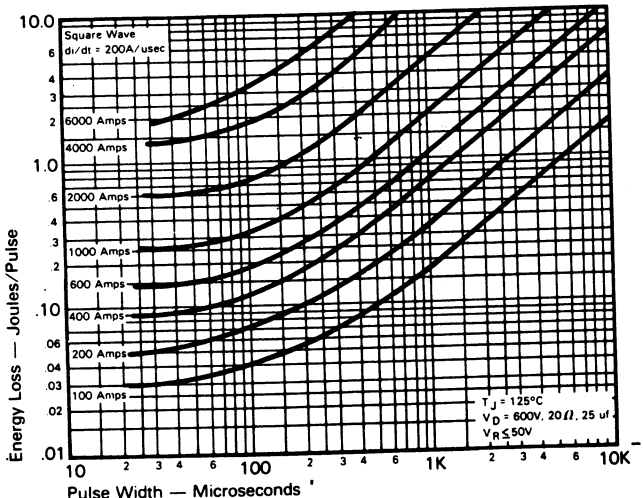
Trapezoidal Wave Current Data



ENERGY PER PULSE FOR TRAPEZOIDAL PULSES (di/dt = 50A/usec)



ENERGY PER PULSE FOR TRAPEZOIDAL PULSES (di/dt = 100A/usec)



ENERGY PER PULSE FOR TRAPEZOIDAL PULSES (di/dt = 200A/usec)

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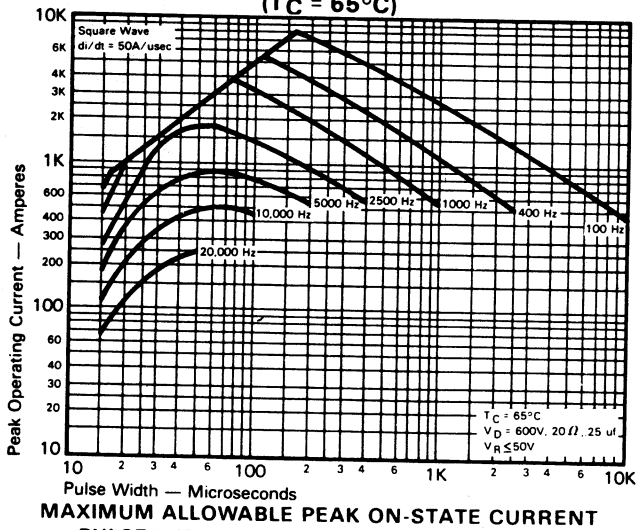
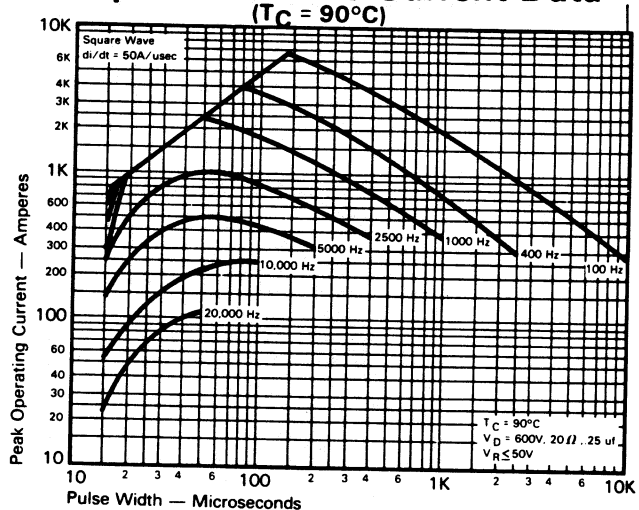
Trapezoidal Wave Current Data (T_C = 65°C)

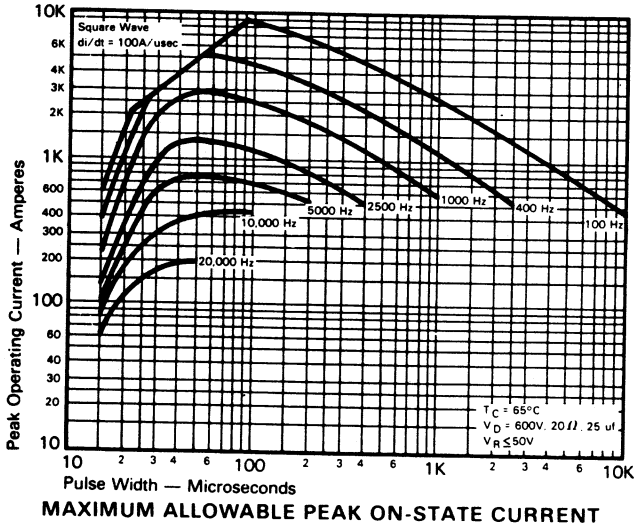


MAXIMUM ALLOWABLE PEAK ON-STATE CURRENT vs. PULSE WIDTH (di/dt = 50A/usec)

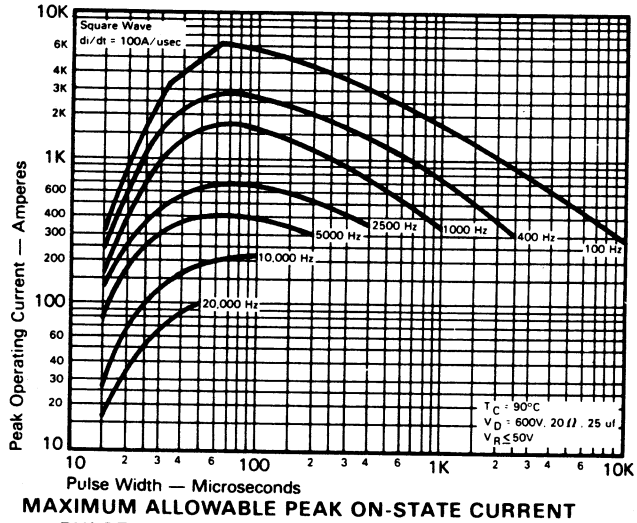
Trapezoidal Wave Current Data (T_C = 90°C)



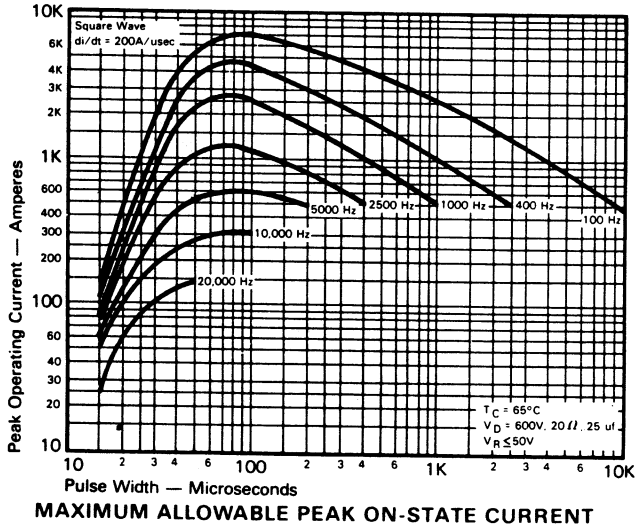
MAXIMUM ALLOWABLE PEAK ON-STATE CURRENT vs. PULSE WIDTH (di/dt = 50A/usec)



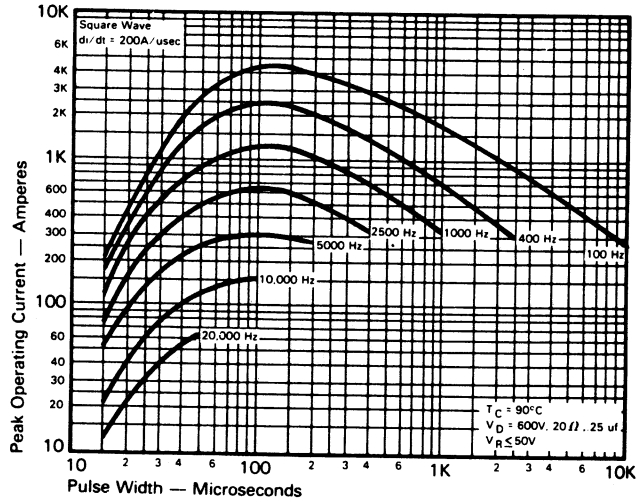
MAXIMUM ALLOWABLE PEAK ON-STATE CURRENT vs. PULSE WIDTH (di/dt = 100A/usec)



MAXIMUM ALLOWABLE PEAK ON-STATE CURRENT vs. PULSE WIDTH (di/dt = 100A/usec)



MAXIMUM ALLOWABLE PEAK ON-STATE CURRENT vs. PULSE WIDTH (di/dt = 200A/usec)



MAXIMUM ALLOWABLE PEAK ON-STATE CURRENT vs. PULSE WIDTH (di/dt = 200A/usec)