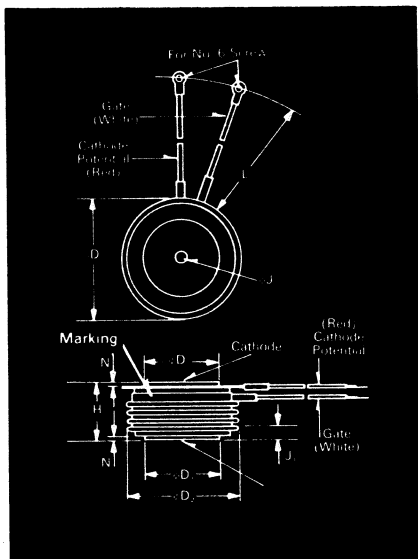


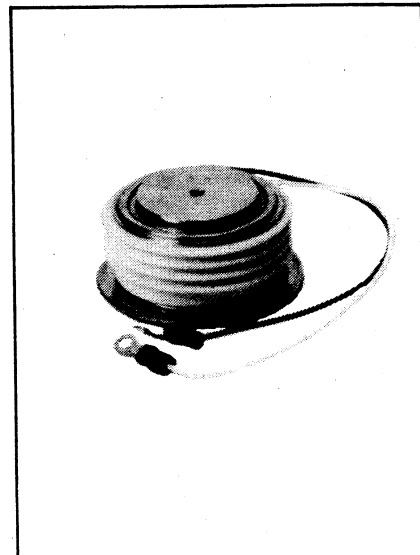
Fast Switching SCR T72H_48

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

- 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	VDRM and VRRM (V)	Code	IT(av) (A)	Code	tq usec	Code	IGT (ma)	Code	Case	Code
T72H	100	01	475	48	20	6	150	4	T72	DN
	200	02			25	8				
	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 VDRM = 400V
IGT = 150 ma, tq = 30 μ sec 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

**475A Avg.
(750 RMS)
Up to 800 Volts
20-40 μ s**

Fast Switching SCR T72H_48

Voltage ①

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

Repetitive peak forward blocking voltage, V ...
Repetitive peak reverse voltage, V ...
Non-repetitive transient peak reverse voltage,
 $t \leq 5.0$ msec, V ...

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

Current

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

Symbol

T72H_48

RMS forward current, A ...

$I_{T(rms)}$

750

Ave. forward current, A ...

$I_{T(av)}$

475

One-half cycle surge current②, A ...

I_{TSM}

8000

I^2t for fusing (for times ≥ 8.3 ms)
A² sec.

I^2t

265,000

Forward voltage drop at $I_{TM} = 1500\text{A}$

and $T_J = 25^\circ\text{C}$, V ...

V_{TM}

1.55

Min. repetitive di/dt ③④⑤ A/ μ sec ...

di/dt

600

Switching

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

Symbol

Max. turn-off time, $I_T = 400\text{A}$, $T_J = 125^\circ\text{C}$

$t_p = 100$ μ sec, $dirR/dt = 25$

A/ μ sec., reapplied $dv/dt =$

200V/ μ sec. linear to 0.8 V_{DRM} , μ sec. ①①

t_q

20 to 40

Typ. delay time, $I_{TM} = 1000\text{A}$

$t_d = .8 V_{DRM}$, μ sec

t_d

.5

Typ turn-on-time $I_{TM} = 1000\text{A}$, μ sec

Min. critical dv/dt exponential to .8

V_{DRM} , $T_J = 125^\circ\text{C}$, V/ μ sec ⑦⑧

t_{on}

3.0

Min. di/dt , non-repetitive, A/ μ sec ①④⑤

dv/dt

300

di/dt

1200

Gate

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

Symbol

Gate current to trigger at $V_D = 12\text{V}$, mA

I_{GT}

150

Gate voltage to trigger at $V_D = 12\text{V}$, V ...

V_{GT}

3

Non-triggering gate voltage, $T_J = 125^\circ\text{C}$,

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., $^\circ\text{C}$...

T_J

-40 to +125

Min., Max. storage temp., $^\circ\text{C}$...

T_{stg}

-40 to +150

Max. mounting force, lb. ... ①

2000 to 2400

Thermal resistance①, double-

side cooling, 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.

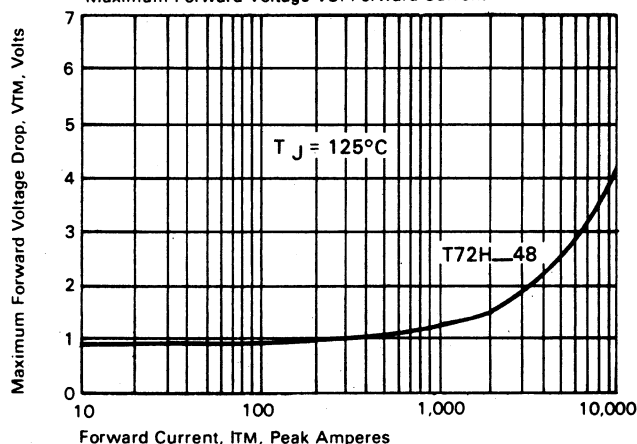
④ With recommended gate drive.

⑤ Higher dv/dt ratings available, consult factory.

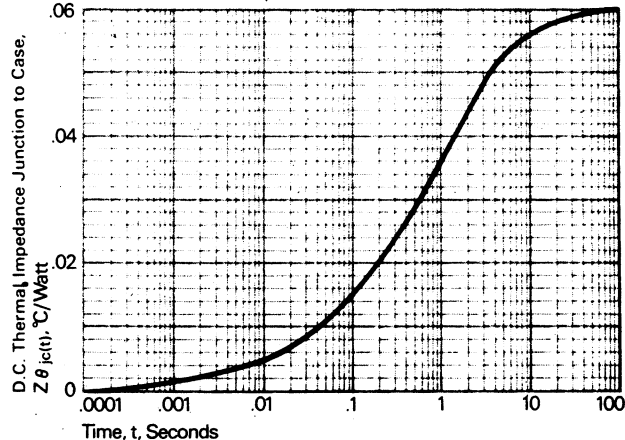
⑥ Per JEDEC standard RS-397, 5.2.2.6.

⑦ For operation with antiparallel diode, consult factory.

Maximum Forward Voltage VS. Forward Current



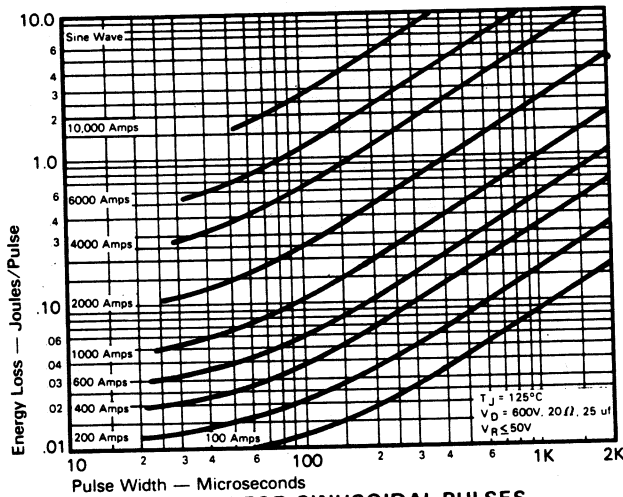
Transient Thermal Impedance VS. Time



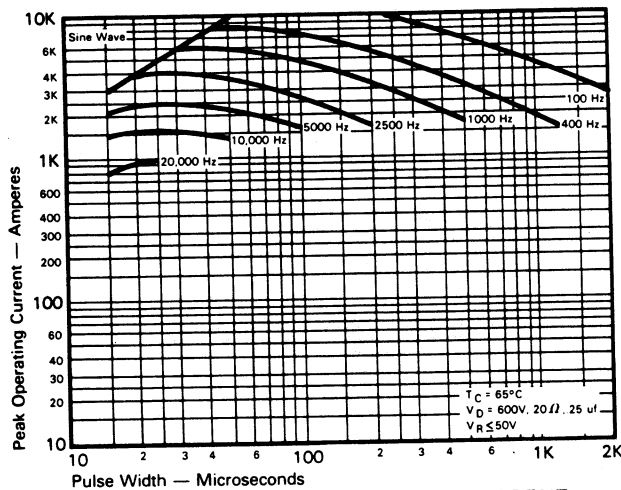
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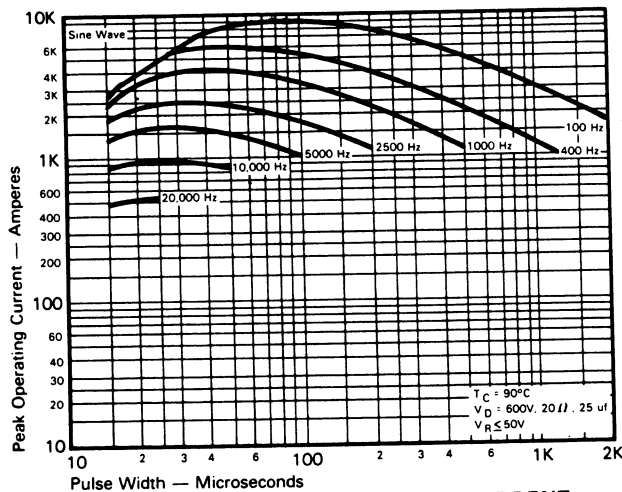
Sinusoidal Current Data



ENERGY PER PULSE FOR SINUSOIDAL PULSES

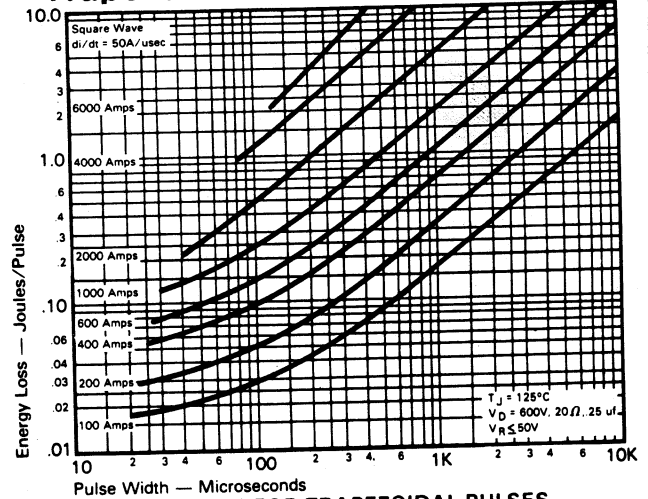


MAXIMUM ALLOWABLE PEAK ON-STATE CURRENT
vs. PULSE WIDTH ($T_C = 65^\circ\text{C}$)

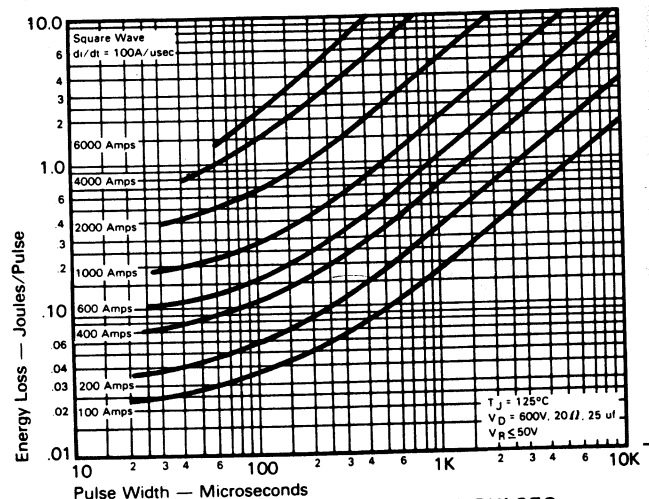


MAXIMUM ALLOWABLE PEAK ON-STATE CURRENT
vs. PULSE WIDTH ($T_C = 90^\circ\text{C}$)

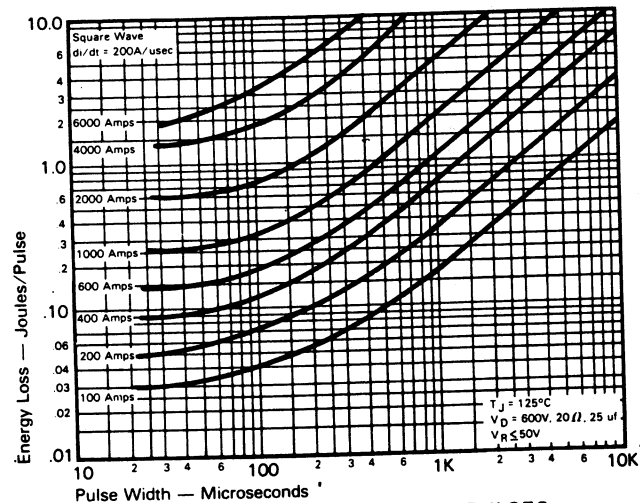
Trapezoidal Wave Current Data



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



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

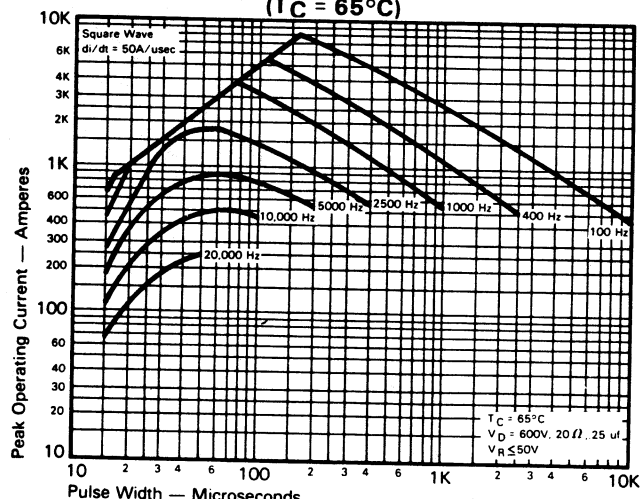


ENERGY PER PULSE FOR TRAPEZOIDAL PULSES
($di/dt = 200\text{A/usec}$)

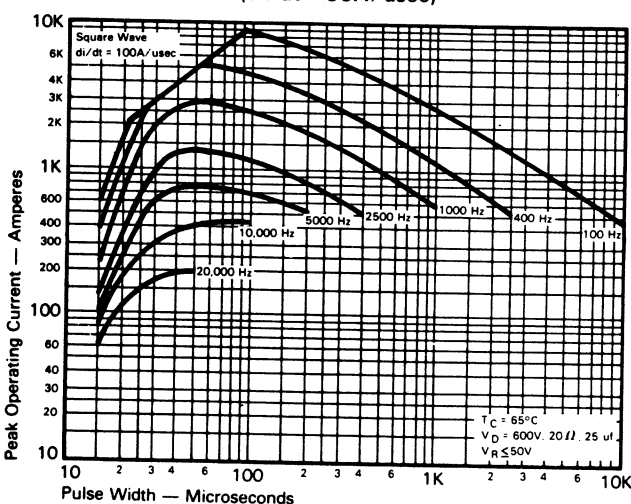
475A Avg.
(750 RMS)
Up to 800 Volts
20-40 μ s

Fast Switching
SCR
T72H_48

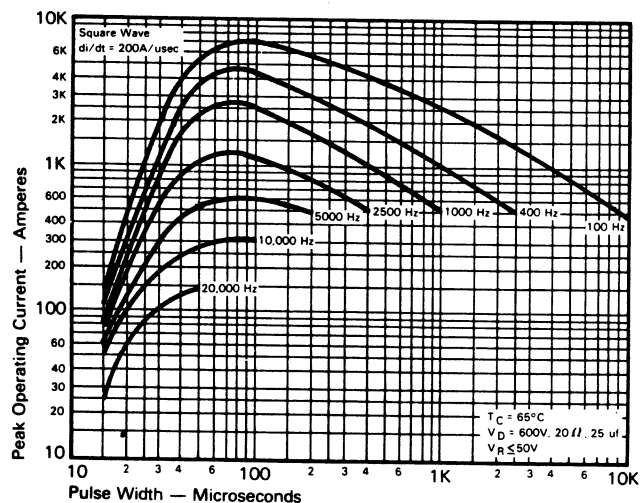
Trapezoidal Wave Current Data ($T_C = 65^\circ\text{C}$)



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

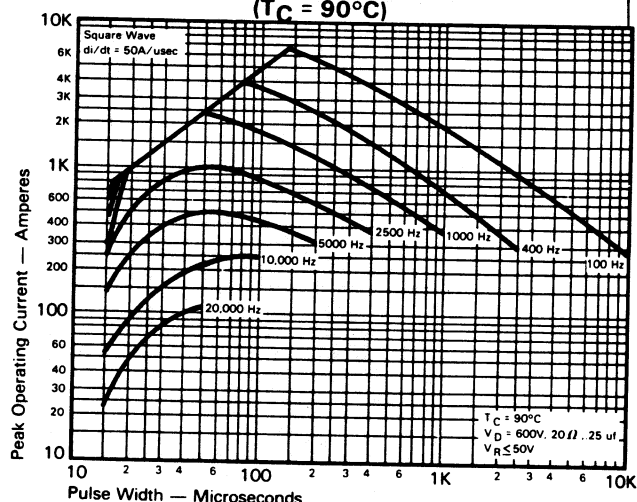


MAXIMUM ALLOWABLE PEAK ON-STATE CURRENT
vs. PULSE WIDTH ($di/dt = 100\text{A/usec}$)

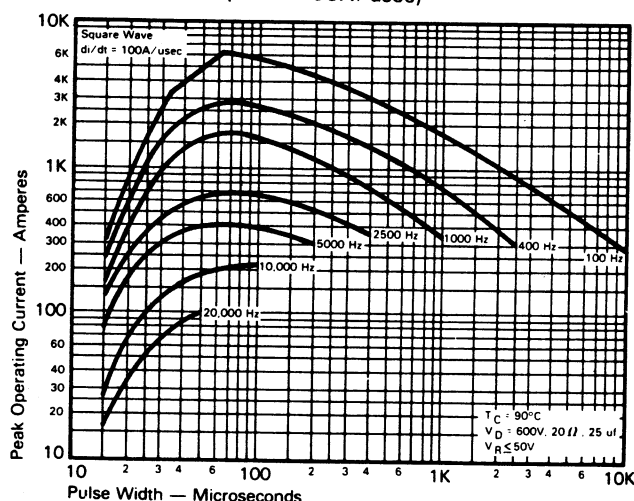


MAXIMUM ALLOWABLE PEAK ON-STATE CURRENT
vs. PULSE WIDTH ($di/dt = 200\text{A/usec}$)

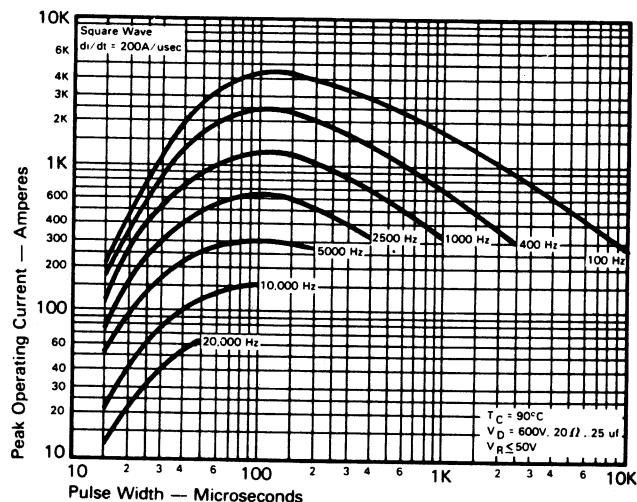
Trapezoidal Wave Current Data ($T_C = 90^\circ\text{C}$)



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 ($di/dt = 200\text{A/usec}$)