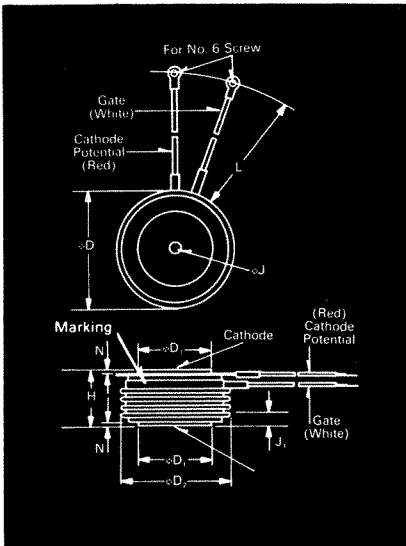


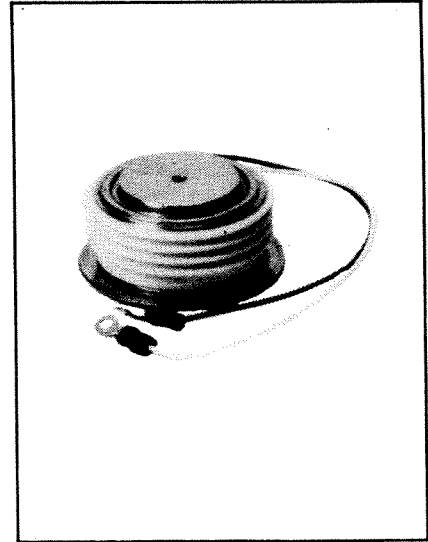
# Fast Switching SCR T72H\_45

450A Avg.  
(700 RMS)  
Up to 1400 Volts  
25-50  $\mu$ s



Symbol	Inches		Millimeters	
	Min.	Max.	Min.	Max.
$\phi D$	2.250	2.290	57.15	58.17
$\phi D_1$	1.333	1.343	33.86	34.11
$\phi D_2$	2.030	2.090	51.56	53.09
H	1.020	1.060	25.91	26.92
$\phi J$	.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 Capabilities to 1200 Volts
- Low Switching Losses at High Frequency
- Soft Commutation (Feedback Diode) Testing Available
- High di/dt with softgate control

### Applications:

- Induction Heating
- Transportation
- Inverters
- Crowbars
- Cycloconverters

## Ordering Information

Type	Voltage		Current		Turn-off		Gate current		Leads		
	Code	V <sub>DRM</sub> and V <sub>RRM</sub> (V)	Code	I <sub>T(av)</sub> (A)	Code	t <sub>q</sub> $\mu$ sec	Code	I <sub>GT</sub> (ma)	Code	Case	
T72H		100	01	450	45	25	B	150	4	T72	DN
		200	02								
		300	03								
		400	04								
		500	05								
		600	06								
		700	07								
		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 T72H rated at 450 A average with V<sub>DRM</sub> = 1000V, I<sub>GT</sub> = 150 ma, t<sub>q</sub> = 40  $\mu$ sec max. and leads—order as:

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

**450A Avg.  
(700 RMS)  
Up to 1400 Volts  
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**Fast Switching  
SCR  
T72H\_45**

**Voltage** ①

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

Repetitive peak forward blocking voltage, V	$V_{DRM}$
Repetitive peak reverse voltage, V	$V_{RRM}$
Non-repetitive transient peak reverse voltage, $V$ $t \leq 5.0$ 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

←----- 35 ----->  
←----- 35 ----->

**Current**

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

Symbol	T72H_45
RMS forward current, A	$I_T(\text{rms})$ 700
Ave. forward current, A	$I_T(\text{av})$ 450
One-half cycle surge current <sup>②</sup> , A	$I_{TSM}$ 7500
3 cycle surge current <sup>③</sup> , A	$I_{TSM}$ 5300
10 cycle surge current <sup>④</sup> , A	$I_{TSM}$ 4650
$I^2t$ for fusing (for times $\geq 8.3$ ms) A <sup>2</sup> sec.	$I^2t$ 234,000
Forward voltage drop at $I_{TM} = 1500\text{A}$ and $T_J = 25^\circ\text{C}$ , V	$V_{TM}$ 2.30
Min. repetitive $di/dt$ ①①① A/ $\mu$ sec	$di/dt$ 600

**Switching**

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

Symbol	
Max. turn-off time, $I_T = 1000\text{A}$ , $T_J = 125^\circ\text{C}$ $t_p = 100$ $\mu$ sec. $dirR/dt = 50$ A/ $\mu$ sec., reappplied $dv/dt =$ 200V/ $\mu$ sec. linear to 0.8 $V_{DRM}$ , $\mu$ sec. ②①	$t_q$ 25 to 50
Typ. delay time, $I_{TM} = 1000\text{A}$ $T_D = .8 V_{DRM}$ ①, $\mu$ sec	$t_d$ .5
Min. critical $dv/dt$ exponential to .8 $V_{DRM}$ , $T_J = 125^\circ\text{C}$ , V/ $\mu$ sec ②②	$dv/dt$ 300
Min. $di/dt$ , non-repetitive, A/ $\mu$ sec ①①①	$di/dt$ 1200

**Gate**

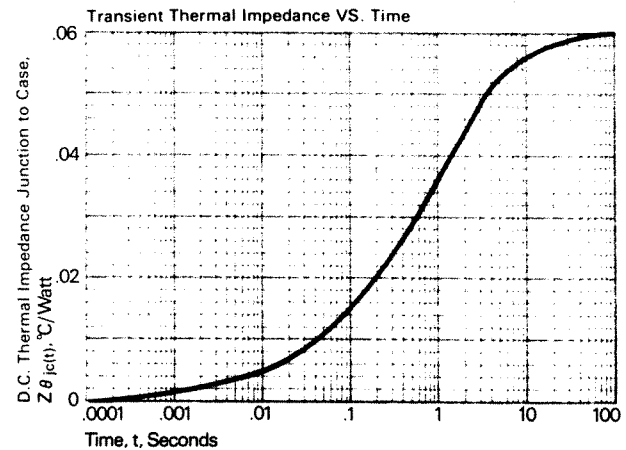
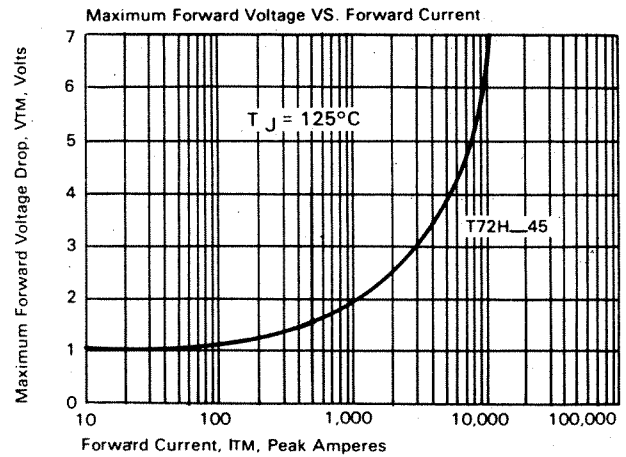
**Maximum Parameters**  
( $T_J = 25^\circ\text{C}$ )

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 resistance <sup>①</sup> , 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.

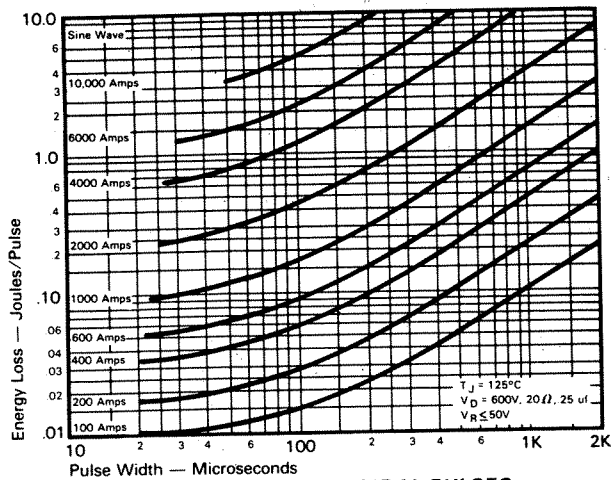


FAST SWITCHING THYRISTORS

# Fast Switching SCR T72H\_45

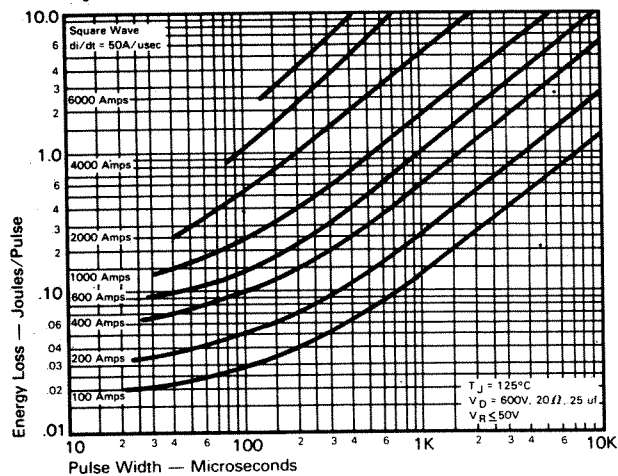
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Up to 1400 Volts  
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## Sinusoidal Current Data

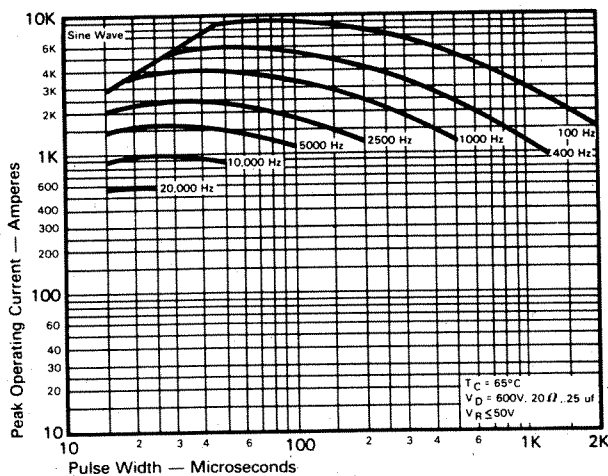


ENERGY PER PULSE FOR SINUSOIDAL PULSES

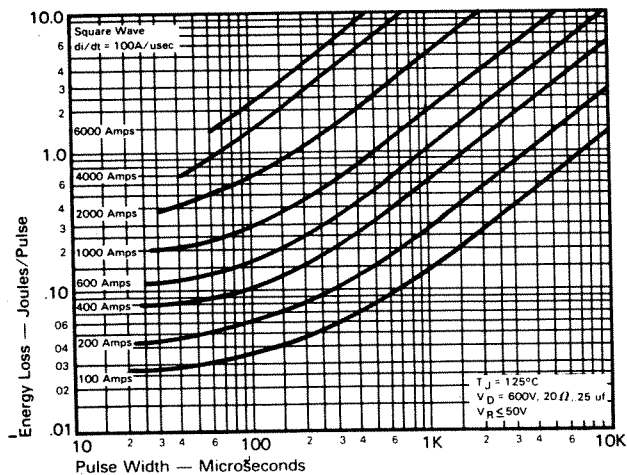
## Trapezoidal Wave Current Data



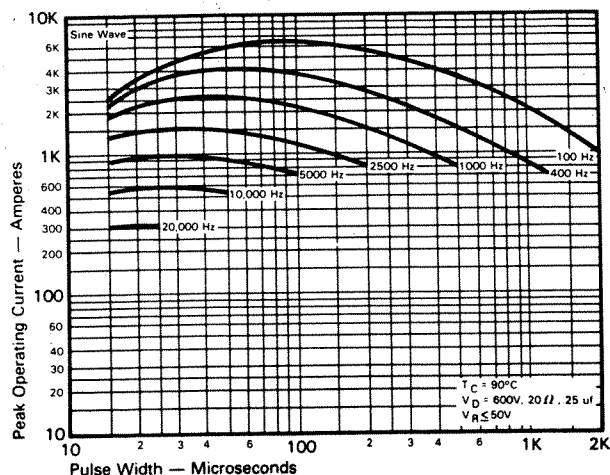
ENERGY PER PULSE FOR TRAPEZOIDAL PULSES  
(di/dt = 50A/usec)



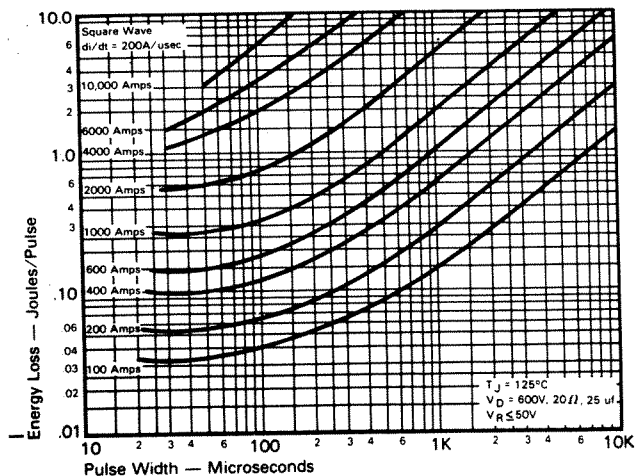
MAXIMUM ALLOWABLE PEAK ON-STATE CURRENT  
vs. PULSE WIDTH ( $T_C = 65^\circ\text{C}$ )



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



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

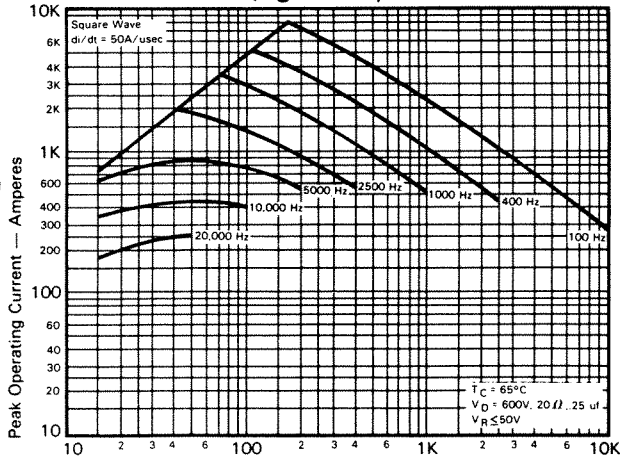


ENERGY PER PULSE FOR TRAPEZOIDAL PULSES  
(di/dt = 200A/usec)

**450A Avg.  
(700 RMS)  
Up to 1400 Volts  
25-50  $\mu$ s**

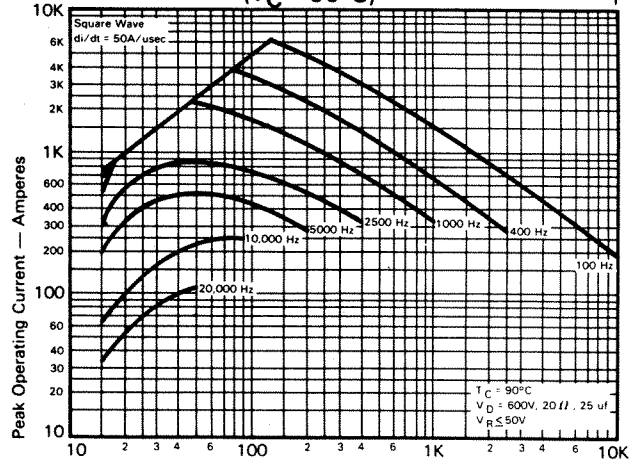
**Fast Switching  
SCR  
T72H\_45**

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

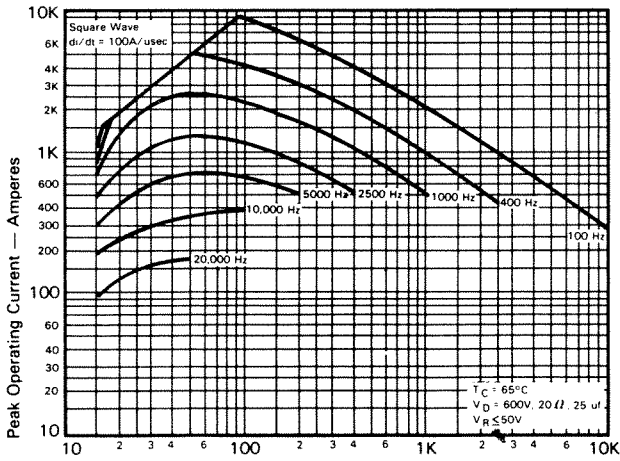


**MAXIMUM ALLOWABLE PEAK ON-STATE CURRENT vs. PULSE WIDTH ( $di/dt = 50A/usec$ )**

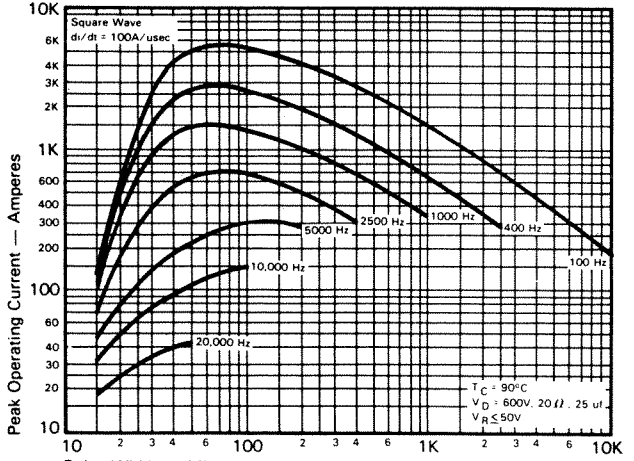
**Trapezoidal Wave Current Data  
( $T_C = 90^\circ\text{C}$ )**



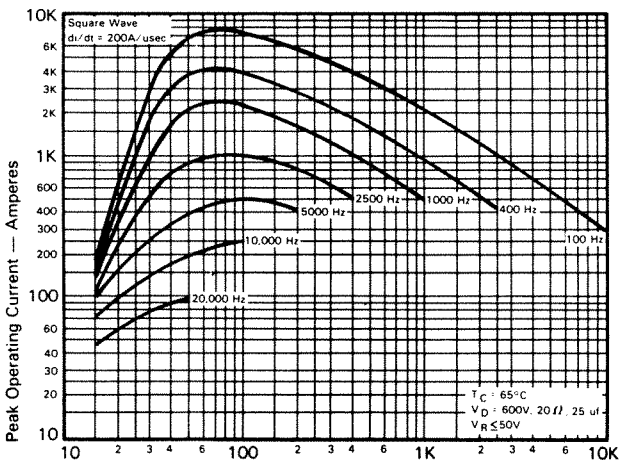
**MAXIMUM ALLOWABLE PEAK ON-STATE CURRENT vs. PULSE WIDTH ( $di/dt = 50A/usec$ )**



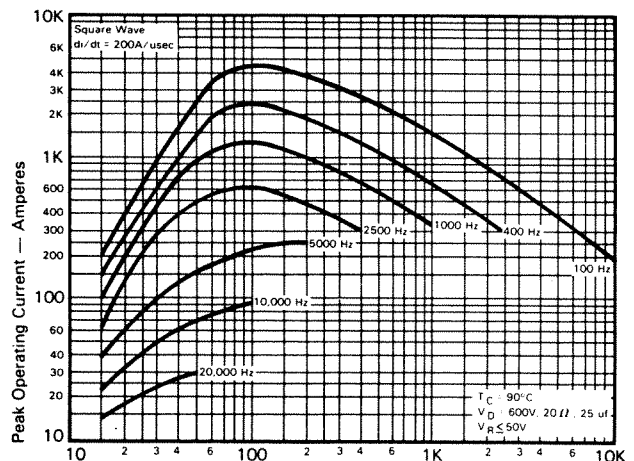
**MAXIMUM ALLOWABLE PEAK ON-STATE CURRENT vs. PULSE WIDTH ( $di/dt = 100A/usec$ )**



**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 ( $di/dt = 200A/usec$ )**

**FAST SWITCHING  
THYRISTORS**