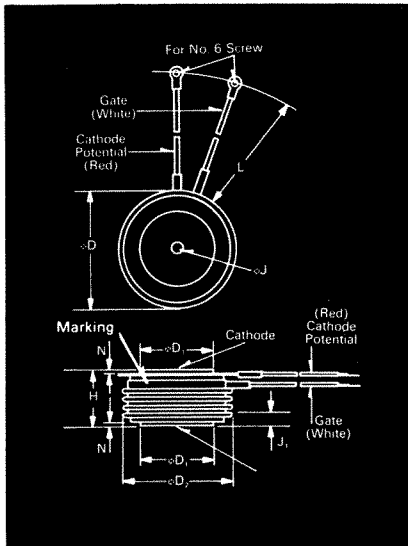


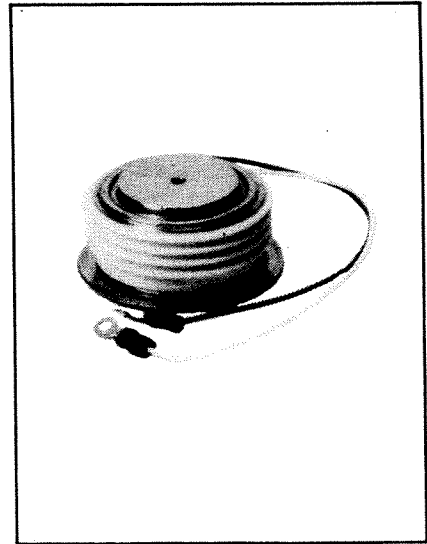
Fast Switching SCR T72H_45

450A Avg.
(700 RMS)
Up to 1400 Volts
25-50 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:

- 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 _{DRM} and V _{RRM} (V)	Code	I _{T(av)} (A)	Code	t _q μ sec	Code	I _{GT} (ma)	Code	Case	Code
T72H	100	01	450	45	25	B	150	4	T72	DN
	200	02			30	5				
	300	03			40	4				
	400	04			50	3				
	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_{DRM} = 1000V.
I_{GT} = 150 ma, t_q = 40 μ 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)
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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, $t \leq 5.0 \text{ msec}$, 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

Current

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

RMS forward current, A	$I_T(\text{rms})$
Ave. forward current, A	$I_T(\text{av})$
One-half cycle surge current③, A	I_{TSM}
3 cycle surge current③, A	I_{TSM}
10 cycle surge current③, A	I_{TSM}
I^2t for fusing (for times $\geq 8.3 \text{ ms}$) A ² sec.	I^2t
Forward voltage drop at $I_{TM} = 1500\text{A}$ and $T_J = 25^\circ\text{C}$, V	V_{TM}
Min. repetitive di/dt ①④⑤ A/ μsec	di/dt

T72H_45

700
450
7500
5300
4650
234,000
2.30
600

Switching

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

Max. turn-off time, $I_T = 1000\text{A}$, $T_J = 125^\circ\text{C}$
 $t_p = 100 \mu\text{sec}$, $di/dt = 50$
A/ μsec , reappplied $dv/dt =$
200V/ μsec , linear to 0.8 V_{DRM} , μsec . ④⑤

Typ. delay time, $I_{TM} = 1000\text{A}$
 $T_D = .8 V_{DRM}$ ④, μsec

Min. critical dv/dt exponential to .8
 V_{DRM} , $T_J = 125^\circ\text{C}$, V/ μsec ④⑤

Min. di/dt , non-repetitive, A/ μsec ①④⑤

Symbol

25 to 50
.5
300
1200

Gate

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

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

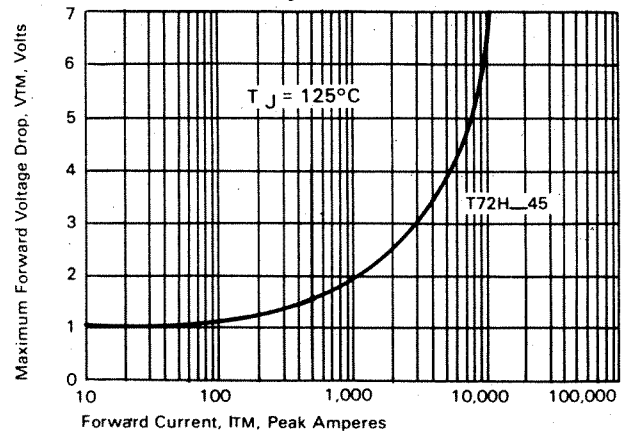
150
3
25+
4
5
16
3

Thermal and Mechanical

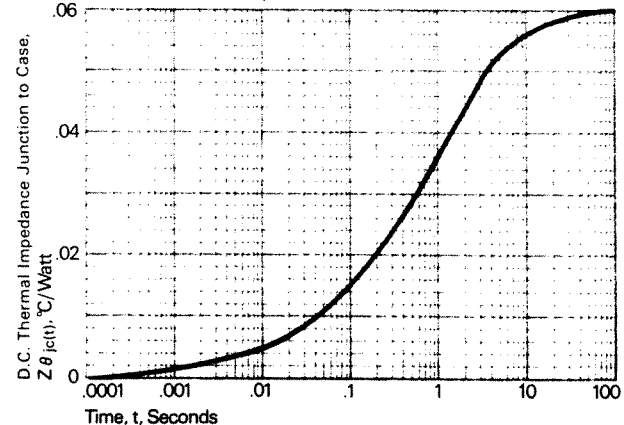
Min., Max. oper. junction temp., $^\circ\text{C}$	T_J	-40 to +125
Min., Max. storage temp., $^\circ\text{C}$	T_{stg}	-40 to +150
Max. mounting force, lb. ①		2000 to 2400
Thermal resistance④, double- side cooling, junction to case, $^\circ\text{C}/\text{Watt}$	$R_{\theta JC}$	.06
Case to sink, lubricated, $^\circ\text{C}/\text{Watt}$	$R_{\theta CS}$	.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



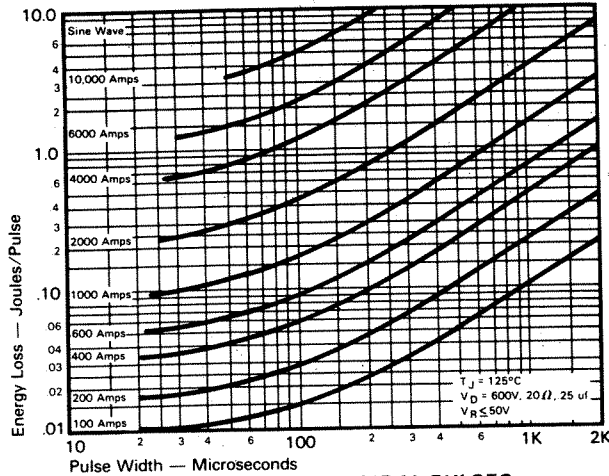
Transient Thermal Impedance VS. Time



Fast Switching SCR T72H_45

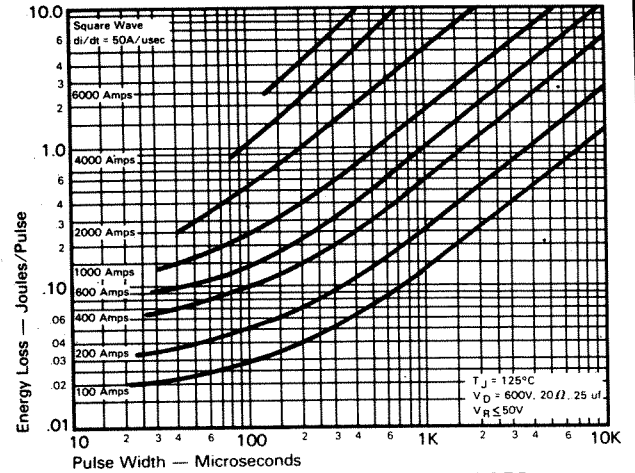
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Sinusoidal Current Data

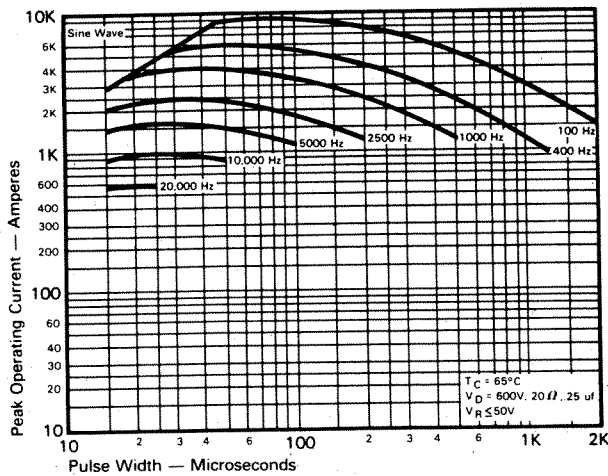


ENERGY PER PULSE FOR SINUSOIDAL PULSES

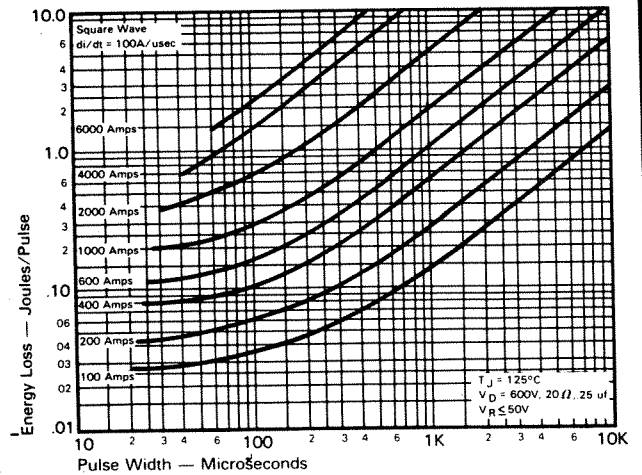
Trapezoidal Wave Current Data



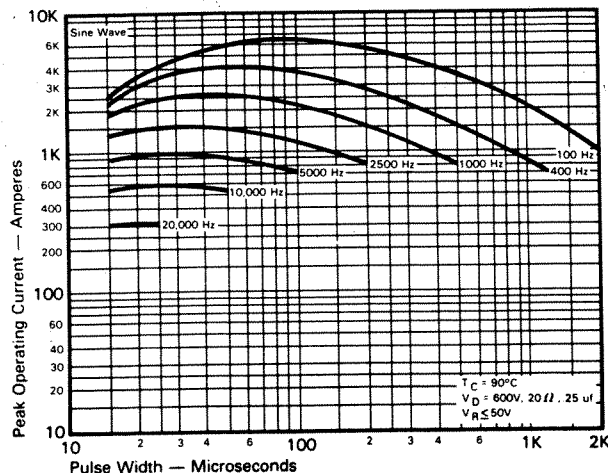
ENERGY PER PULSE FOR TRAPEZOIDAL PULSES
($di/dt = 50\text{A/usec}$)



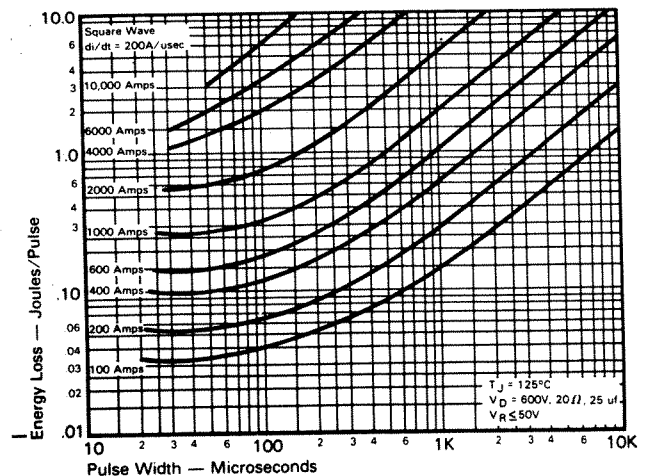
MAXIMUM ALLOWABLE PEAK ON-STATE CURRENT
vs. PULSE WIDTH ($T_C = 65^\circ\text{C}$)



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



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

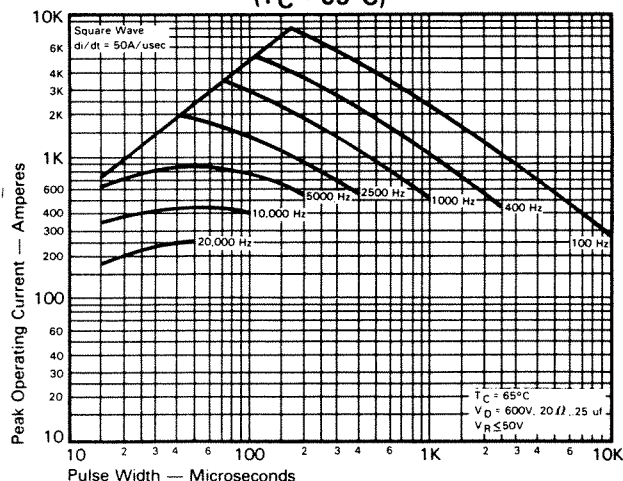


ENERGY PER PULSE FOR TRAPEZOIDAL PULSES
($di/dt = 200\text{A/usec}$)

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25-50 μ s**

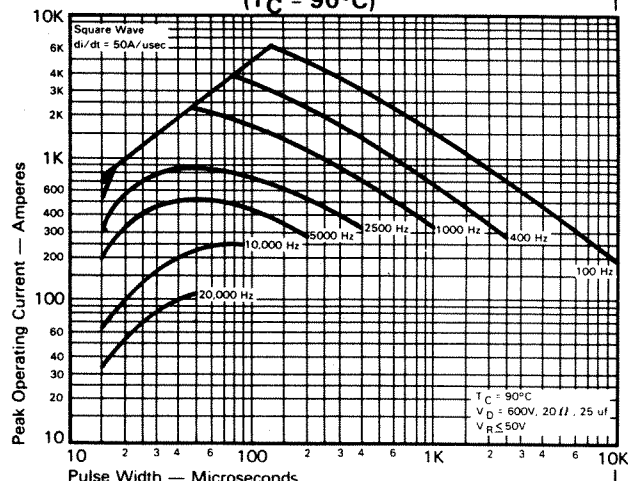
**Fast Switching
SCR
T72H_45**

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

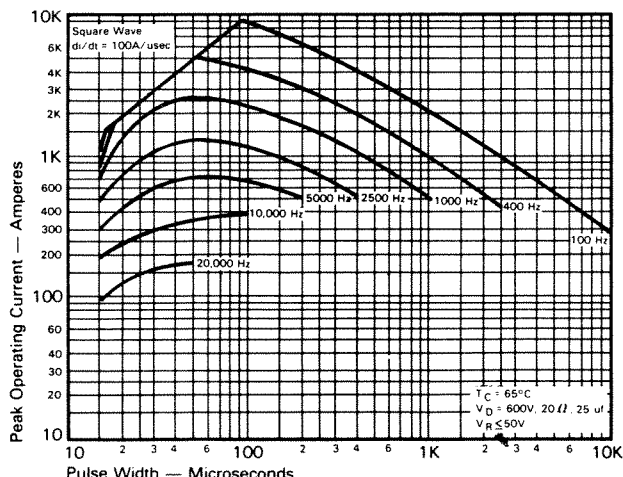


**MAXIMUM ALLOWABLE PEAK ON-STATE CURRENT
vs. PULSE WIDTH ($di/dt = 50\text{A/usec}$)**

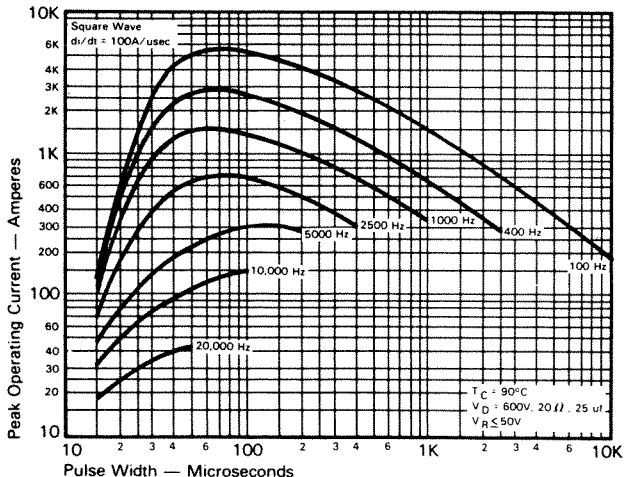
**Trapezoidal Wave Current Data
($T_C = 90^\circ\text{C}$)**



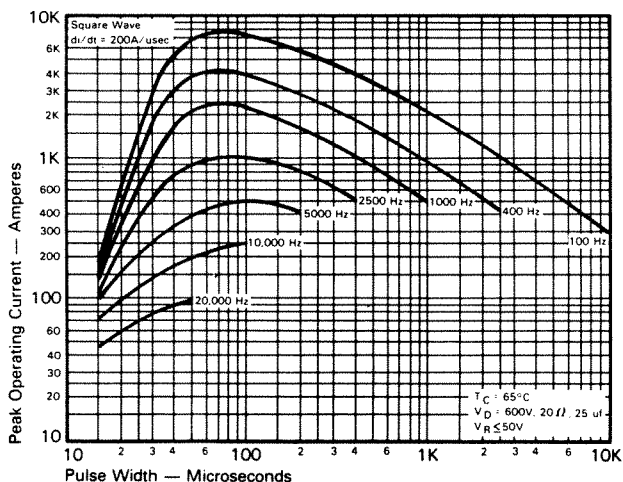
**MAXIMUM ALLOWABLE PEAK ON-STATE CURRENT
vs. PULSE WIDTH ($di/dt = 50\text{A/usec}$)**



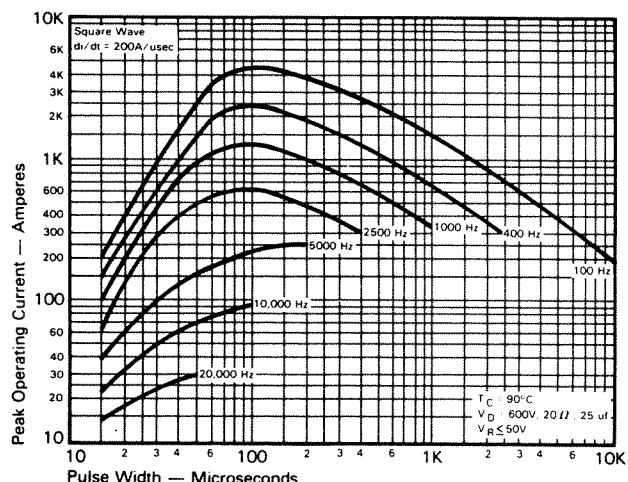
**MAXIMUM ALLOWABLE PEAK ON-STATE CURRENT
vs. PULSE WIDTH ($di/dt = 100\text{A/usec}$)**



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



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



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