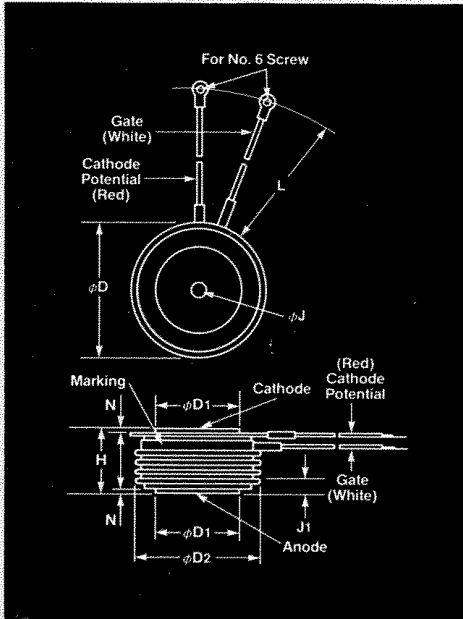




# Fast Switching SCR T72H\_42

420A Avg.  
(650A RMS)  
Up to 1800 Volts  
80-100  $\mu$ 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 <sub>1</sub>	.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—1.02 in. min. (25.91 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 1800 Volts
- Low Switching Losses at High Frequency
- Soft Cummutation (Feedback Diode) Testing Available
- High di/dt

### Applications:

- Induction Heating
- Transportation
- Inverters

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## Ordering Information

Type	Voltage		Current		Turn-off		Gate current		Leads	
	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	Code
T72H	1400 1600 1800	14 16 18	420	42	80 100	1 K	150	4	T72	DN

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

Type T72H rated at 420 A average with V<sub>DRM</sub> = 1600V, I<sub>GT</sub> = 150 ma, t<sub>q</sub> = 80  $\mu$ sec max. and leads—order as:

Type	Voltage	Current	Turn Off	Gate Current	Leads
T 7 2 H	1 6	4 2	1	4	D N

# 420A Avg. (650A RMS) Up to 1800 Volts 80-100 $\mu$ s

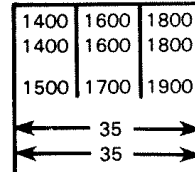
# Fast Switching SCR T72H\_\_42



## Voltage ①

### Blocking State Maximums (T<sub>J</sub> = 125°C) Symbol

Repetitive peak forward blocking voltage, V	..... V <sub>DRM</sub>
Repetitive peak reverse voltage, V	..... V <sub>RRM</sub>
Non-repetitive transient peak reverse voltage, t ≤ 5.0 msec, V	..... V <sub>RSM</sub>
Forward leakage current, mA peak	..... I <sub>DRM</sub>
Reverse leakage current, mA peak	..... I <sub>RRM</sub>



## Current

### Conducting State Maximums (T<sub>J</sub> = 125°C) Symbol T72H\_\_42

RMS forward current, A	..... I <sub>T(rms)</sub>	650
Ave. forward current, A	..... I <sub>T(av)</sub>	420
One-half cycle surge current ③, A	..... I <sub>TSM</sub>	6800
I <sup>2</sup> t for fusing (for times ≥ 8.3 ms) A <sup>2</sup> sec	..... I <sup>2</sup> t	205,000
Forward voltage drop at I <sub>TM</sub> = 1500A and T <sub>J</sub> = 25°C, V	..... V <sub>TM</sub>	2.2
Min. repetitive di/dt ①④⑤ A/μsec	..... di/dt	400

## Switching

(T <sub>J</sub> = 25°C) Symbol		
Max. turn-off time, I <sub>T</sub> = 1000A, T <sub>J</sub> = 125°C, tp = 100 μsec, diR/dt = 50 A/μsec., reapplied dv/dt = 200 V/μsec linear to 0.8 V <sub>DRM</sub> , μsec. ⑤⑦⑧	..... tq	80 to 100
Typ. delay time, I <sub>TM</sub> = 1000A, T <sub>D</sub> = 0.8 V <sub>DRM</sub> ④, μsec ④	..... td	2.0
Typ. turn-on-time I <sub>TM</sub> = 1000A, μsec	..... t <sub>on</sub>	3.0
Min. critical dv/dt exponential to 0.8 V <sub>DRM</sub> T <sub>J</sub> = 125°C, V/μsec ②③	..... dv/dt	300
Min. di/dt non-repetitive, A/μsec ①④⑥	..... di/dt	1200

## Gate

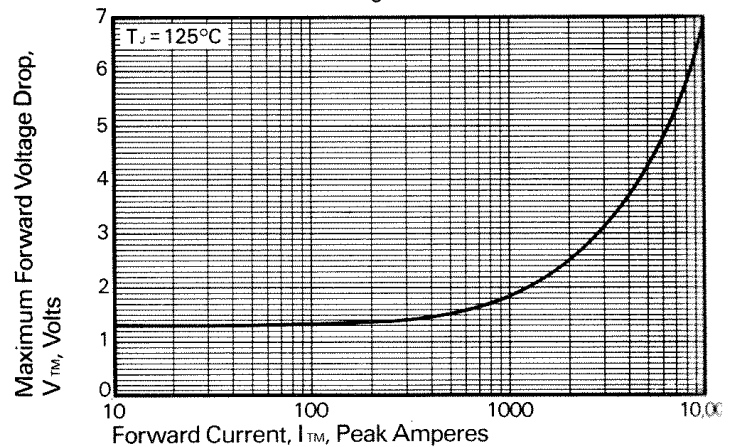
### Maximum Parameters (T<sub>J</sub> = 25°C) Symbol

Gate current to trigger at V <sub>D</sub> = 12V, mA	..... I <sub>GT</sub>	150
Gate voltage to trigger at V <sub>D</sub> = 12V, V	..... V <sub>GT</sub>	3
Non-triggering gate voltage, T <sub>J</sub> = 125°C, and rated V <sub>DRM</sub> , V	..... V <sub>GDM</sub>	25
Peak forward gate current, A	..... I <sub>GTM</sub>	4
Peak reverse gate voltage, V	..... V <sub>GRM</sub>	5
Peak gate power, Watts	..... P <sub>GM</sub>	16
Average gate power, Watts	..... P <sub>G(av)</sub>	3

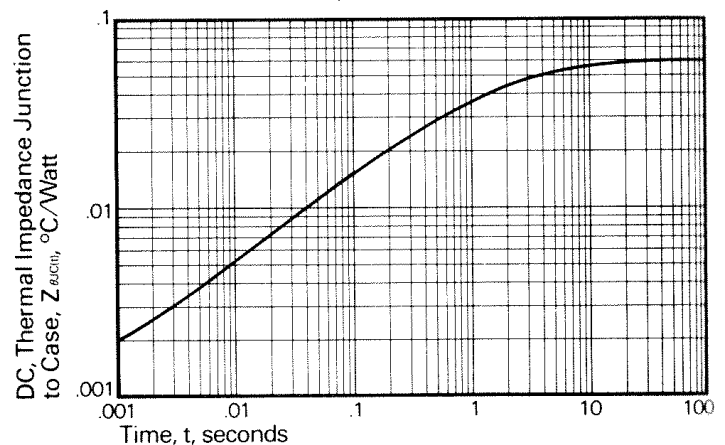
## Thermal and Mechanical

Symbol		
Min., Max. oper. junction temp., °C	..... T <sub>J</sub>	-40 to +125
Min., Max. storage temp., °C	..... T <sub>stg</sub>	-40 to +150
Max. mounting force, lb. ①	.....	2000 to 2400
Thermal resistance ①, double-side cooling,		
junction to case, °C/Watt	..... R <sub>θJC</sub>	.06
Case to sink, lubricated, °C/Watt	..... R <sub>θCS</sub>	.02

Maximum Forward Voltage vs. Forward Current



Transient Thermal Impedance vs. Time



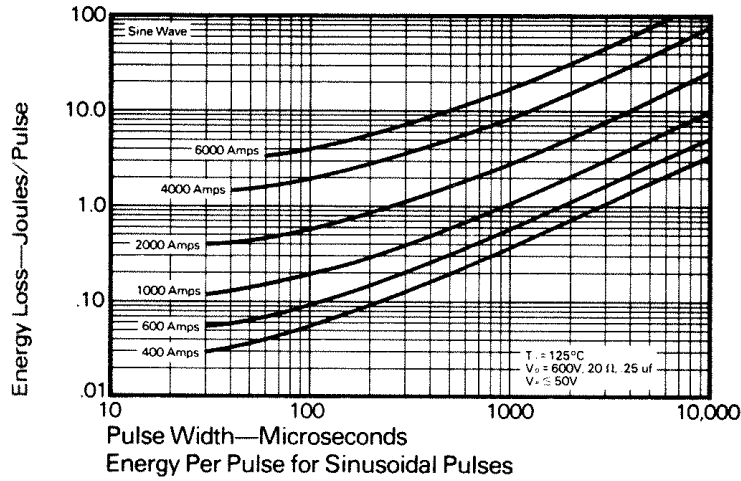
- ① Consult recommended mounting procedures.
- ② Applies for zero or negative gate bias.
- ③ Per JEDEC RS-397, 5.2.2.1.
- ④ With recommended gate drive.
- ⑤ Higher dv/dt ratings available, consult factory.
- ⑥ Per JEDEC standard RS-397, 5.2.2.6.
- ⑦ For operation with antiparallel diode, consult factory.
- ⑧ Other tq and ut combinations available consult factory.



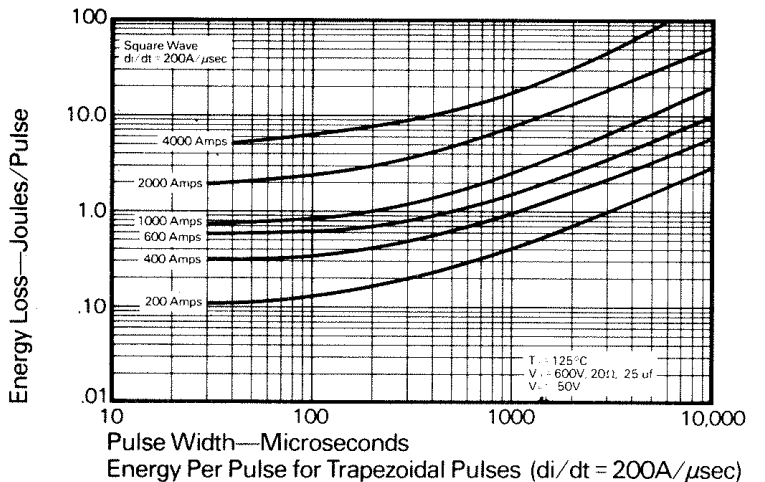
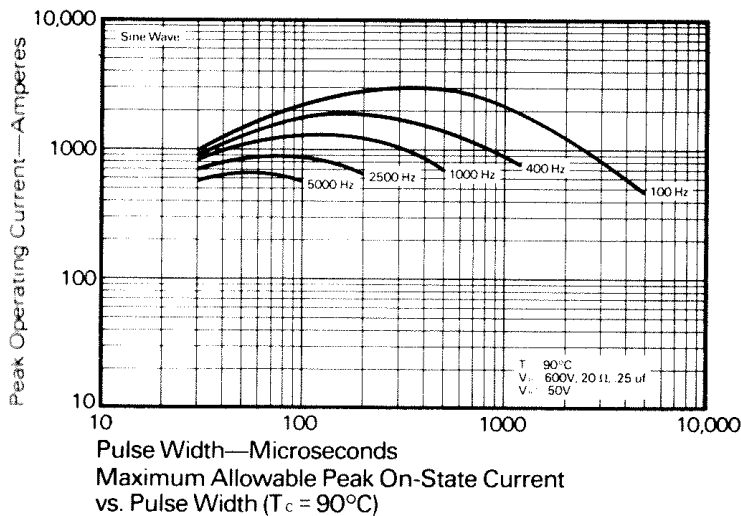
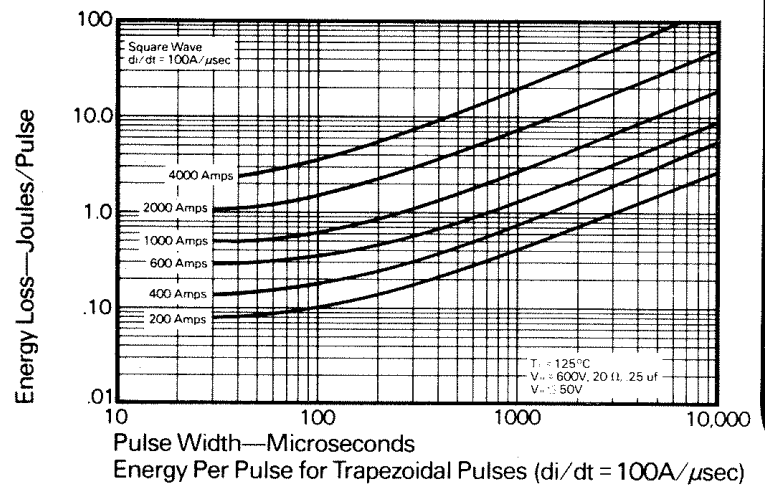
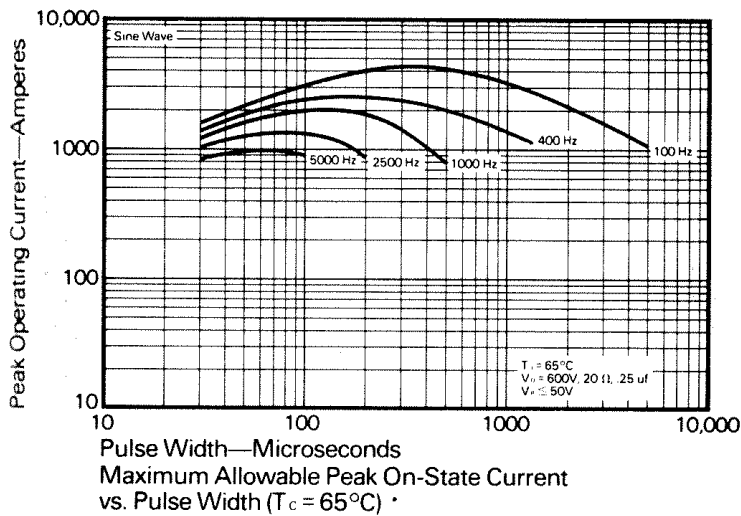
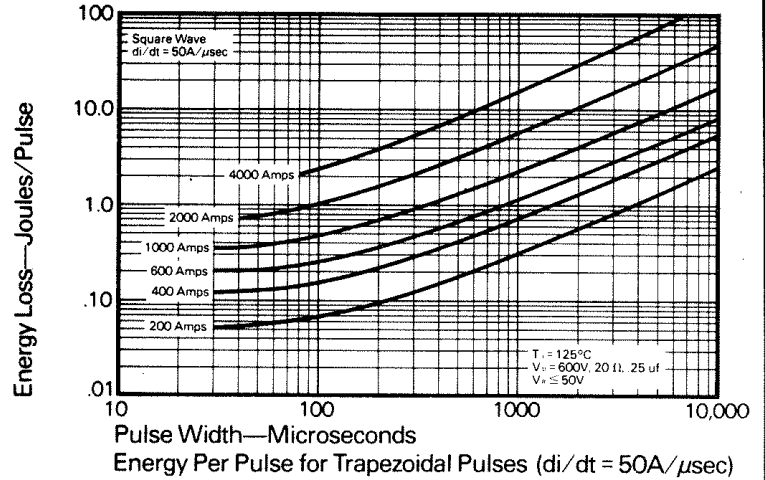
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Sinusoidal Current Data



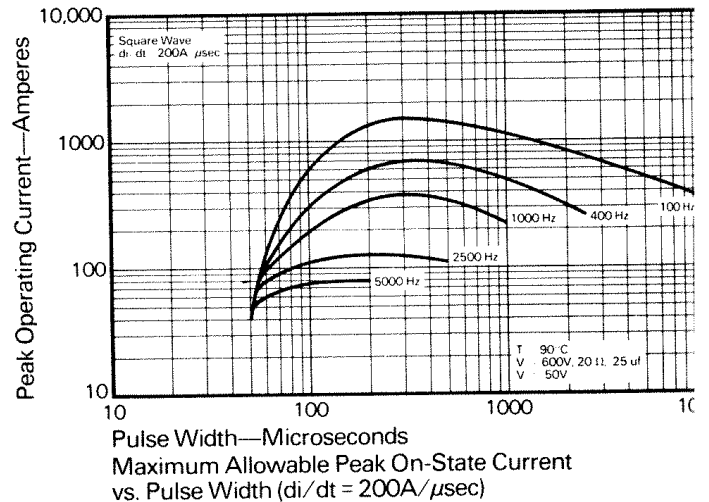
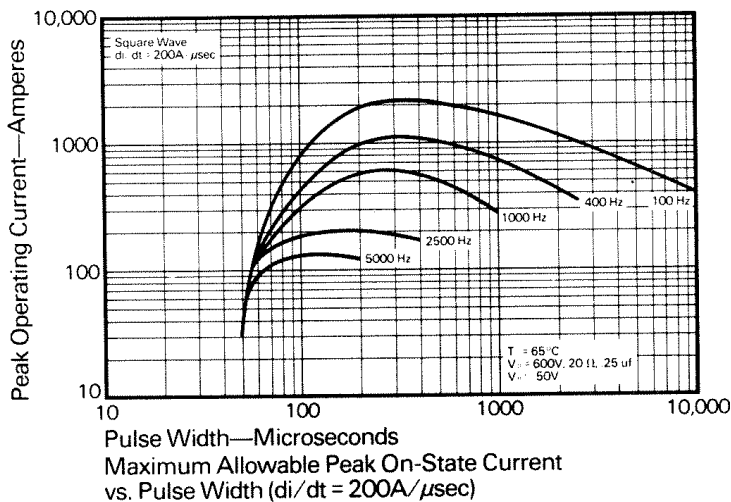
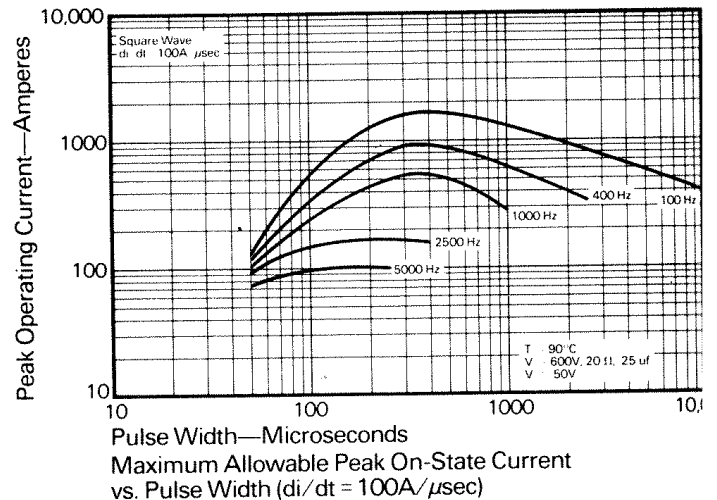
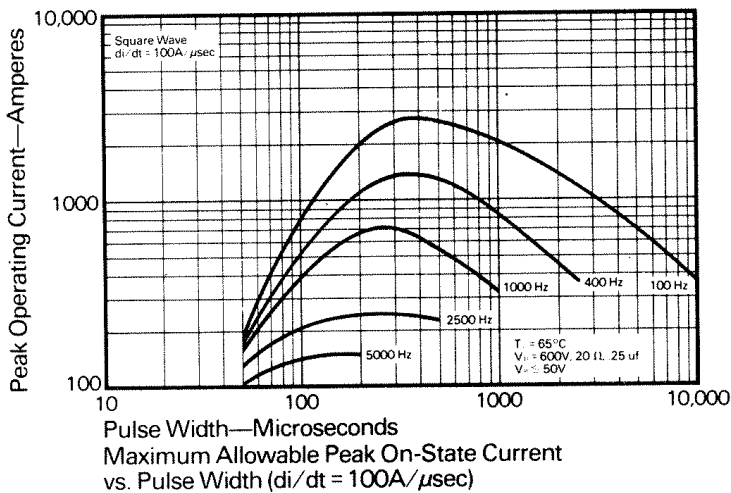
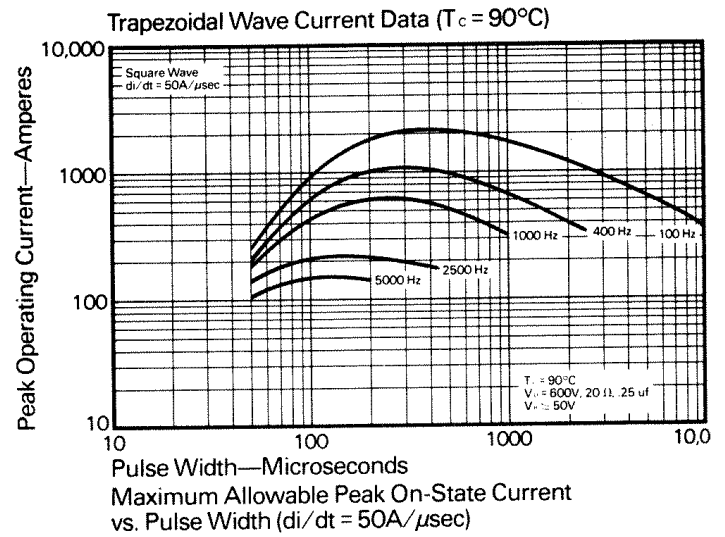
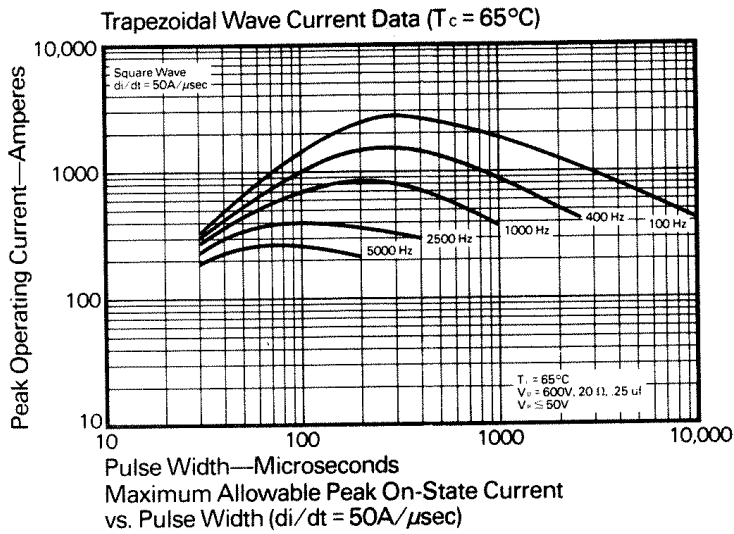
Trapezoidal Wave Current Data



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Fast Switching  
SCR  
T72H\_42



FAST SWITCHING  
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