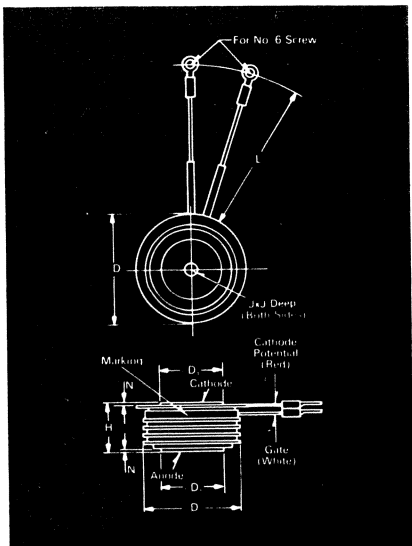


# Fast Switching SCR T9GH\_08

800A Avg.  
(1250 RMS)  
Up to 2000 Volts  
50-100  $\mu$ s



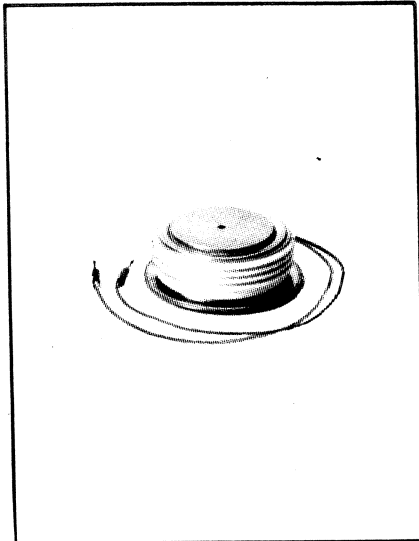
T9G Outline

**Features:**

- Midway, di/dynamic Gate Structure
- Hard Commutation Turn-Off
- Forward Blocking Capabilities to 2000
- Low Switching Losses at High Frequency
- Soft Commutation (Feedback Diode) Testing Available

Symbol	Inches		Millimeters	
	Min.	Max.	Min.	Max.
$\phi D$	2.850	2.900	72.39	73.66
$\phi D_1$	1.845	1.855	46.86	47.12
$\phi D_2$	2.560	2.640	65.02	67.06
H	1.030	1.070	26.16	27.18
$\phi J$	.135	.145	3.43	3.68
$J_1$	.075	.090	1.91	2.29
L	11.50	12.50	292.10	317.50
N	.050		1.27	

Creep Distance—1.20 in. min. (30.48 mm).  
Strike Distance—.07 in. min. (1.78 mm).  
(In accordance with NEMA standards.)  
Finish—Nickel Plate.  
Approx. Weight—2 lb. (908 g).  
1. Dimension "H" is a clamped dimension.



**Applications:**

- Induction Heating
- Transportation
- Inverters
- Crowbars

**Ordering Information**

Type	Voltage		Current		Turn-off		Gate current		Leads		
	Code	VDRM and VRRM * (V)	Code	I <sub>T(av)</sub> (A)	Code	t <sub>q</sub> usec	Code	I <sub>GT</sub> (ma)	Case	Code	
T9GH		600	06	800	08	50	3	300	2	T9G	DH
		800	08			60	2				
		1000	10			70	C				
		1200	12			80	I				
		1400	14			100	K				
		1500	15								
		1600	16								
		1700	17								
		1800	18								
		2000	20								

**Example**

Obtain optimum device performance for your application by selecting proper order code.

Type T9GH rated at 800A average with VDRM = 1800V  
t<sub>q</sub> = 60 usec.  
IGT = 300 ma, and standard 12 inch leads -- order as:

Type	Voltage	Current	Turn Off	Gate Current	Leads
T 9 G H	1 8 0	8	6 0	3 0 0	1 2

\*for lower voltages consult factory

**800A Avg.  
(1250 RMS)  
Up to 2000 Volts  
50-100  $\mu$ s**

**Fast Switching  
SCR  
T9GH\_08**

**Voltage**

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

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, V t $\leq$ 5.0 msec	V <sub>RSM</sub>
Forward leakage current, mA peak	I <sub>DRM</sub>
Reverse leakage current, mA peak	I <sub>RRM</sub>

Symbol	600	800	1000	1200	1400	1500	1600	1700	1800	1900	2000
V <sub>DRM</sub>	600	800	1000	1200	1400	1500	1600	1700	1800	1900	2000
V <sub>RRM</sub>	600	800	1000	1200	1400	1500	1600	1700	1800	1900	2000
V <sub>RSM</sub>	700	900	1100	1300	1500	1600	1700	1800	1900	2000	2100
I <sub>DRM</sub>	←-----60-----→										
I <sub>RRM</sub>	←-----60-----→										

**Current**

**Conducting State Maximums**  
(T<sub>J</sub> = 125°C)

Symbol	T9GH_08
RMS forward current, A	I <sub>T(rms)</sub> 1250
Ave. forward current, A	I <sub>T(av)</sub> 800
One-half cycle surge current, A	I <sub>TSM</sub> 10,000
3 cycle surge current, A	I <sub>TSM</sub> 7,500
10 cycle surge current, A	I <sub>TSM</sub> 6,200
I <sup>2</sup> t for fusing (t=8.3 ms), A <sup>2</sup> sec	I <sup>2</sup> t 416,000
Max I <sup>2</sup> t of package (t=8.3 ms), A <sup>2</sup> sec	I <sup>2</sup> t 90 x 10 <sup>6</sup>
Forward voltage drop at I <sub>TM</sub> = 1500A and T <sub>J</sub> = 25°C, V	V <sub>TM</sub> 2.5
Min. Repetitive di/dt A/usec	500

**Gate**

(T<sub>J</sub> = 25°C)

Symbol	Min	Typ	Max
Gate current to trigger at V <sub>D</sub> = 12V, mA	I <sub>GT</sub>	200	300
Gate voltage to trigger at V <sub>D</sub> = 12V, V	V <sub>GT</sub>	1.5	3.0
Non-triggering gate voltage, T <sub>J</sub> = 125°C, and rated V <sub>DRM</sub> , V	V <sub>GDM</sub>		.15
Non-triggering Gate Current at V <sub>D</sub> = 12V, mA	I <sub>GNT</sub>	20	
Peak forward gate current, A	I <sub>GTM</sub>		10
Peak reverse gate voltage, V	V <sub>GRM</sub>		5
Peak gate power, Watts	P <sub>GM</sub>		60
Average gate power, Watts	P <sub>G(av)</sub>		3

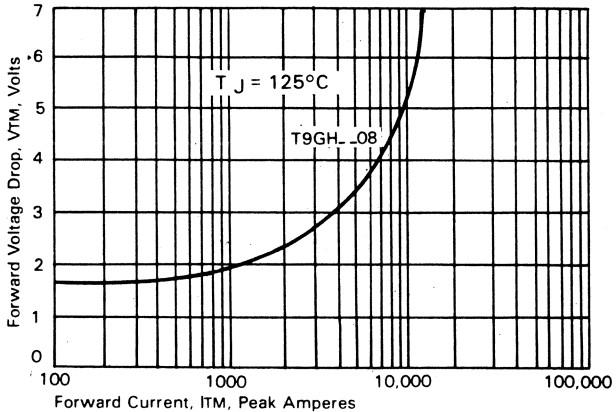
**Switching**

(T<sub>J</sub> = 25°C)

**HARD COMMUTATION:**

Symbol	Value
Maximum Turn-off time, I <sub>T</sub> = 1000A 50V $\leq$ V <sub>R</sub> $\leq$ V <sub>RRM</sub> T <sub>J</sub> = 125°C, di/dt = 100A/usec reapplied dv/dt = 200V/usec linear to 0.8 V <sub>DRM</sub> , usec tq	50-100
Typical Turn-On and Delay Time I <sub>TM</sub> = 1000A, tp = 450 usec	ton 3.0
V <sub>D</sub> = 1100V, usec	td 1.5
Minimum Critical dv/dt exponential to V <sub>DRM</sub> T <sub>J</sub> = 125°C, V/usec	dv/dt 400
Minimum di/dt @ non-repetitive, A/usec	di/dt 1000
Latching Current V <sub>D</sub> = 75V, mA	Typ I <sub>L</sub> 500
Holding Current V <sub>D</sub> = 75V, ma	Max I <sub>H</sub> 1000 Typ I <sub>H</sub> 300 Max I <sub>H</sub> 800

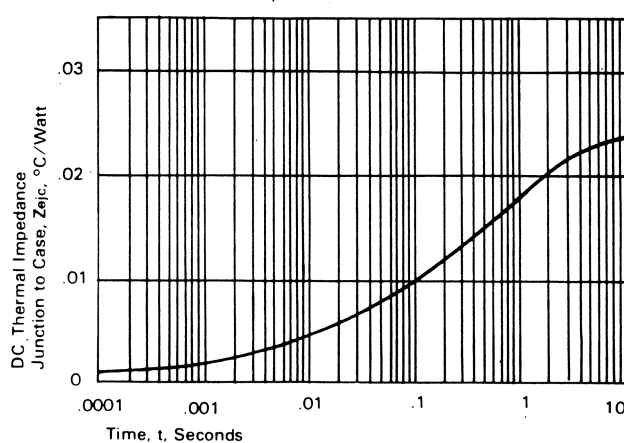
Maximum Forward Voltage Drop Vs. forward Current



**Thermal and Mechanical**

Symbol	Min	Typ	Max
Oper. junction temp., °C	T <sub>J</sub>	-40	125
Storage temp., °C	T <sub>stg</sub>	-40	150
Mounting force, lb <sup>1)</sup>		5000	5500
Thermal resistance with double sided cooling <sup>1)</sup> Junction to case, °C/Watt	R <sub>thJC</sub>		.023
Case to sink, lubricated, °C/Watt	R <sub>thCS</sub>	.006	.0075

Transient Thermal Impedance VS. Time



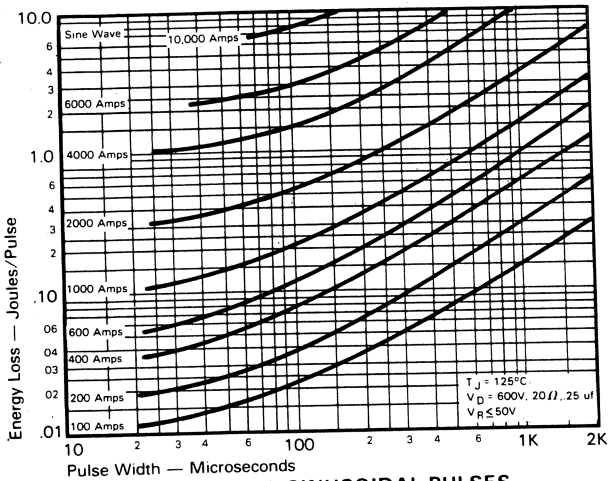
- ① Consult recommended mounting procedures.
- ② Applies for zero or negative gate bias.
- ③ Per JEDEC RS-397, 5.2.2.1.
- ④ With recommended gate drive.
- ⑤ Higher dv/dt ratings available, consult factory.
- ⑥ Per JEDEC standard RS-397, 5.2.2.6.
- ⑦ For operation with antiparallel diode, consult factory.

FAST SWITCHING  
THYRISTORS

# Fast Switching SCR T9GH\_08

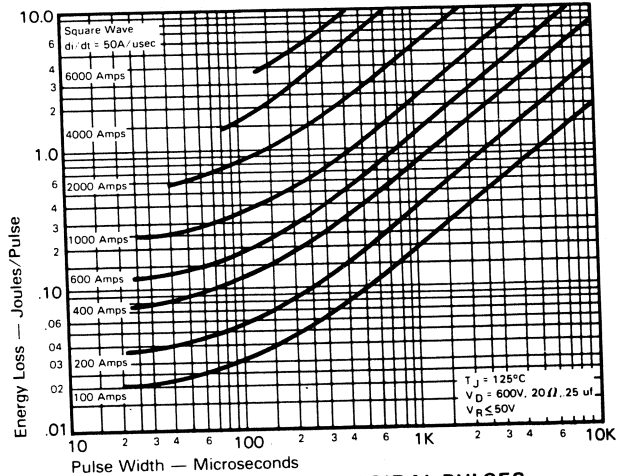
800A Avg.  
(1250 RMS)  
Up to 2000 Volts  
50-100  $\mu$ s

## Sinusoidal Current Data

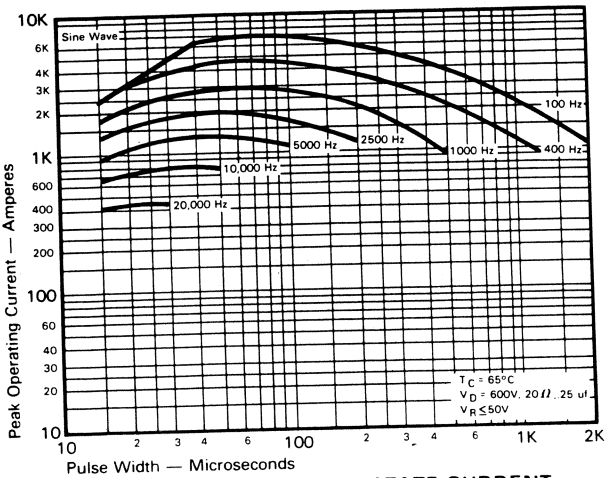


ENERGY PER PULSE FOR SINUSOIDAL PULSES

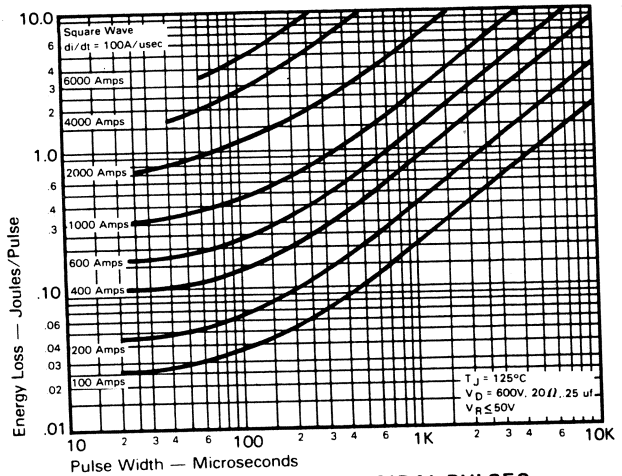
## Trapezoidal Wave Current Data



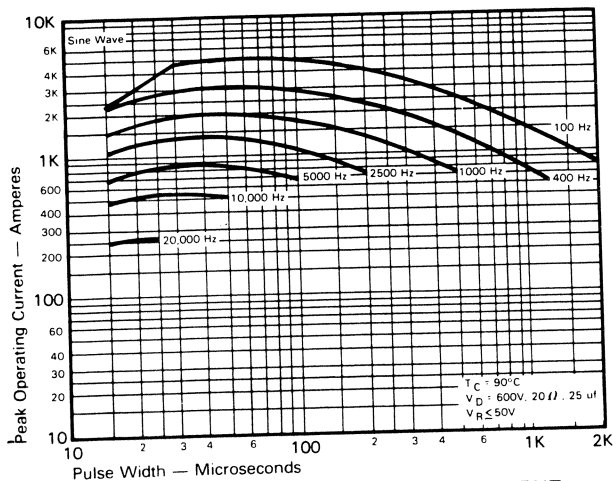
ENERGY PER PULSE FOR TRAPEZOIDAL PULSES  
( $di/dt = 50\text{A/usec}$ )



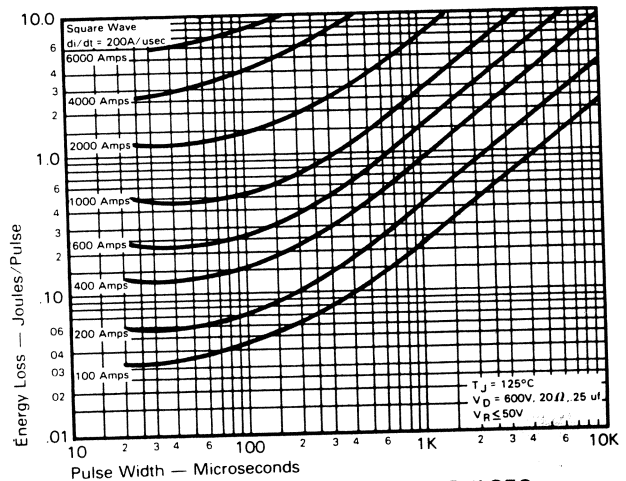
MAXIMUM ALLOWABLE PEAK ON-STATE CURRENT  
vs. PULSE WIDTH ( $T_C = 65^\circ\text{C}$ )



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

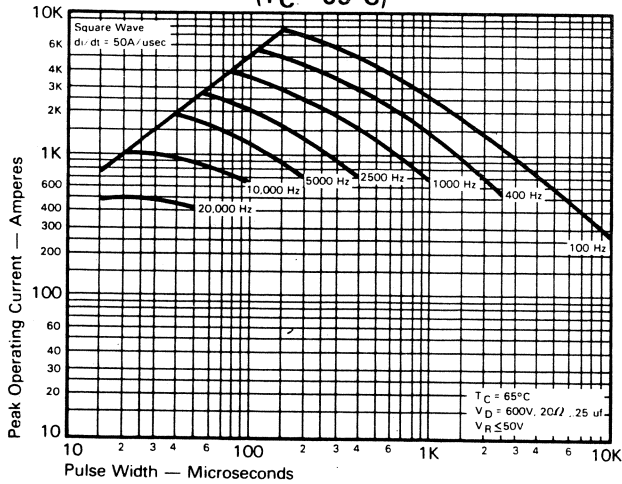
FAST SWITCHING  
THYRISTORS



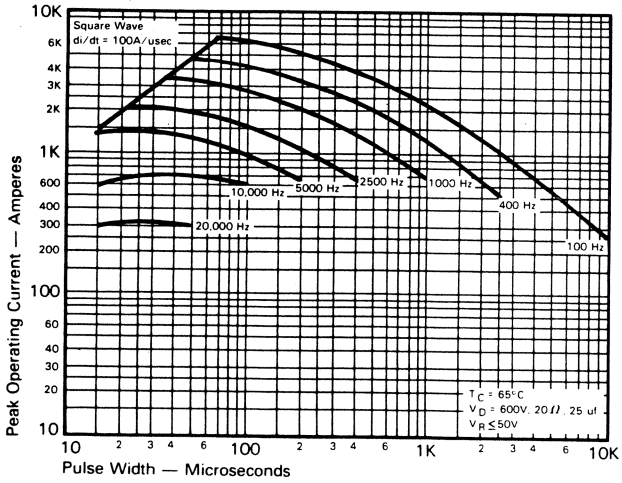
**800A Avg.  
(1250 RMS)  
Up to 2000 Volts  
50-100  $\mu$ s**

**Fast Switching  
SCR  
T9GH\_08**

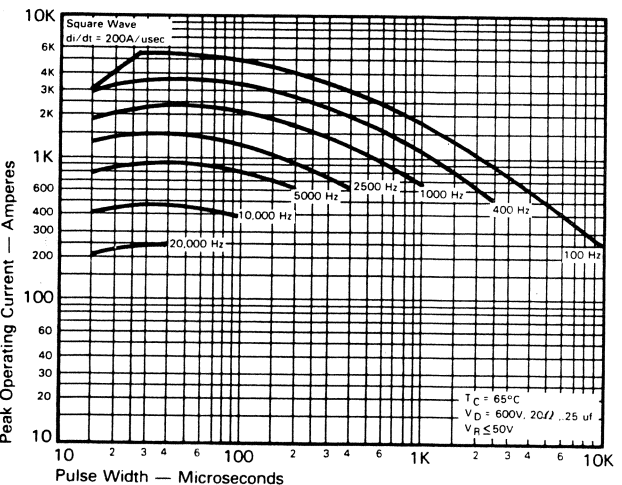
**Trapezoidal Wave Current Data  
( $T_C = 65^\circ\text{C}$ )**



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

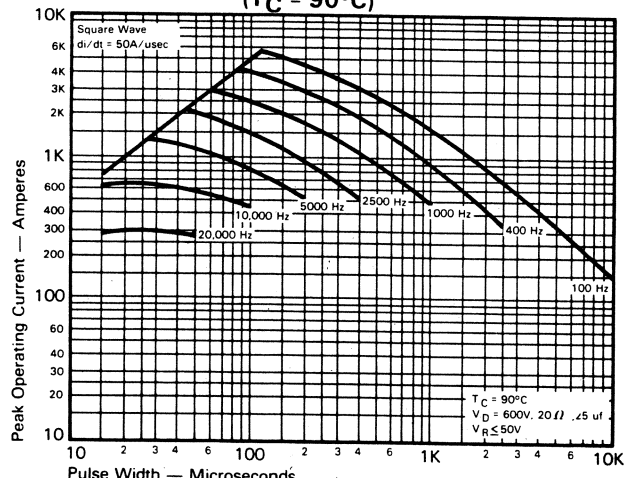


**MAXIMUM ALLOWABLE PEAK ON-STATE CURRENT vs. PULSE WIDTH ( $di/dt = 100\text{A/usec}$ )**

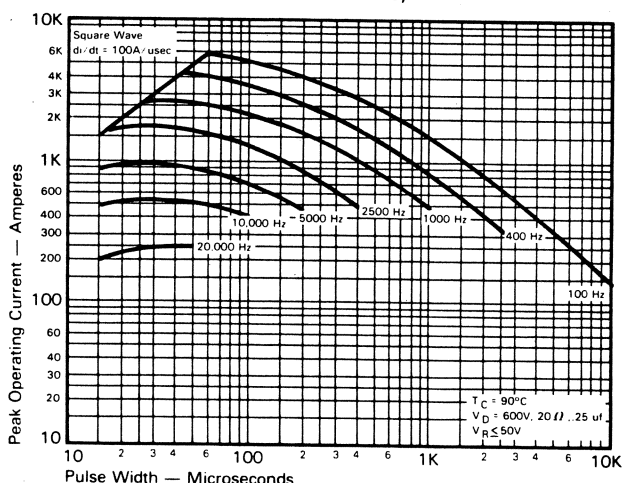


**MAXIMUM ALLOWABLE PEAK ON-STATE CURRENT vs. PULSE WIDTH ( $di/dt = 200\text{A/usec}$ )**

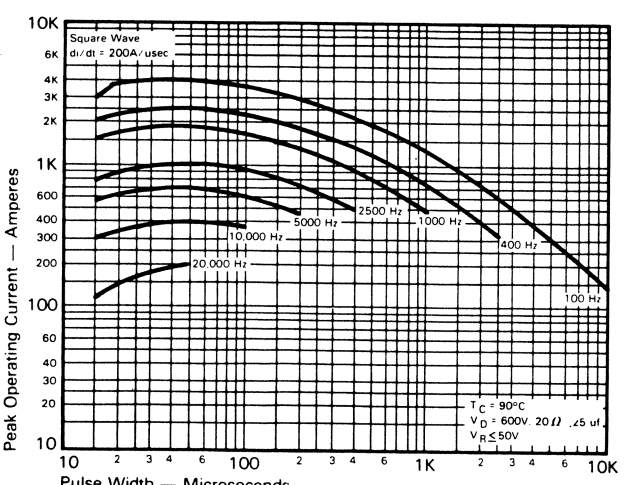
**Trapezoidal Wave Current Data  
( $T_C = 90^\circ\text{C}$ )**



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

FAST SWITCHING THYRISTORS