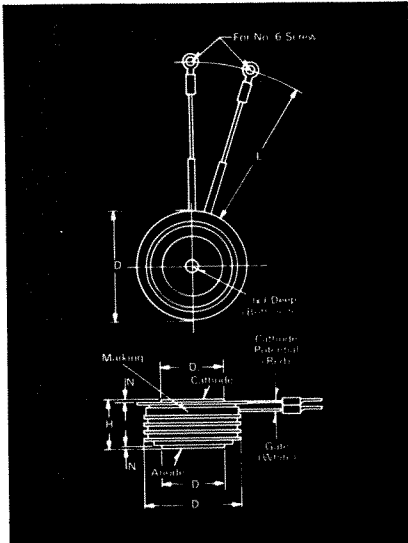


Fast Switching SCR T9GH_09

900A Avg.
(1400 RMS)
Up to 2000 Volts
60-100 μ s



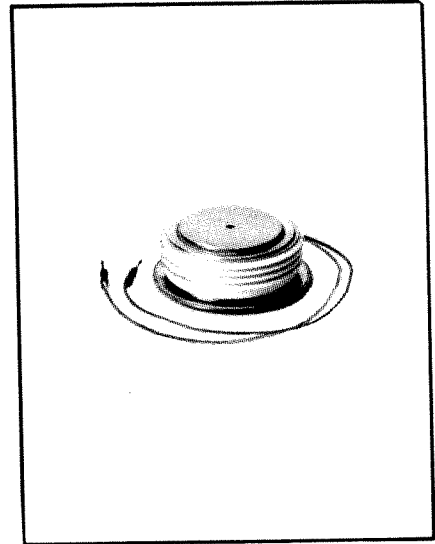
T9G Outline

Features:

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

Symbol	Inches		Millimeters	
	Min.	Max.	Min.	Max.
ϕD	2.850	2.900	72.39	73.66
ϕD_1	1.845	1.855	46.86	47.12
ϕD_2	2.560	2.640	65.02	67.06
H	1.030	1.070	26.16	27.18
ϕJ	.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. (17.78 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	IT(av) (A)	Code	tq usec	Code	IGT (ma)	Code	Case	
T9GH	600	06	900	09	60	70	2	300	2	T9G	DH
	800	08									
	1000	10									
	1200	12									
	1400	14									
	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 900A average with VDRM = 1600V
tq = 70 usec.
IGT = 300 ma, and standard 12 inch leads -- order as:

Type	Voltage	Current	Turn Off	Gate Current	Leads
T 9 G H	1 6 0 9	C	2	D H	

*for lower voltages consult factory

FAST SWITCHING THYRISTORS

**900A Avg.
(1400 RMS)
Up to 2000 Volts
60-100 μs**

**Fast Switching
SCR
T9GH_09**

Voltage

Blocking State Maximums (T_J = 125°C)

Repetitive peak forward blocking voltage, V V_{DRM}
 Repetitive peak reverse voltage, V V_{RRM}
 Non-repetitive transient peak reverse voltage,
 t ≤ 5.0 msec, V V_{RSM}
 Forward leakage current, mA peak I_{DRM}
 Reverse leakage current, mA peak I_{RRM}

Symbol	600	800	1000	1200	1400	1500	1600	1700	1800	1900	2000
V _{DRM}	600	800	1000	1200	1400	1500	1600	1700	1800	1900	2000
V _{RRM}	600	800	1000	1200	1400	1500	1600	1700	1800	1900	2000
V _{RSM}	700	900	1100	1300	1500	1600	1700	1800	1900	2000	2100
I _{DRM}	←----- 60 -----→										
I _{RRM}	←----- 60 -----→										

Current

Conducting State Maximums
(T_J = 125°C)

Symbol	T9GH_09
RMS forward current, A I _{T(rms)}	1400
Ave. forward current, A I _{T(av)}	900
One-half cycle surge current ^① , A I _{TSM}	13,000
3 cycle surge current ^② , A I _{TSM}	9,750
10 cycle surge current ^③ , A I _{TSM}	8,000
I ² t for fusing (t=8.3 ms), A ² sec I ² t	700,000
Max I ² t of package (t=8.3 ms), A ² sec I ² t	90 x 10 ⁶
Forward voltage drop at I _T = 1500A and T _J = 25°C, V V _{TM}	2.25
Min. Repetitive di/dt A/usec. ④ ⑤ di/dt	600

Gate

(T_J = 25°C)

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

Switching

(T_J = 25°C)

HARD COMMUTATION: ①

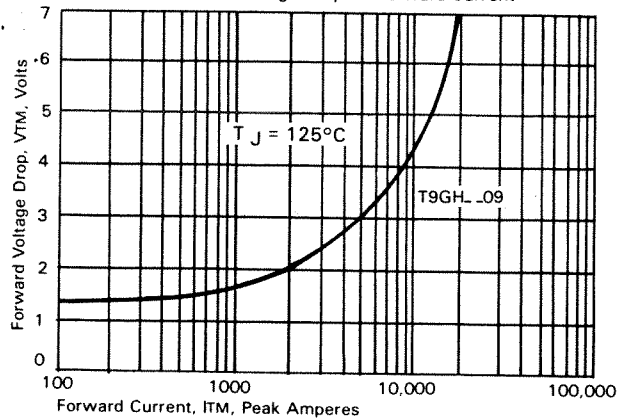
Symbol	Value	
Maximum Turn-off time, I _T = 1000A 50V ≤ V _R ≤ V _{RRM} T _J = 125°C, di/dt = 100A/usec reapplied dv/dt = 200V/usec linear to 0.8 V _{DRM} , usec tq	60-100	
Typical Turn-On and Delay Time I _T = 1000A, tp = 450, usec ton	3.0	
V _D = 1100V, usec td	1.5	
Minimum Critical dv/dt exponential to V _{DRM} T _J = 125°C, V/usec ② ③ dv/dt	400	
Minimum di/dt @ non-repetitive, ① ④ A/usec di/dt	1000	
Latching Current V _D = 75V, mA Typ	500	
Holding Current V _D = 75V, ma Max I _L	1000	
	Typ I _H	300
	Max I _H	800

Thermal and Mechanical

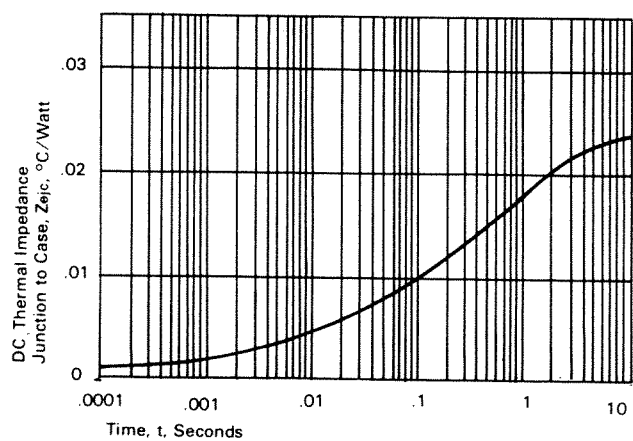
Symbol	Min	Typ	Max
Oper. junction temp., °C T _J	-40		125
Storage temp., °C T _{stg}	-40		150
Mounting force, lb/in	5000		5500
Thermal resistance with double sided cooling: Junction to case, °C/Watt R _{θJC}			.023
Case to sink, lubricated, °C/Watt R _{θCS}	.006		.0075

- 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 For different turn-off values or conditions, consult factory.
- ⑥ Per JEDEC standard RS-397, 5.2.2.6.
- ⑦ For operation with antiparallel diode, consult factory.

Maximum Forward Voltage Drop Vs. forward Current



Transient Thermal Impedance VS. Time

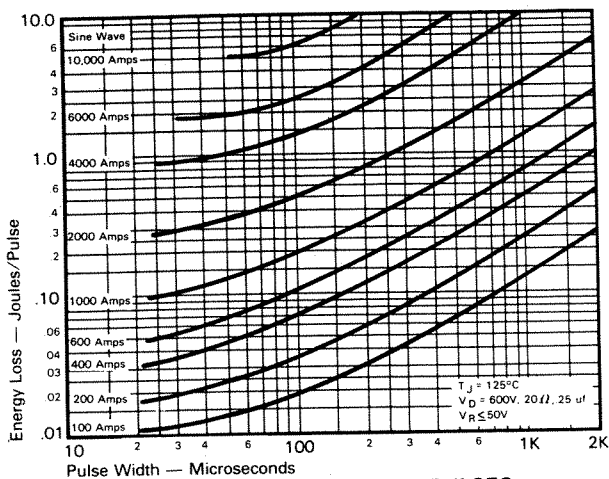


**FAST SWITCHING
THYRISTORS**

Fast Switching SCR T9GH_09

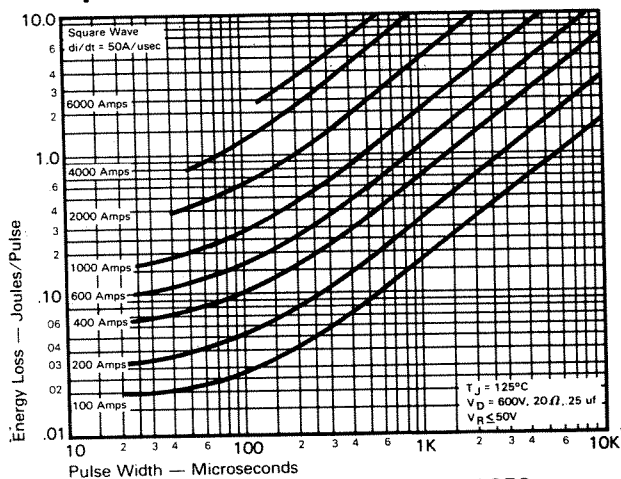
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Sinusoidal Current Data

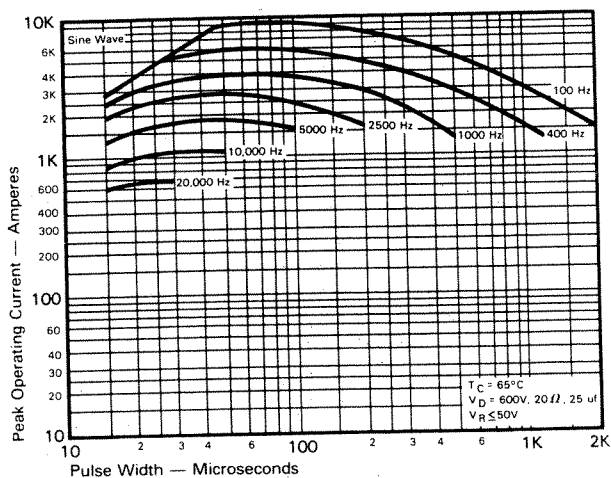


ENERGY PER PULSE FOR SINUSOIDAL PULSES

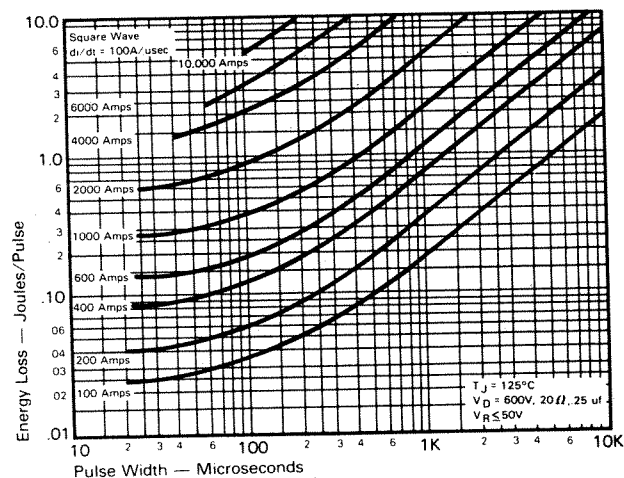
Trapezoidal Wave Current Data



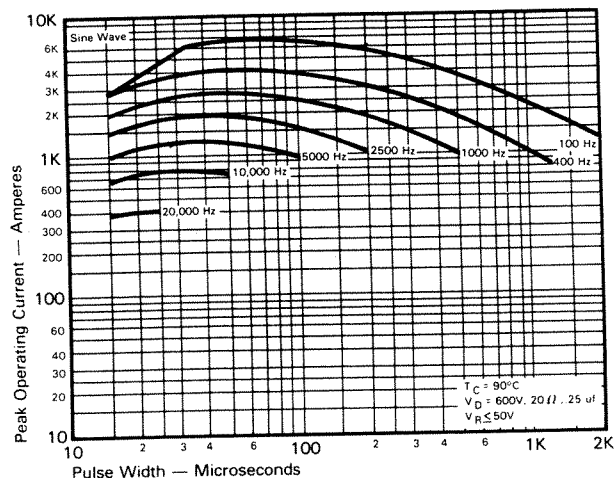
ENERGY PER PULSE FOR TRAPEZOIDAL PULSES
($di/dt = 50\text{A/usec}$)



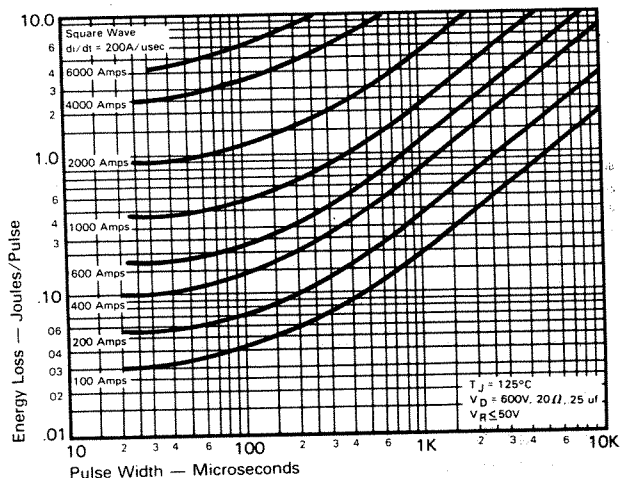
MAXIMUM ALLOWABLE PEAK ON-STATE CURRENT
vs. PULSE WIDTH ($T_C = 65^\circ\text{C}$)



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



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



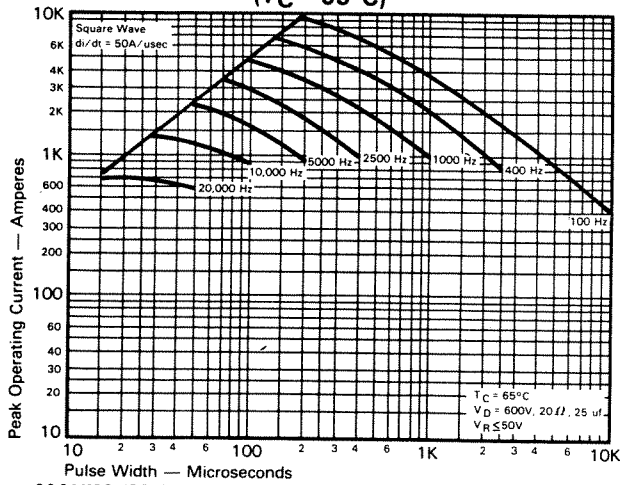
ENERGY PER PULSE FOR TRAPEZOIDAL PULSES
($di/dt = 200\text{A/usec}$)

FAST SWITCHING
THYRISTORS

900A Avg.
(1400 RMS)
Up to 2000 Volts
60-100 μ s

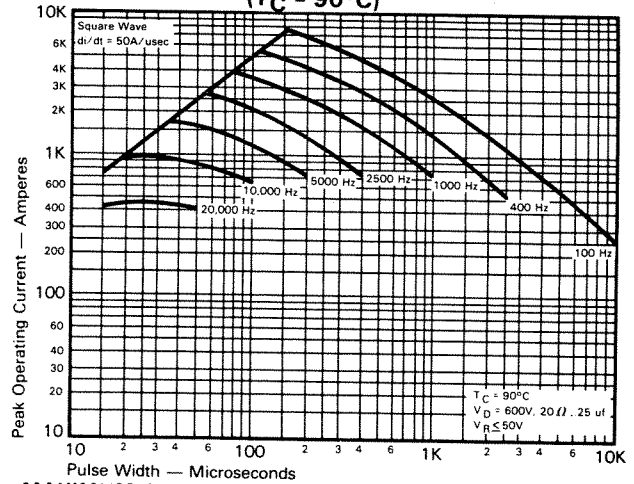
Fast Switching
SCR
T9GH_09

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

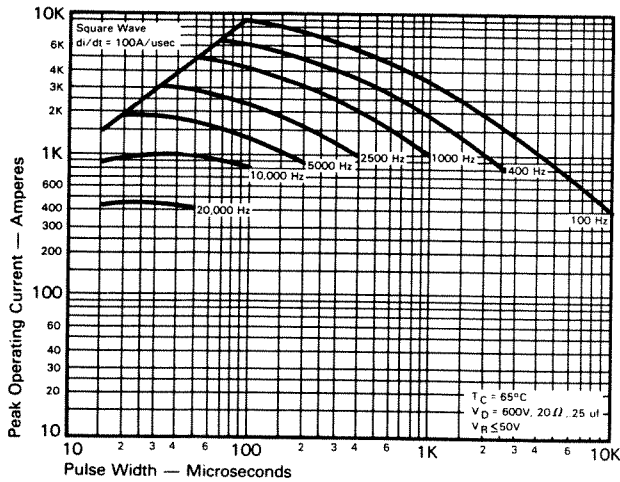


MAXIMUM ALLOWABLE PEAK ON-STATE CURRENT vs. PULSE WIDTH ($di/dt = 50A/usec$)

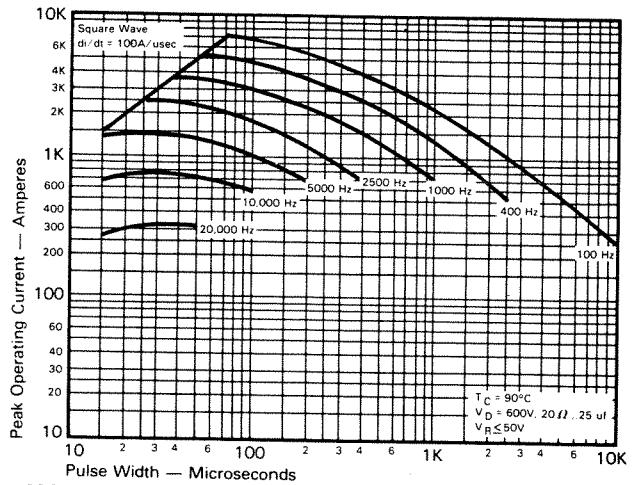
Trapezoidal Wave Current Data
($T_C = 90^\circ\text{C}$)



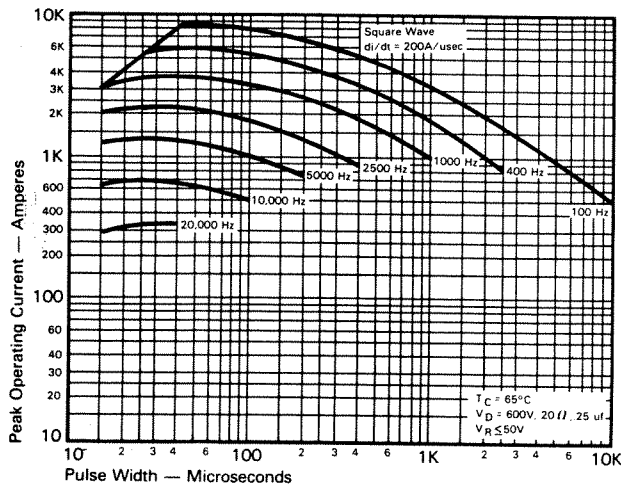
MAXIMUM ALLOWABLE PEAK ON-STATE CURRENT vs. PULSE WIDTH ($di/dt = 50A/usec$)



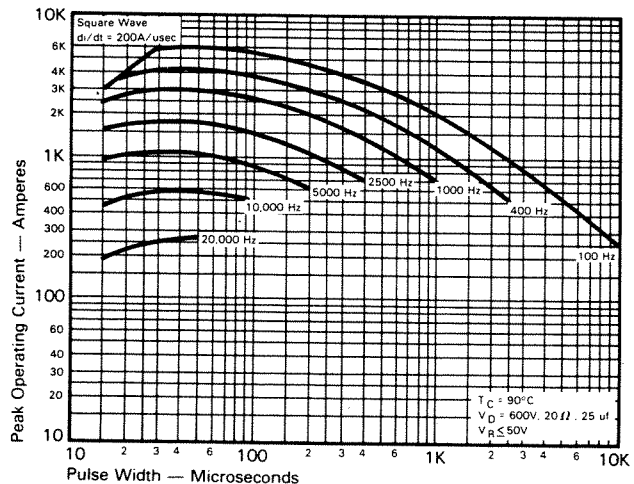
MAXIMUM ALLOWABLE PEAK ON-STATE CURRENT vs. PULSE WIDTH ($di/dt = 100A/usec$)



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