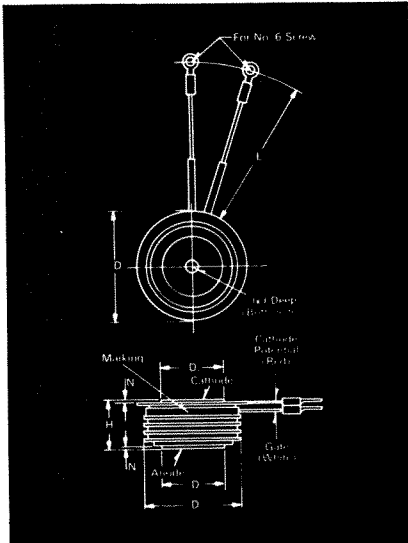


Fast Switching SCR T9GH_09

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



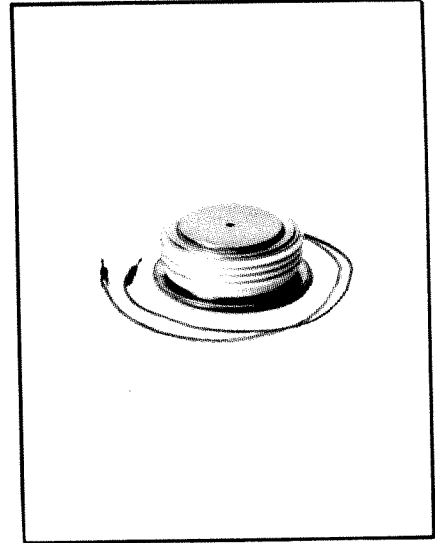
T9G Outline

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	2	300	2	T9G	DH
		800	08		70	C					
		1000	10		80						
		1200	12		100	K					
		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
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Voltage

Blocking State Maximums ^① ($T_J = 125^\circ\text{C}$)

Repetitive peak forward blocking voltage, V V_{DRM}
 Repetitive peak reverse voltage, V V_{RRM}
 Non-repetitive transient peak reverse voltage,
 $t \leq 5.0$ 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
 ($T_J = 125^\circ\text{C}$)

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

Gate

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

Symbol	Min	Typ	Max
Gate current to trigger at $V_D = 12\text{V}$, mA I_{GT}		200	300
Gate voltage to trigger at $V_D = 12\text{V}$, V V_{GT}		1.5	3.0
Non-triggering gate voltage, $T_J = 125^\circ\text{C}$, and rated V_{DRM} , V V_{GDM}			.15
Non-triggering Gate Current at $V_D = 12\text{V}$, 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 $P_{G(\text{av})}$			3

Switching

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

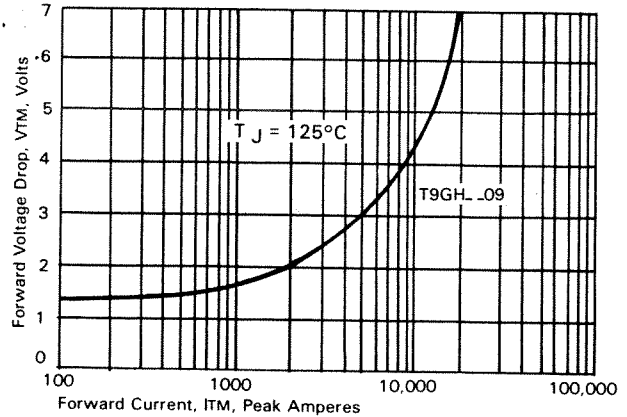
HARD COMMUTATION: ^①

Symbol	
Maximum Turn-off time, $I_T = 1000\text{A}$ $50\text{V} \leq V_R \leq V_{RRM}$ $T_J = 125^\circ\text{C}$, $di/dt = 100\text{A/usec}$ reapplied $dv/dt = 200\text{V/usec}$ linear to $0.8 V_{DRM}$, usec t_q	60-100
Typical Turn-On and Delay Time $I_{TM} = 1000\text{A}$, $t_p = 450$, usec t_{on}	3.0
$V_D = 1100\text{V}$, usec t_d	1.5
Minimum Critical dv/dt exponential to V_{DRM} $T_J = 125^\circ\text{C}$, V/usec ^② ^③ dv/dt	400
Minimum di/dt @ non-repetitive, ^① ^④ ^⑤ A/usec di/dt	1000
Latching Current $V_D = 75\text{V}$, mA I_L	500
Holding Current $V_D = 75\text{V}$, ma I_H	300
	800

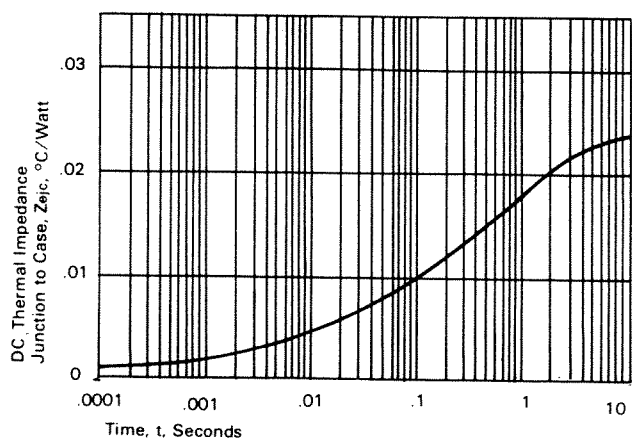
Thermal and Mechanical

Symbol	Min	Typ	Max
Oper. junction temp., $^\circ\text{C}$ T_J	-40		125
Storage temp., $^\circ\text{C}$ T_{stg}	-40		150
Mounting force, lb/in R	5000		5500
Thermal resistance with double sided cooling ^① Junction to case, $^\circ\text{C/Watt}$ $R_{j/c}$.023
Case to sink, lubricated, $^\circ\text{C/Watt}$ $R_{j/cs}$.006		.0075

Maximum Forward Voltage Drop Vs. forward Current



Transient Thermal Impedance VS. Time



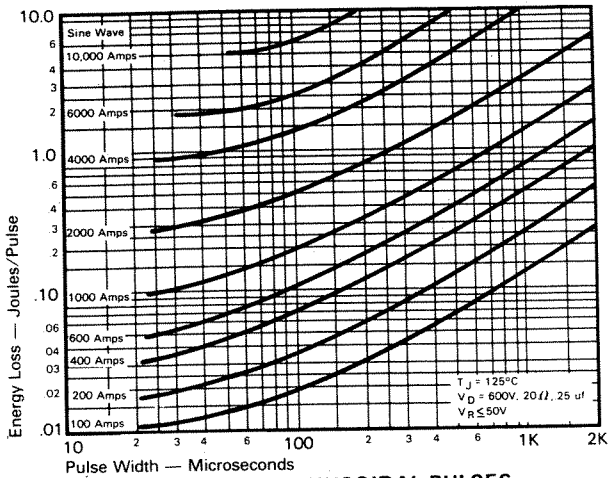
- ① Consult recommended mounting procedures.
- ② Applies for zero or negative gate bias.
- ③ Per JEDEC RS-397, 5.2.2.1.
- ④ With recommended gate drive.
- ⑤ For different turn-off values or conditions, consult factory.
- ⑥ Per JEDEC standard RS-397, 5.2.2.6.
- ⑦ For operation with antiparallel diode, consult factory.

FAST SWITCHING
THYRISTORS

Fast Switching SCR T9GH_09

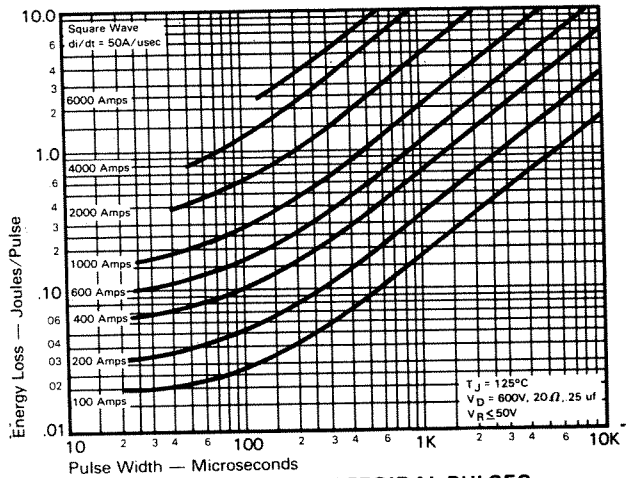
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Sinusoidal Current Data

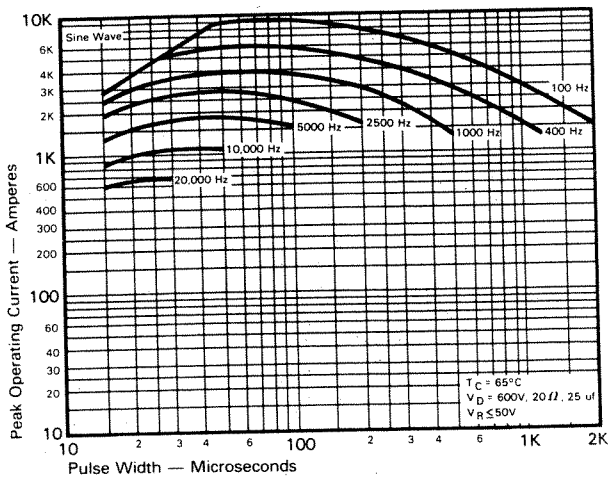


ENERGY PER PULSE FOR SINUSOIDAL PULSES

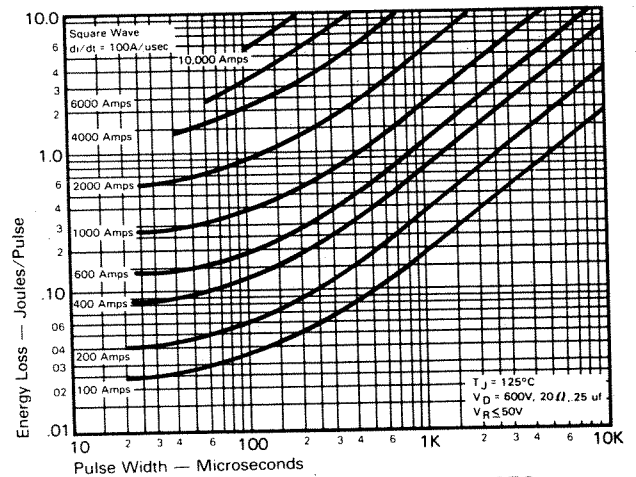
Trapezoidal Wave Current Data



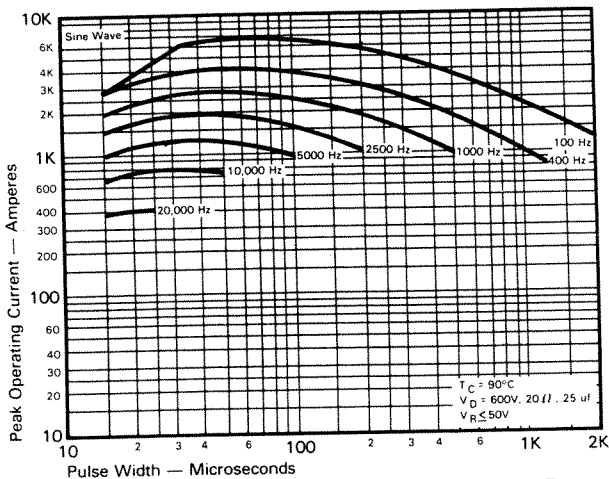
ENERGY PER PULSE FOR TRAPEZOIDAL PULSES
($di/dt = 50\text{A}/\mu\text{sec}$)



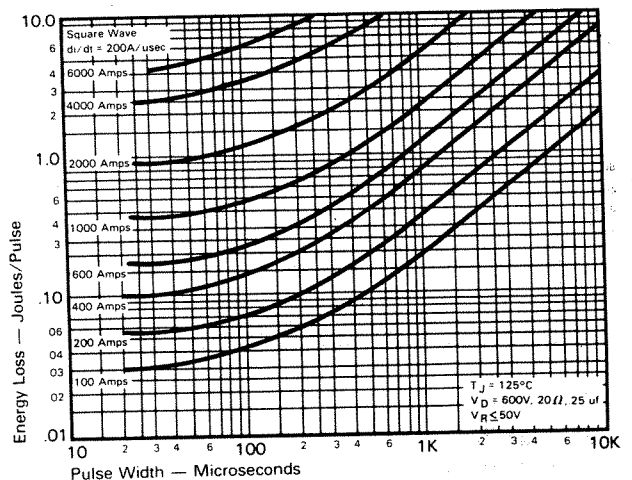
MAXIMUM ALLOWABLE PEAK ON-STATE CURRENT
vs. PULSE WIDTH ($T_C = 65^\circ\text{C}$)



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



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

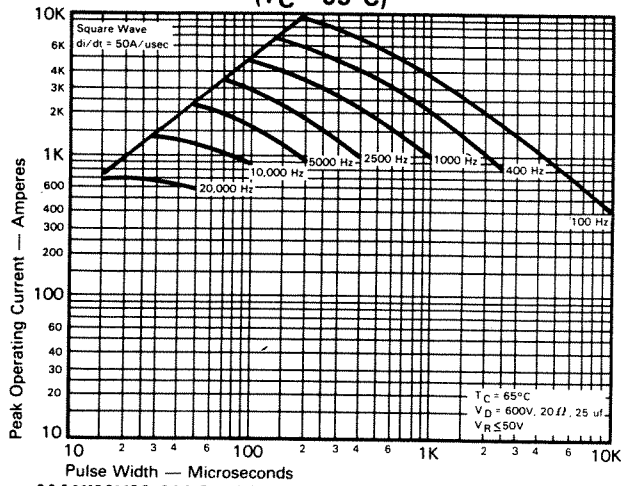


ENERGY PER PULSE FOR TRAPEZOIDAL PULSES
($di/dt = 200\text{A}/\mu\text{sec}$)

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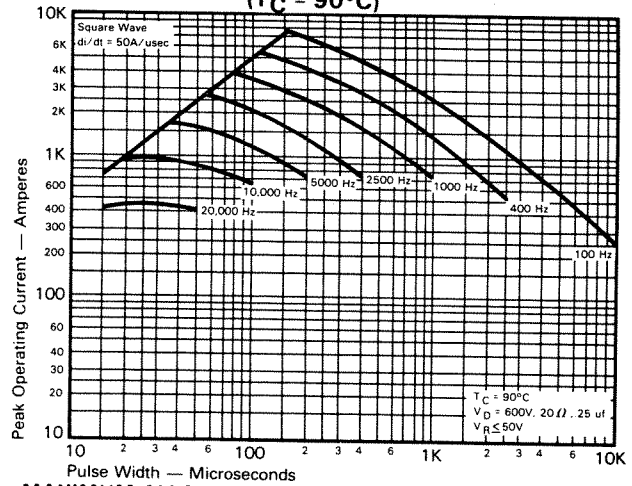
**Fast Switching
SCR
T9GH_09**

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

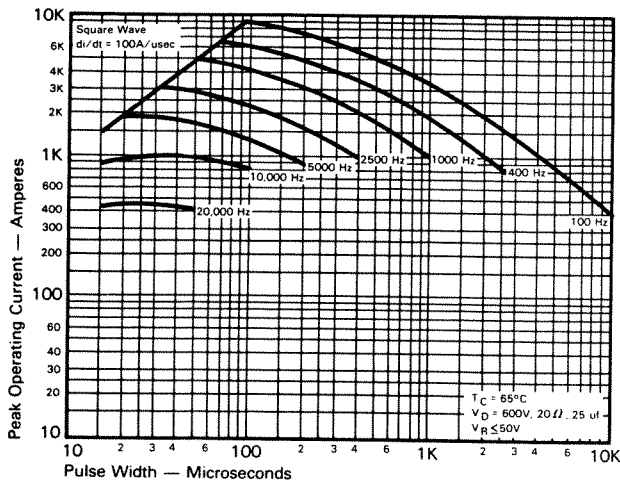


MAXIMUM ALLOWABLE PEAK ON-STATE CURRENT vs. PULSE WIDTH ($di/dt = 50A/usec$)

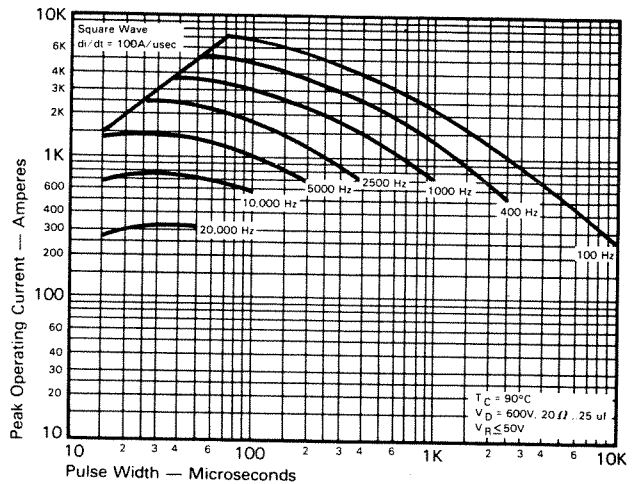
**Trapezoidal Wave Current Data
($T_C = 90^\circ\text{C}$)**



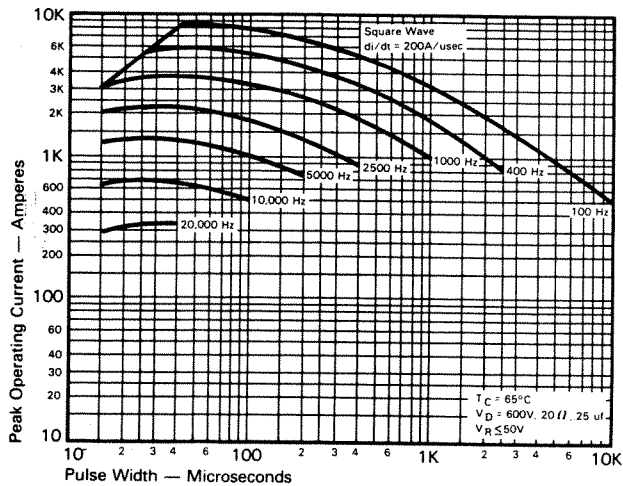
MAXIMUM ALLOWABLE PEAK ON-STATE CURRENT vs. PULSE WIDTH ($di/dt = 50A/usec$)



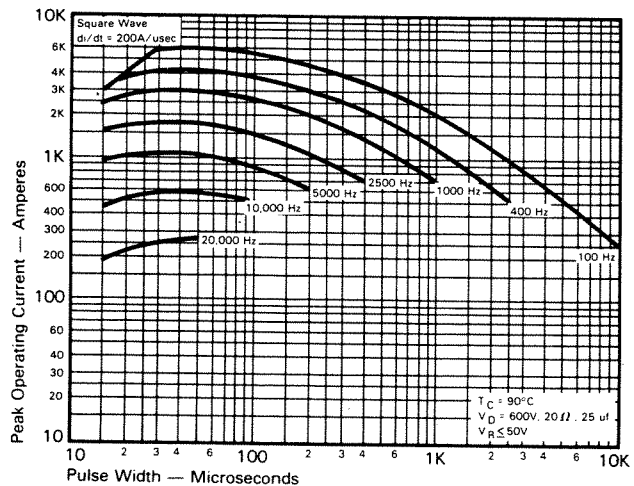
MAXIMUM ALLOWABLE PEAK ON-STATE CURRENT vs. PULSE WIDTH ($di/dt = 100A/usec$)



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