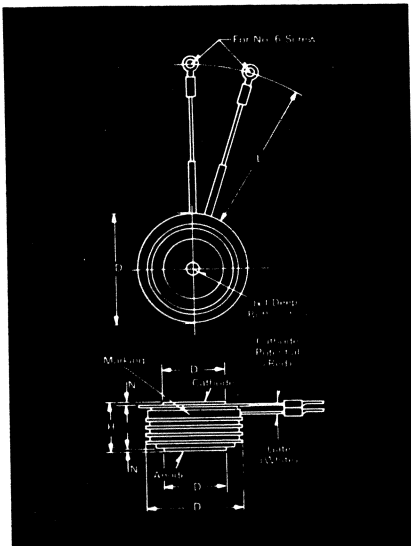


Fast Switching SCR T9GH_11

1100A Avg.
(1725 RMS)
Up to 1200 Volts
40-60 μ s



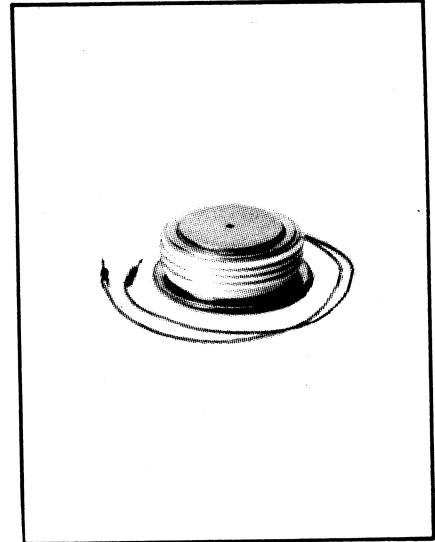
T9G Outline

Features:

- Interdigitated, di/namic Gate Structure
- Hard Commutation Turn-Off
- Forward Blocking Capabilities to 1200
- Low Switching Losses at High Frequency
- Soft Commutation (Feedback Diode) Testing Available
- High di/dt with soft gate control

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—70 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

Ordering Information

Type	Voltage		Current		Turn-off		Gate current		Leads		
Code	VDRM and VRRM * (V)	Code	I _{T(av)} (A)	Code	t _q usec	Code	I _{GT} (ma)	Code	Case	Code	
T9GH	600	06	1100	11	40	4	300	2	T9G	DH	
	800	08			50						3
	1000	10			60						2
	1200	12			80						1
					100	K					

Example

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

Type T9GH rated at 1100A average with VDRM = 800V
t_q = 50 usec.
I_{GT} = 300 ma, and standard 12 inch leads -- order as:

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

*for lower voltages consult factory

FAST SWITCHING
THYRISTORS

1100A Avg.
(1725 RMS)
Up to 1200 Volts
40-60 μ s

Fast Switching
SCR
T9GH_11

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, V t ≤ 5.0 msec	V _{RSM}
Forward leakage current, mA peak	I _{DRM}
Reverse leakage current, mA peak	I _{RRM}

Symbol	600	800	1000	1200
V _{DRM}	600	800	1000	1200
V _{RRM}	600	800	1000	1200
V _{RSM}	700	900	1100	1300
I _{DRM}	← 60 →			
I _{RRM}	← 60 →			

Current

Conducting State Maximums (T_J = 125°C)

Symbol	T9GH_11
RMS forward current, A	I _{T(rms)} 1725
Ave. forward current, A	I _{T(av)} 1100
One-half cycle surge current, A	I _{TSM} 17,000
I ² t for fusing (t=8.3 ms) A ² sec	I ² t 1,203,000
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 _{TM} = 1500A and T _J = 25°C, V	V _{TM} 1.85
Min. Repetitive di/dt A/usec	600

Gate

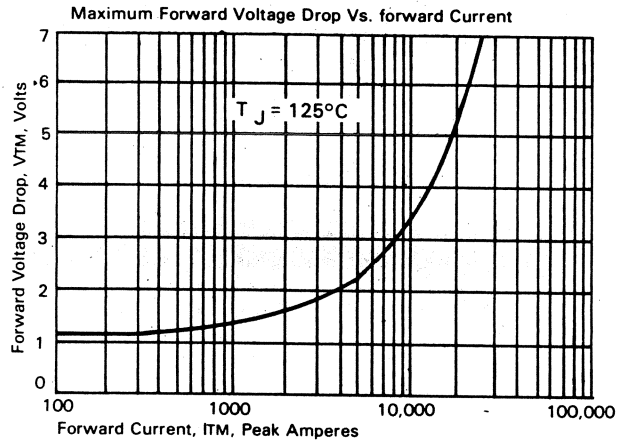
(T_J = 25°C)

Symbol	Min	Typ	Max
Gate current to trigger at V _D = 12V, mA	IGT	200	300
Gate voltage to trigger at V _D = 12V, V	VGT	1.5	3.0
Non-triggering gate voltage, T _J = 125°C, and rated V _{DRM} , V	VGDM		.15
Non-triggering Gate Current at V _D = 12V, mA	IGNT	20	
Peak forward gate current, A	IGTM		10
Peak reverse gate voltage, V	VGRM		5
Peak gate power, Watts	PGM		60
Average gate power, Watts	PG(av)		3

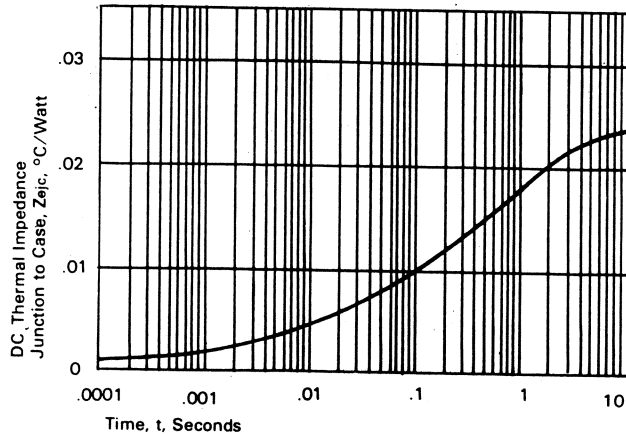
Switching

(T_J = 25°C)

Symbol	
HARD COMMUTATION:	
Typical Turn-off time, I _T = 1000A	40-60
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	
Typical Turn-On and Delay Time	
I _{TM} = 1000A, t _p = 450 usec	ton 3.0
V _D = 1100V, usec	td 1.5
Typical Reverse recovery charge for 40 usec device.	
I _T = 1000A, di/dt = 100A/usec	
T _J = 125°C, t _p = 100 usec, ucol	QRR 360
Minimum Critical dv/dt exponential to V _{DRM}	
T _J = 125°C, V/usec	dv/dt 400
Minimum di/dt @ non-repetitive, A/usec	di/dt 1000
Latching Current	
V _D = 75V, mA	Typ I _L 500
Holding Current	Max I _H 1000
V _D = 75V, ma	Typ I _H 300
	Max I _H 800



Transient Thermal Impedance VS. Time



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		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

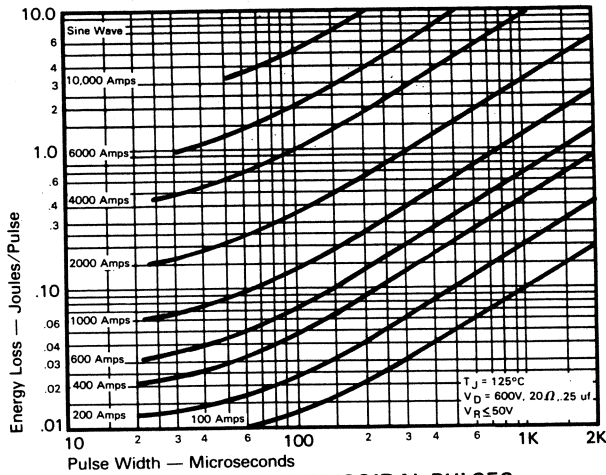
- ① Consult recommended mounting procedures.
- ② Applies for zero or negative gate bias.
- ③ Per JEDEC RS-397, 5.2.2.1.
- ④ With recommended gate drive.
- ⑤ For different turn-off values or conditions, consult factory.
- ⑥ Per JEDEC standard RS-397, 5.2.2.6.
- ⑦ For operation with antiparallel diode,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

FAST SWITCHING THYRISTORS

Fast Switching SCR T9GH_11

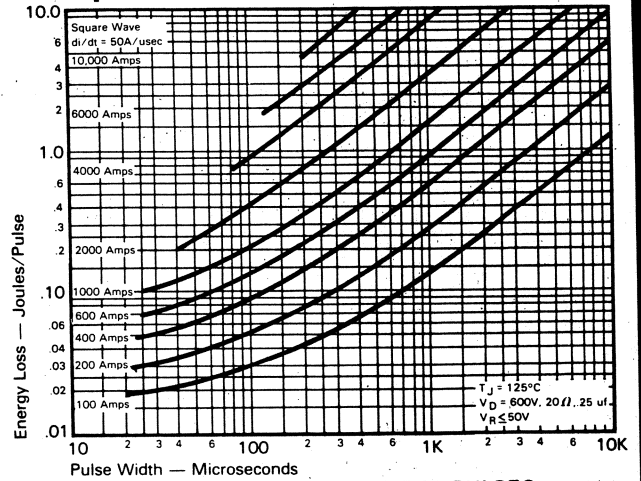
1100A Avg.
(1725 RMS)
Up to 1200 Volts
40-60 μ s

Sinusoidal Current Data

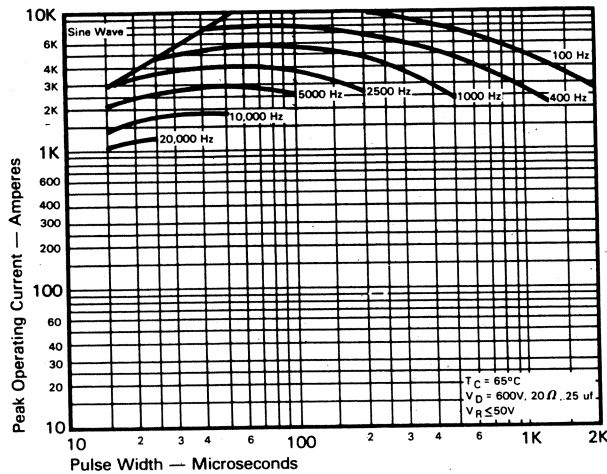


ENERGY PER PULSE FOR SINUSOIDAL PULSES

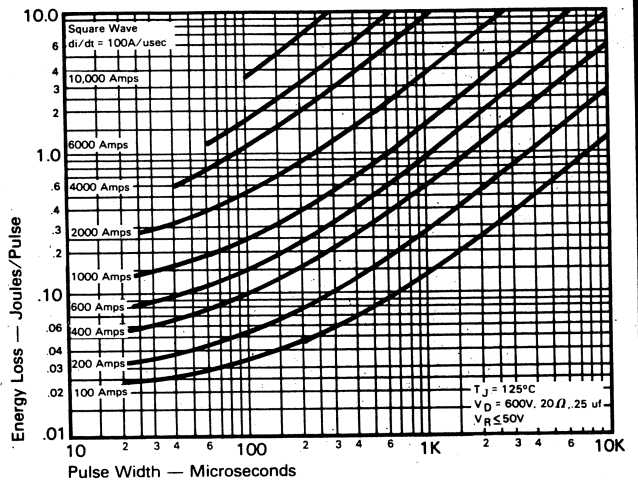
Trapezoidal Wave Current Data



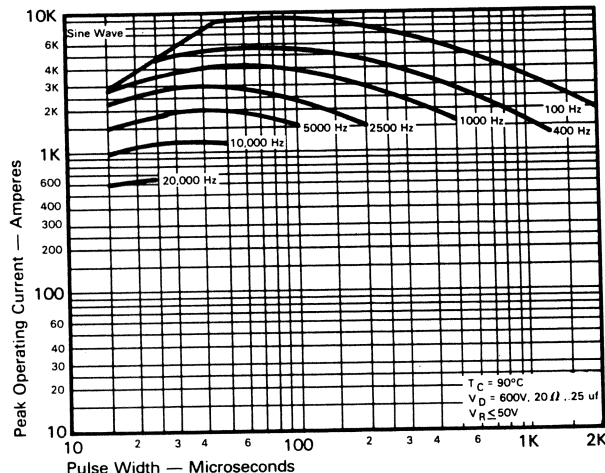
ENERGY PER PULSE FOR TRAPEZOIDAL PULSES
($di/dt = 50A/usec$)



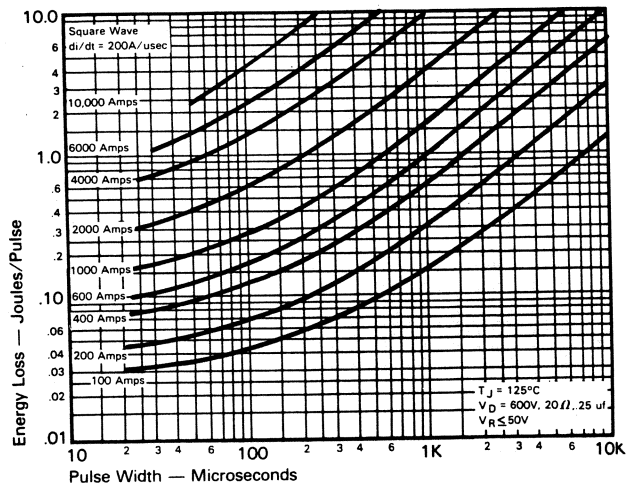
MAXIMUM ALLOWABLE PEAK ON-STATE CURRENT
vs. PULSE WIDTH ($T_C = 65^\circ C$)



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



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



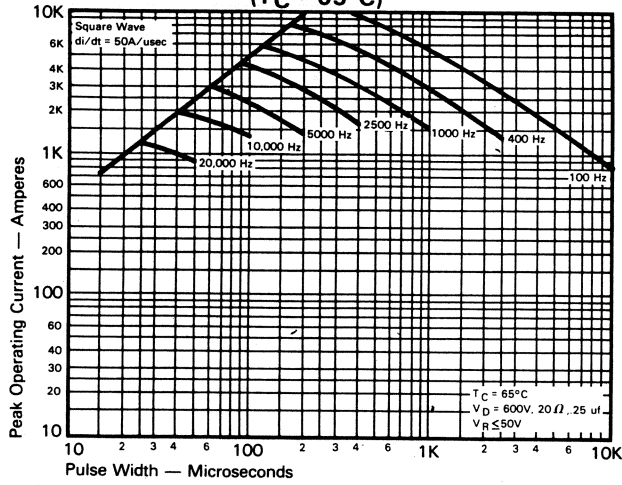
ENERGY PER PULSE FOR TRAPEZOIDAL PULSES
($di/dt = 200A/usec$)

FAST SWITCHING
THYRISTORS

**1100A Avg.
(1725 RMS)
Up to 1200 Volts
40-60 μ s**

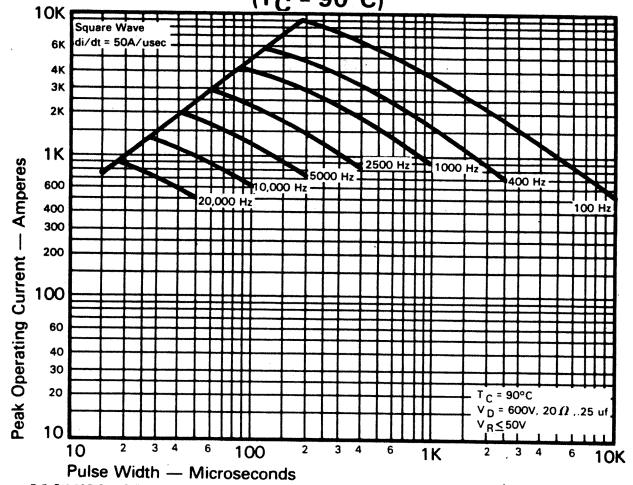
**Fast Switching
SCR
T9GH_11**

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

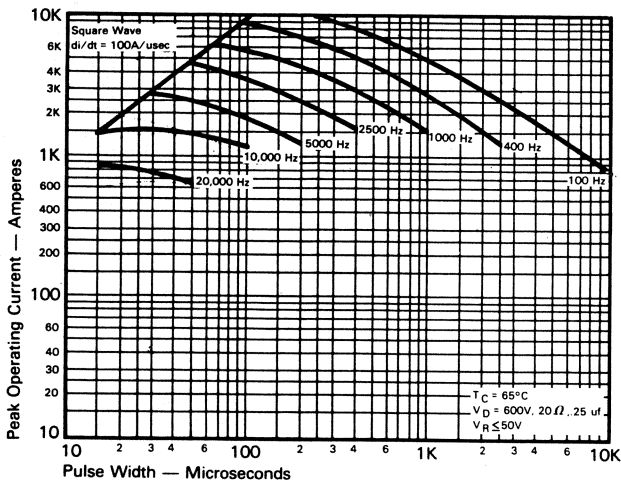


MAXIMUM ALLOWABLE PEAK ON-STATE CURRENT vs. PULSE WIDTH ($di/dt = 50\text{A}/\text{usec}$)

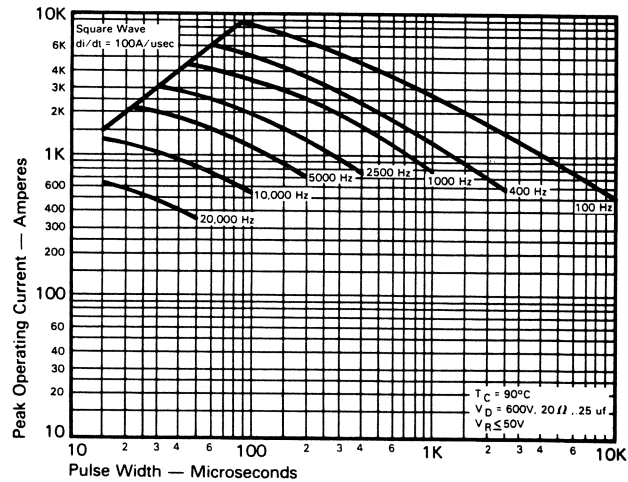
**Trapezoidal Wave Current Data
($T_C = 90^\circ\text{C}$)**



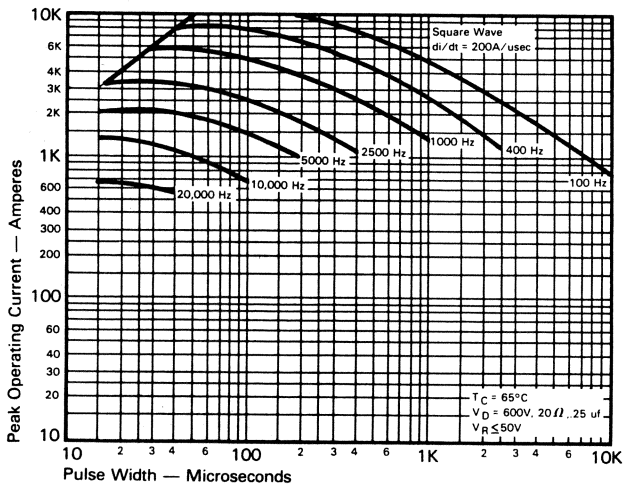
MAXIMUM ALLOWABLE PEAK ON-STATE CURRENT vs. PULSE WIDTH ($di/dt = 50\text{A}/\text{usec}$)



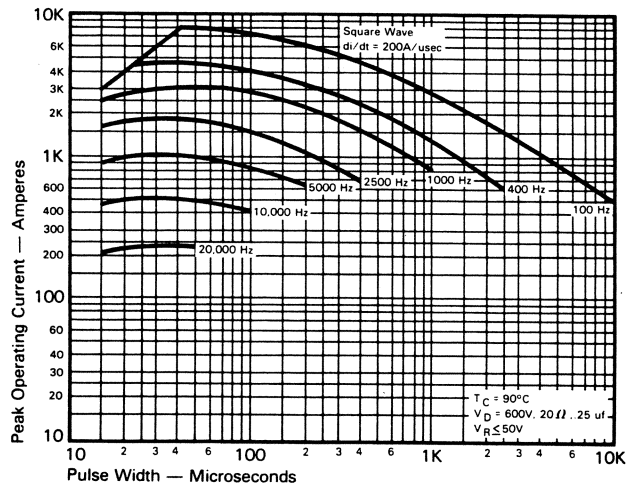
MAXIMUM ALLOWABLE PEAK ON-STATE CURRENT vs. PULSE WIDTH ($di/dt = 100\text{A}/\text{usec}$)



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



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



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

FAST SWITCHING THYRISTORS