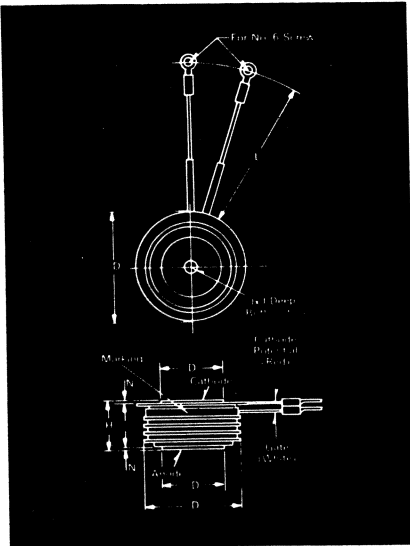


Fast Switching SCR T9GH_11

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



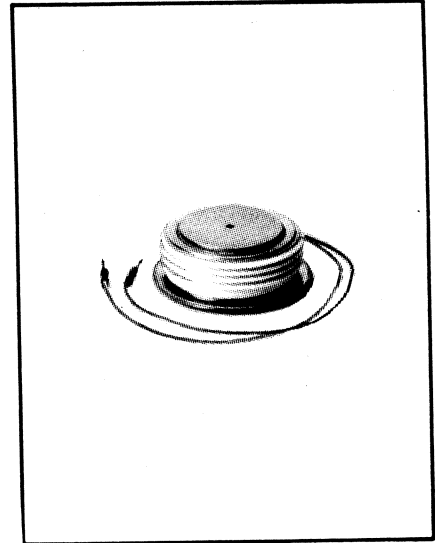
T9G Outline

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.
ϕ D	2.850	2.900	72.39	73.66
ϕ D ₁	1.845	1.855	46.86	47.12
ϕ D ₂	2.560	2.640	65.02	67.06
H	1.030	1.070	26.16	27.18
ϕ 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			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	V _{DRM} and V _{RRM} * (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 V_{DRM} = 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

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T9GH_11

Voltage

Blocking State Maximums ^② ($T_J = 125^\circ\text{C}$)

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
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 ($T_J = 125^\circ\text{C}$)

Symbol	T9GH_11
RMS forward current, A	$I_T(\text{rms})$ 1725
Ave. forward current, A	$I_T(\text{av})$ 1100
One-half cycle surge current ^③ , A	I_{TSM} 17,000
I^2t for fusing ($t=8.3$ ms) A^2sec	i^2t 1,203,000
Max I^2t of package ($t=8.3$ ms), A^2sec	I^2t 90 x 10 ⁶
Forward voltage drop at $I_{TM} = 1500\text{A}$ and $T_J = 25^\circ\text{C}$, V	V_{TM} 1.85
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	$P_{G(av)}$		3

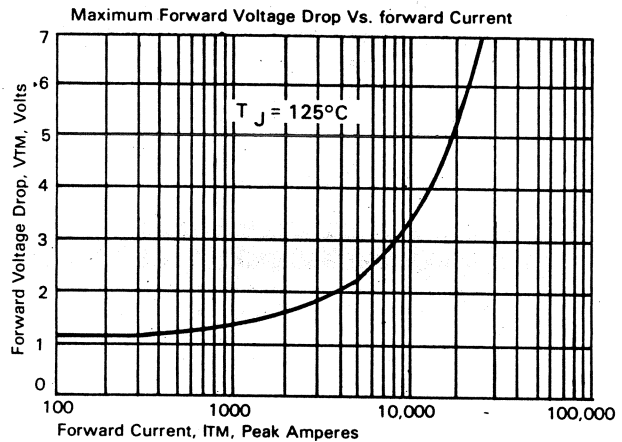
Switching

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

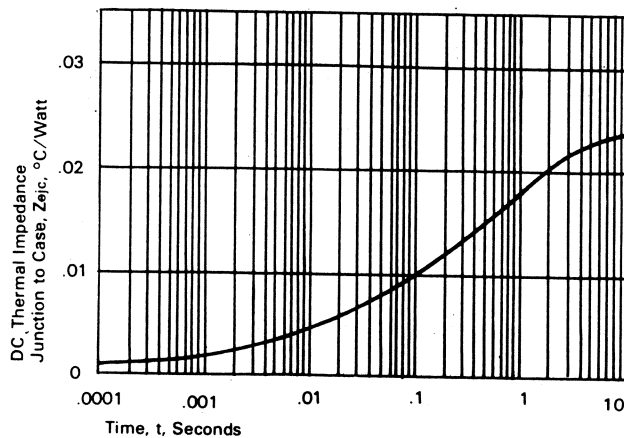
Symbol	
HARD COMMUTATION: ^①	
Typical Turn-off time, $I_T = 1000\text{A}$	
$50\text{V} \leq V_R \leq V_{RRM}$	
$T_J = 125^\circ\text{C}$, $di/dt = 100\text{A}/\text{usec}$ reapplied $dv/dt = 200\text{V}/\text{usec}$ linear to 0.8 V_{DRM} , usec	
	40-60
Typical Turn-On and Delay Time	
$I_{TM} = 1000\text{A}$, $t_p = 450$ μsec	t_{on} 3.0
$V_D = 1100\text{V}$, usec	t_d 1.5
Typical Reverse recovery charge for 40 usec device.	
$I_T = 1000\text{A}$, $di/dt = 100\text{A}/\text{usec}$	
$T_J = 125^\circ\text{C}$, $t_p = 100$ usec, ucol	QRR 360
Minimum Critical dv/dt exponential to V_{DRM}	
$T_J = 125^\circ\text{C}$, V/usec ^① ^⑤	dv/dt 400
Minimum di/dt @ non-repetitive, ^① ^④ ^⑤ A/usec	
	di/dt 1000
Latching Current	
$V_D = 75\text{V}$, mA	Typ I_L 500
Holding Current	
$V_D = 75\text{V}$, ma	Max 1000
	Typ 300
	Max I_H 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 ^①		5000	5500
Thermal resistance			
with double sided cooling ^①			
Junction to case, $^\circ\text{C}/\text{Watt}$	$R_{\theta JC}$.023
Case to sink, lubricated, $^\circ\text{C}/\text{Watt}$	$R_{\theta CS}$.006	.0075



Transient Thermal Impedance VS. Time



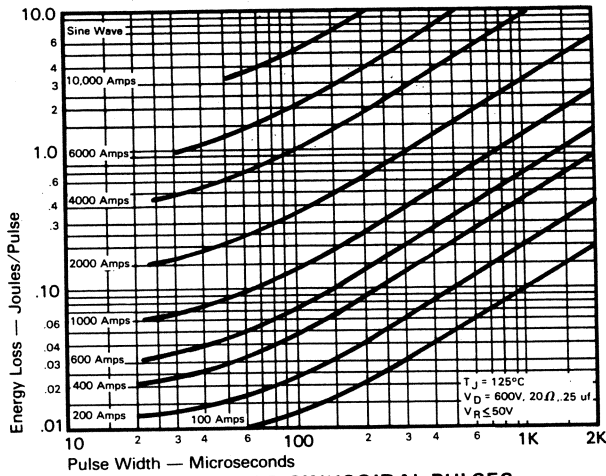
- ① Consult recommended mounting procedures.
- ② Applies for zero or negative gate bias.
- ③ Per JEDEC RS-397, 5.2.2.1.
- ④ With recommended gate drive.
- ⑤ For different turn-off values or conditions, consult factory.
- ⑥ Per JEDEC standard RS-397, 5.2.2.6.
- ⑦ For operation with antiparallel diode,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

FAST SWITCHING THYRISTORS

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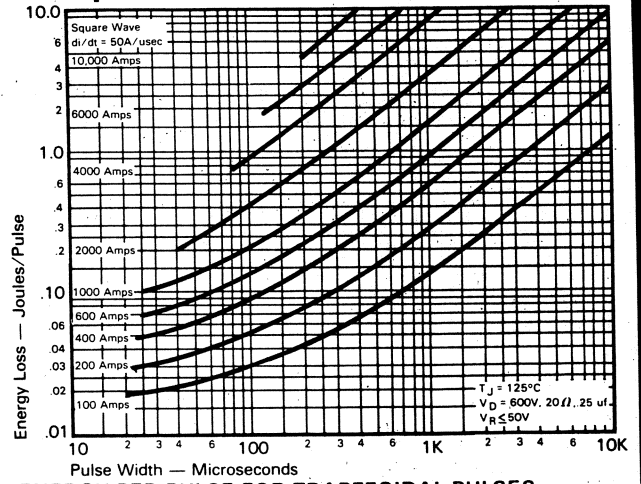
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Sinusoidal Current Data

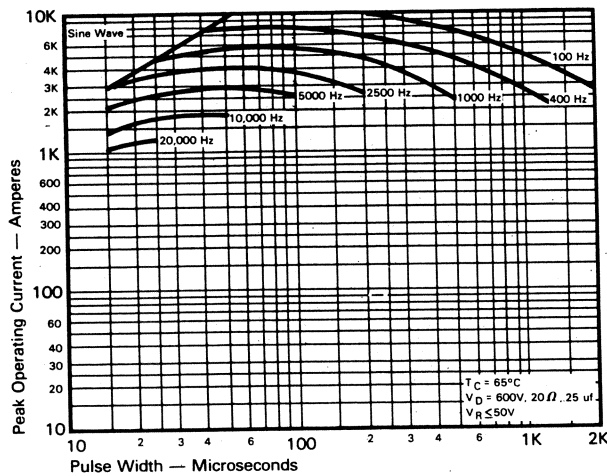


ENERGY PER PULSE FOR SINUSOIDAL PULSES

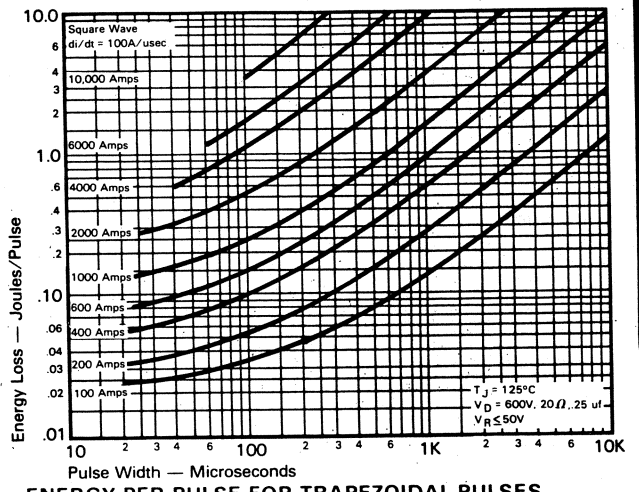
Trapezoidal Wave Current Data



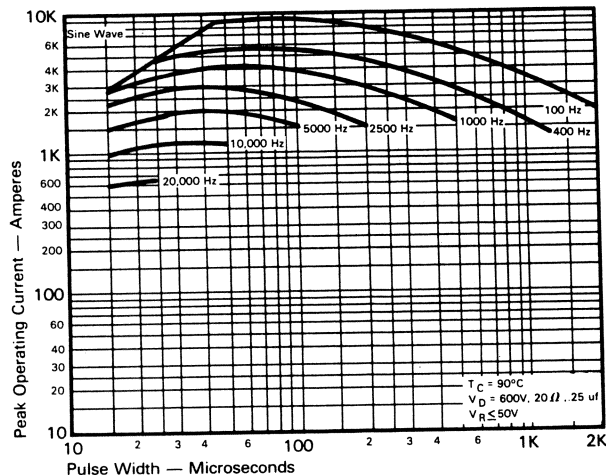
ENERGY PER PULSE FOR TRAPEZOIDAL PULSES
($di/dt = 50\text{A}/\mu\text{sec}$)



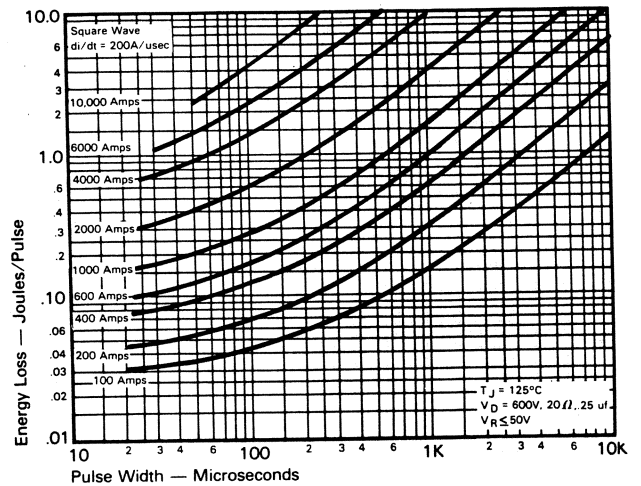
MAXIMUM ALLOWABLE PEAK ON-STATE CURRENT
vs. PULSE WIDTH ($T_C = 65^\circ\text{C}$)



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



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



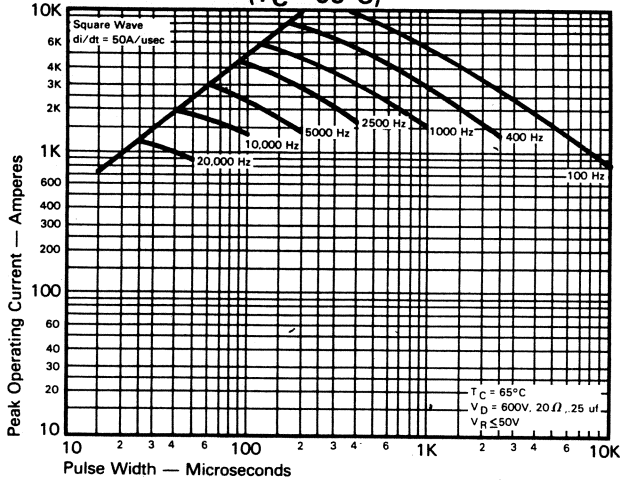
ENERGY PER PULSE FOR TRAPEZOIDAL PULSES
($di/dt = 200\text{A}/\mu\text{sec}$)

FAST SWITCHING
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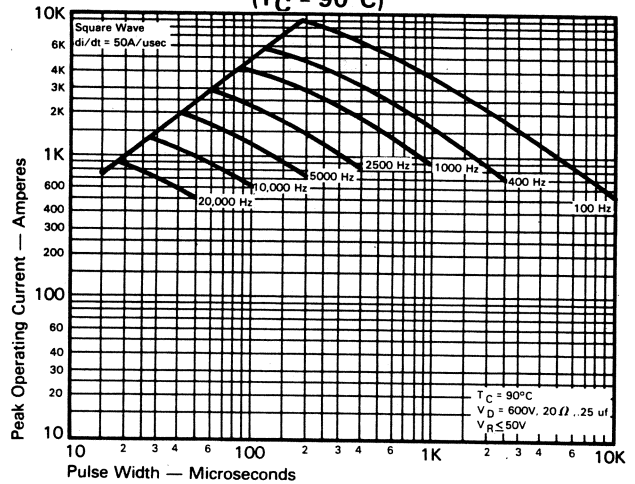
Fast Switching
SCR
T9GH_11

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

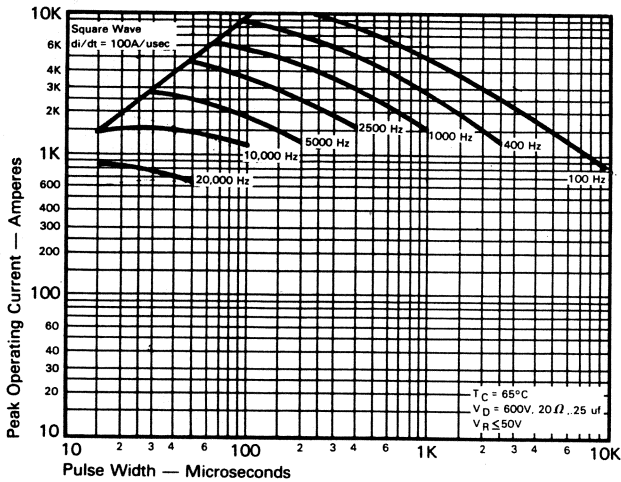


MAXIMUM ALLOWABLE PEAK ON-STATE CURRENT vs. PULSE WIDTH ($di/dt = 50A/usec$)

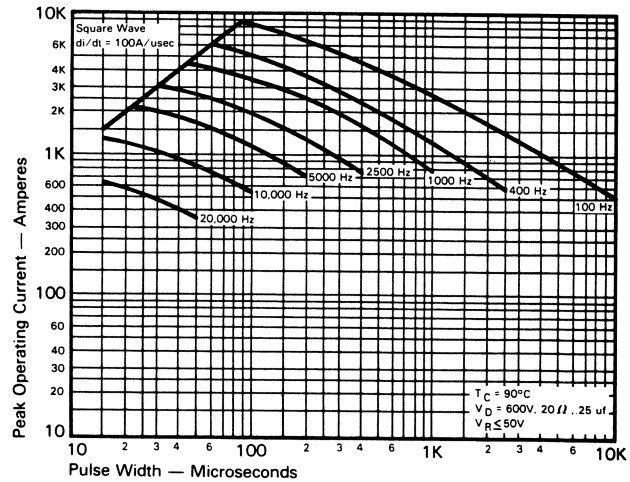
Trapezoidal Wave Current Data
($T_C = 90^\circ\text{C}$)



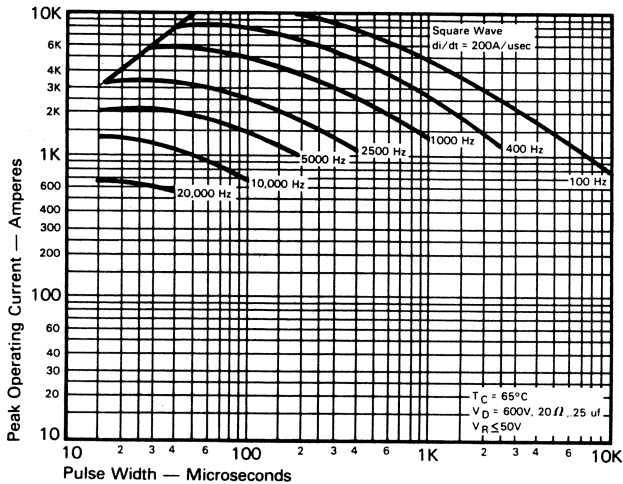
MAXIMUM ALLOWABLE PEAK ON-STATE CURRENT vs. PULSE WIDTH ($di/dt = 50A/usec$)



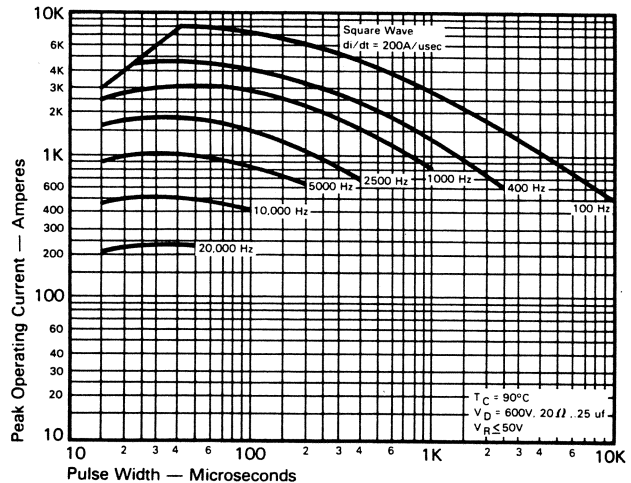
MAXIMUM ALLOWABLE PEAK ON-STATE CURRENT vs. PULSE WIDTH ($di/dt = 100A/usec$)



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