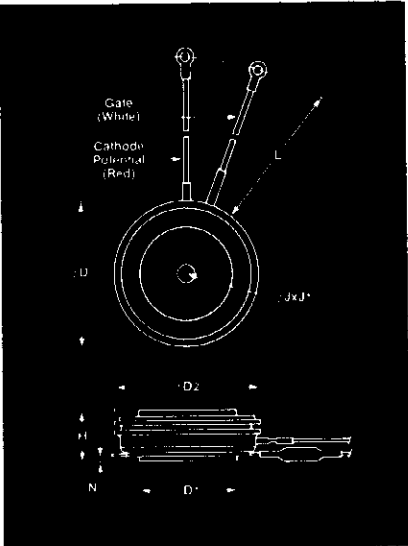


Fast Switching
SCR
T7SH __ 46

460A Avg.
(720A RMS)
1400-1800 Volts
80-100 μ sec



T7S Outline

Features:

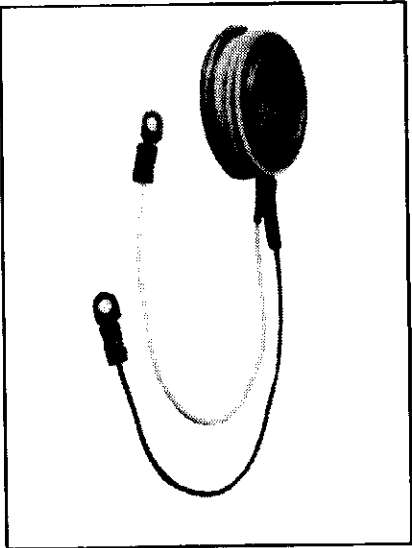
- Interdigitated, di/namic Gate Structure
- Hard Commutation Turn-Off
- Forward Blocking Voltage Capabilities to 1800 Volts
- Low Switching Losses at High Frequency
- Soft Cummutation (Feedback Diode) Testing Available
- High di/dt with soft gate control

Applications:

- Induction Heating
- Transportation
- Inverters

Symbol	Inches		Millimeters	
	Min.	Max.	Min.	Max.
ϕD	1.850	1.900	45.72	48.26
ϕD_1	1.140	1.180	28.96	29.97
ϕD_2	1.760	1.850	44.70	46.99
H	.545	.605	13.84	15.37
ϕJ	.135	.145	3.43	3.68
J_1	.072	.082	1.83	2.08
L	7.75	8.50	196.85	215.90
N	.025		.64	

Creep Distance—.408 in min. (10.36 mm).
Strike Distance—.203 in min. (5.16 mm).
Finish—Nickel Plate.
Approx. Weight—4 oz. (113 g).
1. Dimension "H" is a clamped dimension.



Ordering Information

Type	Voltage		Current		Turn-off		Gate current		Leads
Order Code	V_{DRM} and V_{RRM} (V)	Case	$I_T(av)$ (A)	Peak	t_q μ sec	Peak	I_{GT} (ma)	Peak	Case
T7SH	1400 1600 1800	1 2 3	460	46	80 100	1 2	150		T7S

Example: Obtain optimum device performance for your application by selecting proper Order Code.

Type T7SH rated at 460A average with $V_{DRM} = 1600V$, $I_{GT} = 150$ ma, $t_q = 80 \mu$ sec max. and leads—order as:

Type	Voltage	Current	Turn Off	Gate Current	Leads
T 7 S H	1 6	4 6	1	4	D N

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Voltage ②

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

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}

Current

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

Symbol

T7SH __ 46

RMS forward current, A $I_T(\text{rms})$ 720

Ave. forward current, A $I_T(\text{av})$ 460

One-half cycle surge current ①, A I_{TSM} 6800

I^2t for fusing (for times ≥ 8.3 ms)
A² sec I^2t 301,000

Forward voltage drop at $I_{TM} = 1500\text{A}$
and $T_J = 25^\circ\text{C}$, V V_{TM} 2.2

Min. repetitive di/dt ①④⑥ A/ μ sec di/dt 400

Switching

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

Symbol

Max. turn-off time, $I_T = 400\text{A}$, $T_J = 125^\circ\text{C}$,
 $t_p = 100 \mu\text{sec}$, $di/dt = 25$

A/ μ sec., reappplied $dv/dt =$

200 V/ μ sec linear to 0.8 V V_{DRM} , μsec . ①②③ t_q 80 to 100

Typ. delay time, $I_{TM} = 1000\text{A}$ t_d 2.0

$T_D = 8 \text{ V } V_{DRM}$ ④, μsec ④

Typ. turn-on-time $I_{TM} = 1000\text{A}$, μsec t_{on} 3.0

Min. critical dv/dt exponential to .8
V V_{DRM} , $T_J = 125^\circ\text{C}$, V/ μ sec ②⑤ dv/dt 300

Min. di/dt , non-repetitive, A/ μ sec ①④⑥ di/dt 800

Gate

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

Symbol

Gate current to trigger at $V_D = 12\text{V}$, mA I_{GT} 150

Gate voltage to trigger at $V_D = 12\text{V}$, V V_{GT} 3

Non-triggering gate voltage, $T_J = 125^\circ\text{C}$,
and rated V_{DRM} , V V_{GDM} .25

Peak forward gate current, A I_{GTM} 4

Peak reverse gate voltage, V V_{GRM} 5

Peak gate power, Watts P_{GM} 16

Average gate power, Watts $P_{G(av)}$ 3

Thermal and Mechanical

Symbol

Min., Max. oper. junction temp., $^\circ\text{C}$ T_J -40 to $+125$

Min., Max. storage temp., $^\circ\text{C}$ T_{stg} -40 to $+150$

Max. mounting force, lb. ① 2000 to 2400

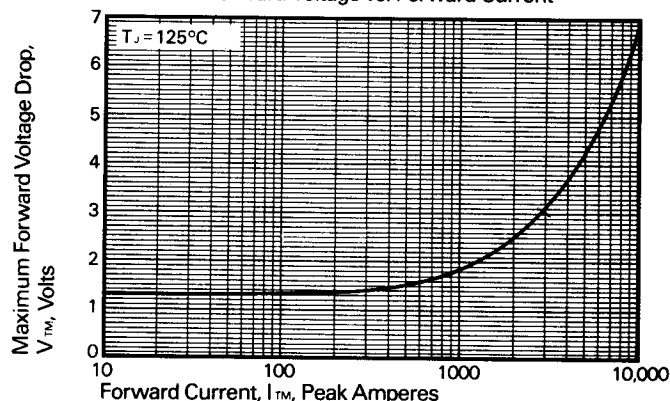
Thermal resistance ①, double-

side cooling, junction to case, $^\circ\text{C}/\text{Watt}$ $R_{\theta JC}$.045

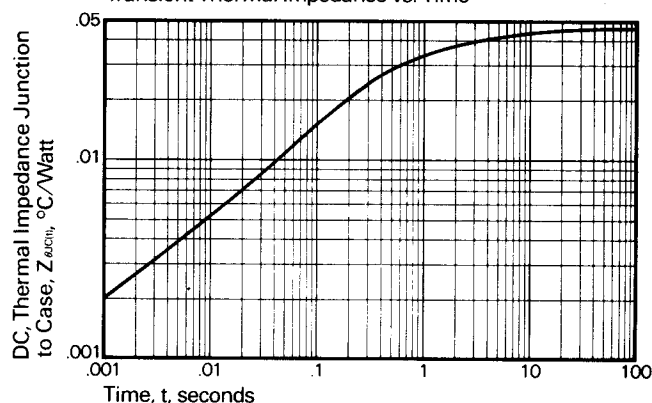
Case to sink, lubricated, $^\circ\text{C}/\text{Watt}$ $R_{\theta CS}$.02

1400	1600	1800
1400	1600	1800
1500	1700	1900
35	35	35

Maximum Forward Voltage vs. Forward Current



Transient Thermal Impedance vs. Time

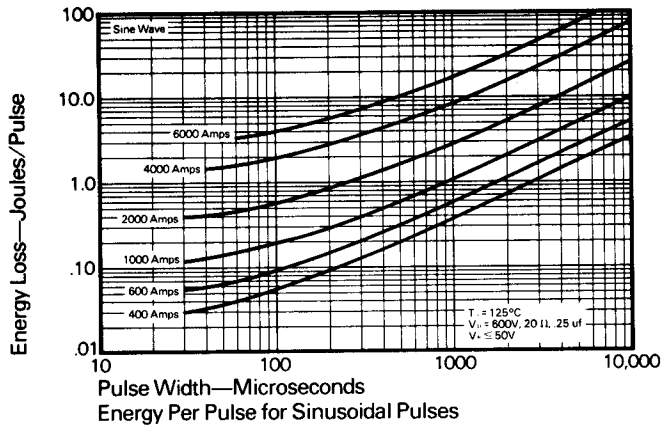


- ① Consult recommended mounting procedures.
- ② Applies for zero or negative gate bias.
- ③ Per JEDEC RS-397, 5.2.2.1.
- ④ With recommended gate drive.
- ⑤ Higher dv/dt ratings available, consult factory.
- ⑥ Per JEDEC standard RS-397, 5.2.2.6.
- ⑦ For operation with antiparallel diode, consult factory.
- ⑧ Other t_q and t_{on} combinations available consult factory.

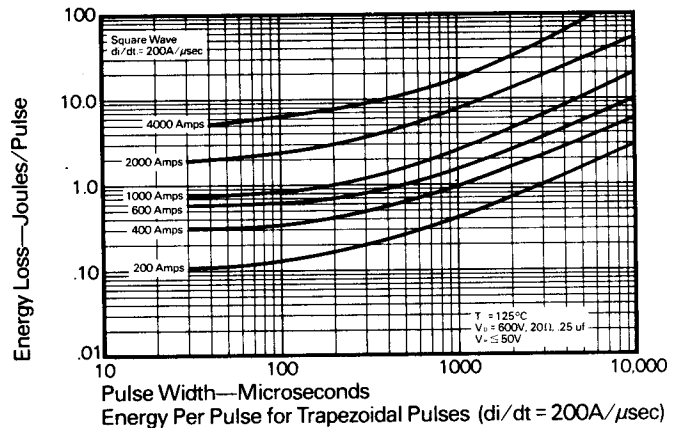
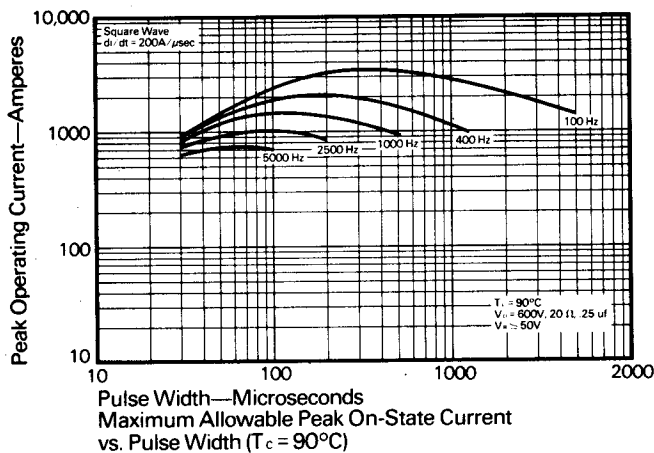
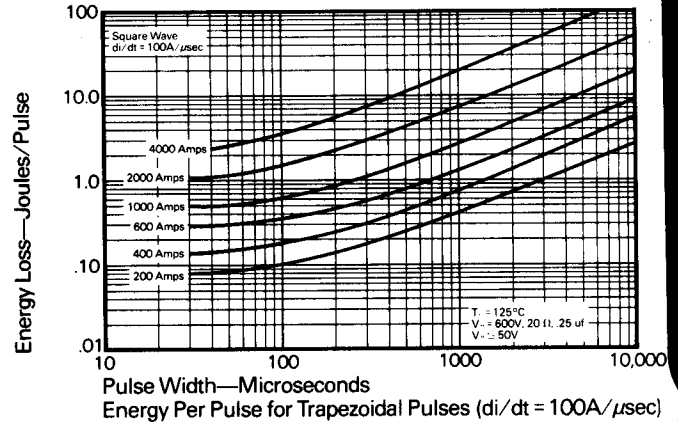
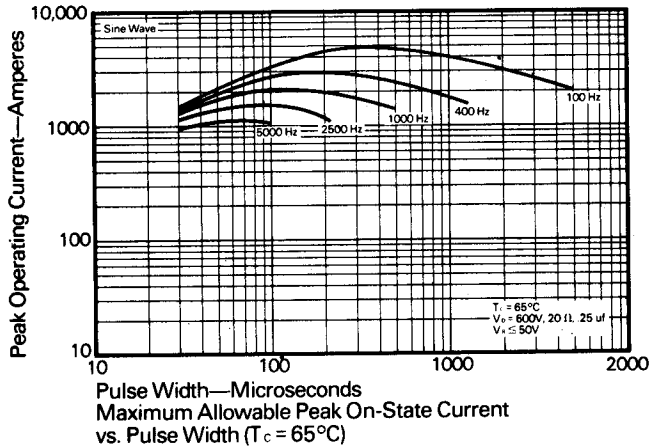
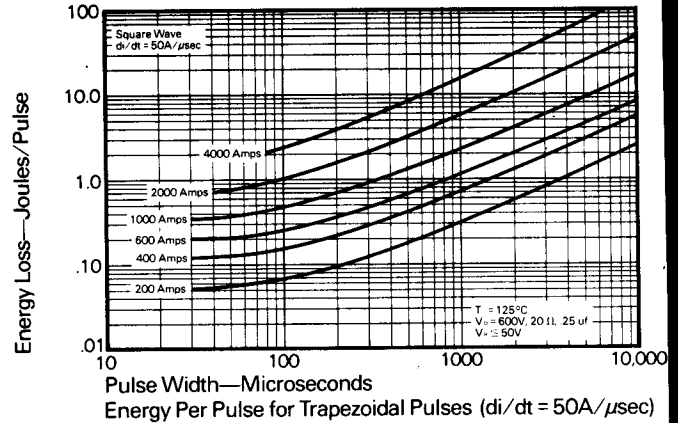
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Sinusoidal Current Data



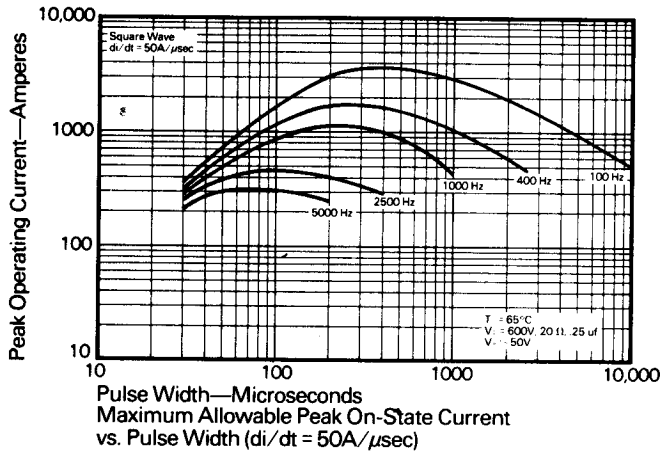
Trapezoidal Wave Current Data



**460A Avg.
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**Fast Switching
SCR
T7SH _ _ 46**

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



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

