

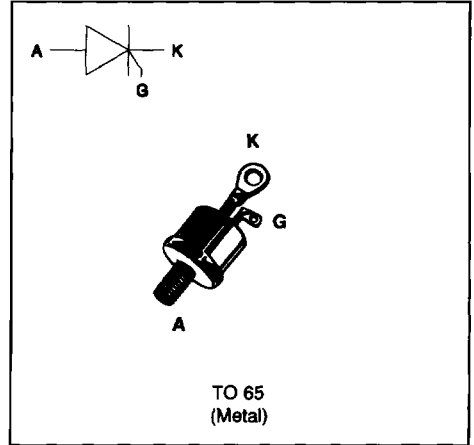
FAST SWITCHING SCR
FEATURES

- HIGH di/dt AND dV/dt RATINGS
- $t_q \leq 40\mu s$ FOLLOWING V_{DRM}/V_{RRM}
- HIGH STABILITY AND RELIABILITY

DESCRIPTION

The TGF148 B Silicon Controlled Rectifier Family uses a high performance glass passivated technology.

This fast switching Silicon Controlled Rectifier Family is designed for high frequency power switching applications.


ABSOLUTE RATINGS (limiting values)

Symbol	Parameter	Value	Unit	
$I_T(RMS)$	RMS on-state current (180° conduction angle)	$T_c=65^\circ C$ 63	A	
$I_T(AV)$	Average on-state current (180° conduction angle, single phase circuit)	$T_c=65^\circ C$ 40	A	
I_{TSM}	Non repetitive surge peak on-state current (T_j initial = 25°C)	$t_p=8.3$ ms	700	A
		$t_p=10$ ms	670	
I_{2t}	I_{2t} value	$t_p=10$ ms	2245	A ² s
di/dt	Critical rate of rise of on-state current Gate supply : $I_G = 1$ A $di_G/dt = 10$ A/ μs	200	A/ μs	
T_{stg} T_j	Storage and operating junction temperature range	- 40 to + 150	°C	
		- 40 to + 125	°C	
T_l	Maximum lead temperature for soldering during 10 s at 4.5 mm from case	230	°C	

Symbol	Parameter	TGF148-				Unit
		600 B	800 B	1000 B	1200 B	
V_{DRM} V_{RRM}	Repetitive peak off-state voltage $T_j = 125^\circ C$	600	800	1000	1200	V

THERMAL RESISTANCES

Symbol	Parameter	Value	Unit
$R_{th(c-h)}$	Contact (case to heatsink)	0.30	°C/W
$R_{th(j-c)}$ DC	Junction to case for DC	0.65	°C/W

GATE CHARACTERISTICS (maximum values)

P_G (AV) = 2W P_{GM} = 80W (tp = 20 μ s) I_{FGM} = 10A (tp = 20 μ s) V_{FGM} = 16V (tp = 20 μ s) V_{RGM} = 5 V.

ELECTRICAL CHARACTERISTICS

Symbol	Test Conditions	Value	Unit
I_{GT}	$V_D=12V$ (DC) $R_L=33\Omega$	$T_j=25^\circ C$ MAX	150 mA
V_{GT}	$V_D=12V$ (DC) $R_L=33\Omega$	$T_j=25^\circ C$ MAX	1.5 V
V_{GD}	$V_D=V_{DRM}$ $R_L=3.3k\Omega$	$T_j=125^\circ C$ MIN	0.2 V
igt	$V_D=V_{DRM}$ $I_G=500mA$ $dI_G/dt=3A/\mu s$	$T_j=25^\circ C$ TYP	2 μs
I_L	$I_G=1.2 I_{GT}$	$T_j=25^\circ C$ MAX	400 mA
I_H	$I_T=500mA$ gate open	$T_j=25^\circ C$ MAX	200 mA
V_{TM}	$I_{TM}=500A$ tp= 380 μs	$T_j=25^\circ C$ MAX	4 V
I_{DRM} I_{RRM}	V_{DRM} Rated V_{RRM} Rated	$T_j=25^\circ C$ MAX $T_j=125^\circ C$	0.05 12 mA
dV/dt	Linear slope up to $V_D=67\%V_{DRM}$ gate open	$T_j=125^\circ C$ MIN	200 V/ μs
T_q	$V_D=67\%V_{DRM}$ $V_R=50V$ $dV_D/dt=20V/\mu s$	$I_{TM}=50A$ $dI_{TM}/dt=30 A/\mu s$ $T_j=125^\circ C$ MAX	40 μs

SINUSOIDAL CURRENT PULSE DATA

Fig.1 : Energy per pulse for sinusoidal pulses.

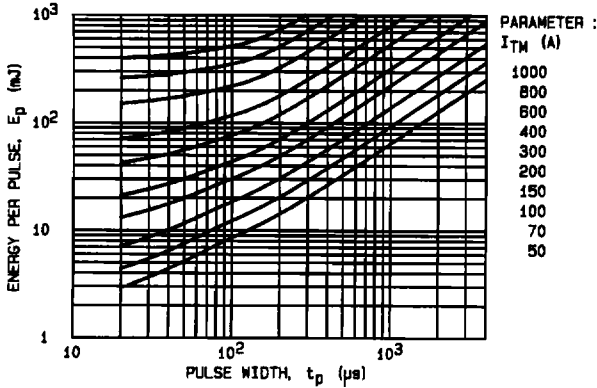


Fig.2 : Maximum allowable peak on-state current versus pulse width for $T_c = 85^\circ\text{C}$.

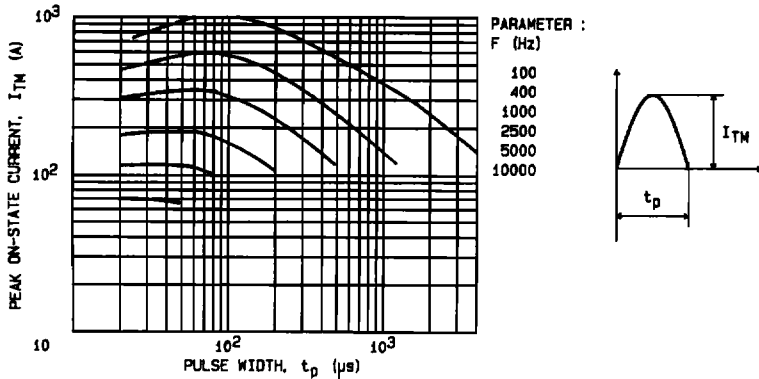
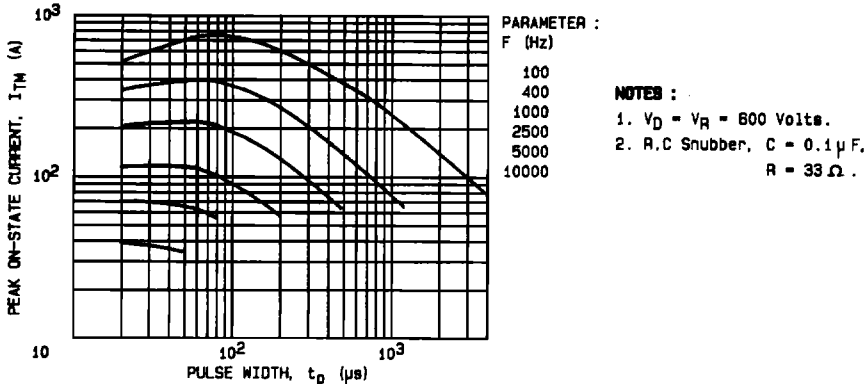


Fig.3 : Maximum allowable peak on-state current versus pulse width for $T_c = 90^\circ\text{C}$.



TRAPEZOIDAL CURRENT PULSE DATA

Fig.4 : Energy per pulse for trapezoidal pulses.

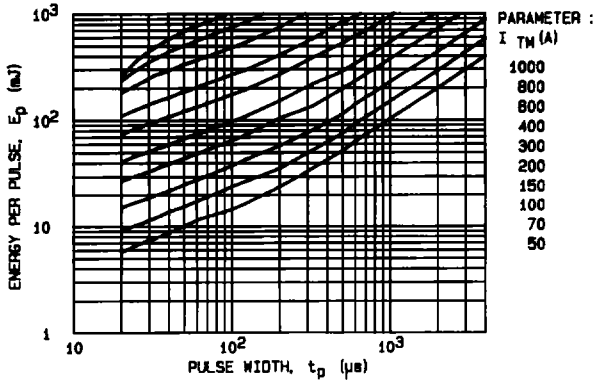
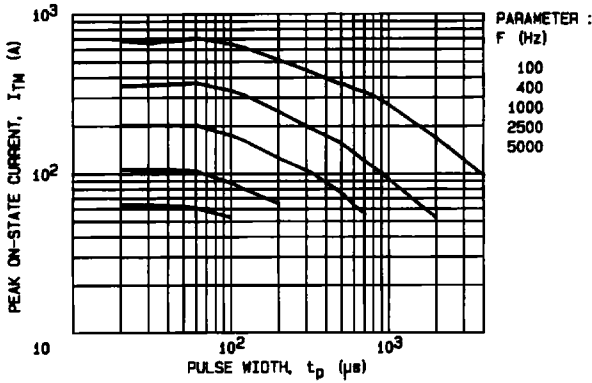


Fig.5 : Maximum allowable peak on-state current versus pulse width for $T_c = 85^\circ\text{C}$.



$di/dt = 100 \text{ A}/\mu\text{s}$

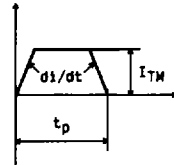
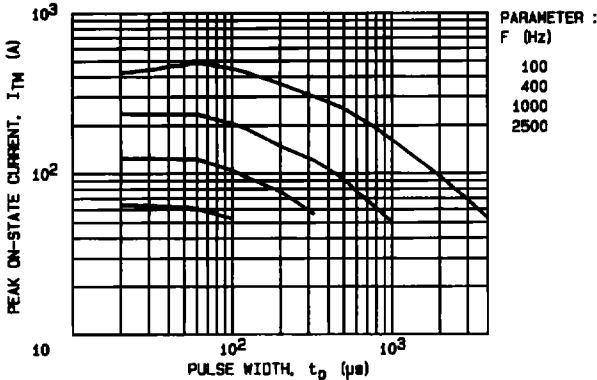


Fig.6 : Maximum allowable peak on-state current versus pulse width for $T_c = 90^\circ\text{C}$.



NOTES :

1. $V_D = V_R = 800$ Volts.
2. R.C Snubber, $C = 0.1 \mu\text{F}$,
 $R = 33 \Omega$.

Fig.7 : Non repetitive surge peak on-state current versus number of cycles.

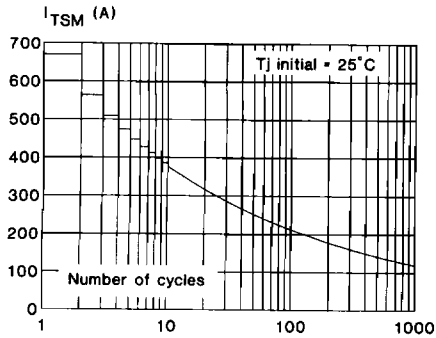


Fig.8 : Transient thermal impedance junction to ambient.

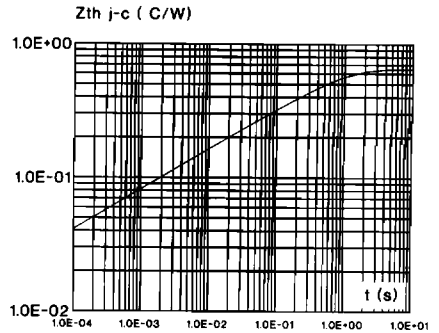


Fig.9 : Relative variation of gate trigger current and holding current versus junction temperature.

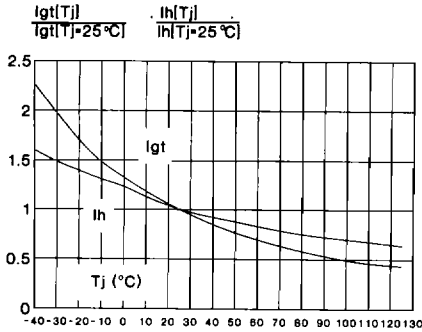


Fig.10 : Non repetitive surge peak on-state current for a sinusoidal pulse with width : $t \leq 10$ ms, and corresponding value of I^2t .

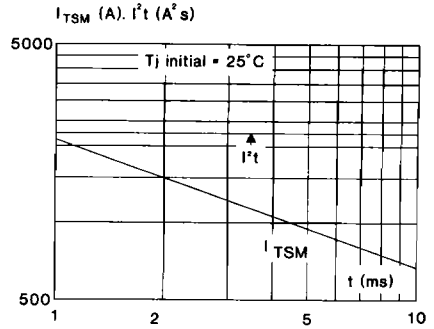
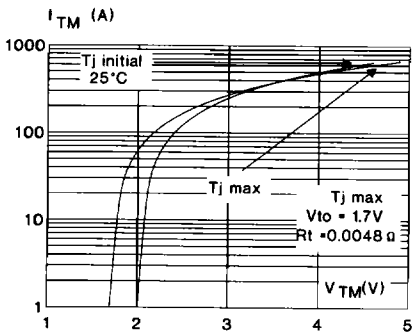


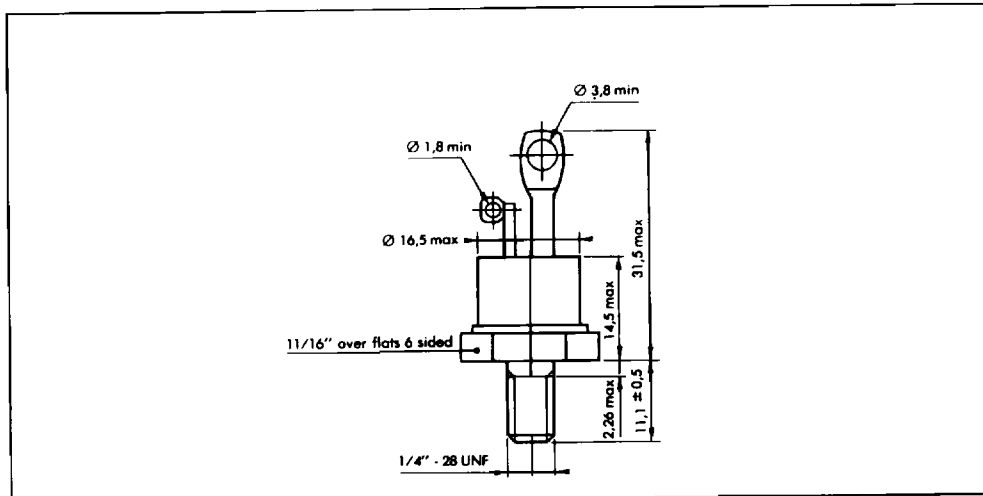
Fig11 : On-state characteristics (maximum values).



TGF148 B

PACKAGE MECHANICAL DATA (in millimeters)

TO 65 Metal



Cooling method : C

Marking : type number

Weight : 19 g

Polarity : Anode (or A2) to case

Stud torque : 3.5 mAN min / 3.8 mAN max