

# SG800(R,U,W,EX)11 SG800(R,U,W,EX)12

## GATE TURN-OFF THYRISTOR

### CHOPPER, INVERTER APPLICATION

- . Repetitive Peak Off-State Voltage :  $V_{DRM}=1300, 1600, 1800, 2500V$
- . R.M.S On-State Current :  $I_{T(RMS)}=300A$
- . Peak Turn-Off Current :  $I_{TGQM}=800A$
- . Critical Rate of Rise of On-State Current :  $di/dt=200A/\mu s$
- . Critical Rate of Rise of Off-State Voltage :  $dv/dt=600V/\mu s$

### MAXIMUM RATINGS

CHARACTERISTIC		SYMBOL	RATING	UNIT
Repetitive Peak Off-State Voltage	SG800R (11,12)	V <sub>DRM</sub>	1300	V
	SG800U (11,12)		1600	
	SG800W (11,12)		1800	
	SG800EX(11,12)		2500	
Repetitive Peak Reverse Voltage		V <sub>RRM</sub>	15	V
Peak Turn-Off Current (Note 1)		I <sub>TGQM</sub>	800	A
R.M.S On-State Current (Note 2)		I <sub>T(RMS)</sub>	300	A
Peak One Cycle Surge On-State Current (Non-Repetitive)		I <sub>TSM</sub>	5000(50Hz)	A
			5500(60Hz)	
Critical Rate of Rise of On-State Current (Note 3)		di/dt	200	A/ $\mu s$
Peak Forward Gate Current (Note 4)		I <sub>FGM</sub>	30	A
Average Forward Gate Power Dissipation		P <sub>G(AV)</sub>	6	W
R.M.S Reverse Gate Current		I <sub>RG(RMS)</sub>	35	A
Peak Reverse Gate Power Dissipation (Note 5)		P <sub>RGM</sub>	4	kW
Peak Reverse Gate Voltage		V <sub>RCM</sub>	15	V
Storage Temperature Range		T <sub>stg</sub>	-40~125	°C
Operating Junction Temperature Range		T <sub>j</sub>	-40~125	°C
Screw Torque (M5)		-	20	kg·cm

Note 1 :  $V_D=1/2$  Rated,  $V_{DM}=2/3$  Rated,  $C_S=2\mu F$ ,  $R_S=20\Omega$ ,  $di_{RG}/dt=20A/\mu s$ ,  $I_{RG}\neq 17CA$ ,  $T_j=125^\circ C$ , ( $V_{DSF}\leq 450V$ )

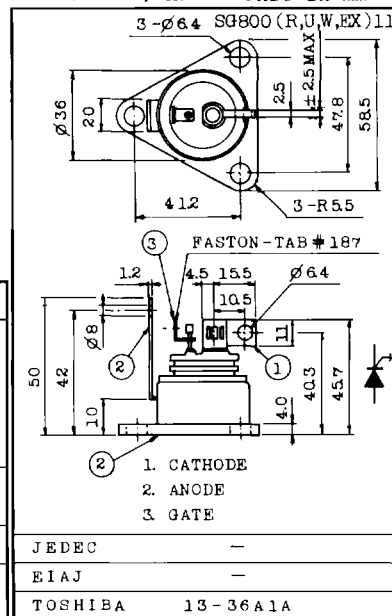
Note 2 : Half sine waveform,  $T_f=70^\circ C$

Note 3 :  $V_D=1/2$  Rated,  $I_{TM}=800A$ ,  $I_G=12A$ ,  $t_r=1\mu s$ ,  $f=50Hz$ ,  $T_j=125^\circ C$

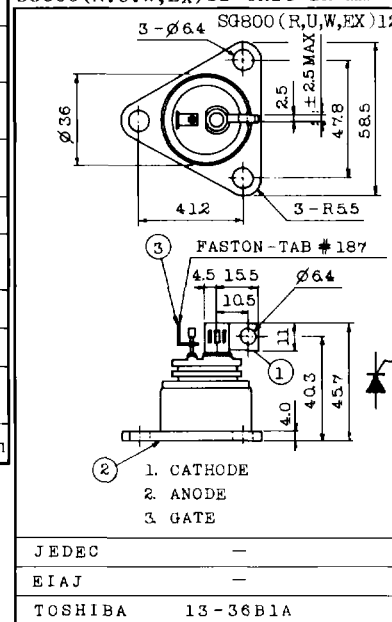
Note 4 : Pulse width : Max. 20 $\mu s$ , Duty : Max. 20%

Note 5 : Pulse width : Max. 20 $\mu s$ , Duty : Max. 2%

SG800(R,U,W,Ex)11 Unit in mm



Weight : 200g  
SG800(R,U,W,Ex)12 Unit in mm



Weight : 170g

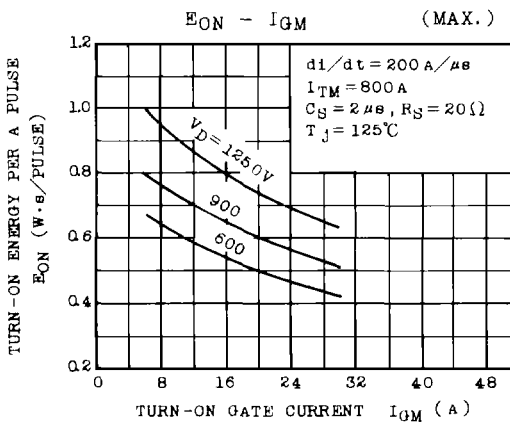
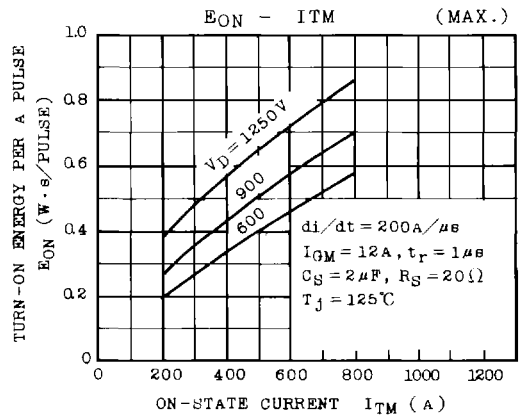
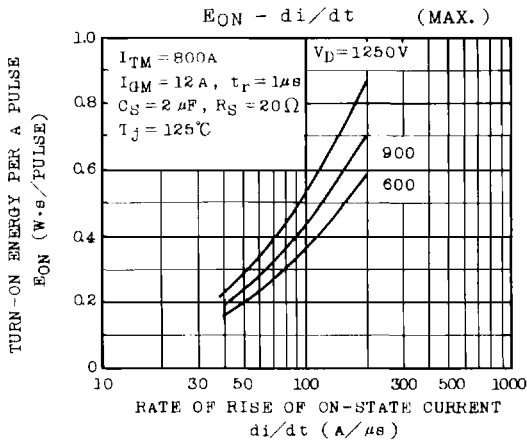
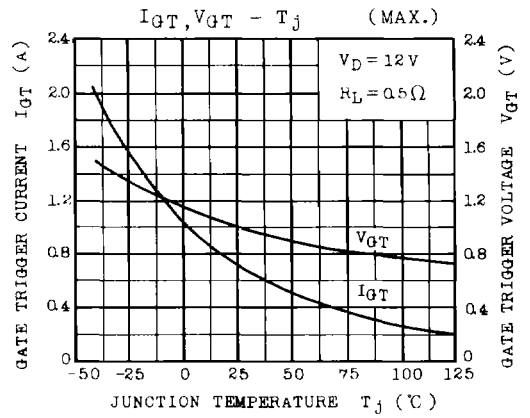
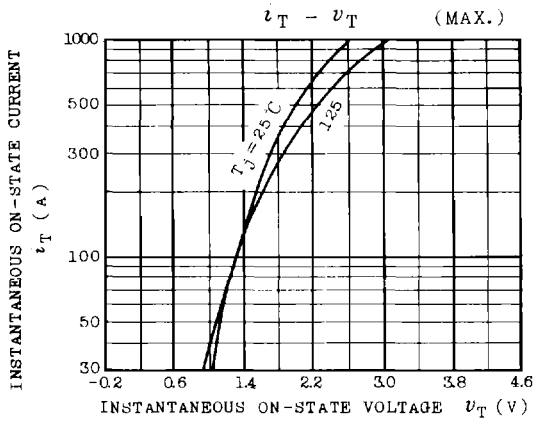
**ELECTRICAL CHARACTERISTICS**

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT	
Repetitive Peak Off-State Current	I <sub>DRM</sub>	V <sub>DRM</sub> =Rated, R <sub>GK</sub> =20Ω T <sub>j</sub> =125°C	-	-	10	mA	
Repetitive Peak Reverse Current	I <sub>RRM</sub>	V <sub>RRM</sub> =Rated, T <sub>j</sub> =125°C	-	-	10	mA	
Repetitive Peak Reverse Gate Current	I <sub>RCM</sub>	V <sub>RCM</sub> =Rated, T <sub>j</sub> =125°C	-	-	10	mA	
Peak On-State Voltage	V <sub>TM</sub>	I <sub>TM</sub> =800A, T <sub>c</sub> =25°C	-	-	2.4	V	
Gate Trigger Voltage	V <sub>GT</sub>	V <sub>D</sub> =12V	T <sub>c</sub> =-40°C	-	-	1.5	V
			T <sub>c</sub> =25°C	-	0.75	1.0	
Gate Trigger Current	I <sub>GT</sub>	R <sub>L</sub> =0.5Ω	T <sub>c</sub> =-40°C	-	-	2000	mA
			T <sub>c</sub> =25°C	-	350	700	
Gate Non-Trigger Voltage	V <sub>GD</sub>	V <sub>D</sub> =1/2 Rated, T <sub>c</sub> =125°C	0.3	-	-	V	
Gate Non-Trigger Current	I <sub>GD</sub>		5	-	-	mA	
Delay Time	t <sub>d</sub>	V <sub>D</sub> =1/2 Rated di/dt=200A/μs	-	-	3.0	μs	
Turn-On Time	t <sub>gt</sub>	I <sub>TM</sub> =800A, I <sub>G</sub> =12A t <sub>r</sub> =1μs, T <sub>c</sub> =25°C	-	-	8.0	μs	
Critical Rate of Rise of Off-State Voltage	dv/dt	V <sub>DRM</sub> =2/3 Rated T <sub>j</sub> =125°C, V <sub>GK</sub> =-2V Exponential Rise	600	-	-	V/μs	
Holding Current	I <sub>H</sub>	T <sub>c</sub> =25°C, R <sub>L</sub> =0.5Ω	-	20	-	A	
Storage Time	t <sub>s</sub>	I <sub>T</sub> =800A	-	-	14	μs	
Gate Turn-Off Time	t <sub>gq</sub>	V <sub>D</sub> =1/2 Rated	-	-	16	μs	
Tail Time	SG800R(11,12)	V <sub>DM</sub> =2/3 Rated C <sub>S</sub> =2μF di <sub>RG</sub> /dt=-20A/μs T <sub>c</sub> =120°C	-	-	76	μs	
	SG800U(11,12)		-	-	73		
	SG800W(11,12)		-	-	70		
	SG800EX(11,12)		-	-	65		
Turn-Off Gate Current	I <sub>RG</sub>		-	170	200	A	
Thermal Resistance	R <sub>th(j-c)</sub>	Junction to Case	-	-	0.09	°C/W	

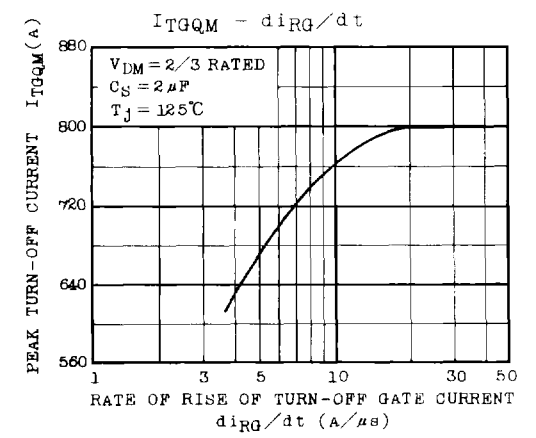
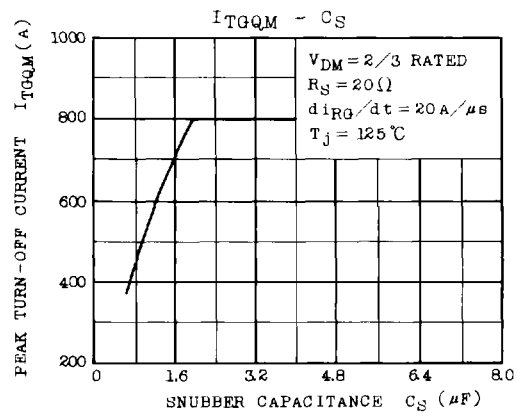
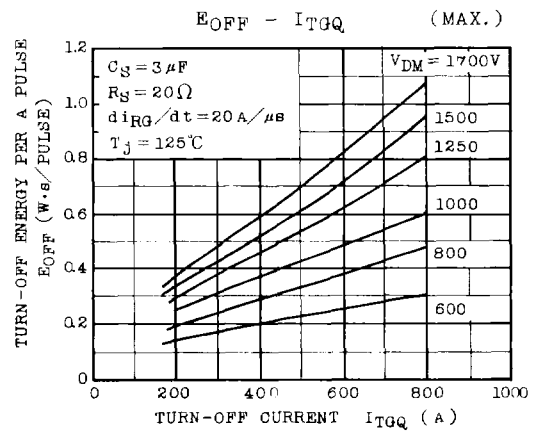
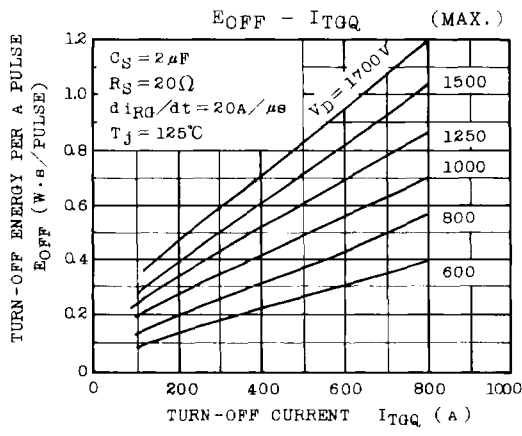
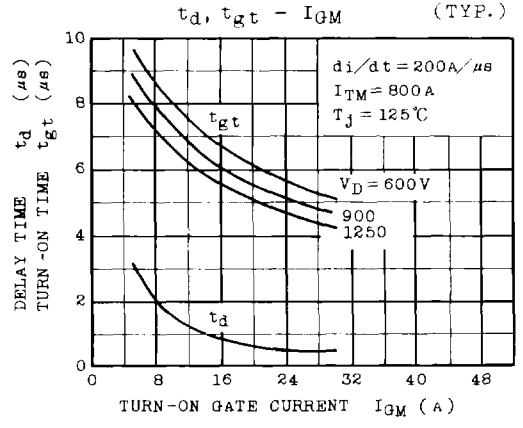
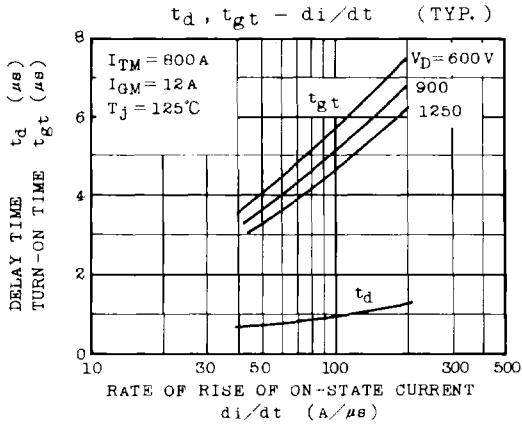
Note. Contact Thermal Resistance R<sub>th(c-f)</sub>=0.04°C/W  
 (Applied silicone grease)

# SG800(R,U,W,EX)11

# SG800(R,U,W,EX)12

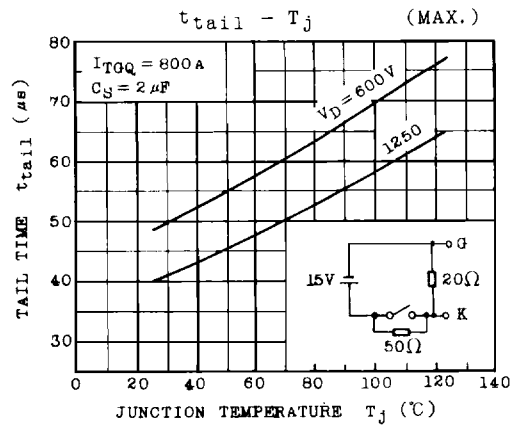
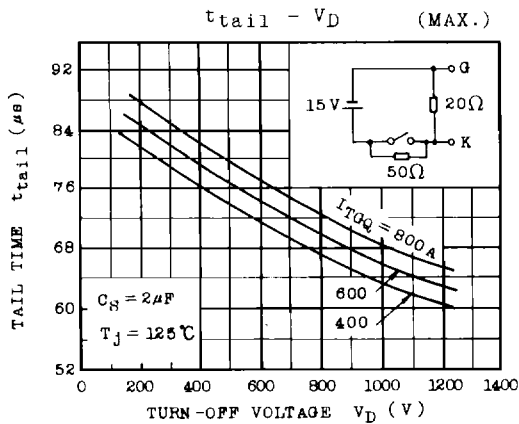
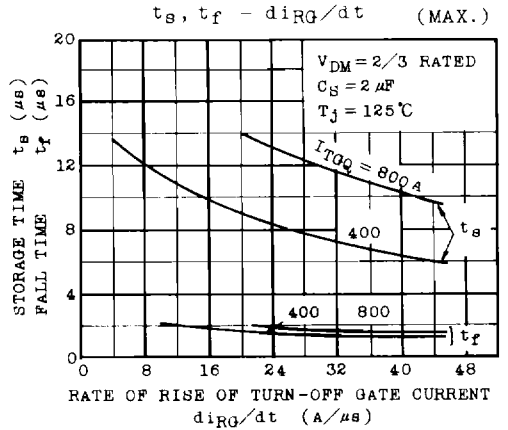
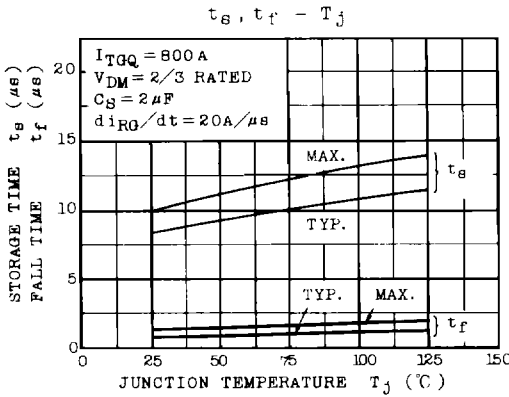
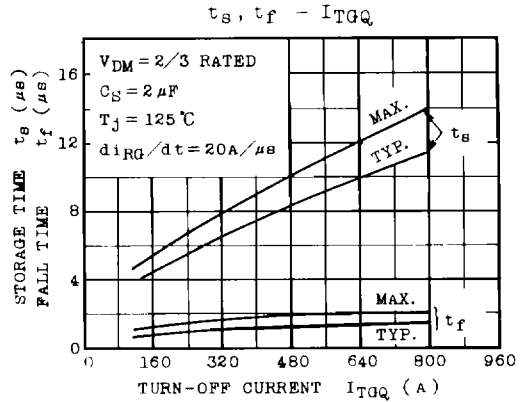
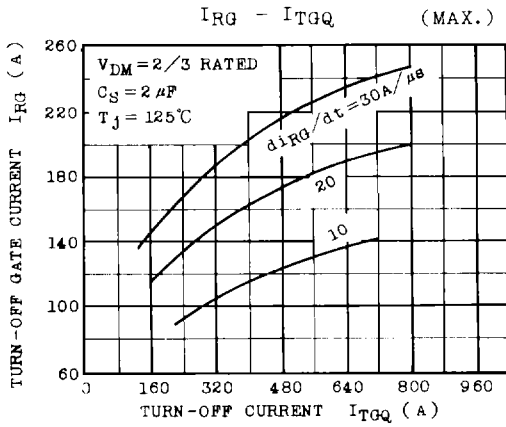


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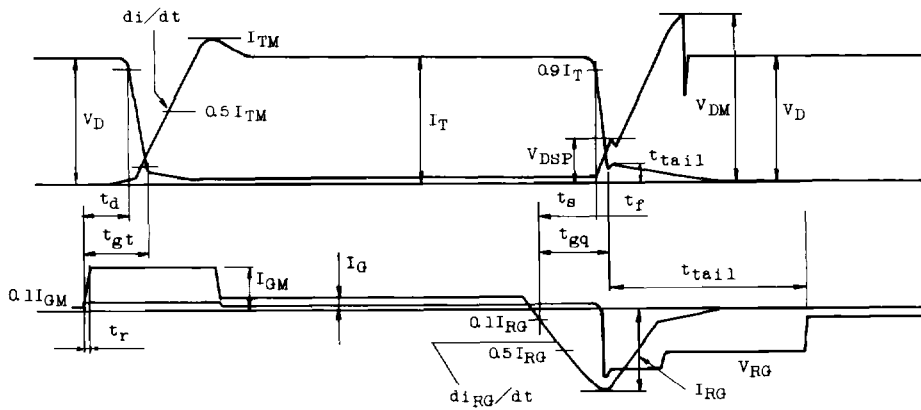
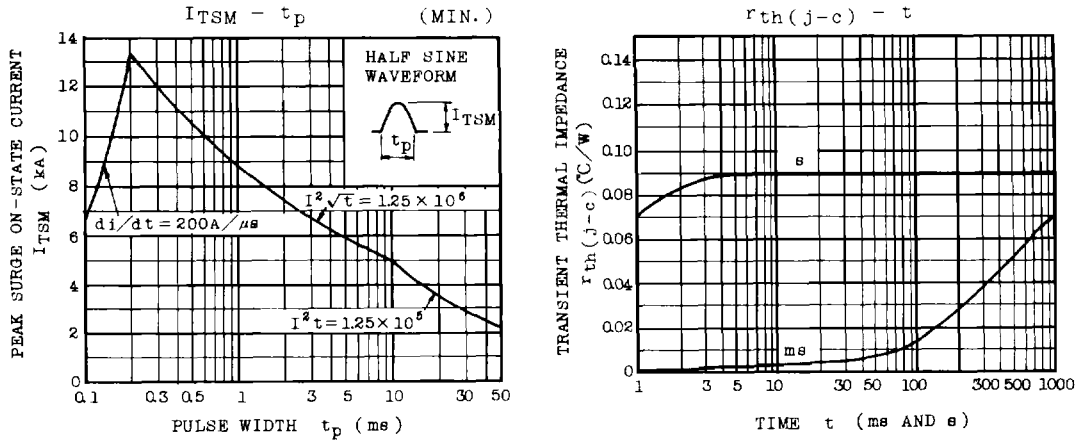


Fig. 1 TURN-ON AND TURN-OFF CHARACTERISTIC OF GTO