

(SG800R24)

**CHOPPER, INVERTER APPLICATION**

- Repetitive Peak Off-State Voltage :  $V_{DRM}=1300, 1600, 1800, 2500V$
- R.M.S On-State Current :  $I_T(RMS)=360A$
- 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 :  $dv/dt=1000V/\mu s$

**MAXIMUM RATINGS**

CHARACTERISTIC		SYMBOL	RATING	UNIT
Repetitive Peak Off-State Voltage (Note 1)	SG800R24	$V_{DRM}$	1300	V
	SG800U24		1600	
	SG800W24		1800	
	SG800EX24		2500	
Repetitive Peak Reverse Voltage		$V_{RRM}$	15	V
Peak Turn-Off Current (Note 2)		$I_{TGQM}$	800	A
R.M.S On-State Current (Note 3)		$I_T(RMS)$	360	A
Peak One Cycle Surge On-State Current (Non-Repetitive, 10ms-Width Half Sine Waveform)		$I_{TSM}$	4000	A
Critical Rate of Rise of On-State Current (Note 4)		$di/dt$	200	A / $\mu s$
Peak Forward Gate Current		$I_{FGM}$	30	A
Average Forward Gate Power Dissipation		$P_{FG(AV)}$	6	W
Average Reverse Gate Power Dissipation		$P_{RG(AV)}$	20	W
R.M.S Gate Current		$I_G(RMS)$	35	A
Peak Reverse Gate Voltage (at Static)		$V_{RGM}$	15	V
Operating Junction Temperature Range		$T_j$	-40~125	°C
Storage Temperature Range		$T_{stg}$	-40~150	°C
Mounting Force		—	6.9±0.69	kN

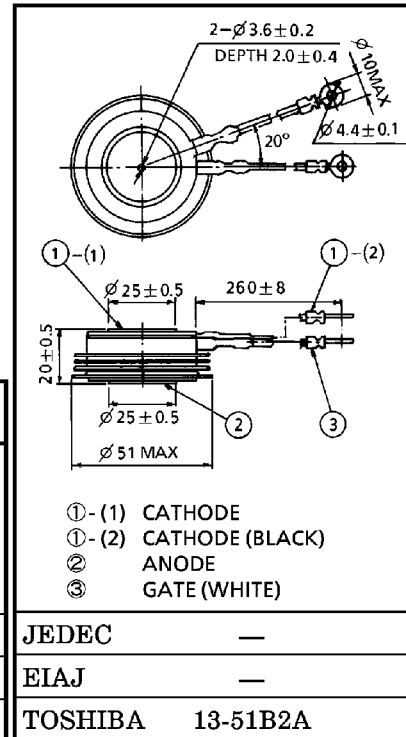
Note 1.  $R_{GK}=20\Omega$

Note 2.  $V_{DM}=2/3$  Rated,  $C_S=2\mu F$ ,  $R_S=20\Omega$ ,  $di_{GQ}/dt=20A/\mu s$ ,  $V_{DSP}\leq 450V$ ,  
 $L_S\leq 0.3\mu H$

Note 3. Half Sine Waveform,  $T_f=80^\circ C$

Note 4.  $V_D=1/2$  Rated,  $I_G=12A$

Unit in mm



Weight : 160g

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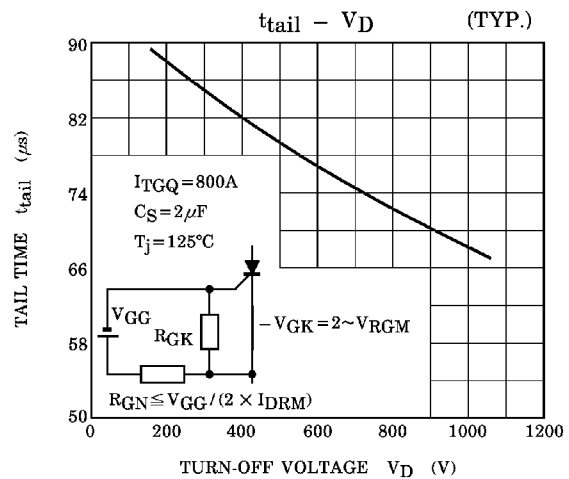
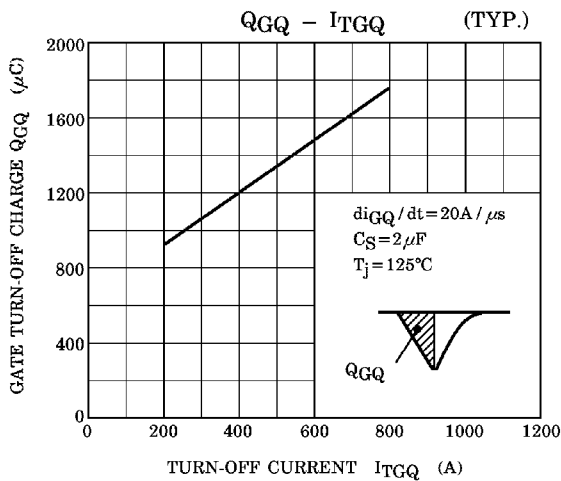
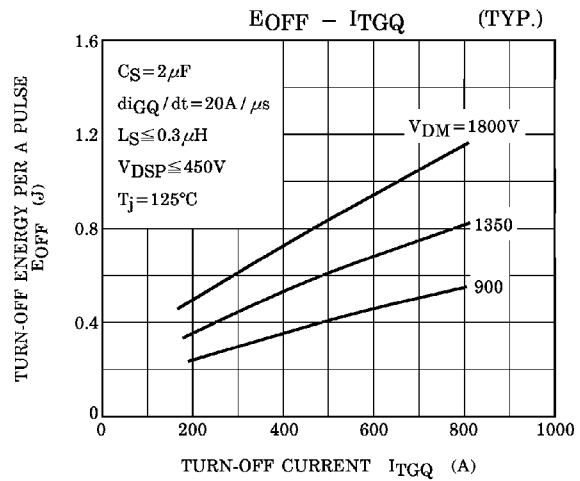
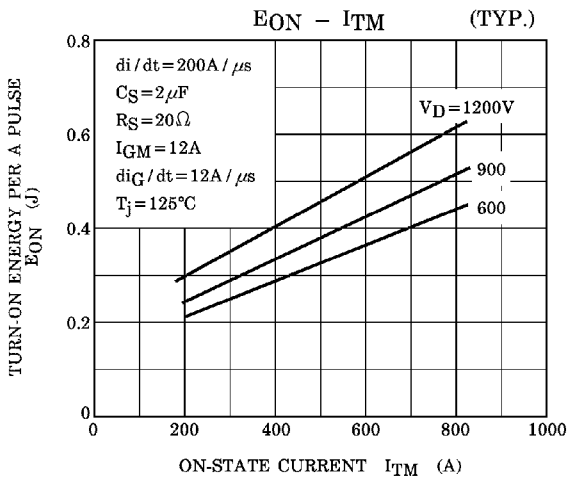
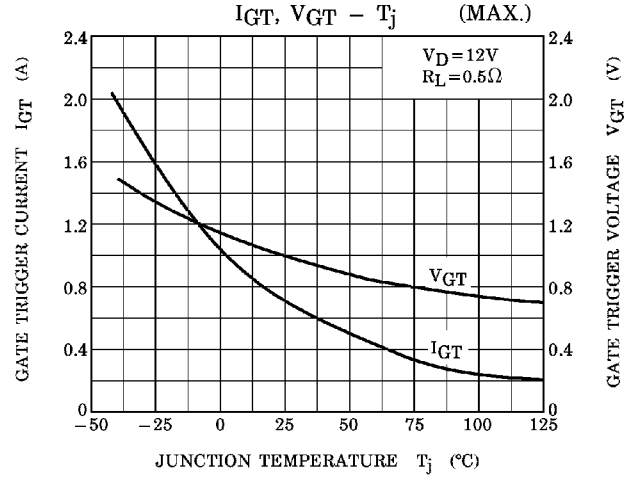
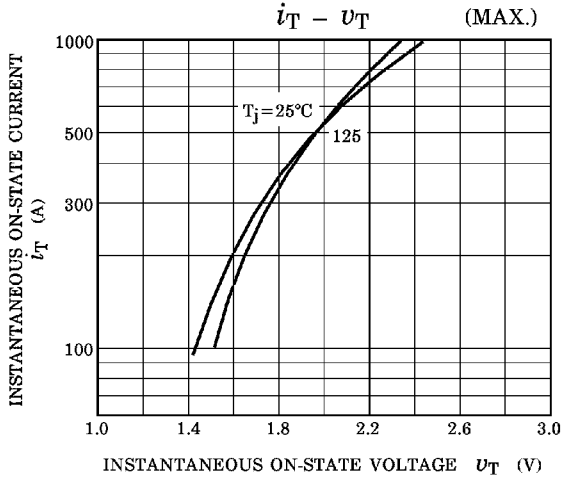
In developing your designs, please ensure that TOSHIBA products are used within specified operating ranges as set forth in the most recent products specifications. Also, please keep in mind the precautions and conditions set forth in the TOSHIBA Semiconductor Reliability Handbook.

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ELECTRICAL CHARACTERISTICS

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT	
Repetitive Peak Off-State Current	$I_{DRM}$	$V_{DRM} = \text{Rated}$ , $R_{GK} = 20\Omega$ , $T_j = 125^\circ\text{C}$	—	—	10	mA	
Repetitive Peak Reverse Current	$I_{RRM}$	$V_{RRM} = \text{Rated}$ , $T_j = 125^\circ\text{C}$	—	—	5	mA	
Repetitive Peak Reverse Gate Current	$I_{RGM}$	$V_{RGM} = \text{Rated}$ , $T_j = 125^\circ\text{C}$	—	—	5	mA	
Peak On-State Voltage	$V_{TM}$	$I_{TM} = 800\text{A}$ , $T_j = 125^\circ\text{C}$	—	—	2.8	V	
Gate Trigger Voltage	$V_{GT}$	$V_D = 12\text{V}$ , $R_L = 0.5\Omega$	$T_j = -40^\circ\text{C}$	—	—	1.5	V
			$T_j = 25^\circ\text{C}$	—	0.75	1.0	
Gate Trigger Current	$I_{GT}$		$T_j = -40^\circ\text{C}$	—	—	2.0	A
			$T_j = 25^\circ\text{C}$	—	—	0.7	
Turn-On Delay Time	$t_d$	$V_D = 1/2 \text{ Rated}$ , $di/dt = 200\text{A}/\mu\text{s}$ , $I_{TM} = 800\text{A}$ , $I_G = 12\text{A}$ , $t_r = 1\mu\text{s}$ , $T_j = 25^\circ\text{C}$	—	—	2.0	$\mu\text{s}$	
Turn-On Time	$t_{gt}$		—	—	6.0	$\mu\text{s}$	
Critical Rate of Rise of Off-State Voltage	$dv/dt$	$V_{DRM} = 2/3 \text{ Rated}$ , $T_j = 125^\circ\text{C}$ , $V_{GK} = -2\text{V}$ , Exponential Rise	1000	—	—	$\text{V}/\mu\text{s}$	
Storage Time	$t_s$	$I_T = 800\text{A}$ , $V_D = 1/2 \text{ Rated}$ , $V_{DM} = 2/3 \text{ Rated}$ , $C_S = 2\mu\text{F}$ , $R_S = 20\Omega$ , $R = 20\Omega$ , $di_{GQ}/dt = 20\text{A}/\mu\text{s}$ , $T_j = 125^\circ\text{C}$	—	—	14	$\mu\text{s}$	
Gate Turn-Off Time	$t_{gq}$		—	—	16	$\mu\text{s}$	
Tail Time	$t_{tail}$		—	—	76	$\mu\text{s}$	
Gate Turn-Off Current	$I_{GQ}$		—	180	—	A	
Thermal Resistance (Junction to Fin)	$R_{th(j-f)}$	DC	—	—	0.07	$^\circ\text{C}/\text{W}$	

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