

TOSHIBA GATE TURN-OFF THYRISTOR LOW SNUBBER TYPE

# SG1000GXH26

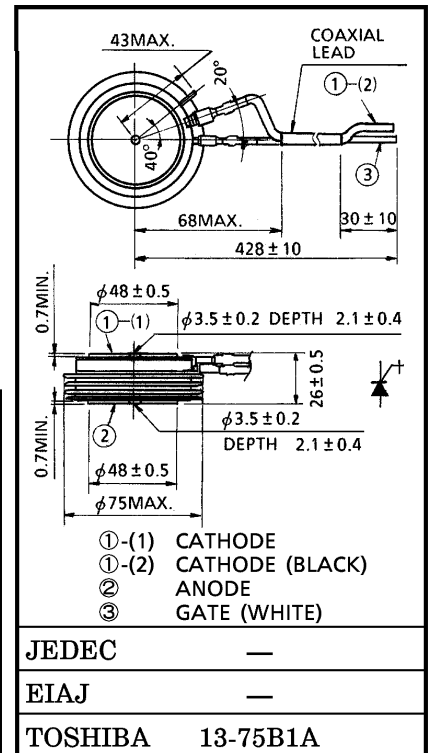
INVERTER APPLICATION

Unit in mm

- Repetitive Peak Off-State Voltage :  $V_{DRM} = 4500\text{ V}$
- R.M.S. On-State Current :  $I_T(\text{RMS}) = 500\text{ A}$
- Peak Turn-Off Current :  $I_{TGQM} = 1000\text{ A}$
- Critical Rate of Rise of On-State Current :  $di/dt = 600\text{ A}/\mu\text{s}$
- Critical Rate of Rise of Off-State Voltage :  $dv/dt = 1000\text{ V}/\mu\text{s}$

MAXIMUM RATINGS

CHARACTERISTIC	SYMBOL	RATING	UNIT
Repetitive Peak Off-state Voltage (Note 1)	$V_{DRM}$	4500	V
Repetitive Peak Reverse Voltage	$V_{RRM}$	16	V
Peak Turn-Off Current (Note 2)	$I_{TGQM}$	1000	A
R.M.S. On-State Current (Note 3)	$I_T(\text{RMS})$	500	A
Peak One Cycle Surge On-State Current (Non Repetitive, 10 ms-Width Half Sine Waveform)	$I_{TSM}$	8000	A
Critical Rate Of Rise Of On-State Current (Note 4)	$di/dt$	600	$\text{A}/\mu\text{s}$
Peak Gate Current	$I_{GM}$	450	A
Average Gate Power Dissipation	$P_G(\text{AV})$	80	W
R.M.S Gate Current (Note 5)	$I_G(\text{RMS})$	42	A
Peak Reverse Gate Voltage (at Static)	$V_{RGM}$	16	V
Operating Junction Temperature Range	$T_j$	-40~125	°C
Storage Temperature Range	$T_{stg}$	-40~150	°C
Mounting Force	—	$13.7 \pm 1.4$	kN



Weight : 520 g

- (Note 1) :  $V_{GK} \leq -2\text{ V}$
- (Note 2) :  $V_{DM} \leq 4000\text{ V}$ ,  $C_S \geq 0.7\ \mu\text{F}$ ,  $di_{GQ}/dt \geq 25\text{ A}/\mu\text{s}$ ,  $L_S \leq 0.2\ \mu\text{H}$  ( $V_{DSP} \leq 900\text{ V}$ )
- (Note 3) : 50 Hz Half Sine Waveform at  $T_f \leq 83^\circ\text{C}$
- (Note 4) :  $V_D \leq 2250\text{ V}$ ,  $I_{GM} \leq 20\text{ A}$  ( $t_r \leq 1\ \mu\text{s}$ )
- (Note 5) : Ambient Temperature of coaxial gate and cathode lead  $\leq 90^\circ\text{C}$

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## ELECTRICAL CHARACTERISTICS

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN	TYP.	MAX	UNIT	
Repetitive Peak Off-state Current	$I_{DRM}$	$V_{DRM} = 4500 \text{ V}$ , $V_{GK} = -2 \text{ V}$ , $T_j = 125^\circ\text{C}$	—	—	40	mA	
Repetitive Peak Reverse Current	$I_{RRM}$	$V_{RRM} = 16 \text{ V}$ , $T_j = 125^\circ\text{C}$	—	—	10	mA	
Repetitive Peak Reverse Gate Current	$I_{RGM}$	$V_{RGM} = 16 \text{ V}$ , $T_j = 125^\circ\text{C}$	—	—	10	mA	
Peak On-State Voltage	$V_{TM}$	$I_{TM} = 1000 \text{ A}$ , $T_j = 125^\circ\text{C}$	—	—	4.0	V	
Gate Trigger Voltage	$V_{GT}$	$V_D = 24 \text{ V}$ , $R_L = 0.1 \Omega$	$T_j = -40^\circ\text{C}$	—	—	1.7	V
			$T_j = 25^\circ\text{C}$	—	—	1.0	V
Gate Trigger Current	$I_{GT}$		$T_j = -40^\circ\text{C}$	—	—	6.0	A
			$T_j = 25^\circ\text{C}$	—	—	2.0	A
Turn-On Delay Time	$t_d$	$V_D = 2250 \text{ V}$ , $I_T = 1000 \text{ A}$ , $di/dt = 600 \text{ A}/\mu\text{s}$ ,	—	—	3.0	$\mu\text{s}$	
Turn-On Time	$t_{gt}$	$I_{GM} = 20 \text{ A}$ ( $t_r = 1 \mu\text{s}$ ), $T_j = 25^\circ\text{C}$	—	—	10.0	$\mu\text{s}$	
Critical Rate Of Rise Of Off-State Voltage	$dv/dt$	$V_{DRM} = 3000 \text{ V}$ , $V_{GK} = -2 \text{ V}$ , Exponential Rise, $T_j = 125^\circ\text{C}$	1000	—	—	$\text{V}/\mu\text{s}$	
Storage Time	$t_s$	$I_{TGQ} = 1000 \text{ A}$ , $V_D = 2250 \text{ V}$ ,	—	—	17	$\mu\text{s}$	
Gate Turn-Off Time	$t_{gq}$	$V_{DM} = 4000 \text{ V}$ , $C_s = 0.7 \mu\text{F}$ , $T_j = 125^\circ\text{C}$ ,	—	—	19	$\mu\text{s}$	
Gate Turn-Off Current	$I_{GQ}$	$di_{GQ}/dt = 25 \text{ A}/\mu\text{s}$ ,	—	350	—	A	
Tail Time	$t_{tail}$	Off Squeeze Current $\geq 500 \text{ mA}$	—	—	40	$\mu\text{s}$	
Thermal Resistance (Junction to Fin)	$R_{th(j-f)}$	DC	—	—	0.028	$^\circ\text{C}/\text{W}$	

