

TOSHIBA GATE TURN-OFF THYRISTOR LOW SNUBBER TYPE

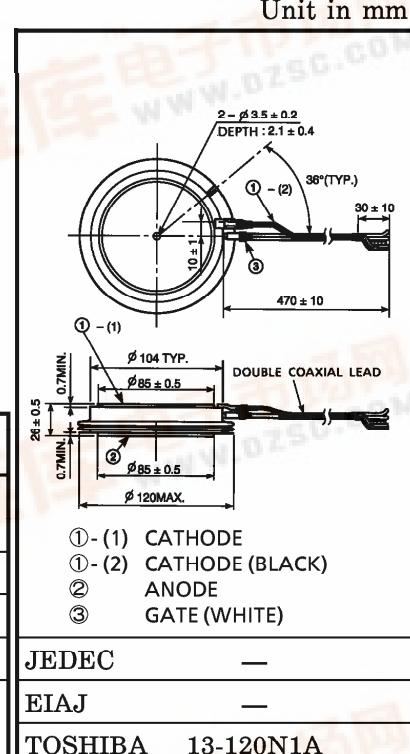
## SG4000EX26

## INVERTER APPLICATION

- Repetitive Peak Off-State Voltage :  $V_{DRM}=2500V$  (Note 1)
- R.M.S On-State Current :  $I_T(\text{RMS})=2000A$  ( $T_f=76^\circ\text{C}$ )
- Peak Turn-Off Current :  $I_{TGQM}=4000A$
- Critical Rate of Rise of On-State Current :  $di/dt=500A/\mu\text{s}$
- Critical Rate of Rise of Off-State Voltage :  $dv/dt=1000V/\mu\text{s}$

## MAXIMUM RATINGS

CHARACTERISTIC	SYMBOL	RATING	UNIT
Repetitive Peak Off-State Voltage (Note 1)	$V_{DRM}$	2500	V
Repetitive Peak Reverse Voltage	$V_{RRM}$	16	V
Peak Turn-Off Current (Note 2)	$I_{TGQM}$	4000	A
R.M.S On-State Current (Note 3)	$I_T(\text{RMS})$	2000	A
Peak One Cycle Surge On-State Current (Non Repetitive, 10ms-Width Half Sine Wave)	$I_{TSM}$	30000	A
Critical Rate of Rise of On-State Current (Note 4)	$di/dt$	500	$A/\mu\text{s}$
Peak Forward Gate Current	$I_{FGM}$	100	A
Average Forward Gate Power Dissipation	$P_{FG}(\text{AV})$	50	W
Average Reverse Gate Power Dissipation	$P_{RG}(\text{AV})$	300	W
R.M.S Gate Current (Note 5)	$I_G(\text{RMS})$	84	A
Peak Reverse Gate Voltage (at Static)	$V_{RGM}$	16	V
Operating Junction Temperature Range	$T_j$	$-40\sim125$	$^\circ\text{C}$
Storage Temperature Range	$T_{stg}$	$-40\sim150$	$^\circ\text{C}$
Mounting Force	—	$38.2\pm5.9$	kN



Weight : 1700g

Note 1  $V_{GK}=-2V$   
 Note 2  $V_{DM}=2500V$ ,  $C_S=6\mu\text{F}$ ,  $R_S=5\Omega$ ,  $di_{GQ}/dt=50A/\mu\text{s}$ ,  $V_{DSP}\leq1000V$ ,  $L_S\leq0.15\mu\text{H}$   
 Note 3 50Hz Half Sine Waveform at  $T_f=76^\circ\text{C}$   
 Note 4  $V_D=1/2V_{DRM}$ ,  $I_{GM}=25A$   
 Note 5 Ambient Temperature of coaxial gate-cathode lead=90°C

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## ELECTRICAL CHARACTERISTICS

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Repetitive Peak Off-State Current	$I_{DRM}$	$V_{DRM} = \text{RATED}$ , $V_{GK} = -2V$ , $T_j = 125^\circ\text{C}$	—	—	100	mA
Repetitive Peak Reverse Current	$I_{RRM}$	$V_{RRM} = \text{RATED}$ , $T_j = 125^\circ\text{C}$	—	—	10	mA
Repetitive Peak Reverse Gate Current	$I_{RGM}$	$V_{RGM} = 16V$ , $T_j = 125^\circ\text{C}$	—	—	10	mA
Peak On-State Voltage	$V_{TM}$	$I_{TM} = 4000A$ , $T_j = 125^\circ\text{C}$	—	—	3.5	V
Gate Trigger Voltage	$V_{GT}$	$V_D = 24V$ , $R_L = 0.1\Omega$	$T_j = -40^\circ\text{C}$	—	—	V
Gate Trigger Current	$I_{GT}$		$T_j = 25^\circ\text{C}$	—	1.50	
Turn-On Delay Time	$t_d$		$T_j = -40^\circ\text{C}$	—	—	A
Turn-On Time	$t_{gt}$		$T_j = 25^\circ\text{C}$	—	4.0	
Critical Rate of Rise of Off-State Voltage	$dv/dt$	$V_{DRM} = 2/3\text{RATED}$ , $T_j = 125^\circ\text{C}$ , $V_{GK} = -10V$	1000	—	—	V/ $\mu$ s
Storage Time	$t_s$	$IT_{GQ} = 4000A$ , $V_{DM} = 2500V$ , $V_D = 1/2V_{DRM}$ , $di_{GQ}/dt = 50A/\mu\text{s}$ , $C_S = 6\mu\text{F}$ , $R_S = 5\Omega$ , $T_j = 125^\circ\text{C}$ , $L_S \leq 0.15\mu\text{H}$	—	—	30	$\mu$ s
Gate Turn-Off Time	$t_{gq}$		—	—	32	$\mu$ s
Tail Time	$t_{tail}$		—	—	150	$\mu$ s
Gate Turn-Off Current	$I_{GQ}$		—	850	—	A
Thermal Resistance (Junction to Fin)	$R_{th(j-f)}$	DC	—	—	0.011	$^\circ\text{C}/\text{W}$