

TOSHIBA

SG3000JX26

TENTATIVE

TOSHIBA GATE TURN-OFF THYRISTOR

SG3000JX26

INVERTER APPLICATION

- Repetitive Peak Off-State Voltage : $V_{DRM} = 6000 \text{ V}$ (Note 1)
- Repetitive Peak Reverse Voltage : $V_{RRM} = 17 \text{ V}$
- R.M.S On-State Current : $I_T(\text{RMS}) = 1200 \text{ A}$
- Peak Turn-Off Current : $I_{TGQM} = 3000 \text{ A}$
- Critical Rate of Rise of On-State Current : $di/dt = 400 \text{ A}/\mu\text{s}$
- 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}	6000	V
Repetitive Peak Reverse Voltage	V_{RRM}	17	V
Peak Turn-Off Current (Note 2)	I_{TGQM}	3000	A
R.M.S On-State Current (Note 3)	$I_T(\text{RMS})$	1200	A
Peak One Cycle Surge On-State Current (Non Repetitive, 10 ms- Width Half Sine Waveform)	I_{TSM}	16000	A
Critical Rate of Rise of On-State Current (Note 4)	di/dt	400	$\text{A}/\mu\text{s}$
Peak Forward Gate Current	I_{FGM}	100	A
Average Gate Power Dissipation	$P_G(\text{AV})$	150	W
R.M.S Gate Current (Note 5)	$I_G(\text{RMS})$	42	A
Peak Reverse Gate Voltage (At Static)	V_{RGM}	17	V
Operation Junction Temperature Range	T_j	$-40 \sim 125$	$^{\circ}\text{C}$
Storage Temperature Range	T_{stg}	$-40 \sim 150$	$^{\circ}\text{C}$
Mounting Force	—	33.3 ± 4.9	kN

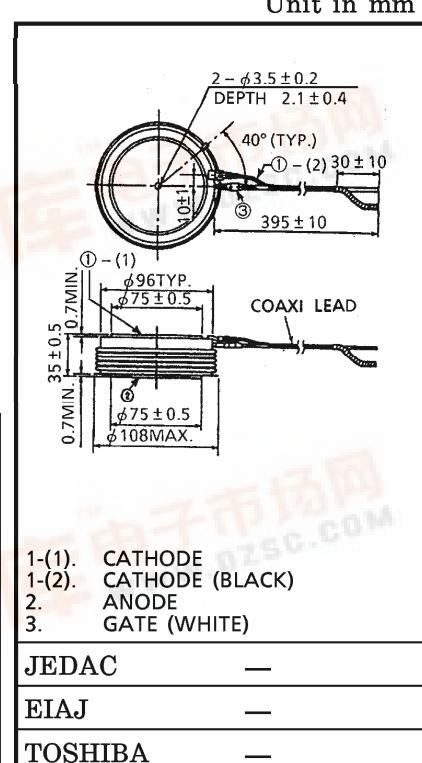
(Note 1) : $V_{GK} = -2 \text{ V}$ (Note 2) : $V_D = 3000 \text{ V}$, $V_{DM} \leq 5000 \text{ V}$, $C_S \geq 3 \mu\text{F}$, $di_{GQ}/dt \geq 40 \text{ A}/\mu\text{s}$, $V_{DSP} \leq 1000 \text{ V}$, $L_S \leq 0.2 \mu\text{H}$

(Note 3) : 50 Hz Half Sine Waveform

(Note 4) : $V_D \leq 4000 \text{ V}$, $I_{TM} \leq 3000 \text{ A}$, $I_G \geq 35 \text{ A}$ ($t_r \leq 1 \mu\text{s}$), $f \leq 50 \text{ Hz}$, $C_S \leq 6 \mu\text{F}$, $R_S \geq 5 \Omega$, $25^{\circ}\text{C} \leq T_j \leq 125^{\circ}\text{C}$ (Note 5) : Ambient Temperature of coaxial gate-cathode lead = 90°C

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1-(1). CATHODE
1-(2). CATHODE (BLACK)
2. ANODE
3. GATE (WHITE)

JEDAC —

EIAJ —

TOSHIBA —

Weight : 1700 g

ELECTRICAL CARACTERISTICS

CHARACTERISTICS	SYMBOL	TEST CONDITION	MIN	TYP.	MAX	UNIT	
Repetitive Peak Off-State Current	I_{DRM}	$V_{DRM} = 6000 \text{ V}$, $V_{GK} = -2 \text{ V}$ $T_j = 125^\circ\text{C}$	—	—	200	mA	
Repetitive Peak Reverse Current	I_{RRM}	$V_{RRM} = 17 \text{ V}$ $T_j = 125^\circ\text{C}$	—	—	10	mA	
Repetitive Peak Reverse Gate Current	I_{RGM}	$V_{RGM} = 17 \text{ V}$ $T_j = 125^\circ\text{C}$	—	—	10	mA	
Peak On-State Voltage	V_{TM}	$I_{TM} = 3000 \text{ A}$, $T_j = 125^\circ\text{C}$	—	—	4.3	V	
Gate Trigger Voltage	V_{GT}	$V_D = 24 \text{ V}$ $R_L = 0.1 \Omega$	$T_j = -40^\circ\text{C}$	—	—	2.5	
Gate Trigger Current	I_{GT}		$T_j = 25^\circ\text{C}$	—	—	1.5	
			$T_j = -40^\circ\text{C}$	—	—	A	
			$T_j = 25^\circ\text{C}$	—	—	3.5	
Turn-On Delay Time	t_d		—	—	3.0	μs	
Turn-On Time	t_{gt}	$I_{GM} = 35 \text{ A}$ ($t_r = 1 \mu\text{s}$) $T_j = 25^\circ\text{C}$, non-snubber	—	—	10	μs	
Critical Rate of Rise of Off-State Voltage	dv/dt	$V_{DRM} = 3000 \text{ V}$ $T_j = 125^\circ\text{C}$, $V_{GK} = -5 \text{ V}$ Exponential Rise	1350	—	—	$\text{V}/\mu\text{s}$	
Storage Time	t_s	$I_{TGQ} = 3000 \text{ A}$	—	—	30	μs	
Gate Turn-Off Time	t_{gq}	$V_{DM} = 5000 \text{ V}$, $T_j = 125^\circ\text{C}$	—	—	33	μs	
Tail Time	t_{tail}	$V_D = 3000 \text{ V}$, $C_S = 3 \mu\text{F}$ $di_{GQ}/dt = 50 \text{ A}/\mu\text{s}$	—	—	120	μs	
Gate Turn-Off Current	I_{GQ}	Off squeeze current $\geq 300 \text{ mA}$	—	—	850	A	
Thermal Resistance	$R_{th(j-f)}$	Junction to fin	—	—	0.017	$^\circ\text{C}/\text{W}$	

