

TOSHIBA**SG3000JX26**

TENTATIVE

TOSHIBA GATE TURN-OFF THYRISTOR

SG3000JX26

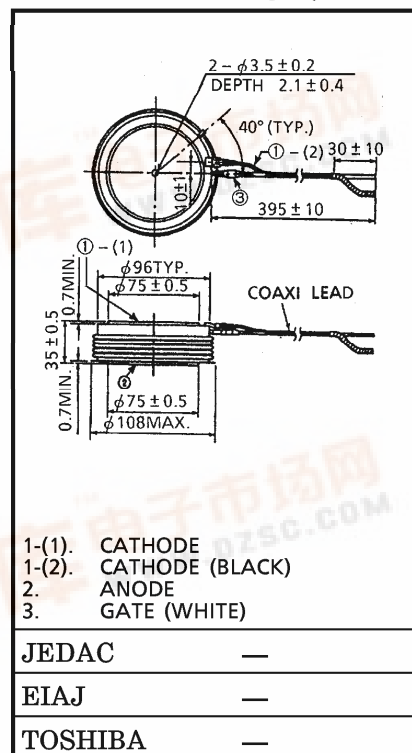
INVERTER APPLICATION

Unit in mm

- 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	A / μs
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	-40~125	°C
Storage Temperature Range	T_{stg}	-40~150	°C
Mounting Force	—	33.3 ± 4.9	kN



Weight : 1700 g

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

(Note 3) : 50 Hz Half Sine Waveform

(Note 4) : $V_D \leq 4000\text{ V}$, $I_{TM} \leq 3000\text{ A}$, $I_G \geq 35\text{ A}$ ($t_r \leq 1\text{ }\mu\text{s}$), $f \leq 50\text{ Hz}$, $C_S \leq 6\text{ }\mu\text{F}$, $R_S \geq 5\text{ }\Omega$, $25^\circ\text{C} \leq T_j \leq 125^\circ\text{C}$

(Note 5) : Ambient Temperature of coaxial gate-cathode lead = 90°C

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ELECTRICAL CHARACTERISTICS

CHARACTERISTICS	SYMBOL	TEST CONDITION	MIN	TYP.	MAX	UNIT
Repetitive Peak Off-State Current	I_{DRM}	$V_{\text{DRM}} = 6000 \text{ V}$, $V_{\text{GK}} = -2 \text{ V}$ $T_j = 125^\circ\text{C}$	—	—	200	mA
Repetitive Peak Reverse Current	I_{RRM}	$V_{\text{RRM}} = 17 \text{ V}$ $T_j = 125^\circ\text{C}$	—	—	10	mA
Repetitive Peak Reverse Gate Current	I_{RGM}	$V_{\text{RGM}} = 17 \text{ V}$ $T_j = 125^\circ\text{C}$	—	—	10	mA
Peak On-State Voltage	V_{TM}	$I_{\text{TM}} = 3000 \text{ A}$, $T_j = 125^\circ\text{C}$	—	—	4.3	V
Gate Trigger Voltage	V_{GT}	$V_{\text{D}} = 24 \text{ V}$ $R_{\text{L}} = 0.1 \Omega$	$T_j = -40^\circ\text{C}$	—	2.5	V
			$T_j = 25^\circ\text{C}$	—	1.5	V
Gate Trigger Current	I_{GT}		$T_j = -40^\circ\text{C}$	—	—	A
			$T_j = 25^\circ\text{C}$	—	3.5	A
Turn-On Delay Time	t_{d}	$V_{\text{D}} = 3000 \text{ V}$, $I_{\text{TM}} = 3000 \text{ A}$ $di/dt = 400 \text{ A}/\mu\text{s}$ $I_{\text{GM}} = 35 \text{ A}$ ($t_r = 1 \mu\text{s}$) $T_j = 25^\circ\text{C}$, non-snubber	—	—	3.0	μs
Turn-On Time	t_{gt}		—	—	10	μs
Critical Rate of Rise of Off-State Voltage	dv/dt	$V_{\text{DRM}} = 3000 \text{ V}$ $T_j = 125^\circ\text{C}$, $V_{\text{GK}} = -5 \text{ V}$ Exponential Rise	1350	—	—	$\text{V}/\mu\text{s}$
Storage Time	t_{s}	$I_{\text{TGQ}} = 3000 \text{ A}$ $V_{\text{DM}} = 5000 \text{ V}$, $T_j = 125^\circ\text{C}$ $V_{\text{D}} = 3000 \text{ V}$, $C_{\text{S}} = 3 \mu\text{F}$ $di_{\text{GQ}}/dt = 50 \text{ A}/\mu\text{s}$ Off squeeze current $\geq 300 \text{ mA}$	—	—	30	μs
Gate Turn-Off Time	t_{gq}		—	—	33	μs
Tail Time	t_{tail}		—	—	120	μs
Gate Turn-Off Current	I_{GQ}		—	—	850	A
Thermal Resistance	$R_{\text{th(j-f)}}$	Junction to fin	—	—	0.017	$^\circ\text{C}/\text{W}$

