

TOSHIBA GATE TURN-OFF THYRISTOR LOW SNUBBER TYPE

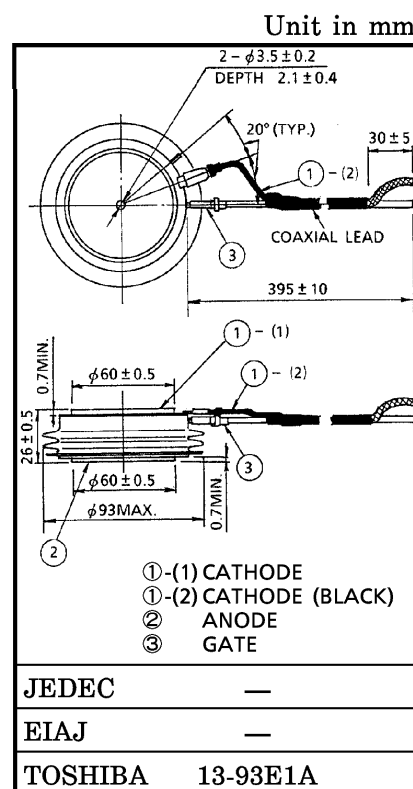
SG2000EX26

INVERTER APPLICATION

- Repetitive Peak Off-State Voltage : $V_{\text{DRM}} = 2500 \text{ V}$ (Note 1)
- R.M.S On-State Current : $I_{\text{T(RMS)}} = 1050 \text{ A}$
- Peak Turn-Off Current : $I_{\text{TGQM}} = 2000 \text{ A}$
- 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}	2500	V
Repetitive Peak Reverse Voltage	V _{RRM}	16	V
Peak Turn-Off Current (Note 2)	I _{TGQM}	2000	A
R.M.S On-State Current (Note 3)	I _{T (RMS)}	1050	A
Peak One Cycle Surge On-State Current (non repetitive, 10 ms- width half sine waveform)	I _{TSM}	18000	A
Critical Rate Of Rise Of On-State Current (Note 4)	di / dt	400	A / μ s
Peak Forward Gate Current	I _{FGM}	70	A
Average Forward Gate Power Dissipation	P _{FG (AV)}	14	W
Average Reverse Gate Power Dissipation	P _{RG (AV)}	120	W
R.M.S Gate Current (Note 5)	I _{G (RMS)}	42	A
Peak Reverse Gate Voltage (at Static)	V _{VRGM}	16	V
Operating Junction Temperature Range	T _j	-40~125	°C
Storage Temperature Range	T _{stg}	-40~150	°C
Mounting Force	—	19.6 ± 2.0	kN



Weight : 800 g

(Note 1) : $V_{GK} = -2\text{ V}$

(Note 2): $V_{DM} = V_{DRM}$, $C_S = 2 \mu F$, $R_S = 5 \Omega$, $di_{GQ}/dt = 40 A/\mu s$, $V_{DSP} \leq 700 V$, $L_S \leq 0.2 \mu H$

(Note 3) : 50 Hz Half Sine Waveform at $T_f = 80^\circ\text{C}$

(Note 4) : $V_D = 1/2 V_{D_{BM}}$, $I_{GM} = 30 \text{ A}$

(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}	$V_{\text{DRM}} = \text{RATED}$, $V_{\text{GK}} = -2 \text{ V}$, $T_j = 125^\circ\text{C}$	—	—	50	mA
Repetitive Peak Reverse Current	I_{RRM}	$V_{\text{RRM}} = \text{RATED}$, $T_j = 125^\circ\text{C}$	—	—	10	mA
Repetitive Peak Reverse Gate Current	I_{RGM}	$V_{\text{RGM}} = 16 \text{ V}$, $T_j = 125^\circ\text{C}$	—	—	10	mA
Peak On-State Voltage	V_{TM}	$I_{\text{TM}} = 2000 \text{ A}$, $T_j = 125^\circ\text{C}$	—	—	3.50	V
Gate Trigger Voltage	V_{GT}	$V_{\text{D}} = 24 \text{ V}$, $R_{\text{L}} = 0.1 \Omega$	$T_j = -40^\circ\text{C}$	—	1.50	V
			$T_j = 25^\circ\text{C}$	—	1.00	V
Gate Trigger Current	I_{GT}		$T_j = -40^\circ\text{C}$	—	9.0	A
			$T_j = 25^\circ\text{C}$	—	3.0	A
Turn-On Delay Time	t_{d}	$V_{\text{D}} = 1/2 V_{\text{DRM}}$, $di/dt = 400 \text{ A}/\mu\text{s}$, $I_{\text{GM}} = 30 \text{ A}$, $I_{\text{T}} = 2000 \text{ A}$, $T_j = 25^\circ\text{C}$	—	—	2.0	μs
Turn-On Time	t_{gt}		—	—	8.0	μs
Critical Rate Of Rise Of Off-State Voltage	dv/dt	$V_{\text{DRM}} = 2/3 \text{ RATED}$, $T_j = 125^\circ\text{C}$, $V_{\text{GK}} = -2 \text{ V}$, Exponential Rise	1000	—	—	$\text{V}/\mu\text{s}$
Storage Time	t_{s}	$I_{\text{TGQ}} = 2000 \text{ A}$, $V_{\text{DM}} = V_{\text{DRM}}$, $R_{\text{S}} = 5 \Omega$, $V_{\text{D}} = 1/2 V_{\text{DRM}}$, $di_{\text{GQ}}/dt = 40 \text{ A}/\mu\text{s}$, $C_{\text{S}} = 2 \mu\text{F}$, $V_{\text{DSP}} \leq 700 \text{ V}$, $T_j = 125^\circ\text{C}$, $L_{\text{S}} \leq 0.2 \mu\text{H}$	—	—	20	μs
Gate Turn-Off Time	t_{gq}		—	—	23	μs
Tail Time	t_{tail}		—	60	—	μs
Gate Turn-Off Current	I_{GQ}		—	450	—	A
Thermal Resistance (Junction to Fin)	$R_{\text{th(j-f)}}$	DC	—	—	0.018	$^\circ\text{C}/\text{W}$

