

TENTATIVE

TOSHIBA GATE TURN-OFF THYRISTOR

SG3000GXH23G

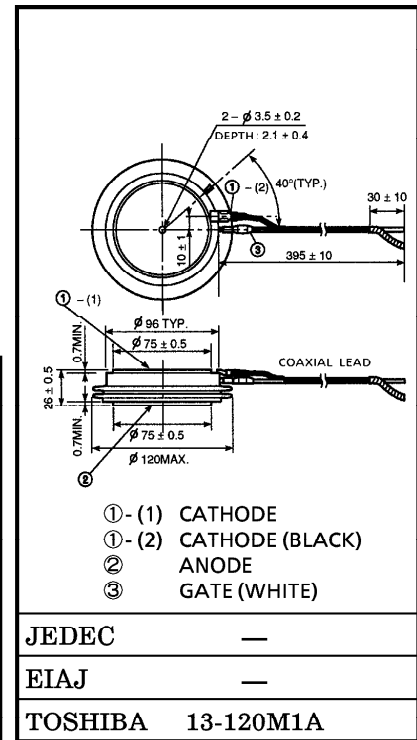
INVERTER APPLICATION

Unit in mm

- Repetitive Peak Off-State Voltage : $V_{DRM}=4500V$
- R.M.S On-State Current : $I_T(RMS)=1200A$
- Peak Turn-Off Current : $I_{TGQM}=3000A$
- Critical Rate of Rise of On-State Current : $di/dt=400A/\mu s$
- Critical Rate of Rise of Off-State Voltage : $dv/dt=1000V/\mu s$
- Suitable for 3000V DC Off-State Voltage Application

MAXIMUM RATINGS

CHARACTERISTIC	SYMBOL	RATING	UNIT
Repetitive Peak Off-State Voltage (Note 1)	V_{DRM}	4500	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)	$I_T(RMS)$	1200	A
Peak One Cycle Surge On-State Current (Non Repetitive, 10ms-Width Half Sine Waveform)	I_{TSM}	19000	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 Forward Gate Power Dissipation	$P_{FG}(AV)$	50	W
Average Reverse Gate Power Dissipation	$P_{RG}(AV)$	150	W
R.M.S Gate Current (Note 5)	$I_G(RMS)$	42	A
Peak Reverse Gate Voltage (at Static)	V_{RGM}	17	V
Operating Junction Temperature Range	T_j	-40~125	°C
Storage Temperature Range	T_{stg}	-40~150	°C
Mounting Force	—	28.5~44.0	kN

Note 1 : $V_{GK} = -2V$ Note 2 : $V_{DM}=4500V$, $C_S \geq 3\mu F$, $R_S=5\Omega$, $di_{GQ}/dt=50A/\mu s$, $V_{DSP} \leq 850V$,
 $L_S=200nH$ (Stray inductance of snubber [GTO-C_S-D_S] loop)Note 3 : 50Hz Half Sine Waveform at $T_f=76^\circ C$ Note 4 : $V_D=3000V$, $I_{GM} \geq 25A$ Note 5 : Ambient Temperature of coaxial Gate-Cathode lead = $90^\circ C$ 

Weight : 1500g

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ELECTRICAL CHARACTERISTICS

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Repetitive Peak Off-State Current	I_{DRM}	$V_{\text{DRM}} = 4500\text{V}$, $V_{\text{GK}} = -2\text{V}$, $T_j = 125^\circ\text{C}$	—	—	100	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}	$I_{\text{TM}} = 3000\text{A}$, $T_j = 125^\circ\text{C}$	—	—	4.0	V
Gate Trigger Voltage	V_{GT}	$V_{\text{D}} = 24\text{V}$, $R_{\text{L}} = 0.1\Omega$	$T_j = -40^\circ\text{C}$	—	—	V
			$T_j = 25^\circ\text{C}$	—	1.5	
Gate Trigger Current	I_{GT}		$T_j = -40^\circ\text{C}$	—	—	A
			$T_j = 25^\circ\text{C}$	—	1.8	
Turn-On Delay Time	t_{d}	$V_{\text{D}} = 3000\text{V}$, $di/dt = 400\text{A}/\mu\text{s}$, $I_{\text{TM}} = 3000\text{A}$, $I_{\text{GM}} = 25\text{A}$, $T_j = 25^\circ\text{C}$	—	—	3	μs
Turn-On Time	t_{gt}		—	—	10	μs
Critical Rate of Rise of Off-State Voltage	dv/dt	$V_{\text{D}} = 3000\text{V}$, $V_{\text{GK}} = -2\text{V}$, Exponential Rise, $T_j = 125^\circ\text{C}$	1000	—	—	$\text{V}/\mu\text{s}$
Storage Time	t_{s}	$I_{\text{TGQ}} = 3000\text{A}$, $V_{\text{DM}} = 4500\text{V}$, $C_{\text{S}} = 6\mu\text{F}$, $V_{\text{D}} \leq 3000\text{V}$, $R_{\text{S}} = 5\Omega$, $di_{\text{GQ}}/dt = 50\text{A}/\mu\text{s}$, $T_j = 125^\circ\text{C}$, $V_{\text{DSP}} \leq 850\text{V}$	—	—	30	μs
Gate Turn-Off Time	t_{gq}		—	—	33	μs
Tail Time	t_{tail}		—	—	115	μs
Gate Turn-Off Current	I_{GQ}		—	—	770	A
Thermal Resistance	$R_{\text{th(j-f)}}$	(Junction to Fin)	—	—	0.014	$^\circ\text{C}/\text{W}$

(Note) The switching loss value is different from SG3000GXH29.

E_{OFF} is about 0.7 times as SG3000GXH29.

E_{ON} is same as SG3000GXH29.