

TOSHIBA GATE TURN-OFF THYRISTOR LOW SNUBBER TYPE

SG4000GXH26

INVERTER APPLICATION

- Repetitive Peak Off-State Voltage : $V_{DRM} = 4500\text{ V}$
- R.M.S On-State Current : $I_T(\text{RMS}) = 1900\text{ A}$
- Peak Turn-Off Current : $I_{TGQM} = 4000\text{ A}$
- Critical Rate of Rise of On-State Current : $di/dt = 500\text{ A}/\mu\text{s}$
- 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}	4500	V
Repetitive Peak Reverse Voltage	V_{RRM}	16	V
Peak Turn-Off Current (Note 2)	I_{TGQM}	4000 (6 μF) 3000 (3 μF)	A
R.M.S On-State Current (Note 3)	$I_T(\text{RMS})$	1900	A
Peak One Cycle Surge On-State Current (non repetitive, 10 ms width half sine waveform)	I_{TSM}	20000	A
Critical Rate Of Rise Of On-State Current (Note 4)	di/dt	500	A / μs
Peak Forward Gate Current	I_{FGM}	100	A
Average Forward Gate Power Dissipation	$P_{FG(AV)}$	100	W
Average Reverse Gate Power Dissipation	$P_{RG(AV)}$	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	-40~125	$^{\circ}\text{C}$
Storage Temperature Range	T_{stg}	-40~150	$^{\circ}\text{C}$
Mounting Force	—	38.7 ± 5.4	kN

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

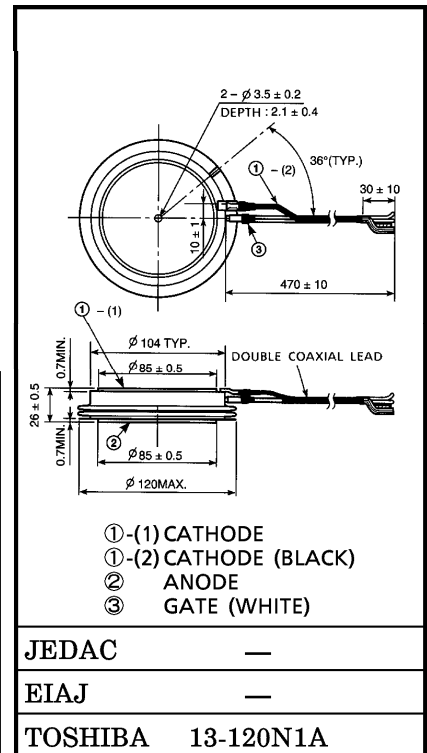
(Note 2) : $V_{DM} = 4000\text{ V}$, $R_S = 5\ \Omega$, $di_{GQ}/dt = 50\text{ A}/\mu\text{s}$, $V_{DSP} \leq 1000\text{ V}^*$, $L_S \leq 0.2\ \mu\text{H}$
 *FOR 3 μF -3000 A, 1200 V FOR 6 μF -4000 A

(Note 3) : 50 Hz Half Sine Waveform at $T_f = 71^{\circ}\text{C}$

(Note 4) : $V_D = 1/2 V_{DRM}$, $I_{GM} = 25\text{ A}$

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

Unit in mm



JEDAC	—
EIAJ	—
TOSHIBA	13-120N1A

Weight : 1700 g

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ELECTRICAL CHARACTERISTICS

CHARACTERISTICS	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT	
Repetitive Peak Off-State Current	I_{DRM}	$V_{DRM} = \text{RATED}, V_{GK} = -2 \text{ V}, T_j = 125^\circ\text{C}$	—	—	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}	$V_{RGM} = 16 \text{ V}, T_j = 125^\circ\text{C}$	—	—	10	mA	
Peak On-State Voltage	V_{TM}	$I_{TM} = 4000 \text{ A}, T_j = 125^\circ\text{C}$	—	—	4.0	V	
Gate Trigger Voltage	V_{GT}	$V_D = 24 \text{ V}, R_L = 0.1 \Omega$	$T_j = -40^\circ\text{C}$	—	—	1.7	V
			$T_j = 25^\circ\text{C}$	—	—	15	
Gate Trigger Current	I_{GT}		$T_j = 0^\circ\text{C}$	—	—	10	A
			$T_j = 25^\circ\text{C}$	—	—	4	
Turn-On Delay Time	t_d	$V_D = 1/2 V_{DRM}, di/dt = 500 \text{ A}/\mu\text{s},$	—	—	3	μs	
Turn-On Time	t_{gt}	$I_{GM} = 25 \text{ A}, T_j = 25^\circ\text{C}$	—	—	10		
Critical Rate of Rise of Off-State Voltage	dv/dt	$V_{DRM} = 2/3 \text{ RATED}, T_j = 125^\circ\text{C}, V_{GK} = -10 \text{ V}$	1000	—	—	$\text{V}/\mu\text{s}$	
Storage Time	t_s	$I_{TGQ} = 4000 \text{ A}, V_{DM} = 4000 \text{ V},$	—	—	30	μs	
Gate Turn-Off Time	t_{gq}	$V_D = 1/2 V_{DRM},$	—	—	32		
Tail Time	t_{tail}	$di_{GQ}/dt = 50 \text{ A}/\mu\text{s}, C_S = 6 \mu\text{F}, R_S = 5 \Omega,$	—	—	150		
Gate Turn-Off Current	I_{GQ}	$T_j = 125^\circ\text{C}, L_S \leq 0.2 \mu\text{H}$	—	850	—	A	
Thermal Resistance (Junction to Fin)	$R_{th(j-f)}$	DC	—	—	0.011	$^\circ\text{C}/\text{W}$	

