

TOSHIBA GATE TURN-OFF THYRISTOR

SG2500GXH24

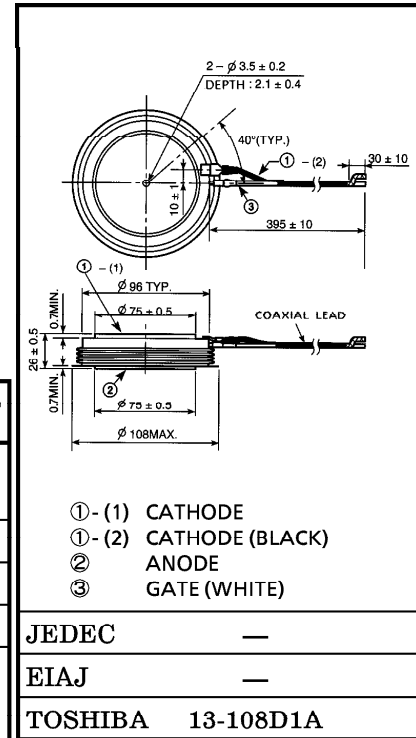
INVERTER APPLICATION

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 : $I_{TGQM}=2500A$
- Critical Rate of Rise of On-State Current : $di/dt=400A/\mu s$
- Critical Rate of Rise of Off-State Voltage : $dv/dt=1000V/\mu s$

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}	2500	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}	16000	A
Critical Rate of Rise of On-State Current (Note 4)	di/dt	400	A
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}	16	V
Operating Junction Temperature Range	T_j	-40~125	°C
Storage Temperature Range	T_{stg}	-40~150	°C
Mounting Force	—	33.3 ± 4.9	kN



Weight : 1290g

Note 1 $V_{GK} = -2V$

Note 2 $V_{DM}=4500V$, $C_S=6\mu F$, $R_S=5\Omega$, $di_{GQ}/dt=50A/\mu s$, $V_{DSP} \leq 850V$, $L_S \leq 0.3\mu H$

Note 3 50Hz Half Sine Waveform at $T_f=77^\circ C$

Note 4 $V_D=1/2V_{DRM}$, $I_{GM}=25A$

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}	$V_{DRM} = \text{Rated}$, $V_{GK} = -2V$, $T_j = 125^\circ C$	—	—	100	mA	
Repetitive Peak Reverse Current	I_{RRM}	$V_{RRM} = \text{Rated}$, $T_j = 125^\circ C$	—	—	10	mA	
Repetitive Peak Reverse Gate Current	I_{RGM}	$V_{RGM} = 16V$, $T_j = 125^\circ C$	—	—	10	mA	
Peak On-State Voltage	V_{TM}	$I_{TM} = 2500A$, $T_j = 125^\circ C$	—	—	3.4	V	
Gate Trigger Voltage	V_{GT}	$V_D = 24V$, $R_L = 0.1\Omega$	$T_j = -40^\circ C$	—	—	1.7	V
	$T_j = 25^\circ C$		—	—	1.5		
Gate Trigger Current	I_{GT}		$T_j = -40^\circ C$	—	—	8.5	A
			$T_j = 25^\circ C$	—	—	3.5	
Turn-On Delay Time	t_d	$V_D = 1/2 V_{DRM}$, $I_{TM} = 2500A$, $di/dt = 400A/\mu s$, $I_{GM} = 25A$, $T_j = 25^\circ C$	—	—	3	μs	
Turn-On Time	t_{gt}		—	—	10	μs	
Critical Rate of Rise of Off-State Voltage	dv/dt	$V_{DRM} = 2/3 \text{ RATED}$, Exponential Rise, $T_j = 125^\circ C$, $V_{GK} = -2V$	1000	—	—	$V/\mu s$	
Storage Time	t_s	$I_{TGQ} = 2500A$, $V_{DM} = 4500V$, $V_D = 1/2 V_{DRM}$, $di_{GQ}/dt = 50A/\mu s$, $C_S = 6\mu F$, $R_S = 5\Omega$, $T_j = 125^\circ C$, $L_S \leq 0.3\mu H$	—	—	23	μs	
Gate Turn-Off Time	t_{gq}		—	—	25	μs	
Tail Time	t_{tail}		—	—	70	μs	
Gate Turn-Off Current	I_{GQ}		—	650	—	A	
Thermal Resistance (Junction to Fin)	$R_{th(j-f)}$		DC	—	—	0.016	$^\circ C/W$

