

TOSHIBA GATE TURN-OFF THYRISTOR

**SG2500GXH24**

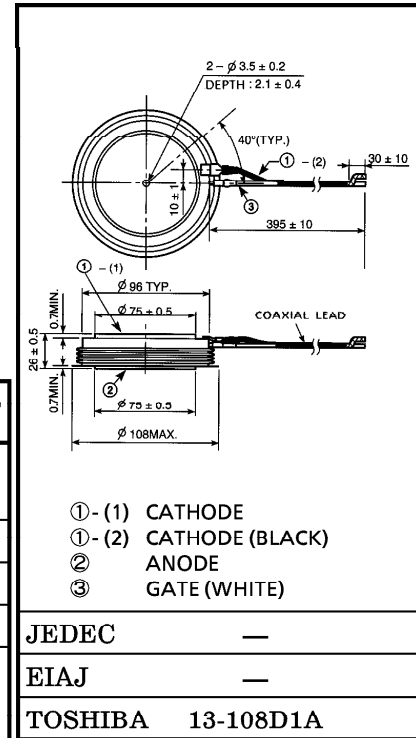
INVERTER APPLICATION

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	—	$33.3 \pm 4.9$	kN



JEDEC	—
EIAJ	—
TOSHIBA	13-108D1A

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= $90^\circ C$

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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	$\mu s$	
Turn-On Time	$t_{gt}$		—	—	10	$\mu s$	
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	$t_s$	$I_{TGQ} = 2500A$ , $V_{DM} = 4500V$ ,	—	—	23	$\mu s$	
Gate Turn-Off Time	$t_{gq}$	$V_D = 1/2 V_{DRM}$ , $di_{GQ}/dt = 50A/\mu s$ ,	—	—	25	$\mu s$	
Tail Time	$t_{tail}$	$C_S = 6\mu F$ , $R_S = 5\Omega$ ,	—	—	70	$\mu s$	
Gate Turn-Off Current	$I_{GQ}$	$T_j = 125^\circ C$ , $L_S \leq 0.3\mu H$	—	650	—	A	
Thermal Resistance (Junction to Fin)	$R_{th(j-f)}$	DC	—	—	0.016	$^\circ C/W$	

