

TOSHIBA GATE TURN-OFF THYRISTOR

SG2200FXF24, SG2200GXH24

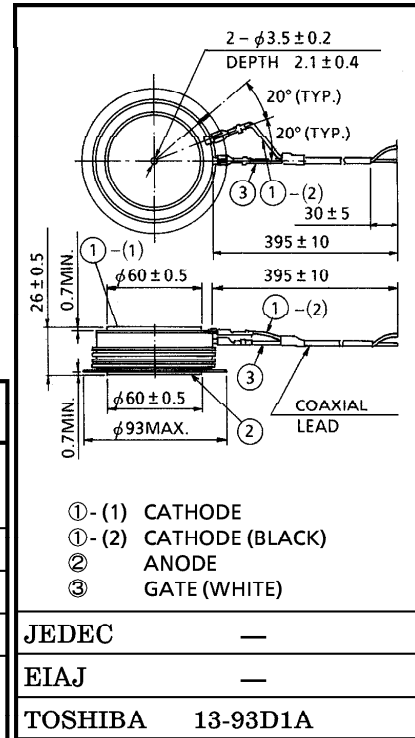
INVERTER APPLICATION

Unit in mm

- Repetitive Peak Off-State Voltage : $V_{DRM}=4500V, 3300V$
- R.M.S On-State Current : $I_T(RMS)=1000A$
- Peak Turn-Off Current : $I_{TGQM}=2200A$
- 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)	SG2200FXF24	V_{DRM}	3300	V
	SG2200GXH24		4500	
Repetitive Peak Reverse Voltage		V_{RRM}	16	V
Peak Turn-Off Current (Note 2)		I_{TGQM}	2200	A
R.M.S On-State Current (Note 3)		$I_T(RMS)$	1000	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 / μs
Peak Forward Gate Current		I_{FGM}	100	A
Average Forward Gate Power Dissipation		$P_{FG(AV)}$	50	W
Average Reverse Gate Power Dissipation		$P_{RG(AV)}$	120	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		—	20.6±2.9	kN



Weight : 800g

- Note 1 $V_{GK} = -2V$
- Note 2 $V_{DM} = V_{DRM}, C_S = 4\mu F, R_S = 5\Omega, di_{GQ}/dt = 35A/\mu s, V_{DSP} \leq 650V, L_S \leq 0.3\mu H$
- Note 3 50Hz Half Sine Waveform at $T_f = 76^\circ C$
- Note 4 $V_D = 1/2 V_{DRM}, I_{GM} = 25A$
- 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}	$I_{TM} = 2200A, T_j = 125^\circ C$	—	—	3.5	V	
Gate Trigger Voltage	V_{GT}	$V_D = 24V, R_L = 0.1\Omega$	$T_j = -40^\circ C$	—	—	1.7	V
			$T_j = 25^\circ C$	—	—	1.2	
Gate Trigger Current	I_{GT}		$T_j = -40^\circ C$	—	—	7.5	A
			$T_j = 25^\circ C$	—	—	3.0	
Turn-On Delay Time	t_d	$V_D = 1/2V_{DRM}, di/dt = 400A/\mu s, I_{GM} = 25A, T_j = 25^\circ C$	—	—	3	μs	
Turn-On Time	t_{gt}		—	—	10	μs	
Critical Rate of Rise of Off-State Voltage	dv/dt	$V_{DRM} = 2/3\text{RATED}, \text{Exponential Rise}, T_j = 125^\circ C, V_{GK} = -2V$	1000	—	—	$V/\mu s$	
Storage Time	t_s	$I_{TGQ} = 2200A, V_{DM} = V_{DRM}, V_D = 1/2V_{DRM}, di_{GQ}/dt = 35A/\mu s, C_S = 4\mu F, R_S = 5\Omega, T_j = 125^\circ C, L_S \leq 0.3\mu H$	—	—	23	μs	
Gate Turn-Off Time	t_{gq}		—	—	25	μs	
Tail Time	t_{tail}		—	100	—	μs	
Gate Turn-Off Current	I_{GQ}		—	520	—	A	
Thermal Resistance (Junction to Fin)	$R_{th(j-f)}$	DC	—	—	0.020	$^\circ C/W$	

