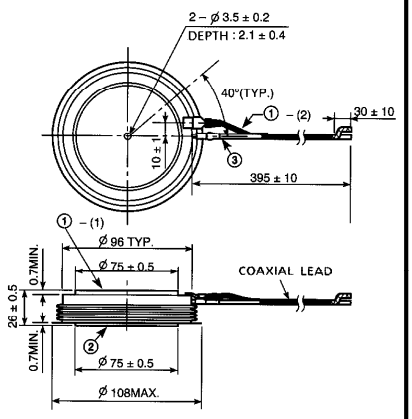
TOSHIBA GATE TURN-OFF THYRISTOR LOW SNUBBER TYPE

SG4000GXH26G

INVERTER APPLICATION

Unit in mm

- Repetitive Peak off-state Voltage : V_{DRM} = 4500 V (Note 1)
- R.M.S On-State Current : $I_{T(RMS)}$ = 1200 A (T_f = 76°C)
- Peak Turn-Off Current : I_{TGQM} = 4000 A
- Critical Rate of Rise of On-State Current : di / dt = 500 A / μs
- Critical Rate of Rise of off-State Voltage : dv / dt = 1000 V / μs



①-(1) CATHODE
①-(2) CATHODE(BLACK)
② ANODE
③ GATE(WHITE)

JEDAC	—
EIAJ	—
TOSHIBA	13-108D1A

Weight : 1290 g

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)	$I_{T(RMS)}$	1200	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	$P_{FG(AV)}$	50	W
Average Reverse Gate Power Dissipation	$P_{RG(AV)}$	250	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

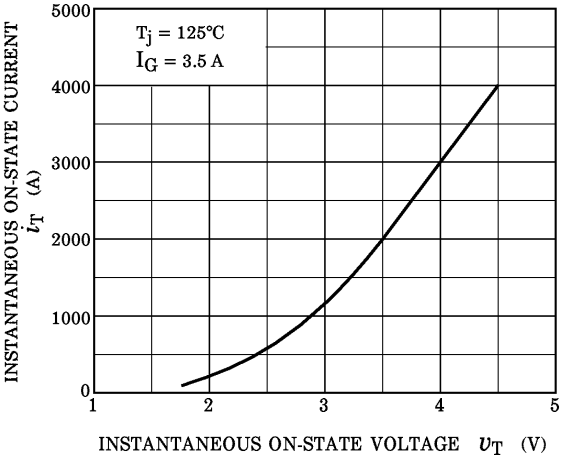
(Note 1) : V_{GK} = −2 V
(Note 2) : V_{DM} = 4000 V, C_S = 6 μF or 3 μF, R_S = 5 Ω, di_{GQ} / dt = 50 A / μs,
$V_{DSP} \leqq$ 1000 V*, $L_S \leqq$ 0.2 μH *FOR 3 μF-3000 A, 1200 V FOR 6 μF-4000 A
(Note 3) : 50 Hz Half Sine Waveform at Tf = 76°C
(Note 4) : $V_D = 1/2\,V_{DRM}$, I_{GM} = 25 A
(Note 5) : Ambient Temperature of coaxial gate-cathode lead = 90°C

961001EAA2

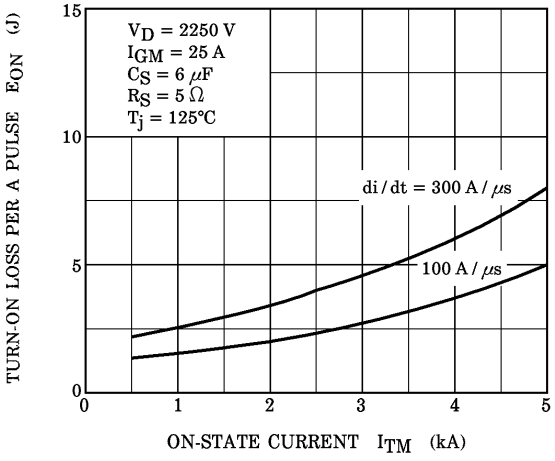
ELECTRICAL CARACTERISTICS

CHARACTERISTICS	SYMBOL	TEST CONDITION		MIN.	TYP.	MAX.	UNIT
Repetitive Peak Off-State Current	I_{DRM}	V_{DRM} = RATED, V_{GK} = −2 V, T_j = 125°C		—	—	100	mA
Repetitive Peak Reverse Current	I_{RRM}	V_{RRM} = RATED, T_j = 125°C		—	—	10	mA
Repetitive Peak Reverse Gate Current	I_{RGM}	V_{RGM} = 16 V, T_j = 125°C		—	—	10	mA
Peak On-State Voltage	V_{TM}	I_{TM} = 3000 A, T_j = 125°C		—	—	4.0	V
Gate Trigger Voltage	V_{GT}	V_D = 24 V, R_L = 0.1 Ω	T_j = −40°C	—	—	1.70	V
			T_j = 25°C	—	—	1.50	
Gate Trigger Current	I_{GT}		T_j = 0°C	—	—	8.5	A
			T_j = 25°C	—	—	3.5	
Turn-On Delay Time	t_d	V_D = 1 / 2 V_{DRM}, di / dt = 500 A / μs, I_{GM} = 25 A, T_j = 25°C		—	—	3	μs
Turn-On Time	t_{gt}			—	—	10	
Critical Rate of Rise of Off-State Voltage	dv / dt	V_{DRM} = 2 / 3 RATED, T_j = 125°C, V_{GK} = −2 V		1000	—	—	V / μs
Storage Time	t_s	I_{TGQ} = 4000 A, V_{DM} = 4000 V, V_D = 2250 V, di_{GQ} / dt = 50 A / μs, C_S = 6 μF, R_S = 5 Ω, T_j = 125°C, L_S ≦ 0.2 μH		—	—	30	μs
Gate Turn-Off Time	t_{gq}			—	—	32	
Tail Time	t_{tail}			—	—	150	
Gate Turn-Off Current	I_{GQ}			—	850	—	A
Thermal Resistance (Junction to Fin)	$R_{th\ (j\text{-}f)}$	DC		—	—	0.014	°C / W

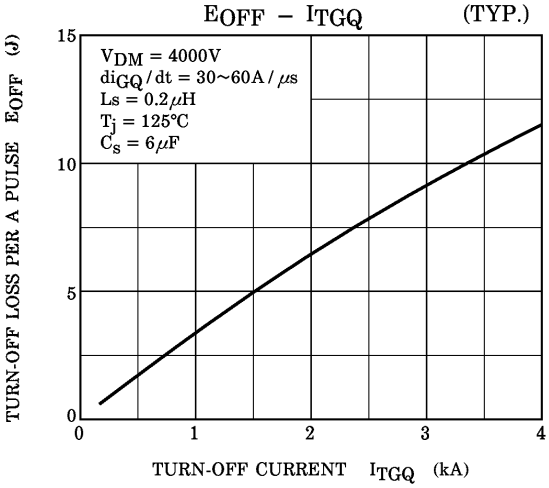
$i_T - v_T$ (MAX.)



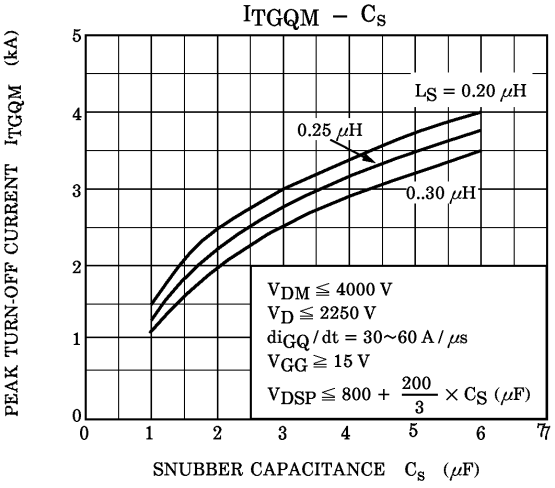
$E_{ON} - I_{TM}$ (TYP.)



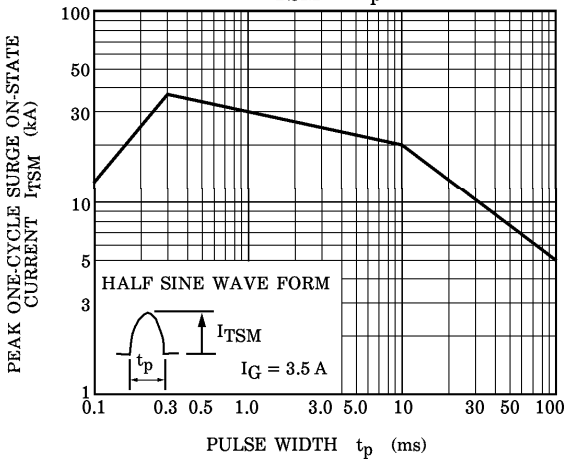
$E_{OFF} - I_{TGQ}$ (TYP.)



$I_{TGQM} - C_S$



$I_{TSM} - t_p$



$r_{th\,(j\text{-}f)} - t$