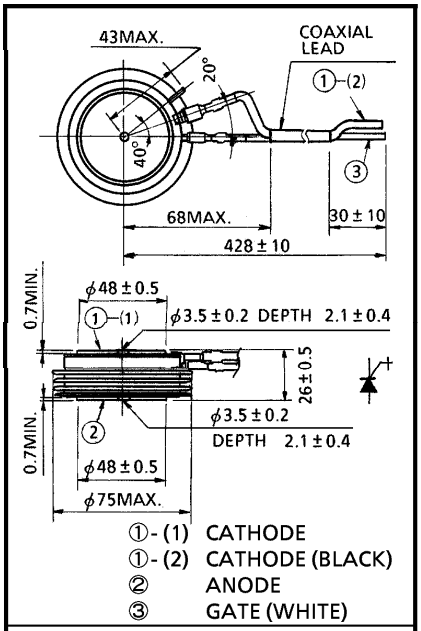
TOSHIBA GATE TURN-OFF THYRISTOR

SG1500EX24

INVERTER APPLICATION

- Repetitive Peak off-state Voltage : V_{DRM} = 2500 V (Note 1)
- R.M.S On-State Current : $I_{T(RMS)}$ = 750 A
- Peak Turn-Off Current : I_{TGQM} = 1500 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

Unit in mm



JEDAC	—
EIAJ	—
TOSHIBA	13-75B1A

Weight : 520 g

MAXIMUM RATINGS

CHARACTERISTIC	SYMBOL	RATING	UNIT
Repetitive Peak Off-state Voltage (Note 1)	V_{DRM}	2500	V
Repetitive Peak Reverse Voltage	V_{RRM}	16	V
Peak Turn-Off Current (Note 2)	I_{TGQM}	1500	A
R.M.S On-State Current (Note 3)	$I_{T(RMS)}$	750	A
Peak One Cycle Surge On-State Current (Non Repetitive, 10 ms-Width Half Sine Waveform)	I_{TSM}	8000	A
Critical Rate Of Rise Of On-State Current (Note 4)	di / dt	500	A / μs
Peak Gate Current	I_{GM}	400	A
Average Gate Power Dissipation	$P_{G(AV)}$	80	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	—	13.7 ± 1.4	kN

(Note 1) : V_{GK} = −2 V
(Note 2) : $V_{DM} \leqq$ 2000 V, C_S = 3 μF, R_S = 5 Ω, di_{GQ} / dt = 30 A / μs, $V_{DSP} \leqq$ 650 V, $L_S \leqq$ 0.2 μH
(Note 3) : 50 Hz Half Sine Waveform at T_f = 78°C
(Note 4) : V_D = 1250 V, I_{GM} = 15 A, T_j = 125°C
(Note 5) : Ambient Temperature of coaxial gate-cathode lead = 90°C

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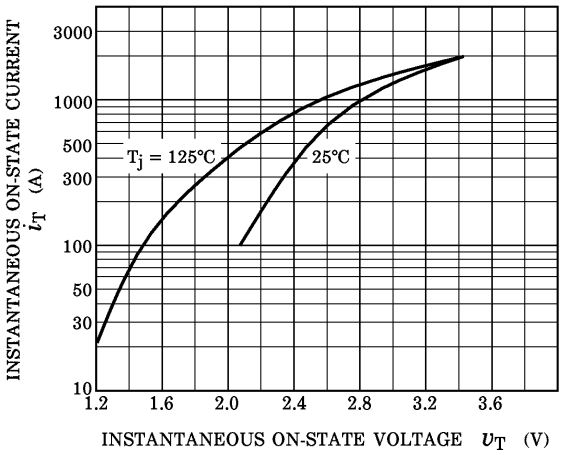
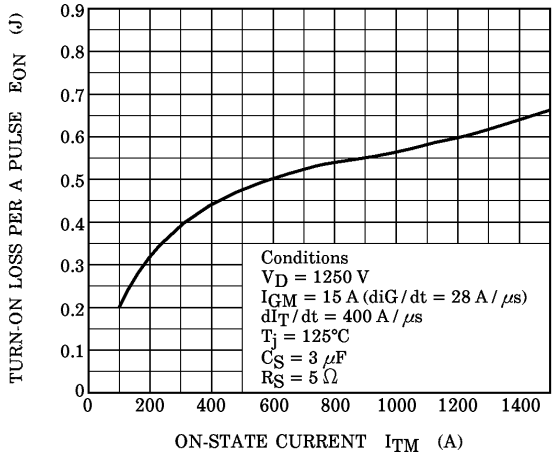
ELECTRICAL CHARACTERISTICS

CHARACTERISTIC	SYMBOL	TEST CONDITION		MIN.	TYP.	MAX.	UNIT
Repetitive Peak Off-State Current	I_{DRM}	V_{DRM} = 2500 V, V_{GK} = −2 V, T_j = 125°C		—	—	40	mA
Repetitive Peak Reverse Current	I_{RRM}	V_{RRM} = 16 V, 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} = 1500 A, T_j = 125°C		—	—	3.0	V
Gate Trigger Voltage	V_{GT}	V_D = 24 V, R_L = 0.1 Ω	T_j = −40°C	—	—	1.50	V
			T_j = 25°C	—	—	1.00	V
Gate Trigger Current	I_{GT}		T_j = 0°C	—	—	6.0	A
			T_j = 25°C	—	—	2.0	A
Turn-On Delay Time	t_d	V_D = 1250 V, di / dt = 300 A / μs, I_{GM} = 15 A, I_T = 1500 A, T_j = 25°C		—	—	3.0	μs
Turn-On Time	t_{gt}			—	—	10.0	μs
Critical Rate of Rise of Off-State Voltage	dv / dt	V_{DRM} = 1700 V, T_j = 125°C, V_{GK} = −2 V, Exponential Rise		1000	—	—	V / μs
Storage Time	t_s	I_{TGQ} = 1500 A, V_{DM} = 2000 V, R_S = 5 Ω, V_D = 1250 V, di_{GQ} / dt = 30 A / μs, C_S = 3 μF, V_{DSP} ≦ 650 V, T_j = 125°C, L_S ≦ 0.2 μH		—	—	20	μs
Gate Turn-Off Time	t_{gq}			—	—	22	μs
Tail Time	t_{tail}			—	50	—	μs
Gate Turn-Off Current	I_{GQ}			—	400	—	A
Thermal Resistance (Junction to Fin)	$R_{th\ (j-f)}$	DC		—	—	0.028	°C / W

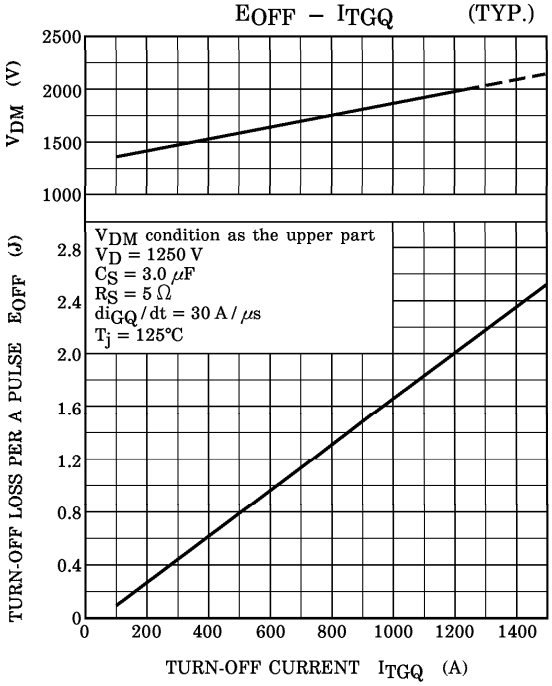
$i_T - v_T$ (MAX.)



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



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



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