

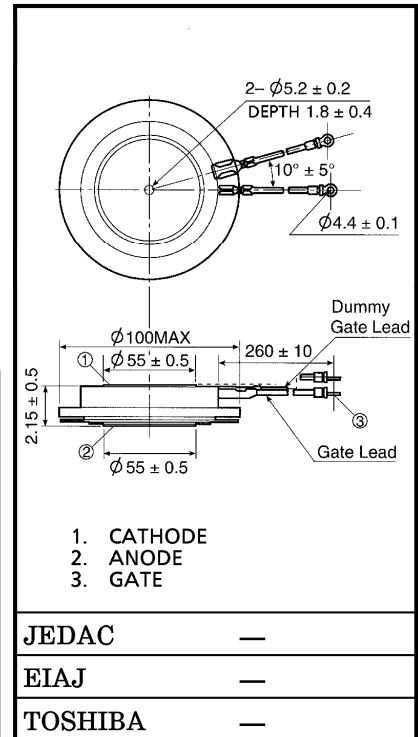
TENTATIVE

TOSHIBA GATE TURN-OFF THYRISTOR

# SG1400EX25

- Repetitive Peak Off-State Voltage :  $V_{DRM}=2500V$   
(Note 1)
- Repetitive Peak Reverse Voltage :  $V_{RRM}=500V$
- R.M.S On-State Current :  $I_T(RMS)=700A$
- Peak Turn-Off Current :  $I_{TGQM}=1400A$
- Critical Rate of Rise of On-State Current :  $di/dt=250A/\mu s$
- Critical Rate of Rise of Off-State Voltage :  $dv/dt=500V/\mu s$

Unit in mm



Weight : 700g

**MAXIMUM RATINGS**

CHARACTERISTICS	SYMBOL	RATING	UNIT
Repetitive Peak Off-State Voltage (Note 1)	$V_{DRM}$	2500	V
Repetitive Peak Reverse Voltage	$V_{RRM}$	500	V
Peak Turn-Off Current (Note 2)	$I_{TGQM}$	1400	A
R.M.S On-State Current (Note 3)	$I_T(RMS)$	700	A
Peak One Cycle Surge On-State Current (Non Repetitive, Half Sine Waveform)	$I_{TSM}$	14000 (50Hz)	A
Critical Rate of Rise of On-State Current (Note 4)	$di/dt$	250	A / $\mu s$
Peak Forward Gate Current	$I_{FGM}$	20	A
Average Forward Gate Power Dissipation	$P_{FG(AV)}$	4	W
R.M.S Gate Current (Note 5)	$I_G(RMS)$	42	A
Peak Reverse Gate Voltage (At Static)	$V_{RGM}$	15	V
Operating Junction Temperature Range	$T_j$	-40~115	°C
Storage Temperature Range	$T_{stg}$	-40~115	°C
Mounting Force	—	$19.6 \pm 2.0$	kN

(Note 1)  $R_{GK} \leq 20\Omega$

(Note 2)  $V_D = 1250V$ ,  $V_{DM} \leq 1700V$ ,  $C_S \geq 2\mu F$ ,  $di_{GQ}/dt \geq 30A/\mu s$ ,  $V_{DSP} \leq 600V$ ,  $L_S \leq 0.2\mu H$   
(TOSHIBA method)

(Note 3) 50Hz Half Sine Waveform

(Note 4)  $V_D \leq 1250V$ ,  $I_{TM} \leq 1400A$ ,  $I_G \geq 20A$  ( $t_r \leq 1\mu s$ ),  $f \leq 50Hz$ ,  $C_S \leq 2\mu F$ ,  $R_S \geq 10\Omega$ ,  $25^\circ C \leq T_j \leq 115^\circ C$

(Note 5) Ambient Temperature of gate and cathode leading wire = 90°C

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## ELECTRICAL CHARACTERISTICS

CHARACTERISTICS	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT	
Repetitive Peak Off-State Current	$I_{DRM}$	$V_{DRM}=2500V$ , $V_{GK}=-2V$ $T_j=115^\circ C$	—	—	50	mA	
Repetitive Peak Reverse Current	$I_{RRM}$	$V_{RRM}=500V$ $T_j=115^\circ C$	—	—	50	mA	
Repetitive Peak Reverse Gate Current	$I_{RGM}$	$V_{RGM}=15V$ $T_j=115^\circ C$	—	—	100	mA	
Peak On-State Voltage	$V_{TM}$	$I_{TM}=1400A$ , $T_j=25^\circ C$	—	—	2.62	V	
Gate Trigger Voltage	$V_{GT}$	$V_D=24V$	$T_j=-40^\circ C$	—	—	3.0	V
			$T_j=25^\circ C$	—	—	1.5	V
Gate Trigger Current	$I_{GT}$	$R_L=0.2\Omega$	$T_j=-40^\circ C$	—	—	—	A
			$T_j=25^\circ C$	—	—	1.5	A
Turn-On Delay Time	$t_d$	$V_D=1250V$ , $I_{TM}=1400A$ $di/dt=250A/\mu s$	—	—	6.0	$\mu s$	
Turn-On Time	$t_{gt}$	$I_{GM}=20A$ ( $t_r=1\mu s$ ), $T_j=25^\circ C$ , non-snubber	—	—	12	$\mu s$	
Critical Rate of Rise of Off-State Voltage	$dv/dt$	$V_{DRM}=1700V$ $T_j=115^\circ C$ , $V_{GK}=-4V$ Exponential Rise	500	—	—	$V/\mu s$	
Storage Time	$t_s$	$I_{TGQ}=1400A$	—	—	20	$\mu s$	
Gate Turn-Off Time	$t_{gq}$	$V_{DM}=1700V$ , $T_j=115^\circ C$	—	—	25	$\mu s$	
Tail Time	$t_{tail}$	$V_D=1250V$ , $C_S=2\mu F$ $di_{GQ}/dt=30A/\mu s$	—	160	—	$\mu s$	
Turn-Off Gate Current	$I_{GQ}$	Off squeeze current $\geq 300mA$	—	350	—	A	
Thermal Resistance	$R_{th(j-f)}$	Junction to fin	—	—	0.03	$^\circ C/W$	