

TENTATIVE

TOSHIBA GATE TURN-OFF THYRISTOR

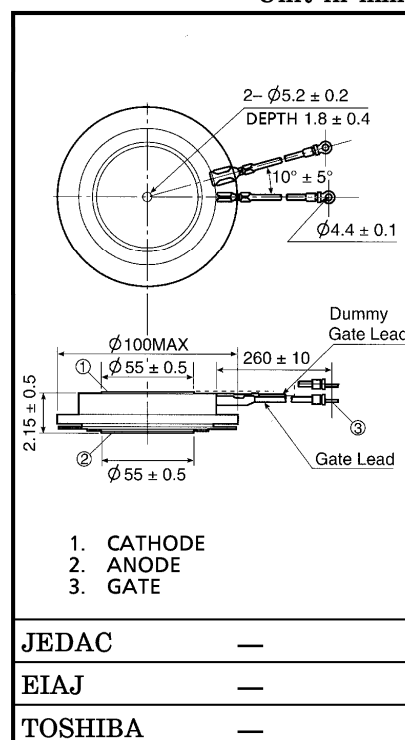
SG1400EX25

Unit in mm

- 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 : $dv/dt=500V/\mu s$

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 / μs
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 ± 2.0	kN



Weight : 700g

(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 = $90^\circ C$

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ELECTRICAL CHARACTERISTICS

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