

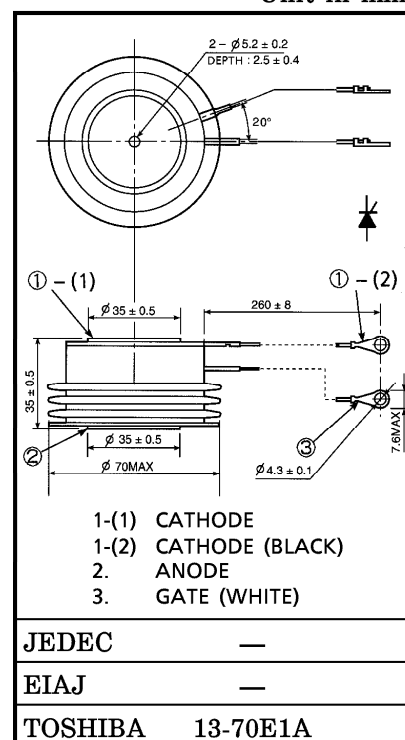
TOSHIBA ALLOY-FREE HIGH SPEED THYRISTOR

SH400R32B

HIGH POWER CONTROL APPLICATIONS

Unit in mm

- Repetitive Peak Off-State Voltage : V_{DRM}
- Repetitive Peak Reverse Voltage : V_{RRM}
- Average On-State Current : $I_T(AV) = 400A$
- Turn-Off Time : $t_q = 25\mu s$ (Max.)
- Critical Rate of Rise of On-State Current : $di/dt = 200A/\mu s$
- Critical Rate of Rise of Off-State Voltage : $dv/dt = 500V/\mu s$
- Weight : 480g
- Flat Package



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MAXIMUM RATINGS

CHARACTERISTIC	SYMBOL	SYMBOL	RATING	UNIT
Repetitive Peak Off-State Voltage and Repetitive Peak Reverse Voltage	V_{DRM} V_{RRM}	V_{DRM} V_{RRM}	1300	V
Non-Repetitive Peak Reverse Voltage (Non-Repetitive < 5ms, $T_j = 0 \sim 115^\circ\text{C}$)	V_{RSM}	V_{RSM}	1400	V
R.M.S On-State Current	$I_{\text{T}}(\text{RMS})$	$I_{\text{T}}(\text{RMS})$	630	A
Average On-State Current	$I_{\text{T}}(\text{AV})$	$I_{\text{T}}(\text{AV})$	400	A
Peak One Cycle Surge On-State Current (Non-Repetitive)	I_{TSM}	I_{TSM}	8000 (50Hz) 8800 (60Hz)	A
I^2t Limit Value	I^2t	I^2t	3.2×10^5	A^2s
Critical Rate of Rise of On-State Current (Note)	di / dt	di / dt	200	$\text{A} / \mu\text{s}$
Peak Gate Power Dissipation	P_{GM}	P_{GM}	20	W
Average Gate Power Dissipation	$P_{\text{G}}(\text{AV})$	$P_{\text{G}}(\text{AV})$	4	W
Peak Forward Gate Current	I_{GM}	I_{GM}	4	A
Peak Forward Gate Voltage	V_{FGM}	V_{FGM}	20	V
Peak Reverse Gate Voltage	V_{RGM}	V_{RGM}	5	V
Junction Temperature	T_j	T_j	$-40 \sim 115$	$^\circ\text{C}$
Storage Temperature Range	T_{stg}	T_{stg}	$-40 \sim 115$	$^\circ\text{C}$
Mounting Force	—	—	14.7 ± 1.5	kN

Note : $V_{\text{D}} = 650\text{V}$, $f = 50\text{Hz}$, $T_j = 110^\circ\text{C}$, Gate Supply ($V_{\text{G}} = 15\text{V}$, $R_{\text{G}} = 8\Omega$, $t_r \leq 1\mu\text{s}$)

ELECTRICAL CHARACTERISTICS

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	MAX.	UNIT
Repetitive Peak Off-State Current and Repetitive Peak Reverse Current	I_{DRM} I_{RRM}	$V_{DRM} = V_{RRM} = 1300V$ $T_j = 115^\circ C$	—	50	mA
Peak On-State Voltage	V_{TM}	$I_{TM} = 1250A$, $T_j = 25^\circ C$	—	2.2	V
Gate Trigger Voltage	V_{GT}	$V_D = 6V$, $R_L = 6\Omega$	$T_j = -40^\circ C$	—	4.5
			$T_j = 25^\circ C$	—	3.5
Gate Trigger Current	I_{GT}		$T_j = -40^\circ C$	—	400
			$T_j = 25^\circ C$	—	260
Gate Non-Trigger Voltage	V_{GD}	$V_D = 650V$, $T_j = 115^\circ C$	0.2	—	V
Gate Non-Trigger Current	I_{GD}		5	—	mA
Delay Time	t_d	$V_D = 650V$, $T_j = 25^\circ C$ Gate Supply ($V_G = 15V$, $R_G = 8\Omega$, $t_r \leq 1\mu s$)	—	4	μs
Gate Turn-On Time	t_{gt}		—	6	μs
Turn-Off Time	t_q	$I_T = 800A$, $V_R \geq 50V$ $dv/dt = 20V/\mu s$, $T_j = 110^\circ C$ $V_{DRM} = 650V$	—	25	μs
Holding Current	I_H	$T_j = 25^\circ C$, $R_L = 6\Omega$	—	400	mA
Critical Rate of Rise of Off-State Voltage	dv/dt	$V_{DRM} = 870V$, $T_j = 115^\circ C$ Gate Open, Exponential Rise	500	—	$V/\mu s$
Thermal Resistance (Junction to Case)	$R_{th(j-f)}$	DC	—	0.05	$^\circ C/W$

