

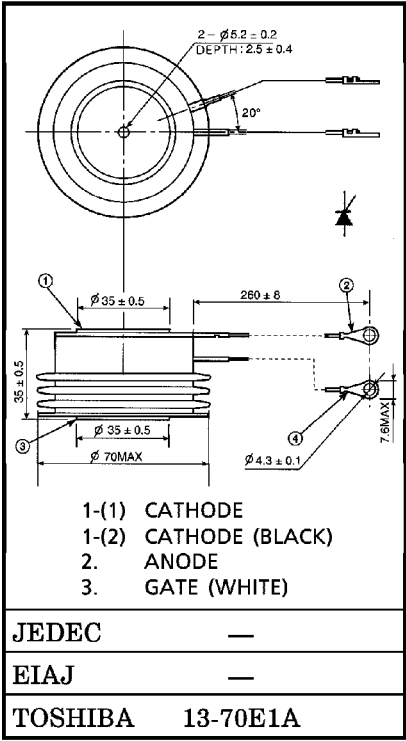
TOSHIBA ALLOY-FREE HIGHT SPEED THYRISTOR

SH400R28B

HIGH POWER CONTROL APPLICATIONS

- 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

Unit in mm



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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	$I_{\text{T(RMS)}}$	$I_{\text{T(RMS)}}$	630	A
Average On-State Current	$I_{\text{T(AV)}}$	$I_{\text{T(AV)}}$	400	A
Peak One Cycle Surge On-State Current (Non-Repetitive)	I_{TSM}	I_{TSM}	7200 (50Hz) 8000 (60Hz)	A
I^2t Limit Value	I^2t	I^2t	200×10^3	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	$P_{\text{G(AV)}}$	$P_{\text{G(AV)}}$	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 : $V_D = 1/2$ Rated, $T_j = 110^\circ\text{C}$, Gate Supply ($V_G = 15\text{V}$, $R_G = 8\Omega$, $t_r \leq 1\mu\text{s}$)

ELECTRICAL CHARACTERISTICS

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	MAX.	UNIT
Repetitive Peak Off-State Current and Repetitive Peak Reverse Current	I_{DRM} I_{RRM}	$V_{\text{DRM}} = V_{\text{RRM}} = \text{Rated}$ $T_j = 115^\circ\text{C}$	—	50	mA
Peak On-State Voltage	V_{TM}	$I_{\text{TM}} = 1250\text{A}$, $T_j = 25^\circ\text{C}$	—	2.2	V
Gate Trigger Voltage	V_{GT}	$V_{\text{D}} = 6\text{V}$, $R_{\text{L}} = 6\Omega$	$T_j = -40^\circ\text{C}$	—	4.5
			$T_j = 25^\circ\text{C}$	—	3.5
Gate Trigger Current	I_{GT}		$T_j = -40^\circ\text{C}$	—	400
			$T_j = 25^\circ\text{C}$	—	260
Gate Non-Trigger Voltage	V_{GD}	$V_{\text{D}} = 1/2 \text{ Rated}$, $T_j = 115^\circ\text{C}$	0.2	—	V
Gate Non-Trigger Current	I_{GD}		5	—	mA
Delay Time	t_{d}	$V_{\text{D}} = 1/2 \text{ Rated}$, $T_j = 25^\circ\text{C}$ Gate Supply ($V_{\text{G}} = 15\text{V}$, $R_{\text{G}} = 8\Omega$, $t_{\text{r}} \leq 1\mu\text{s}$)	—	4	μs
Gate Turn-On Time	t_{gt}		—	6	μs
Turn-Off Time	t_{q}	$I_{\text{T}} = 800\text{A}$, $V_{\text{R}} \geq 50\text{V}$ $\text{d}v/\text{d}t = 20\text{V}/\mu\text{s}$, $T_j = 110^\circ\text{C}$ $V_{\text{DRM}} = 1/2 \text{ Rated}$	—	25	μs
Holding Current	I_{H}	$T_j = 25^\circ\text{C}$, $R_{\text{L}} = 6\Omega$	—	400	mA
Critical Rate of Rise of Off-State Voltage	$\text{d}v/\text{d}t$	$V_{\text{DRM}} = 1/2 \text{ Rated}$, $T_j = 115^\circ\text{C}$ Gate Open, Exponential Rise	500	—	$\text{V}/\mu\text{s}$
Thermal Resistance (Junction to Case)	$R_{\text{th (j-f)}}$	DC	—	0.05	$^\circ\text{C}/\text{W}$

