

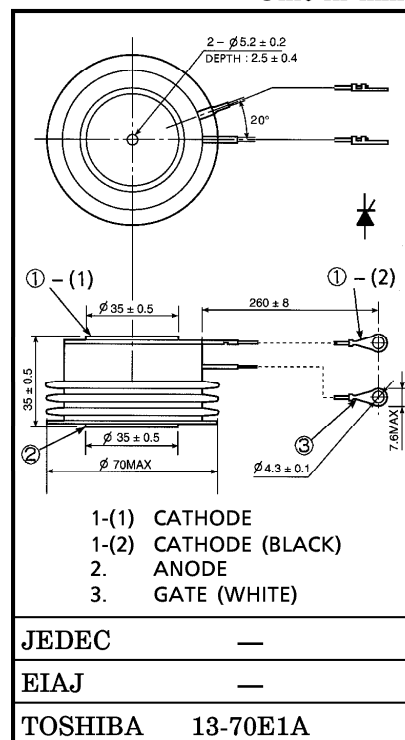
TOSHIBA ALLOY-FREE THYRISTOR

SF500EX32, SF500FX32

HIGH POWER CONTROL APPLICATIONS

- Repetitive Peak Off-State Voltage : V_{DRM} } = 2500V, 3000V
- Repetitive Peak Reverse Voltage : V_{RRM} }
- Average On-State Current : $I_T(AV) = 500A$
- Turn-Off Time : $t_q = 400\mu s$ (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	RATING	UNIT
Repetitive Peak Off-State Voltage and Repetitive Peak Reverse Voltage	SF500EX32	V _{DRM} 2500	V
	SF500FX32	V _{RDM} 3000	
Non-Repetitive Peak Reverse Voltage (Non-Repetitive <5ms, T _j =0~125°C)	SF500EX32	V _{RSM} 2750	V
	SF500FX32	V _{RSM} 3100	
R.M.S On-State Current	I _T (RMS)	785	A
Average On-State Current	I _T (AV)	500	A
Peak One Cycle Surge On-State Current (Non-Repetitive)	I _{TSM}	8000 (50Hz)	A
		8800 (60Hz)	
I ² t Limit Value	I ² t	3.2×10 ⁵	A ² s
Critical Rate of Rise of On-State Current (Note)	di / dt	200	A / μs
Peak Gate Power Dissipation	P _{GM}	20	W
Average Gate Power Dissipation	P _G (AV)	4	W
Peak Forward Gate Current	I _{GM}	4	A
Peak Forward Gate Voltage	V _{FGM}	20	V
Peak Reverse Gate Voltage	V _{RGM}	5	V
Junction Temperature	T _j	-40~125	°C
Storage Temperature Range	T _{stg}	-40~125	°C
Mounting Force	—	14.7±1.5	kN

Note : V_D=1/2 Rated, f=50Hz, T_j=120°C, Gate Supply (V_G=15V, R_G=8Ω, t_r≤1μs)

ELECTRICAL CHARACTERISTICS

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	MAX.	UNIT
Repetitive Peak Off-State Current and Repetitive Peak Reverse Current	I_{DRM} I_{RRM}	$V_{DRM} = V_{RRM} = \text{Rated}$ $T_j = 125^\circ\text{C}$	—	50	mA
Peak On-State Voltage	V_{TM}	$I_{TM} = 1600\text{A}$, $T_j = 25^\circ\text{C}$	—	2.16	V
Gate Trigger Voltage	V_{GT}	$V_D = 6\text{V}$, $R_L = 6\Omega$	$T_j = -40^\circ\text{C}$	—	4.5
			$T_j = 25^\circ\text{C}$	0.6	2.5
Gate Trigger Current	I_{GT}	$V_D = 6\text{V}$, $R_L = 6\Omega$	$T_j = -40^\circ\text{C}$	—	400
			$T_j = 25^\circ\text{C}$	15	250
Gate Non-Trigger Voltage	V_{GD}	$V_D = 1/2 \text{ Rated}$, $T_j = 125^\circ\text{C}$	0.2	—	V
Gate Non-Trigger Current	I_{GD}		5	—	mA
Delay Time	t_d	$V_D = 1/2 \text{ Rated}$, $T_j = 25^\circ\text{C}$ Gate Supply	—	4	μs
Gate Turn-On Time	t_{gt}	($V_G = 15\text{V}$, $R_G = 8\Omega$, $t_r \leq 1\mu\text{s}$)	—	6	μs
Turn-Off Time	t_q	$I_T = 800\text{A}$, $V_R \geq 50\text{V}$ $dv/dt = 20\text{V}/\mu\text{s}$, $T_j = 120^\circ\text{C}$ $V_{DRM} = 1/2 \text{ Rated}$	—	400	μs
Holding Current	I_H	$T_j = 25^\circ\text{C}$, $R_L = 6\Omega$	—	300	mA
Critical Rate of Rise of Off-State Voltage	dv/dt	$V_{DRM} = 2/3 \text{ Rated}$, $T_j = 125^\circ\text{C}$ Gate Open, Exponential Rise	500	—	$\text{V}/\mu\text{s}$
Thermal Resistance (Junction to Case)	$R_{th(j-f)}$	DC	—	0.05	$^\circ\text{C}/\text{W}$

