

TOSHIBA**SF500EX33**

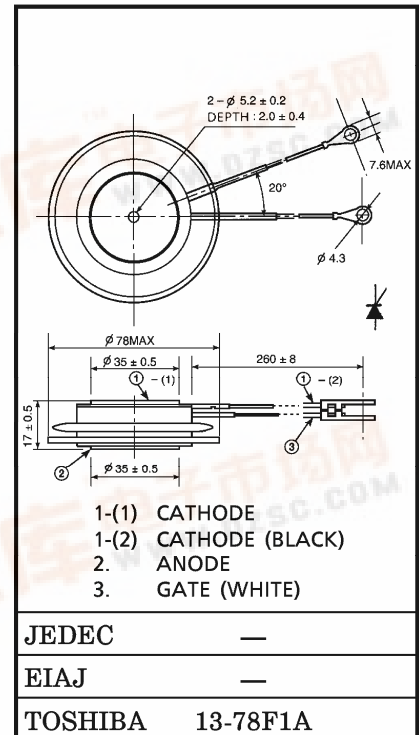
TOSHIBA ALLOY-FREE THYRISTOR

SF500EX33

HIGH POWER CONTROL APPLICATIONS

Unit in mm

- Repetitive Peak Off-State Voltage : V_{DRM}
- Repetitive Peak Reverse Voltage : V_{RRM}
- Average On-State Current : $I_T(AV) = 500A$
- 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 : 250g
- Flat Package



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MAXIMUM RATINGS

CHARACTERISTIC	SYMBOL	RATING	UNIT
Repetitive Peak Off-State Voltage and Repetitive Peak Reverse Voltage	V _{DRM} V _{RRM}	2500	V
Non-Repetitive Peak Reverse Voltage (Non-Repetitive < 5ms, T _j = 0~125°C)	V _{RSM}	2750	V
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) 8800 (60Hz)	A
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 = 1250V, 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}	$V_{DRM}=V_{RRM}=2500V$ $T_j=125^{\circ}C$	—	50	mA
Peak On-State Voltage	V_{TM}	$I_{TM}=1600A$, $T_j=25^{\circ}C$	—	2.16	V
Gate Trigger Voltage	V_{GT}	$V_D=6V$, $R_L=6\Omega$	$T_j=-40^{\circ}C$	—	4.5
			$T_j=25^{\circ}C$	0.6	2.5
Gate Trigger Current	I_{GT}		$T_j=-40^{\circ}C$	—	400
			$T_j=25^{\circ}C$	15	250
Gate Non-Trigger Voltage	V_{GD}	$V_D=1250V$, $T_j=115^{\circ}C$	0.2	—	V
Gate Non-Trigger Current	I_{GD}		5	—	mA
Delay Time	t_d	$V_D=1250V$, $T_j=25^{\circ}C$ Gate Supply	—	4	μs
Gate Turn-On Time	t_{gt}	$(V_G=15V, R_G=8\Omega, t_r \leq 1\mu s)$	—	6	μs
Turn-Off Time	t_q	$I_T=800A$, $V_R \geq 50V$ $dv/dt=20V/\mu s$, $T_j=120^{\circ}C$ $V_{DRM}=1250V$	—	400	μs
Holding Current	I_H	$T_j=25^{\circ}C$, $R_L=6\Omega$	—	300	mA
Critical Rate of Rise of Off-State Voltage	dv/dt	$V_{DRM}=1670V$, $T_j=125^{\circ}C$ Gate Open, Exponential Rise	500	—	$V/\mu s$
Thermal Resistance (Junction to Case)	$R_{th(j-f)}$	DC	—	0.04	$^{\circ}C/W$

