

TOSHIBA THYRISTOR SILICON DIFFUSED TYPE

SF1500GX23

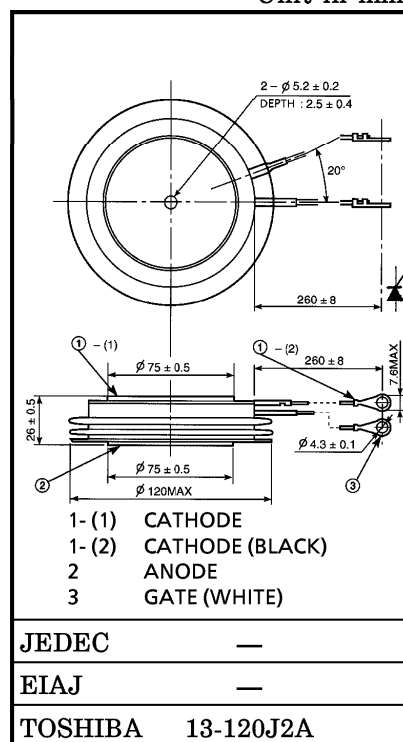
HIGH POWER CONTROL APPLICATIONS

Unit in mm

- Repetitive Peak Off-State Voltage : V_{DRM} } = 4000V
- Repetitive Peak Reverse Voltage : V_{RRM} }
- Average On-State Current : $I_T(AV) = 1500A$
- Turn-Off Time : $t_q = 400\mu s$ (Max.)
- Critical Rate of Rise of On-State Current : $di/dt = 250A/\mu s$
- Critical Rate of Rise of Off-State Voltage : $dv/dt = 1500V/\mu s$
- Flat Package

MAXIMUM RATINGS

CHARACTERISTIC	SYMBOL	RATING	UNIT
Repetitive Peak Off-State Voltage and Repetitive Peak Reverse Voltage	V_{DRM} V_{RRM}	4000	V
Non-Repetitive Peak Reverse Voltage (Non-Repetitive <5ms, $T_j = 0 \sim 125^\circ C$)	V_{RSM}	4400	V
R.M.S On-State Current	$I_T(RMS)$	2355	A
Average On-State Current	$I_T(AV)$	1500	A
Peak One Cycle Surge On-State Current (Non-Repetitive)	I_{TSM}	30000 (50Hz) 33000 (60Hz)	A
I^2t Limit Value	I^2t	4.5×10^6	A^2s
Critical Rate of Rise of On-State Current (Note)	di/dt	250	$A/\mu s$
Peak Gate Power Dissipation	P_{GM}	30	W
Average Gate Power Dissipation	$P_G(AV)$	4	W
Peak Forward Gate Current	I_{GM}	6	A
Peak Forward Gate Voltage	V_{FGM}	30	V
Peak Reverse Gate Voltage	V_{RGM}	5	V
Junction Temperature	T_j	$-40 \sim 125$	$^\circ C$
Storage Temperature Range	T_{stg}	$-40 \sim 125$	$^\circ C$
Mounting Force	—	30~45	kN



JEDEC —

EIAJ —

TOSHIBA 13-120J2A

Weight : 1350g

Note : $V_D = 2000V$, $f = 50Hz$, $T_j = 125^\circ C$, Gate Supply ($V_G = 15V$, $R_G = 8\Omega$, $t_r \leq 1\mu s$)

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ELECTRICAL CHARACTERISTICS

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	MAX.	UNIT
Repetitive Peak Off-State Current and Repetitive Peak Reverse Current	I_{DRM} I_{RRM}	$V_{\text{DRM}} = V_{\text{RRM}} = 4000\text{V}$, $T_j = 125^\circ\text{C}$	—	120	mA
Peak On-State Voltage	V_{TM}	$I_{\text{TM}} = 5000\text{A}$, $T_j = 25^\circ\text{C}$	—	2.4	V
Gate Trigger Voltage	V_{GT}	$V_{\text{D}} = 12\text{V}$, $R_{\text{L}} = 6\Omega$	$T_j = -40^\circ\text{C}$	—	4.5
			$T_j = 25^\circ\text{C}$	—	3.5
Gate Trigger Current	I_{GT}		$T_j = -40^\circ\text{C}$	—	600
			$T_j = 25^\circ\text{C}$	—	400
Gate Non-Trigger Voltage	V_{GD}	$V_{\text{D}} = 2000\text{V}$, $T_j = 125^\circ\text{C}$	0.2	—	V
Gate Non-Trigger Current	I_{GD}		5	—	mA
Delay Time	t_{d}	$V_{\text{D}} = 2000\text{V}$, $T_j = 25^\circ\text{C}$ Gate Supply	—	5	μs
Gate Turn-On Time	t_{gt}	($V_{\text{G}} = 15\text{V}$, $R_{\text{G}} = 8\Omega$, $t_{\text{r}} \leq 1\mu\text{s}$)	—	10	μs
Turn-Off Time	t_{q}	$I_{\text{T}} = 1200\text{A}$, $V_{\text{R}} \geq 200\text{V}$, $dv/dt = 25\text{V}/\mu\text{s}$, $T_j = 125^\circ\text{C}$ $V_{\text{DRM}} = 2000\text{V}$, $di/dt = 2\text{A}/\mu\text{s}$	—	400	μs
Holding Current	I_{H}	$T_j = 25^\circ\text{C}$, $R_{\text{L}} = 6\Omega$	—	300	mA
Critical Rate of Rise of Off-State Voltage	dv/dt	$V_{\text{DRM}} = 2670\text{V}$, $T_j = 125^\circ\text{C}$ Gate Open Exponential Rise	1500	—	$\text{V}/\mu\text{s}$
Thermal Resistance	$R_{\text{th(j-f)}}$	Junction to Fin	—	0.0125	$^\circ\text{C}/\text{W}$

