

TOSHIBA THYRISTOR SILICON DIFFUSED TYPE

SF2500EX22

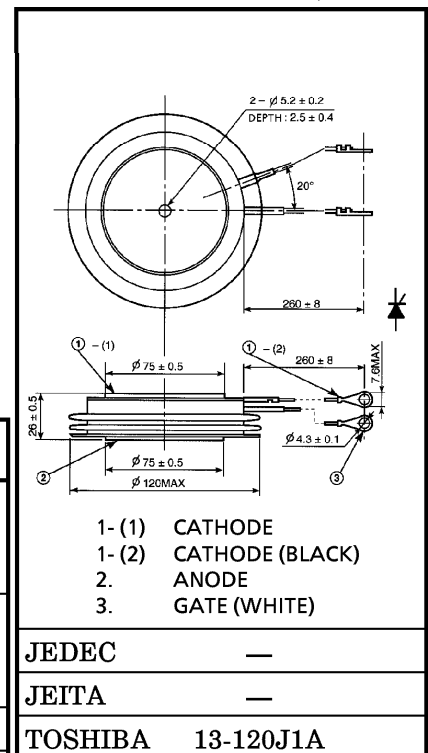
HIGH POWER CONTROL APPLICATIONS

- Repetitive Peak Off-State Voltage : V_{DRM} } = 2500V
- Repetitive Peak Reverse Voltage : V_{RRM} }
- Average On-State Current : $I_T(AV) = 2500A$
- 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}	2500	V
Non-Repetitive Peak Reverse Voltage (Non-Repetitive <5ms, $T_j = 0 \sim 125^\circ C$)	V_{RSM}	2750	V
R.M.S On-State Current	$I_T(RMS)$	3925	A
Average On-State Current	$I_T(AV)$	2500	A
Peak One Cycle Surge On-State Current (Non-Repetitive)	I_{TSM}	45000 (50Hz)	A
		50000 (60Hz)	
I^2t Limit Value	I^2t	1×10^7	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	—	39.2 ± 3.9	kN

Unit in mm



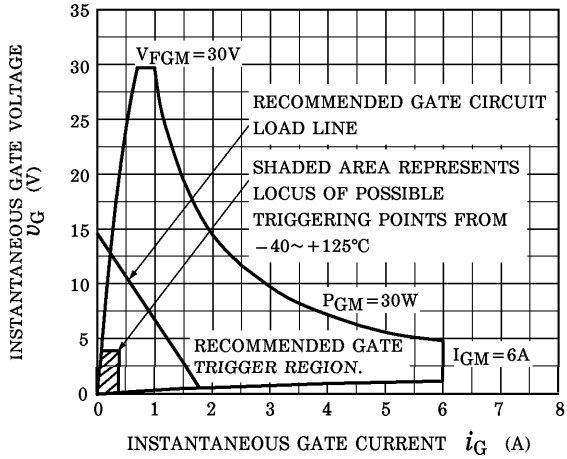
Weight : 1350g

Note : $V_D = 1/2$ Rated, $T_j = 120^\circ C$, Gate Supply ($V_G = 15V$, $R_G = 8\Omega$, $t_r \leq 1\mu s$)

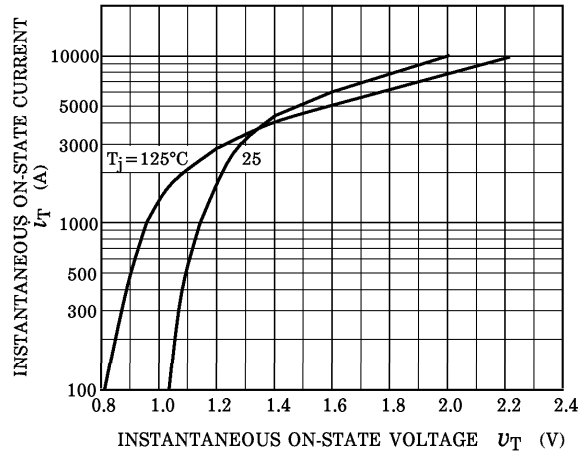
ELECTRICAL CHARACTERISTICS

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	MAX.	UNIT	
Repetitive Peak Off-State Current and Repetitive Peak Reverse Current	I_{DRM} I_{RRM}	$V_{DRM} = V_{RRM} = \text{Rated}$, $T_j = 125^\circ\text{C}$	—	120	mA	
Peak On-State Voltage	V_{TM}	$I_{TM} = 8000\text{A}$, $T_j = 25^\circ\text{C}$	—	1.82	V	
Gate Trigger Voltage	V_{GT}	$V_D = 12\text{V}$, $R_L = 6\Omega$	$T_j = -40^\circ\text{C}$	—	4.0	V
			$T_j = 25^\circ\text{C}$	—	2.5	
Gate Trigger Current	I_{GT}	$V_D = 12\text{V}$, $R_L = 6\Omega$	$T_j = -40^\circ\text{C}$	—	400	mA
			$T_j = 25^\circ\text{C}$	—	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	$V_D = 0.5 \text{ Rated}$, $T_j = 25^\circ\text{C}$ Gate Supply	—	5	μs	
Gate Turn-On Time	t_{gt}	($V_G = 15\text{V}$, $R_G = 8\Omega$, $t_r \leq 1\mu\text{s}$)	—	10	μs	
Turn-Off Time	t_q	$I_T = 1200\text{A}$, $V_R \geq 200\text{V}$ $dv/dt = 25\text{V}/\mu\text{s}$, $T_j = 115^\circ\text{C}$ $V_{DRM} = 1/2 \text{ Rated}$	—	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	$V_{DRM} = 1/2 \text{ Rated}$, $T_j = 125^\circ\text{C}$ Gate Open Exponential Rise	1500	—	$\text{V}/\mu\text{s}$	
Thermal Resistance	$R_{th(j-f)}$	Junction to Fin	—	0.0125	$^\circ\text{C}/\text{W}$	

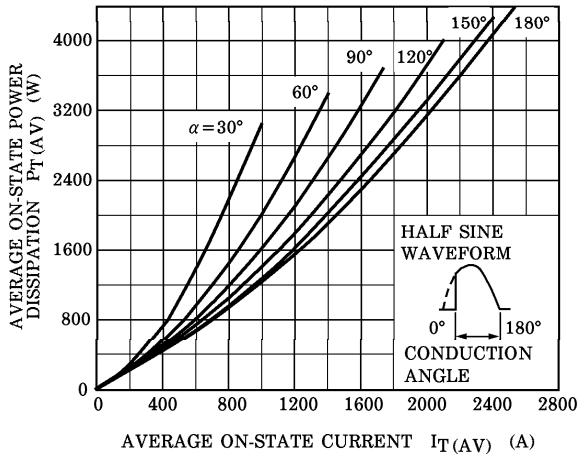
GATE TRIGGER CHARACTERISTIC



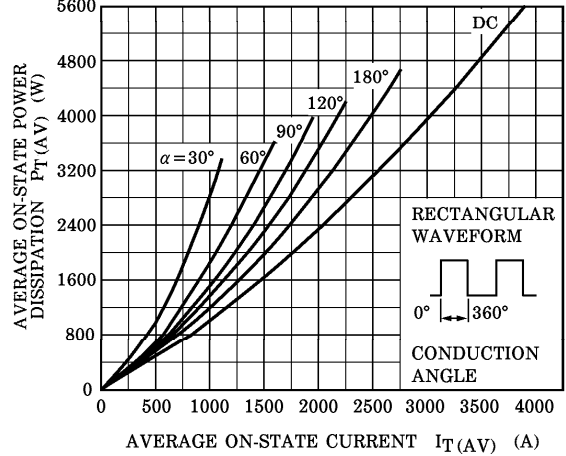
$i_T - v_T$



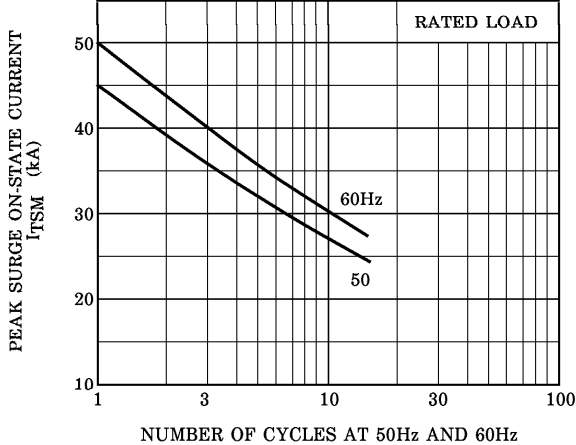
PT (AV) - IT (AV)



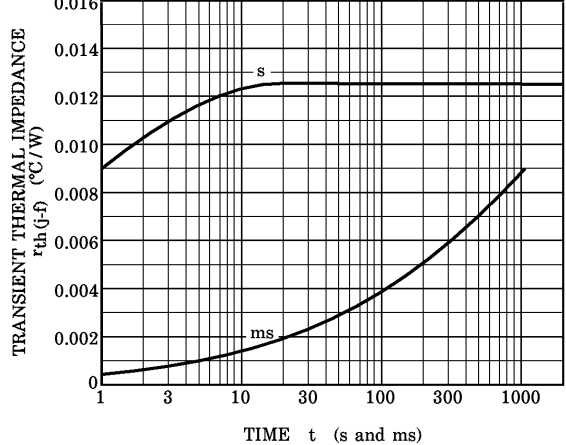
PT (AV) - IT (AV)



SURGE ON-STATE CURRENT (NON-REPETITIVE)



TRANSIENT THERMAL IMPEDANCE (JUNCTION TO FIN)



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