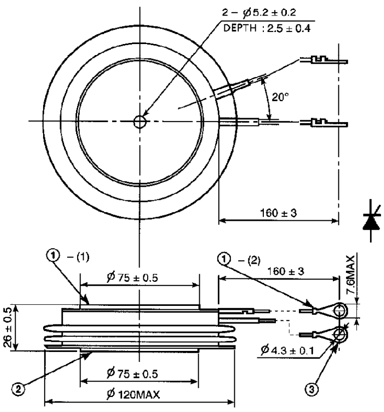
TOSHIBA THYRISTOR SILICON DIFFUSED TYPE

SF1500GX22

HIGH POWER CONTROL APPLICATIONS

- 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

Unit in mm



1-(1) CATHODE
1-(2) CATHODE (BLACK)
2 ANODE
3 GATE (WHITE)

JEDEC	—
JEITA	—
TOSHIBA	13-120J2A

Weight : 1350g

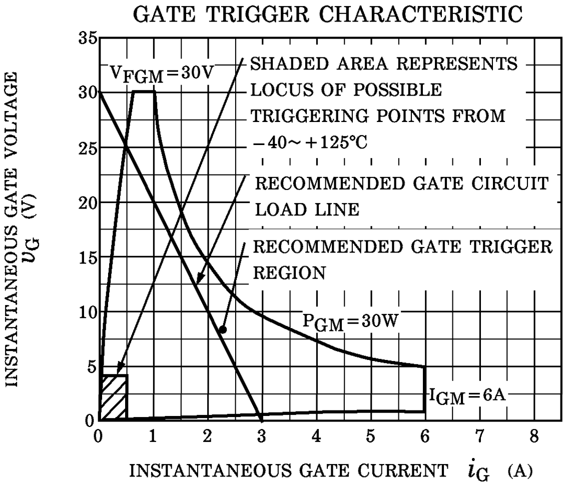
MAXIMUM RATINGS

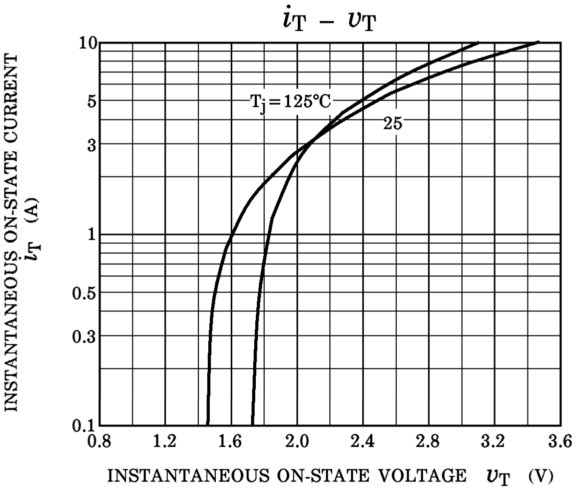
CHARACTERISTIC	SYMBOL	RATING	UNIT
Repetitive Peak Off-State Voltage and Repetitive Peak Reverse Voltage	V_{DRM} V_{RRM}	4000	V
Non-Repetitive Peak Reverse Voltage (Non-Repetitive < 5ms, $T_j = 0\sim125°C$)	V_{RSM}	4400	V
R.M.S On-State Current	$I_{T(RMS)}$	2355	A
Average On-State Current	$I_{T(AV)}$	1500	A
Peak One Cycle Surge On-State Current (Non-Repetitive)	I_{TSM}	30000 (50Hz) 33000 (60Hz)	A
I^2t Limit Value	I^2t	4500×10^3	A^2s
Critical Rate of Rise of On-State Current (Note)	di / dt	250	A / μs
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	$-40\sim125$	°C
Storage Temperature Range	T_{stg}	$-40\sim125$	°C
Mounting Force	—	39.2 ± 3.9	kN

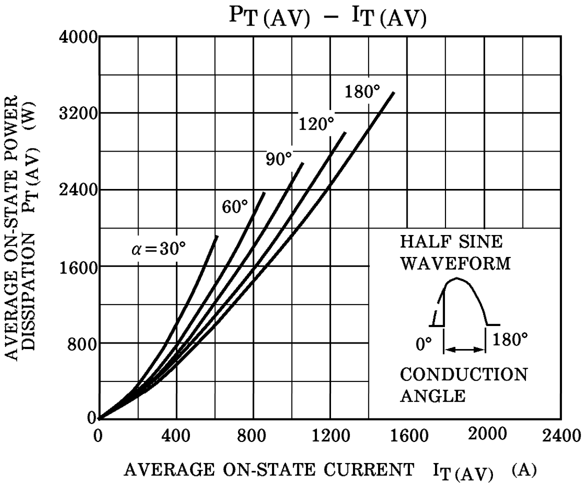
Note : $V_D = 1/2$ Rated, $T_j = 120°C$, Gate Supply ($V_G = 15V$, $R_G = 8\Omega$, $t_r \leqq 1\mu s$)

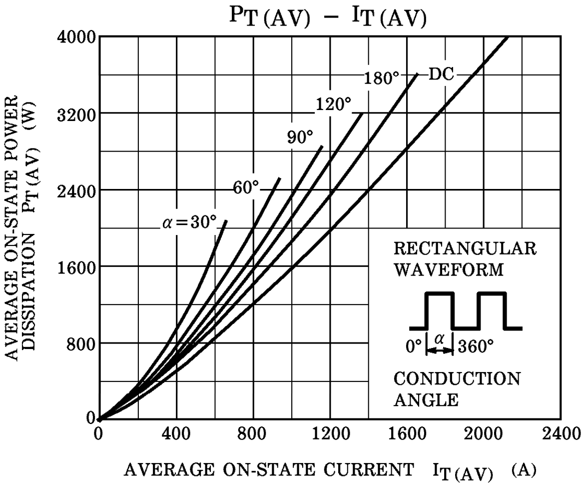
ELECTRICAL CHARACTERISTICS

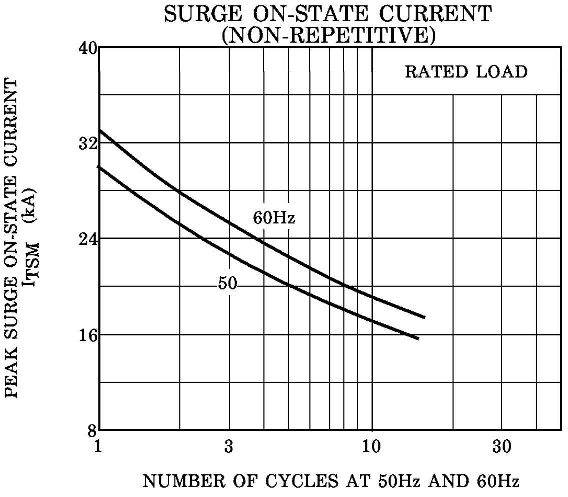
CHARACTERISTIC	SYMBOL	TEST CONDITION		MIN.	MAX.	UNIT
Repetitive Peak Off-State Current and Repetitive Peak Reverse Current	I_{DRM} I_{RRM}	$V_{DRM} = V_{RRM} =$ Rated, $T_j = 125$°C		—	120	mA
Peak On-State Voltage	V_{TM}	$I_{TM} = 5000$A, $T_j = 25$°C		—	2.4	V
Gate Trigger Voltage	V_{GT}	$V_D = 12$V, $R_L = 6\Omega$	$T_j = -40$°C	—	4.5	V
			$T_j = 25$°C	—	3.5	
Gate Trigger Current	I_{GT}		$T_j = -40$°C	—	600	mA
			$T_j = 25$°C	—	400	
Gate Non-Trigger Voltage	V_{GD}	$V_D = 1/2$ Rated, $T_j = 125$°C		0.2	—	V
Gate Non-Trigger Current	I_{GD}			5	—	mA
Delay Time	t_d	$V_D = 0.5$ Rated, $T_j = 25$°C Gate Supply ($V_G = 15$V, $R_G = 8\Omega$, $t_r \leqq 1\mu$s)		—	5	μs
Gate Turn-On Time	t_{gt}			—	10	μs
Turn-Off Time	t_q	$I_T = 1200$A, $V_R \geqq 200$V, $dv/dt = 25$V/μs, $T_j = 115$°C, $V_{DRM} = 1/2$ Rated		—	400	μs
Holding Current	I_H	$T_j = 25$°C, $R_L = 6\Omega$		—	300	mA
Critical Rate of Rise of Off-State Voltage	dv / dt	$V_{DRM} = 1/2$ Rated, $T_j = 125$°C Gate Open Exponential Rise		1500	—	V / μs
Thermal Resistance	$R_{th\,(j\text{-}f)}$	Junction to Fin		—	0.0125	°C / W

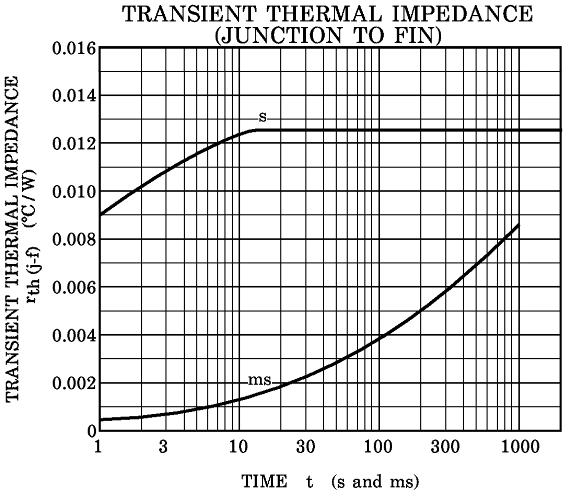

GATE TRIGGER CHARACTERISTIC


i_T − v_T


$P_{T(AV)}$ − $I_{T(AV)}$


$P_{T(AV)}$ − $I_{T(AV)}$


SURGE ON-STATE CURRENT (NON-REPETITIVE)


TRANSIENT THERMAL IMPEDANCE (JUNCTION TO FIN)

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