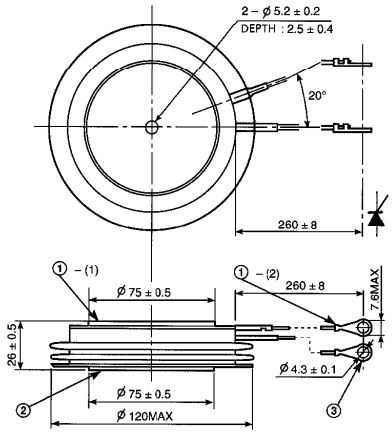
TOSHIBA THYRISTOR SILICON DIFFUSED TYPE

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 = 400μs (Max.)
- Critical Rate of Rise of On-State Current : di / dt = 250A / μs
- Critical Rate of Rise of Off-State Voltage : dv / dt = 1500V / μs
- Flat Package



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

JEDEC	—
EIAJ	—
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 = 0~125°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 / 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	−40~125	°C
Storage Temperature Range	T_{stg}	−40~125	°C
Mounting Force	—	30~45	kN

Note : V_D = 2000V, f = 50Hz, T_j = 125°C, Gate Supply (V_G = 15V, R_G = 8Ω, $t_r \leqq 1\mu s$)

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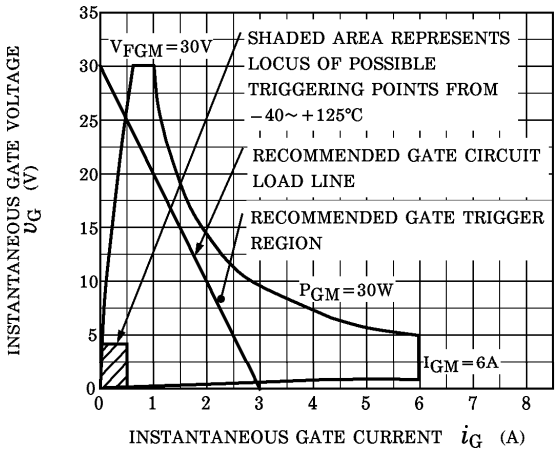
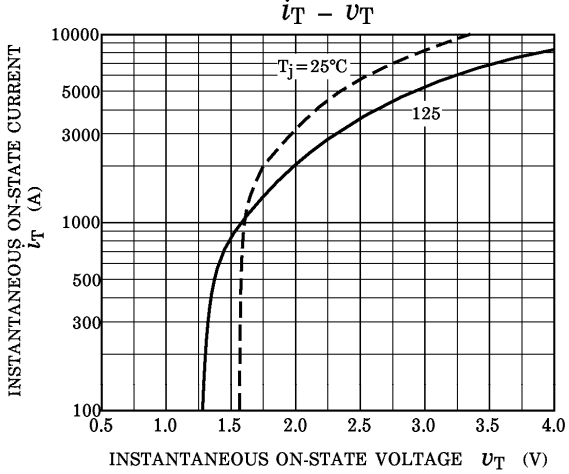
ELECTRICAL CHARACTERISTICS

CHARACTERISTIC	SYMBOL	TEST CONDITION		MIN.	MAX.	UNIT
Repetitive Peak Off-State Current and Repetitive Peak Reverse Current	I_{DRM} I_{RRM}	$V_{DRM}=V_{RRM}=4000V$, $T_j=125°C$		—	120	mA
Peak On-State Voltage	V_{TM}	$I_{TM}=5000A$, $T_j=25°C$		—	2.4	V
Gate Trigger Voltage	V_{GT}	$V_D=12V$, $R_L=6\Omega$	$T_j=-40°C$	—	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}	$V_D=2000V$, $T_j=125°C$		0.2	—	V
Gate Non-Trigger Current	I_{GD}			5	—	mA
Delay Time	t_d	$V_D=2000V$, $T_j=25°C$ Gate Supply ($V_G=15V$, $R_G=8\Omega$, $t_r\leqq1\mu s$)		—	5	μs
Gate Turn-On Time	t_{gt}			—	10	μs
Turn-Off Time	t_q	$I_T=1200A$, $V_R\geqq200V$, $dv/dt=25V/\mu s$, $T_j=125°C$ $V_{DRM}=2000V$, $di/dt=2A/\mu s$		—	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	$V_{DRM}=2670V$, $T_j=125°C$ Gate Open Exponential Rise		1500	—	$V/\mu s$
Thermal Resistance	$R_{th\,(j-f)}$	Junction to Fin		—	0.0125	°C/W

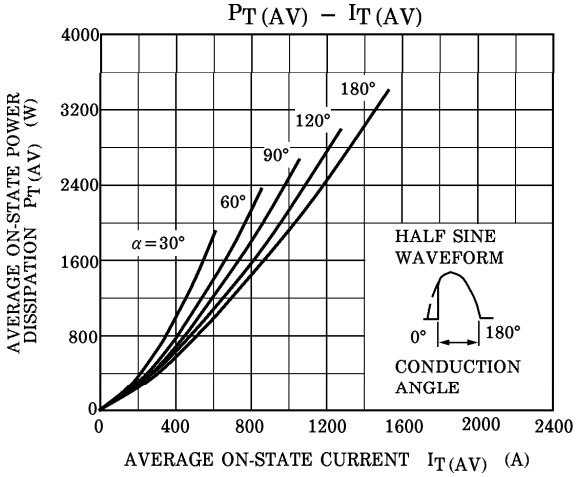
GATE TRIGGER CHARACTERISTIC



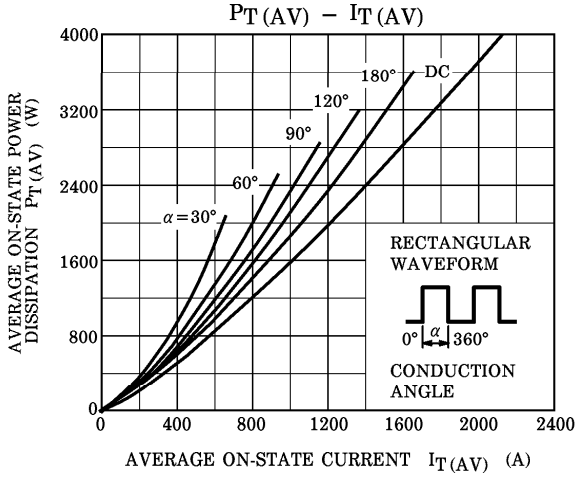
$i_T - v_T$



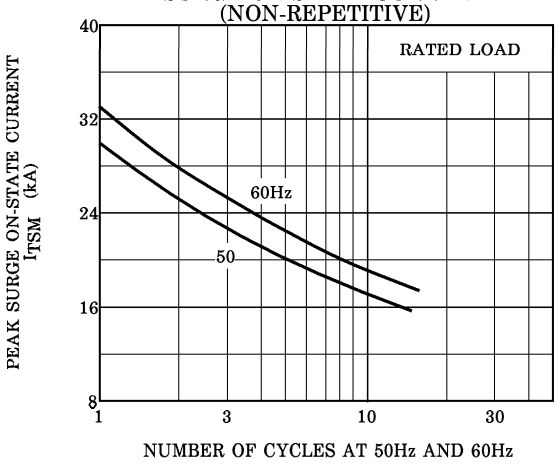
$P_{T(AV)} - I_{T(AV)}$



$P_{T(AV)} - I_{T(AV)}$



SURGE ON-STATE CURRENT (NON-REPETITIVE)



TRANSIENT THERMAL IMPEDANCE (JUNCTION TO FIN)