SG500JX22

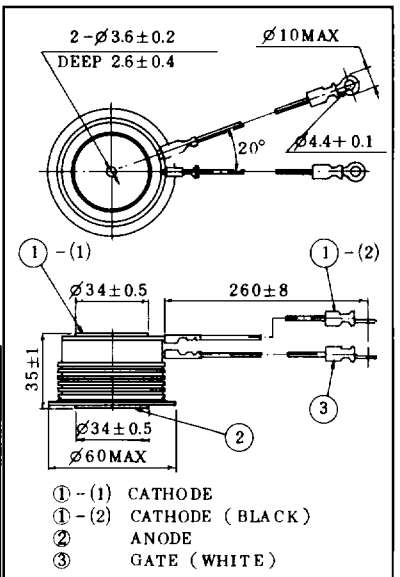
GATE TURN-OFF THYRISTOR

TENTATIVE DATA

CHOPPER, INVERTER APPLICATION

- Repetitive Peak Off-State Voltage : V_{DRM}=6000V
- R.M.S On-State Current : $I_{T(RMS)}$=200A
- Peak Turn-Off Current : I_{TGQM}=500A
- Critical Rate of Rise of On-State Current : di/dt=200A/μs
- Critical Rate of Rise of Off-State Voltage : dv/dt=1500V/μs

Unit in mm



JEDEC	—
EIAJ	—
TOSHIBA	

Weight : 330g

MAXIMUM RATINGS

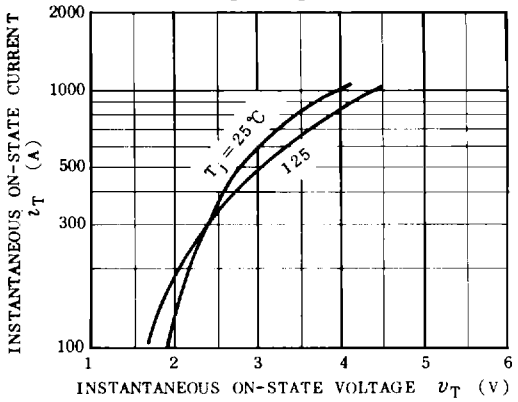
CHARACTERISTIC	SYMBOL	RATING	UNIT
Repetitive Peak Off-State Voltage	V_{DRM}	6000	V
Repetitive Peak Reverse Voltage	V_{RRM}	15	V
Peak Turn-Off Current (Note 1)	I_{TGQM}	500	A
R.M.S On-State Current (Note 2)	$I_{T(RMS)}$	200	A
Peak One Cycle Surge On-State Current (Non-Repetitive)	I_{TSM}	3000(50Hz) 3300(60Hz)	A
Critical Rate of Rise of On-State Current (Note 3)	di/dt	200	A/μs
Peak Forward Gate Current (Note 4)	I_{FGM}	30	A
Average Forward Gate Power Dissipation	$P_{G(AV)}$	6	W
R.M.S Reverse Gate Current	$I_{RG(RMS)}$	35	A
Peak Reverse Gate Power Dissipation (Note 5)	P_{RGM}	8	kW
Peak Reverse Gate Voltage	V_{RGM}	15	V
Storage Temperature Range	Tstg	-40~125	°C
Operating Junction Temperature Range	Tj	-40~125	°C
Mounting Force	-	700±70	kg

Note 1 : V_D=3000V, C_S=2μF, R_S=20Ω, di_{RG}/dt=20A/μs, I_{RG} ≒150A
f=50Hz, Tj=120°C, ($V_{DSP} \leqq$ 500V)
Note 2 : Half Sine Waveform
Note 3 : V_D=3000V, I_{TM}=500A, I_G=12A, t_r=1μs, f=50Hz, Tj=25°C
Note 4 : Pulse width : Max. 20μs, Duty : Max. 20%
Note 5 : Pulse width : Max. 20μs, Duty : Max 2%

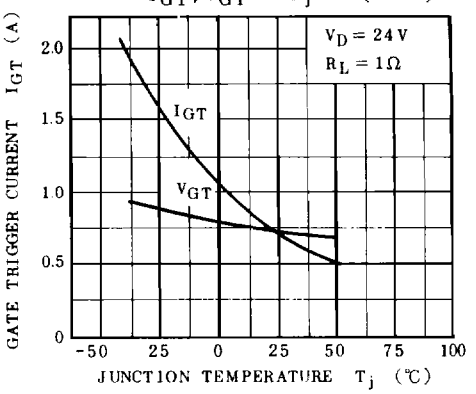
ELECTRICAL CHARACTERISTICS

CHARACTERISTIC	SYMBOL	TEST CONDITION		MIN.	TYP.	MAX.	UNIT
Repetitive Peak Off-State Current	I_{DRM}	V_{DRM}=6000V, R_{GK}=20Ω Tj=125°C		-	-	40	mA
Repetitive Peak Reverse Current	I_{RRM}	V_{RRM}=15V, Tj=125°C		-	-	10	mA
Repetitive Peak Reverse Gate Current	I_{RGM}	V_{RGM}=15V, Tj=125°C		-	-	10	mA
Peak On-State Voltage	V_{TM}	I_{TM}=500A, Tc=25°C		-	-	3.5	V
Gate Trigger Voltage	V_{GT}	V_D=24V R_L=1Ω	Tc=-40°C	-	-	1.5	V
			Tc=25°C	-	-	1.0	
Gate Trigger Current	I_{GT}		Tc=-40°C	-	2.0	4.0	mA
			Tc=25°C	-	0.7	1.2	
Gate Non-Trigger Voltage	V_{GD}	V_D=3000V Tc=125°C		0.3	-	-	V
Gate Non-Trigger Current	I_{GD}			5	-	-	mA
Dealy Time	t_d	V_D=3000V di/dt=200A/μs I_{TM}=500A, I_G=12A t_r=1μs, Tc=25°C		-	-	2.0	μs
Turn-On Time	t_{gt}			-	-	8.0	μs
Critical Rate of Rise of Off-State Voltage	dv/dt	V_{DRM}=4000V Tj=125°C, V_{GK}=-4V Exponential Rise		1500	-	-	V/μs
Holding Current	I_H	Tc=25°C, R_L=1Ω		-	15	-	A
Storage Time	t_s	I_T=500A, V_D=3000V V_{DM}=4000V di_{RG}/dt=-20A/μs C_S=2μF, Tc=120°C		-	-	13	μs
Gate Turn-Off Time	t_{gq}			-	-	15	μs
Tail Time	t_{tail}			-	-	90	μs
Turn-Off Gate Current	I_{RG}			-	150	180	A
Thermal Resistance	$R_{th(j-f)}$	Junction to Fin		-	-	0.07	°C/W

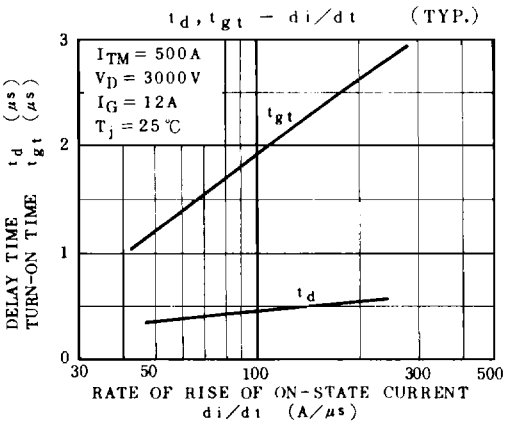
$i_T - v_T$ (TYP.)



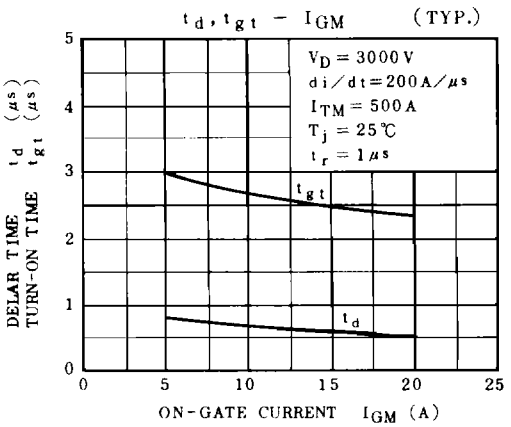
$I_{GT}, V_{GT} - T_j$ (TYP.)



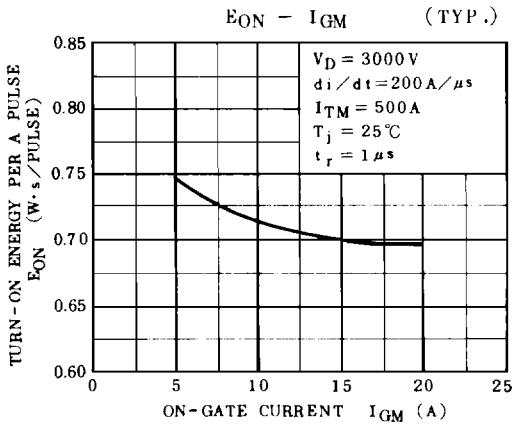
$t_d, t_{gt} - di/dt$ (TYP.)



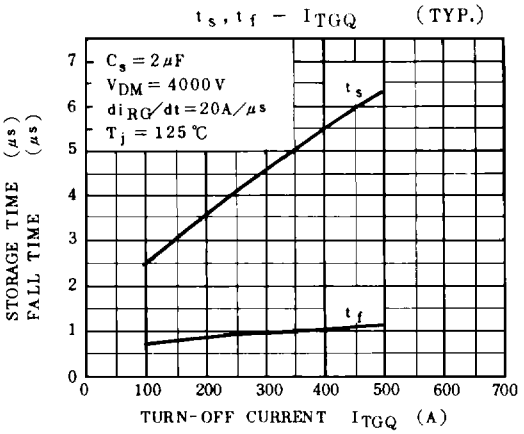
$t_d, t_{gt} - I_{GM}$ (TYP.)



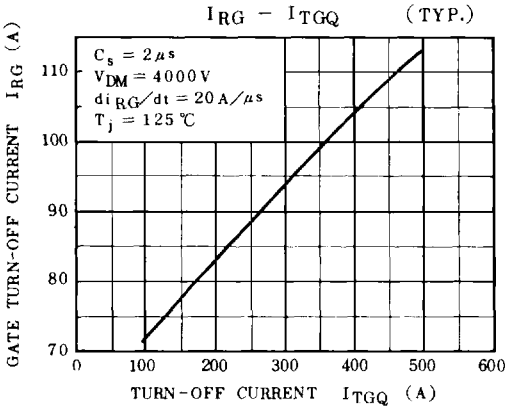
$E_{ON} - I_{GM}$ (TYP.)



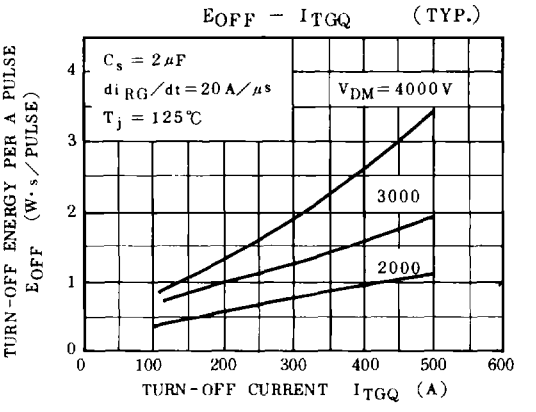
$t_s, t_f - I_{TGQ}$ (TYP.)



I_{RG} – I_{TGQ} (TYP.)



E_{OFF} – I_{TGQ} (TYP.)



t_{tail} – V_D (TYP.)