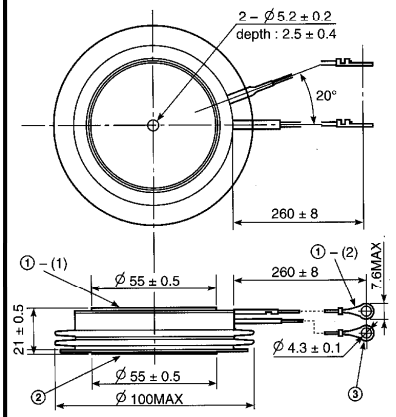
TOSHIBA ALLOY-FREE REVERSE CONDUCTING THYRISTOR

SHR400EX25

HIGH POWER CONTROL APPLICATIONS

- Repetitive Peak Off-State Voltage : V_{DRM} = 2500V
- R.M.S On-State Current : $I_{T(RMS)}$ = 630A
- Turn-Off Time : t_q = 40μs (Max.)
- Flat Package

Unit in mm



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

JEDEC	—
EIAJ	—
TOSHIBA	

Weight : 630g (Typ.)

MAXIMUM RATINGS

CHARACTERISTIC	SYMBOL	RATING	UNIT
Repetitive Peak Off-State Voltage	V_{DRM}	2500	V
Non-Repetitive Peak Off-State Voltage (Non-Repetitive < 5ms, T_j = 0~115°C)	V_{DSM}	2500	V
R.M.S On-State Current	$I_{T(RMS)}$	630	A
R.M.S Reverse Current	$I_{R(RMS)}$	235	
Average On-State Current	$I_{T(AV)}$	400	A
Average Reverse Current	$I_{R(AV)}$	150	
Peak One Cycle Surge On-State Current (Non-Repetitive)	I_{TSM}	7000 (50Hz)	A
		7700 (60Hz)	
Peak One Cycle Surge Reverse Current (Non-Repetitive)	I_{RSM}	2500 (50Hz)	
		2750 (60Hz)	
I^2t Limit Value	I^2t	245×10^3 (On-Current)	A^2s
		31×10^3 (Reverse Current)	
Critical Rate of Rise of On-State Current	di / dt	200	A / μs
Peak Gate Power Dissipation	P_{GM}	20	W
Average Gate Power Dissipation	$P_{G(AV)}$	4	W
Peak Forward Gate Current	I_{GM}	4	A
Peak Forward Gate Voltage	V_{FGM}	20	V
Peak Reverse Gate Voltage	V_{RGM}	5	V
Junction Temperature	T_j	−40~115	°C
Storage Temperature Range	T_{stg}	−40~115	°C
Mounting Force	—	19.6 ± 2	kN

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ELECTRICAL CHARACTERISTICS

CHARACTERISTIC	SYMBOL	TEST CONDITION		MIN.	MAX.	UNIT
Repetitive Peak Off-State Current	I_{DRM}	V_{DRM} = Rated, T_j = 115°C		—	100	mA
Peak On-State Voltage	V_{TM}	I_{TM} = 1250A, T_j = 25°C		—	3.0	V
Peak Reverse Voltage	V_{RM}	I_{RM} = 500A, T_j = 25°C		—	2.3	
Gate Trigger Voltage	V_{GT}	V_D = 12V, R_L = 6Ω	T_j = −40°C	—	4.0	V
			T_j = 25°C	0.5	3.0	
Gate Trigger Current	I_{GT}		T_j = −40°C	—	500	mA
			T_j = 25°C	15	300	
Gate Non-Trigger Voltage	V_{GD}	V_D = 0.5 Rated, T_j = 115°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 = 15V, R_G = 8Ω, $t_r \leqq 1\mu s$) di / dt = 200A / μs		—	4	μs
Gate Turn-On Time	t_{gt}			—	6	μs
Turn-Off Time	t_q	I_{TM} = 400A, I_R = 10A V_{DRM} = 0.5 Rated dv / dt = 350V / μs, T_j = 115°C		—	40	μs
Holding Current	I_H	T_j = 25°C, R_L = 6Ω		—	1000	mA
Critical Rate of Rise of Commutating OFF-State Voltage	dv / dt (C)	I_{TM} = 2500A, I_{RM} = 2500A, V_{DRM} = 0.5 Rated, Pulse width = 100μs, T_j = 115°C		350	—	V / μs
Thermal Resistance (Junction to Case)	$R_{th\ (j\text{-}f)}$	DC		—	0.025	°C / W