

TOSHIBA ALLOY-FREE REVERSE CONDUCTING THYRISTOR

SHR400R22

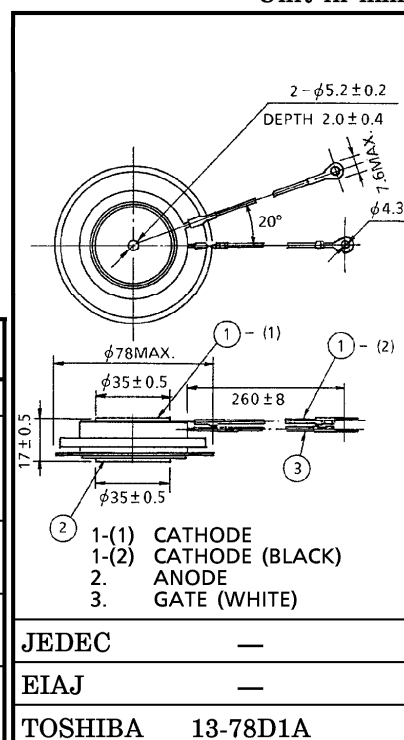
HIGH POWER CONTROL APPLICATIONS

- Repetitive Peak Off-State Voltage : $V_{DRM}=1300V$
- R.M.S On-State Current : $I_T(RMS)=630A$
- Turn-Off Time : $t_q=40\mu s$ (Max.)
- Flat Package

MAXIMUM RATINGS

CHARACTERISTIC	SYMBOL	RATING	UNIT
Repetitive Peak Off-State Voltage	V_{DRM}	1300	V
Non-Repetitive Peak Off-State Voltage (Non-Repetitive < 5ms, $T_j=0\sim115^\circ C$)	V_{DSM}	1300	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}	7200 (50Hz)	A
		8000 (60Hz)	
Peak One Cycle Surge Reverse Current (Non-Repetitive)	I_{RSM}	2500 (50Hz)	A
		2750 (60Hz)	
I^2t Limit Value	I^2t	200×10^3 (On-Current)	A^2s
		31×10^3 (Reverse Current)	
Critical Rate of Rise of On-State Current	di/dt	100	$A/\mu s$
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	$-40\sim115$	$^\circ C$
Storage Temperature Range	T_{stg}	$-40\sim115$	$^\circ C$
Mounting Force	—	1350~1650	kg

Unit in mm



Weight : 260g

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ELECTRICAL CHARACTERISTICS

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	MAX.	UNIT
Repetitive Peak Off-State Current	I_{DRM}	$V_{DRM} = \text{Rated}$, $T_j = 115^\circ\text{C}$	—	35	mA
Peak On-State Voltage	V_{TM}	$I_{TM} = 1250\text{A}$, $T_j = 25^\circ\text{C}$	—	3.0	V
Peak Reverse Voltage	V_{RM}	$I_{RM} = 500\text{A}$, $T_j = 25^\circ\text{C}$	—	2.5	
Gate Trigger Voltage	V_{GT}	$V_D = 6\text{V}$, $R_L = 6\Omega$	$T_c = -40^\circ\text{C}$	—	4.5
			$T_c = 25^\circ\text{C}$	—	
Gate Trigger Current	I_{GT}		$T_c = -40^\circ\text{C}$	—	400
			$T_c = 25^\circ\text{C}$	—	
Gate Non-Trigger Voltage	V_{GD}	$V_D = 1/2 \text{ Rated}$, $T_j = 115^\circ\text{C}$	0.15	—	V
Gate Non-Trigger Current	I_{GD}		1.5	—	mA
Delay Time	t_d	$V_D = 1/2 \text{ Rated}$, $T_j = 25^\circ\text{C}$, Gate Supply ($V_G = 15\text{V}$, $R_G = 8\Omega$, $t_r \leq 1\mu\text{s}$)	—	4	μs
Gate Turn-On Time	t_{gt}		—	6	μs
Turn-Off Time	t_q	$I_{TM} = 400\text{A}$, $I_R = 10\text{A}$, $V_{DRM} = 1/2 \text{ Rated}$, $dv/dt (C) = 200\text{V}/\mu\text{s}$, $T_j = 115^\circ\text{C}$	—	40	μs
Holding Current	I_H	$T_j = 25^\circ\text{C}$, $R_L = 6\Omega$	—	500	mA
Critical Rate of Rise of Commutating OFF-State Voltage	$dv/dt (C)$	$I_{TM} = 2000\text{A}$, $I_{RM} = 1000\text{A}$, $V_{DRM} = 1/2 \text{ Rated}$, Pulse width $60\mu\text{s}$, $T_j = 115^\circ\text{C}$	200	—	$\text{V}/\mu\text{s}$
Thermal Resistance (Junction to Case)	$R_{th(j-f)}$	DC	—	0.04	$^\circ\text{C}/\text{W}$
Critical Rate of Rise of Off-State Voltage	dv/dt	$V_D = 650\text{V}$, $T_j = 115^\circ\text{C}$, Gate Open, Exponential Rise	1000	—	$\text{V}/\mu\text{s}$

