

HIGH-SPEED THYRISTOR

SHIBA [DISCRETE/OPTO]

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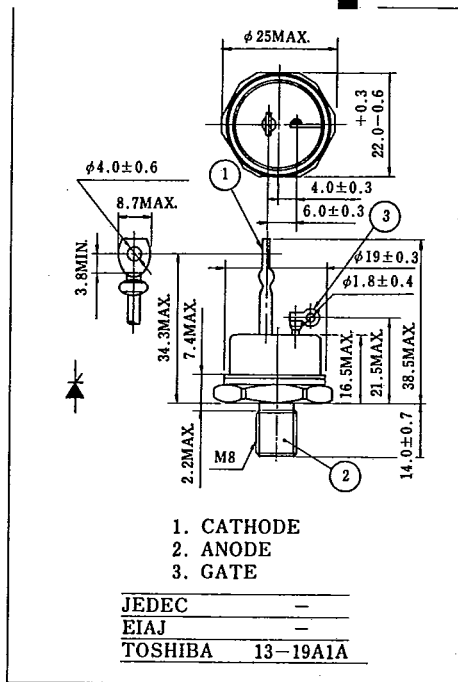
Unit in mm

SH50L13A

800V 50A

MAXIMUM RATINGS

CHARACTERISTIC	SYMBOL	RATING	UNIT
Repetitive Peak Off-State Voltage and Repetitive Peak Reverse Voltage	SH50D13A	200	V
	SH50F13A	300	
	SH50G13A	400	
	SH50H13A	500	
	SH50J 13A	600	
	SH50L13A	800	
Non-Repetitive Peak Reverse Voltage (Non-Rep <5ms) $T_j = 0 \sim 125^\circ\text{C}$	SH50D13A	300	V
	SH50F13A	400	
	SH50G13A	500	
	SH50H13A	600	
	SH50J 13A	720	
	SH50L13A	960	
R.M.S. On-State Current	$I_T(\text{RMS})$	79	A
Average On-State Current (Half Sine Waveform $T_c = 35^\circ\text{C}$)	$I_T(\text{AV})$	50	A
Peak One Cycle Surge On-State Current (Non-Repetitive)	I_{TSM}	1000(50Hz)	A
		1100(60Hz)	
I^2t Limit Value ($t = 1\text{ms} \sim 10\text{ms}$)	I^2t	5×10^3	A^2s
Critical Rate of Rise of On-State Current (Notel)	di/dt	100	$\text{A}/\mu\text{s}$
Peak Gate Power Dissipation	P_{GM}	5	W
Average Gate Power Dissipation	$P_{G(\text{AV})}$	0.5	W
Peak Forward Gate Current	I_{GM}	2	A
Peak Forward Gate Voltage	V_{FGM}	10	V
Peak Reverse Gate Voltage	V_{RGM}	-5	V
Junction Temperature	T_j	-40 ~ 125	$^\circ\text{C}$
Storage Temperature Range	T_{stg}	-40 ~ 125	$^\circ\text{C}$
Stud Torque		50	kg cm



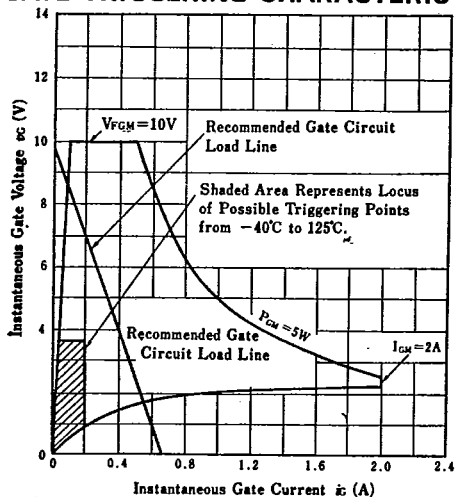
Note: $V_D = \text{Rated}$, $I_{TM} = 100\text{A}$, $T_c = 120^\circ\text{C}$, Gate Supply ($V_G = 10\text{V}$, $R_G = 15\Omega$, $t_r \leq 1\mu\text{s}$)

ELECTRICAL CHARACTERISTICS

CHARACTERISTIC	SYMBOL	CONDITION	MIN.	MAX.	UNIT	
Repetitive Peak Off-State Current and Repetitive Peak Reverse Current	I_{DRM} and I_{RRM}	$V_{DRM} = V_{RRM} = \text{Rated}$, $T_j = 125^\circ\text{C}$	-	15	mA	
Peak On-State Voltage	V_{TM}	$I_{TM} = 150\text{A}$, $T_c = 25^\circ\text{C}$	-	1.95	V	
Gate Trigger Voltage	V_{GT}	$V_D = 6\text{V}$, $R_L = 6\Omega$	$T_c = -40^\circ\text{C}$	-	3.7	V
			$T_c = 25^\circ\text{C}$	-	3.0	
Gate Trigger Current	I_{GT}	$V_D = 6\text{V}$, $R_L = 6\Omega$	$T_c = -40^\circ\text{C}$	-	200	mA
			$T_c = 25^\circ\text{C}$	-	100	
Gate Non-Trigger Voltage	V_{GD}	$V_D = \text{Rated}$, $T_c = 125^\circ\text{C}$	0.15	-	V	
Gate Non-Trigger Current	I_{GD}	$V_D = \text{Rated}$, $T_c = 125^\circ\text{C}$	1.0	-	mA	
Turn-On Time	t_{gt}	$V_D = 0.5\text{Rated}$, $T_c = 25^\circ\text{C}$	-	-	-	
Delay Time	t_d	Gate Supply ($V_G = 10\text{V}$, $R_G = 15\Omega$, $t \leq 1\mu\text{s}$)	-	4	μs	
Turn-Off Time	t_q	$I_T = 100\text{A}$, $V_R \geq 50\text{V}$	-	15	μs	
		$dv/dt = 20\text{V}/\mu\text{s}$, $V_{DRM(\text{reapplied})} = \text{Rated}$, $T_c = 120^\circ\text{C}$	-	-		
Critical Rate of Rise of Off-State Voltage	dv/dt	$V_{DRM} = \text{Rated}$, $T_j = 125^\circ\text{C}$, Gate Open, Exponential Rise	200	-	$\text{V}/\mu\text{s}$	
Holding Current	I_H	$T_c = 25^\circ\text{C}$, $R_L = 6\Omega$	-	150	mA	
			-	0.4		
Thermal Resistance*	$R_{th(j-c)}$	DC	-	-	$^\circ\text{C}/\text{W}$	

* Junction to Case

GATE TRIGGERING CHARACTERISTICS



$T_c \text{ MAX} - I_T(\text{AV})$

