

PHASE CONTROL THYRISTOR

TOSHIBA (DISCRETE/OPTO)

39 DE 9097250 0002276 4

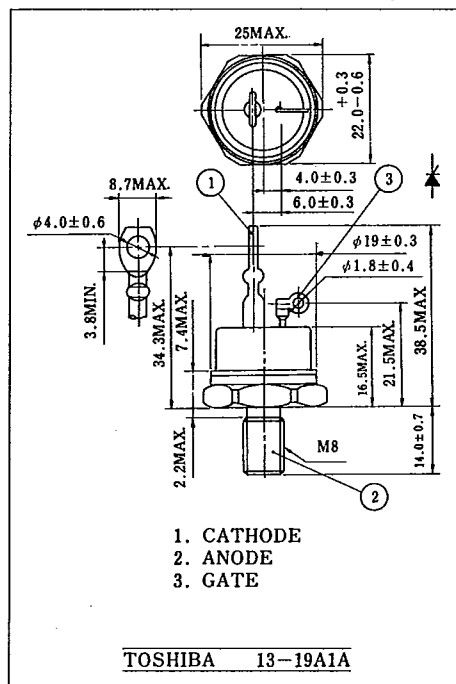
Unit: mm

SF50Q13 1200V 50A

MAXIMUM RATINGS

CHARACTERISTIC	SYMBOL	RATING	UNIT
Repetitive Peak Off-State Voltage and Repetitive Peak Reverse Voltage	SF50D13	200	V
	SF50F13	300	
	SF50G13	400	
	SF50J13	600	
	SF50L13	800	
	SF50N13	1000	
	SF50Q13	1200	
Non-Repetitive Peak Reverse Voltage (Non-Rep <5ms) $T_j = 0 \sim 125^\circ\text{C}$	SF50D13	300	V
	SF50F13	400	
	SF50G13	500	
	SF50J13	720	
	SF50L13	960	
	SF50N13	1200	
	SF50Q13	1440	
R.M.S On-State Current	$I_{T(RMS)}$	78.5	A
Average On-State Current (Half Sine Waveform)	$I_{T(AV)}$	50.0	A
Peak One Cycle Surge On-State Current (Non-Repetitive)	I_{TSM}	1100(60Hz)	A
		1000(50Hz)	
I^2t Limit Value ($t=1\text{ms} \sim 10\text{ms}$)	I^2t	5000	A^2s
Critical Rate of Rise of On-State Current (Note 1)	di/dt	100	$\text{A}/\mu\text{s}$
Peak Gate Power Dissipation	P_{GM}	5	W
Average Gate Power Dissipation	$P_{G(AV)}$	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}	-40~150	$^\circ\text{C}$
Stud Torque		50~70	kg cm

Note 1 : $V_D = \frac{1}{2}$ Rated, $T_C = 120^\circ\text{C}$, Gate Supply ($V_G = 10\text{V}$, $R_G = 20\Omega$, $t_r \leq 1\mu\text{s}$)



ELECTRICAL CHARACTERISTICS

CHARACTERISTIC	SYMBOL	CONDITION	MIN.	MAX.	UNIT
Repetitive Peak Off-State Current and Repetitive Peak Reverse Current	I_{DRM} and I_{RRM}	$V_{DRM} = V_{RRM} = \text{Rated}$ $T_j = 125^\circ\text{C}$	-	10	mA
Peak On-State Voltage	V_{TM}	$I_{TM} = 150\text{A}$, $T_c = 25^\circ\text{C}$	-	1.7	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	
			$T_c = -40^\circ\text{C}$	200	
Gate Trigger Current	I_{GT}	$V_D = 6\text{V}$, $R_L = 6\Omega$	$T_c = 25^\circ\text{C}$	100	mA
Gate Non-Trigger Voltage	V_{GD}	$V_D = \frac{1}{2}$ Rated, $T_c = 125^\circ\text{C}$	0.25	-	V
Gate Non-Trigger Current	I_{GD}	$V_D = \frac{1}{2}$ Rated, $T_c = 125^\circ\text{C}$	5	-	mA
Turn-On Time	t_{gt}	$V_D = 0.5$ Rated, $T_c = 25^\circ\text{C}$	-	6	μs
Delay Time	t_d	Gate Supply ($V_G = 10\text{V}$, $R_G = 20\Omega$, $t_r \leq 1\mu\text{s}$)	-	4	μs
Turn-Off Time	t_q	$I_T = 100\text{A}$, $V_R \geq 50\text{V}$, $dv/dt = 20\text{V}/\mu\text{s}$, $V_{DRM}(\text{reapplied}) = \frac{1}{2}$ Rated, $T_c = 120^\circ\text{C}$	-	150	μs
Holding Current	I_H	$T_c = 25^\circ\text{C}$, $R_L = 100\Omega$	-	65	mA
Critical Rate of Rise of Off-State Voltage	dv/dt	$V_{DRM} = \frac{3}{8}$ Rated, $T_j = 125^\circ\text{C}$, Gate open, Exponential rise	200	-	$\text{V}/\mu\text{s}$
Thermal Resistance *	$R_{th(j-c)}$	DC	-	0.4	$^\circ\text{C}/\text{W}$

* Junction to Case.

GATE TRIGGERING CHARACTERISTICS

