

TOSHIBA BI-DIRECTIONAL TRIODE THYRISTOR SILICON PLANAR TYPE

S6903G, S6903J

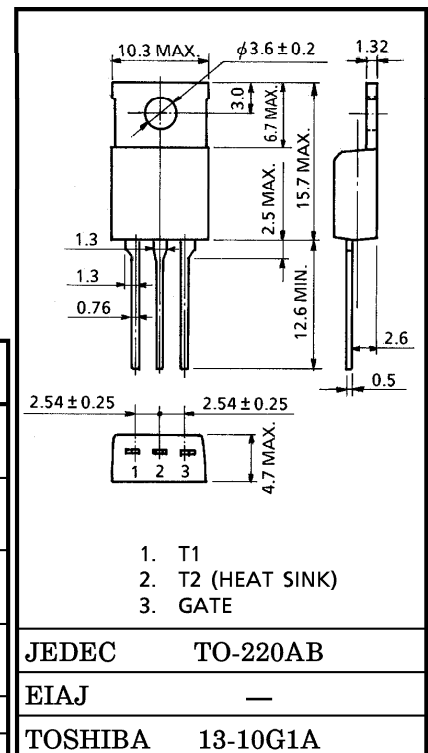
AC POWER CONTROL APPLICATIONS

Unit in mm

- High Rush Current Capability
Optimal for controlling actuators where high rush current may flow.
: $I_{TRM} = 120A$ ($n = 100k$ cycle, $T_c = 45^\circ C$)
- R.M.S On-State Current : $I_T (RMS) = 20A$
- Repetitive Peak Off-State Voltage : $V_{DRM} = 400V, 600V$

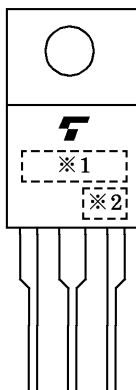
MAXIMUM RATINGS

CHARACTERISTIC	SYMBOL	RATING	UNIT
Repetitive Peak Off-State Voltage	V_{DRM}	400 600	V
R.M.S On-State Current (Full Sine Waveform $T_c = 100^\circ C$)	$I_T (RMS)$	20	A
Peak One Cycle Surge On-State Current (Non-Repetitive)	I_{TSM}	180 (50Hz) 200 (60Hz)	A
Repetitive Surge On-State Current (Note 1)	I_{TRM}	120	A
I^2t Limit Value	I^2t	167	A^2s
Critical Rate of Rise of On-State Current	di/dt	50	$A/\mu s$
Peak Gate Power Dissipation	P_{GM}	5	W
Average Gate Power Dissipation	$P_G (AV)$	0.5	W
Peak Gate Voltage	V_{GM}	10	V
Peak Gate Current	I_{GM}	2	A
Junction Temperature	T_j	$-40 \sim 125$	$^\circ C$
Storage Temperature Range	T_{stg}	$-40 \sim 125$	$^\circ C$



Weight : 2.0g

MARKING



NUMBER	SYMBOL	MARK
※1	TYPE	S6903G S6903J
※2	Lot Number Month (Starting from) Year (Last Decimal Digit of the Current Year)	Example 8A : January 1998 8B : February 1998 8L : December 1998

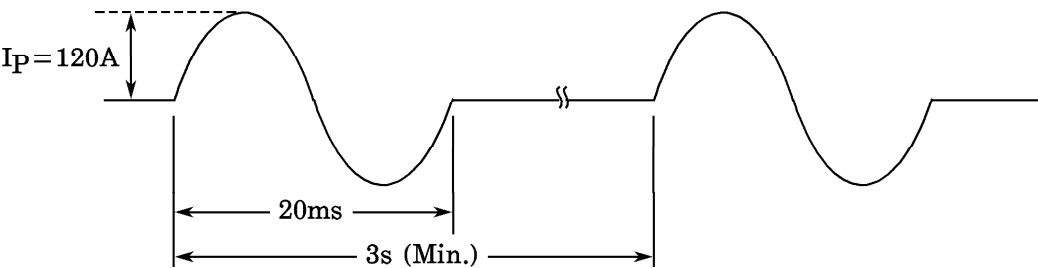
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ELECTRICAL CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	TEST CONDITION		MIN.	TYP.	MAX.	UNIT
Repetitive Peak Off-State Current		I_{DRM}	V_{DRM} = Rated		—	—	20	μA
Gate Trigger Voltage	I	V_{GT}	$V_{\text{D}} = 12\text{V}$ $R_{\text{L}} = 20\Omega$	T2 (+), Gate (+)	—	—	1.5	V
	II			T2 (+), Gate (—)	—	—	1.5	
	III			T2 (—), Gate (—)	—	—	1.5	
	IV			T2 (—), Gate (+)	—	—	—	
Gate Trigger Current	I	I_{GT}	$V_{\text{D}} = 12\text{V}$ $R_{\text{L}} = 20\Omega$	T2 (+), Gate (+)	—	—	30	mA
	II			T2 (+), Gate (—)	—	—	30	
	III			T2 (—), Gate (—)	—	—	30	
	IV			T2 (—), Gate (+)	—	—	—	
Peak On-State Voltage		V_{TM}	$I_{\text{TM}} = 30\text{A}$		—	—	1.6	V
Gate Non-Trigger Voltage		V_{GD}	V_{D} = Rated, $T_{\text{c}} = 125^{\circ}\text{C}$		0.2	—	—	V
Holding Current		I_{H}	$V_{\text{D}} = 12\text{V}$, $I_{\text{TM}} = 2\text{A}$		—	—	50	mA
Thermal Resistance		$R_{\text{th(j-c)}}$	Junction to Case, AC		—	—	1.0	$^{\circ}\text{C} / \text{W}$
Critical Rate of Rise of Off-State Voltage at Commutation		$(\text{dv} / \text{dt})_{\text{c}}$	$V_{\text{DRM}} = 400\text{V}$, $T_{\text{j}} = 125^{\circ}\text{C}$ $(\text{di} / \text{dt})_{\text{c}} = -8.7\text{A} / \text{ms}$		10	—	—	$\text{V} / \mu\text{s}$

(Note 1) Repetitive Surge On-State Current



$I_{\text{P}} = 120\text{A}$ ($f = 50\text{Hz}$) at $T_{\text{c}} = 45^{\circ}\text{C}$
Max. Repetitive Number of cycle $n = 100\text{k}$ cycle (Repetitive cycle $T = 3\text{s}$ Min.)