

TOSHIBA BI-DIRECTIONAL TRIODE THYRISTOR SILICON PLANAR TYPE

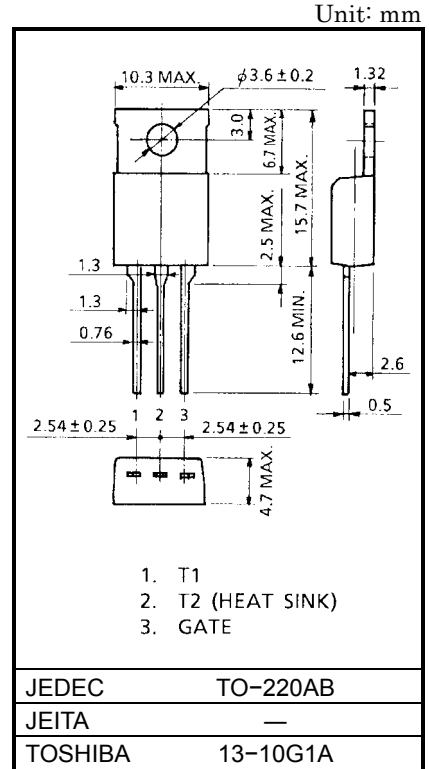
# S6903G,S6903J

## AC POWER CONTROL APPLICATIONS

- 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 :  $V_{DRM} = 400V, 600V$

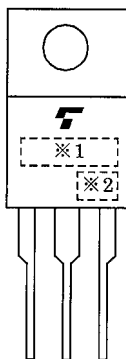
## MAXIMUM RATINGS

CHARACTERISTIC	SYMBOL	RATING	UNIT
Repetitive Peak Off-State Voltage	S6903G	400	V
	S6903J	600	
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)	A
		200 (60Hz)	
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	$T_j$	-40~125	$^\circ C$
Storage Temperature Range	$T_{stg}$	-40~125	$^\circ C$



Weight: 2.0 g

## MARKING

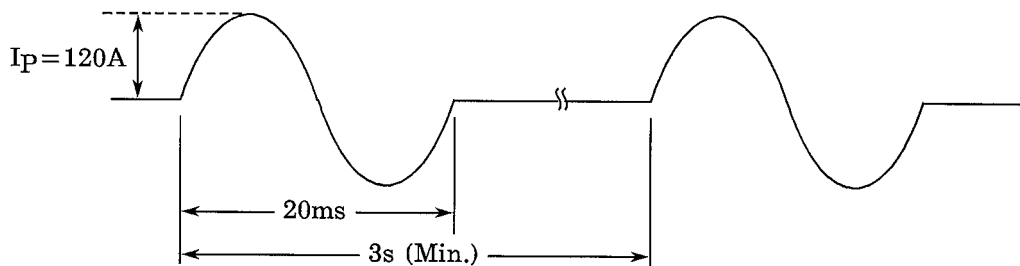


NUMBER	SYMBOL	MARK
*1	TYPE	S6903G
		S6903J
*2	Lot Number 	Example 8A: January 1998 8B: February 1998 8L: December 1998

## ELECTRICAL CHARACTERISTICS (Ta = 25°C)

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

Note 1: Repetitive Surge On-State Current



$I_p = 120\text{A}$  ( $f = 50\text{Hz}$ ) at  $T_c = 45^\circ\text{C}$

Max. Repetitive Number of cycle  $n = 100\text{k}$  cycle (Repetitive cycle  $T = 3\text{s}$  Min.)

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