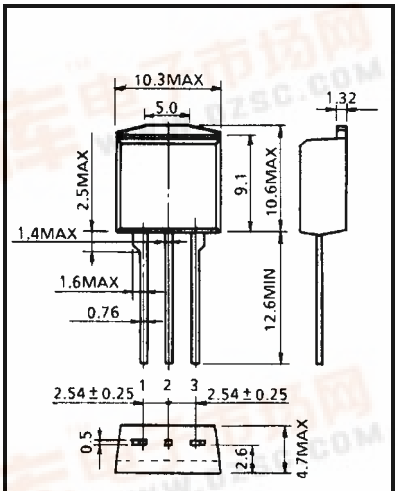
TOSHIBA Thyristor Silicon Planar Type

S6A13

Condenser Discharge Control Applications

- FWD included between cathode and anode
- Critical rate of rise of ON-state current: di/dt = 750 A/μs
- Repetitive peak surge ON-state current: I_{TRM} = 500 A (t_w = 2 μs)
- Repetitive peak OFF-state voltage: V_{DRM} = 800 V
- Gate trigger current: I_{GT} = 30 mA max.

Unit: mm



1. CATHODE
2. ANODE
3. GATE

JEDEC	—
JEITA	—
TOSHIBA	13-10J1B

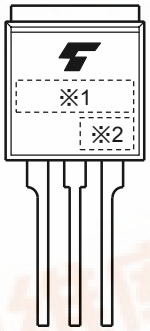
Weight: 1.5 g (typ.)

Maximum Ratings

Characteristics	Symbol	Rating	Unit
Repetitive peak OFF-state voltage	V_{DRM}	800	V
Repetitive peak surge ON-state current (Note)	I_{TRM}	500	A
Repetitive peak surge forward current (Note)	I_{FRM}	500	A
Critical rate of rise of ON-state current (Note)	di/dt	750	A/μs
Peak gate power dissipation	P_{GM}	5	W
Average gate power dissipation	$P_{G\ (AV)}$	0.5	W
Peak forward gate voltage	V_{FGM}	10	V
Peak reverse gate voltage	V_{RGM}	−5	V
Peak forward gate current	I_{GM}	2	A
Junction temperature	T_j	−40~125	°C
Storage temperature range	T_{stg}	−40~150	°C

Note: $V_D \leqq 0.8 \times$ rated, Tc = 85°C, $i_{gp} \geqq 60$ mA, $t_{gw} \geqq 10$ μs, $t_{gr} \leqq 150$ ns

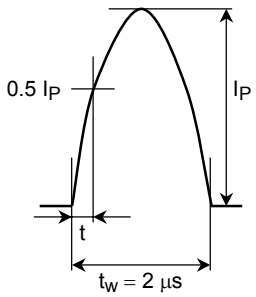
Marking



※1	MARK	S6A13	TYPE NAME	S6A13
※2	Lot Number □□ ← Month (starting from alphabet A) └ Year (last decimal digit of the current year)			

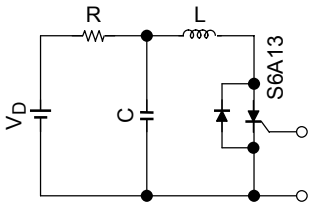
Electrical Characteristics (Ta = 25°C)

Characteristics	Symbol	Test Condition	Min	Typ.	Max	Unit
Repetitive peak OFF-state current	I_{DRM}	V_{DRM} = Rated	—	—	10	μA
Peak ON-state voltage (thyristor)	V_{TM}	I_{TM} = 25 A	—	—	1.5	V
Peak forward voltage (diode)	V_{FM}	I_{FM} = 25 A	—	—	2.0	V
Gate trigger voltage	V_{GT}	V_D = 6 V, R_L = 10 Ω	—	—	1.0	V
Gate trigger current	I_{GT}		—	—	30	mA
Gate non-trigger voltage	V_{GD}	V_D = Rated, Tc = 125°C	0.2	—	—	V
Critical rate of rise of OFF-state voltage	dv/dt	V_{DRM} = Rated, Tc = 125°C Exponential Rise	—	50	—	V/μs
Holding current	I_H	V_D = 6 V, I_{TM} = 1 A	—	—	35	mA
Thermal resistance (junction to ambient)	$R_{th\ (j-a)}$	DC	—	—	70	°C/W



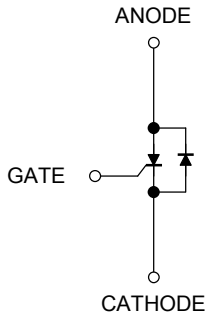
$$di/dt = \frac{0.5\ I_P}{t}$$

Test Circuit Examples

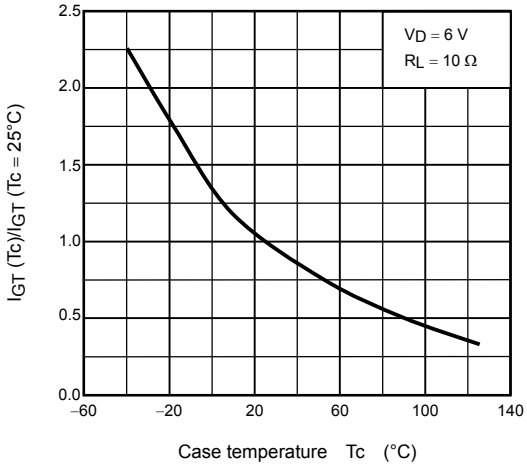


$$t_w = \pi\sqrt{LC}\ ,\ I_P = \frac{V_D}{\sqrt{L/C}}$$

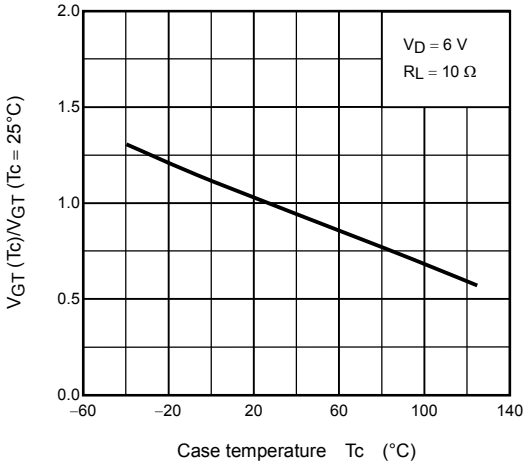
Equivalent Circuit



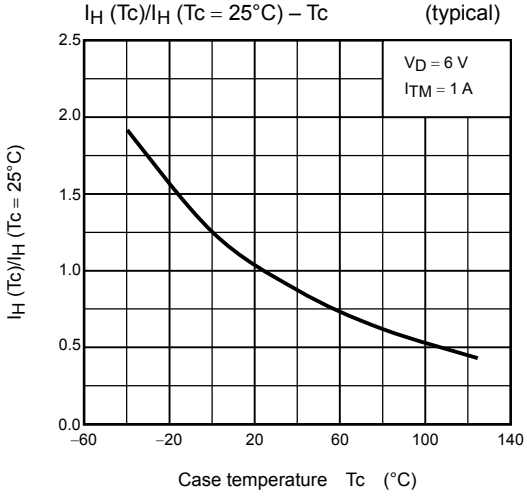
I_{GT} (Tc)/I_{GT} (Tc = 25°C) – Tc (typical)



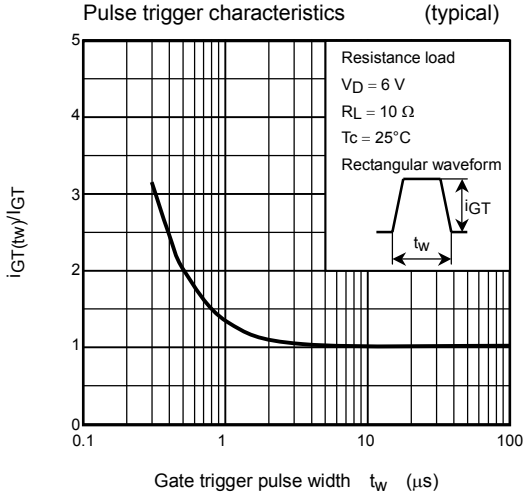
V_{GT} (Tc)/V_{GT} (Tc = 25°C) – Tc (typical)



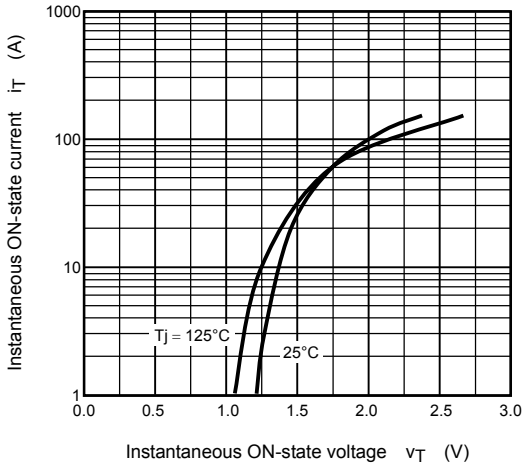
I_H (Tc)/I_H (Tc = 25°C) – Tc (typical)



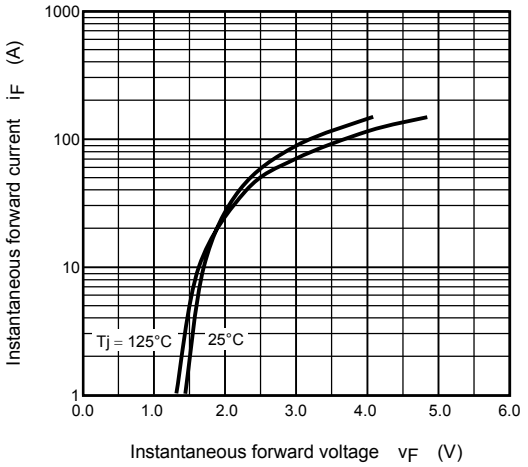
Pulse trigger characteristics (typical)



i_T – v_T (thyristor)



i_F – v_F (diode)



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