

TOSHIBA Thyristor Silicon Planar Type

# S6A13

## Condenser Discharge Control Applications

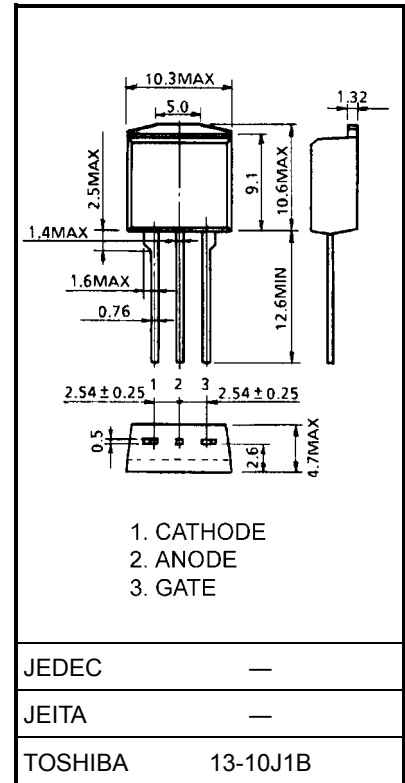
- FWD included between cathode and anode
- Critical rate of rise of ON-state current:  $di/dt = 750 \text{ A}/\mu\text{s}$
- Repetitive peak surge ON-state current:  $I_{TRM} = 500 \text{ A}$  ( $t_w = 2 \mu\text{s}$ )
- Repetitive peak OFF-state voltage:  $V_{DRM} = 800 \text{ V}$
- Gate trigger current: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

## 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	$\text{A}/\mu\text{s}$
Peak gate power dissipation	$P_{GM}$	5	W
Average gate power dissipation	$P_G (AV)$	0.5	W
Peak forward gate 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	$^{\circ}\text{C}$
Storage temperature range	$T_{stg}$	-40~150	$^{\circ}\text{C}$

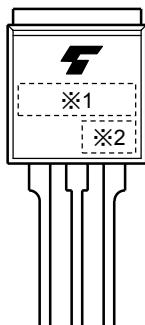
Note:  $V_D \leq 0.8 \times \text{rated}$ ,  $T_c = 85^{\circ}\text{C}$ ,  $i_{gp} \geq 60 \text{ mA}$ ,  $t_{gw} \geq 10 \mu\text{s}$ ,  $t_{gr} \leq 150 \text{ ns}$

Unit: mm



Weight: 1.5 g (typ.)

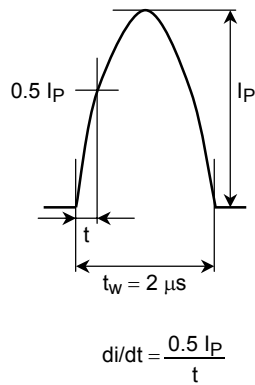
## Marking



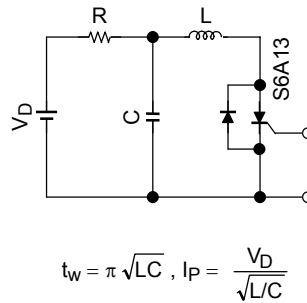
※1	MARK	S6A13	TYPE NAME	S6A13
※2	Lot Number □□ ← Month (starting from alphabet A) ↑ Year (last decimal digit of the current year)			

## Electrical Characteristics (Ta = 25°C)

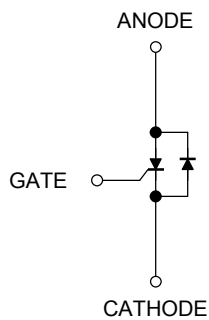
Characteristics	Symbol	Test Condition	Min	Typ.	Max	Unit
Repetitive peak OFF-state current	$I_{DRM}$	$V_{DRM} = \text{Rated}$	—	—	10	$\mu\text{A}$
Peak ON-state voltage (thyristor)	$V_{TM}$	$I_{TM} = 25 \text{ A}$	—	—	1.5	V
Peak forward voltage (diode)	$V_{FM}$	$I_{FM} = 25 \text{ A}$	—	—	2.0	V
Gate trigger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

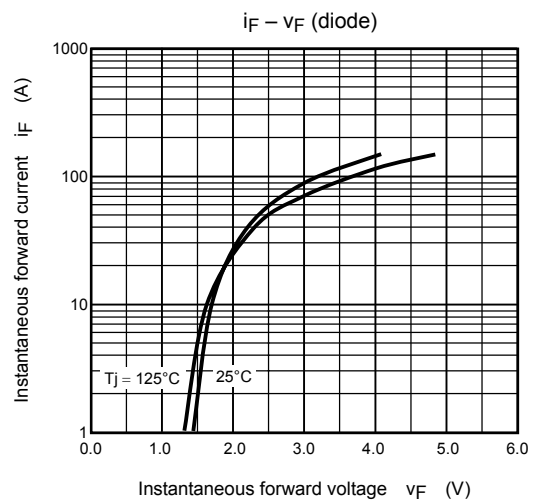
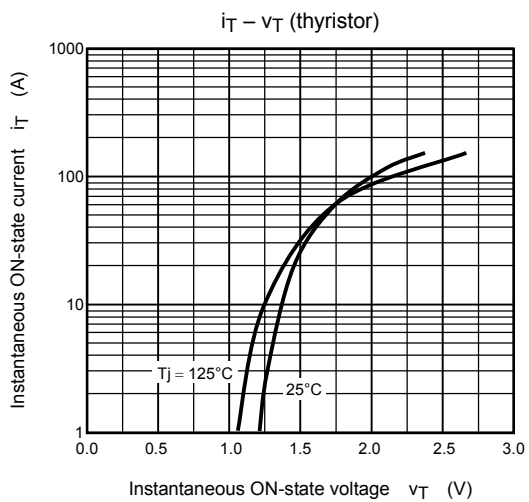
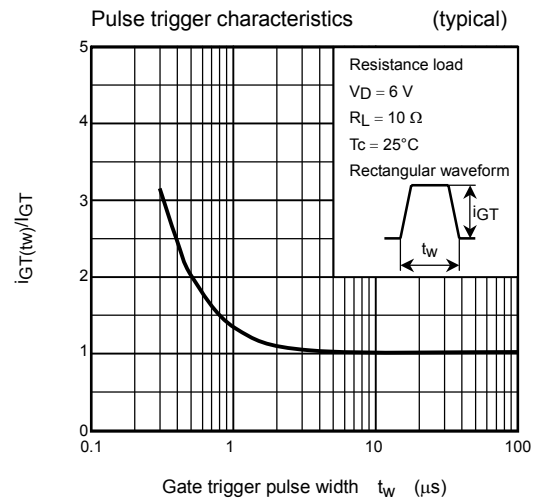
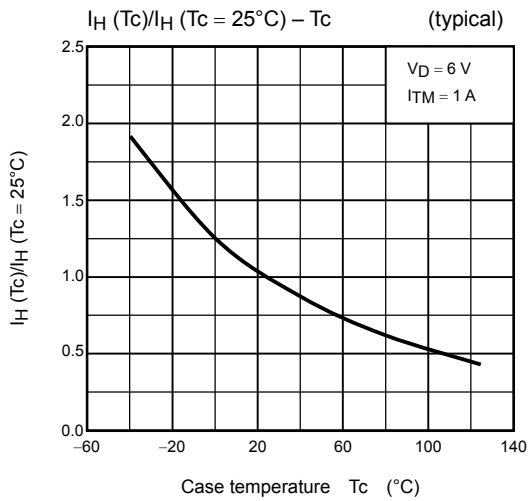
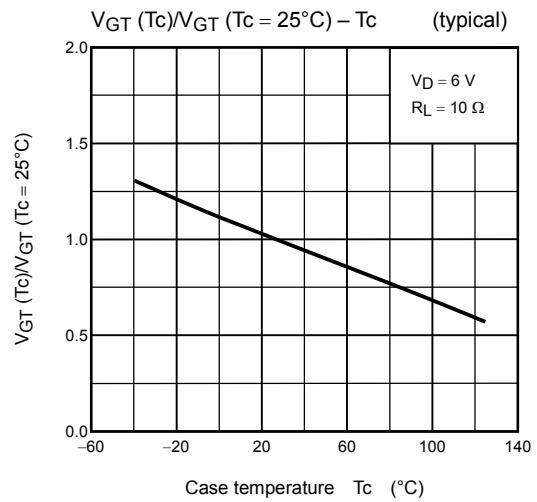
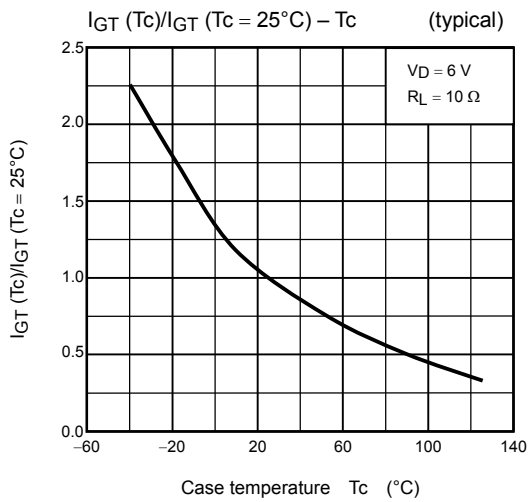


### Test Circuit Examples



### Equivalent Circuit





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