

# 2SB1193

## Silicon PNP epitaxial planar type darlington

For midium-speed power switching

Complementary to 2SD1773

### ■ Features

- High forward current transfer ratio  $h_{FE}$
- High-speed switching
- Full-pack package which can be installed to the heat sink with one screw

### ■ Absolute Maximum Ratings $T_C = 25^\circ\text{C}$

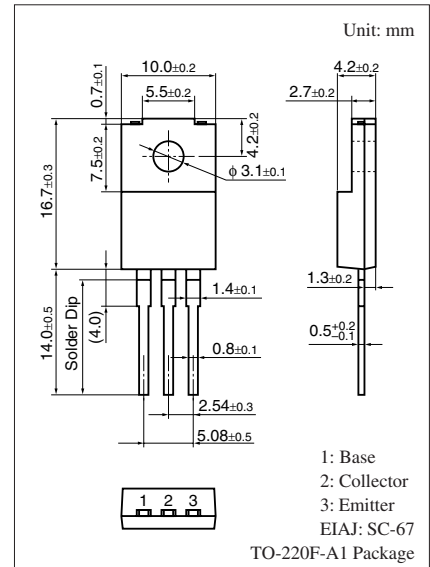
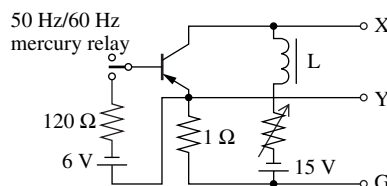
Parameter	Symbol	Rating	Unit
Collector-base voltage (Emitter open)	$V_{CBO}$	-120	V
Collector-emitter voltage (Base open)	$V_{CEO}$	-120	V
Emitter-base voltage (Collector open)	$V_{EBO}$	-7	V
Collector current	$I_C$	-8	A
Peak collector current	$I_{CP}$	-12	A
Collector power dissipation	$P_C$	50	W
		2	
Junction temperature	$T_j$	150	$^\circ\text{C}$
Storage temperature	$T_{stg}$	-55 ~ +150	$^\circ\text{C}$

### ■ Electrical Characteristics $T_C = 25^\circ\text{C} \pm 3^\circ\text{C}$

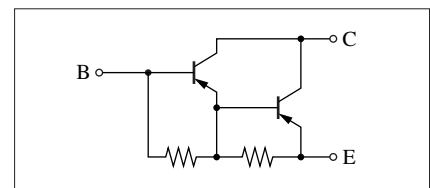
Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Collector-emitter sustaining voltage *	$V_{CEO(SUS)}$	$I_C = -2\text{ A}$ , $L = 10\text{ mH}$	-120			V
Emitter-base voltage (Collector open)	$V_{EBO}$	$I_E = -50\text{ mA}$ , $I_C = 0$	-7			V
Collector-base cutoff current (Emitter open)	$I_{CBO}$	$V_{CB} = -120\text{ V}$ , $I_E = 0$			-100	$\mu\text{A}$
Collector-emitter cutoff current (Base open)	$I_{CEO}$	$V_{CE} = -100\text{ V}$ , $I_B = 0$			-10	$\mu\text{A}$
Forward current transfer ratio	$h_{FE}$	$V_{CE} = -3\text{ V}$ , $I_C = -4\text{ A}$	1 000	20 000		—
Collector-emitter saturation voltage	$V_{CE(sat)1}$	$I_C = -4\text{ A}$ , $I_B = -8\text{ mA}$			-1.5	V
	$V_{CE(sat)2}$	$I_C = -8\text{ A}$ , $I_B = -80\text{ mA}$			-3.0	
Base-emitter saturation voltage	$V_{BE(sat)1}$	$I_C = -4\text{ A}$ , $I_B = -8\text{ mA}$			-2.0	V
	$V_{BE(sat)2}$	$I_C = -8\text{ A}$ , $I_B = -80\text{ mA}$			-3.5	
Transition frequency	$f_T$	$V_{CE} = -10\text{ V}$ , $I_C = -0.5\text{ A}$ , $f = 1\text{ MHz}$		15		MHz
Turn-on time	$t_{on}$	$I_C = -4\text{ A}$ , $I_{B1} = -8\text{ mA}$ , $I_{B2} = 8\text{ mA}$		0.7		$\mu\text{s}$
Storage time	$t_{stg}$	$V_{CC} = -50\text{ V}$		3.5		$\mu\text{s}$
Fall time	$t_f$			2.0		$\mu\text{s}$

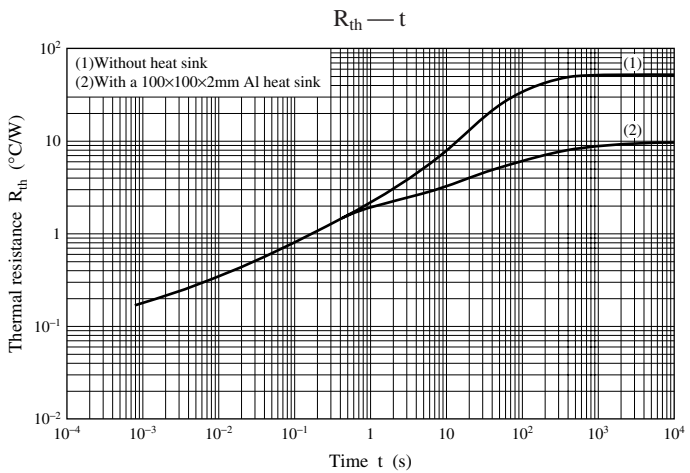
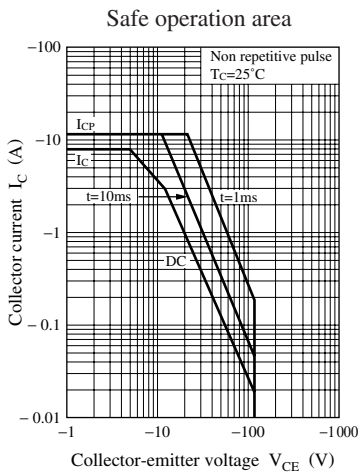
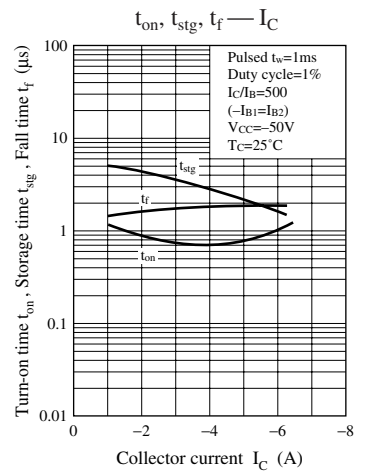
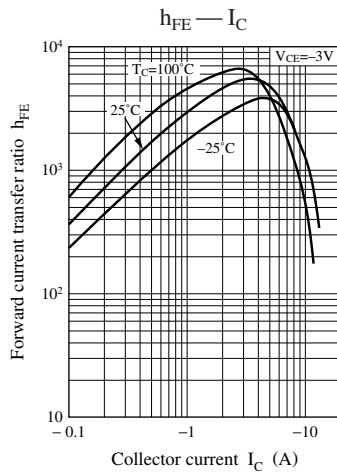
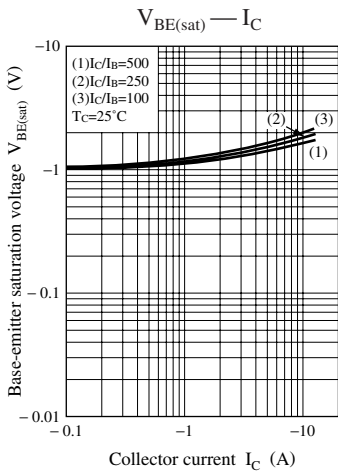
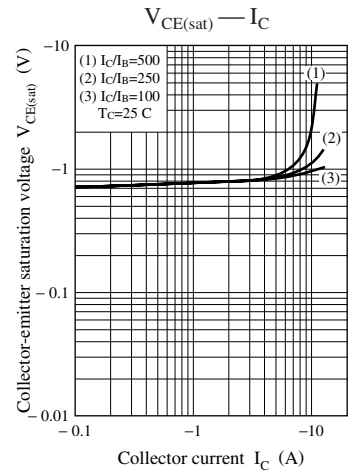
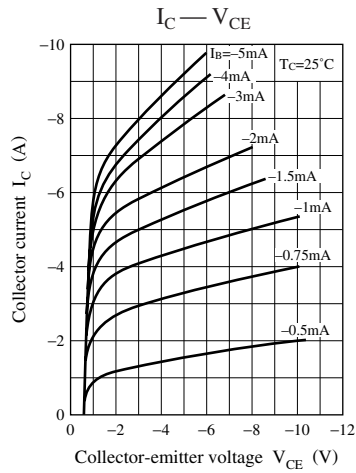
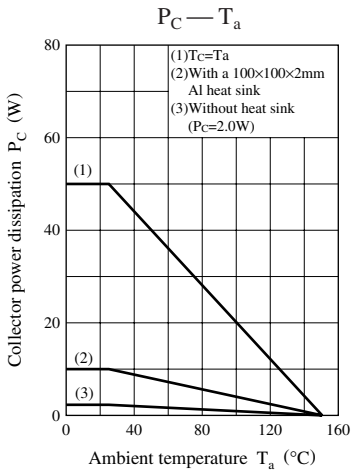
Note) 1. Measuring methods are based on JAPANESE INDUSTRIAL STANDARD JIS C 7030 measuring methods for transistors.

2. \*:  $V_{CEO(SUS)}$  test circuit



### Internal Connection





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