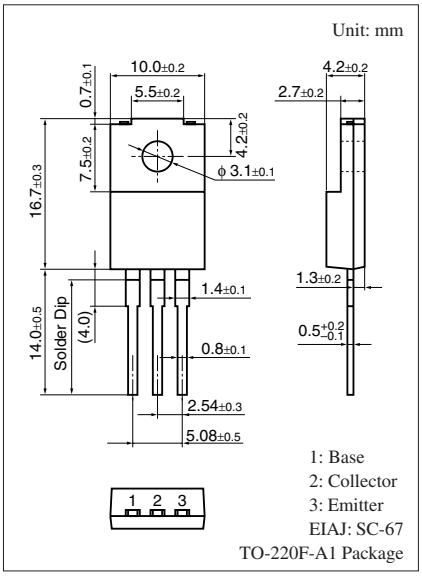
2SB1193

Silicon PNP epitaxial planar type darlington

For midium-speed power switching
Complementary to 2SD1773



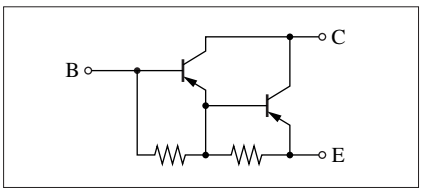
■ Features

- 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 $T_C = 25°C$

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
$T_a = 25°C$		2	
Junction temperature	T_j	150	°C
Storage temperature	T_{stg}	−55 ~ +150	°C

Internal Connection

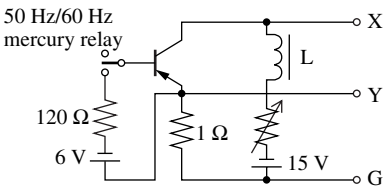


■ Electrical Characteristics $T_C = 25°C \pm 3°C$

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

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

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



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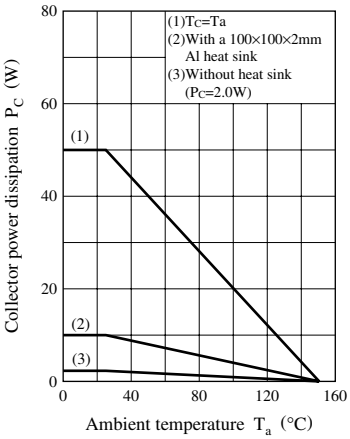
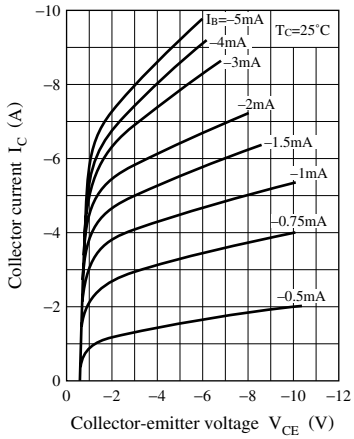
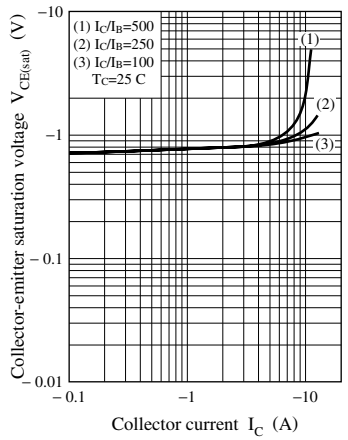
P_C — T_a



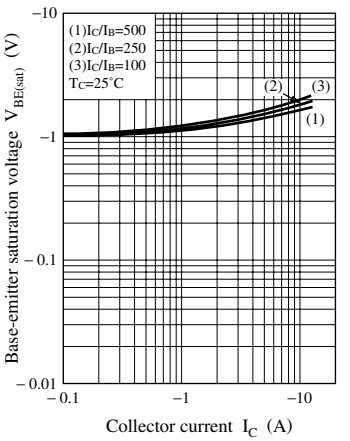
I_C — V_{CE}



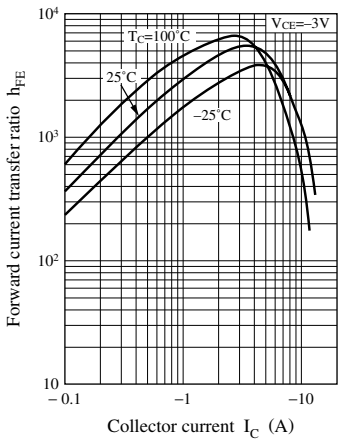
$V_{CE(sat)}$ — I_C



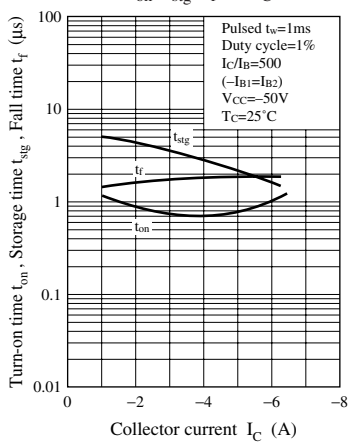
$V_{BE(sat)}$ — I_C



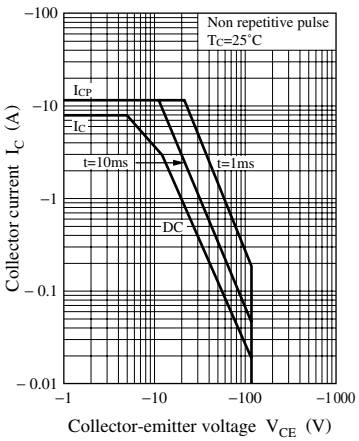
h_{FE} — I_C



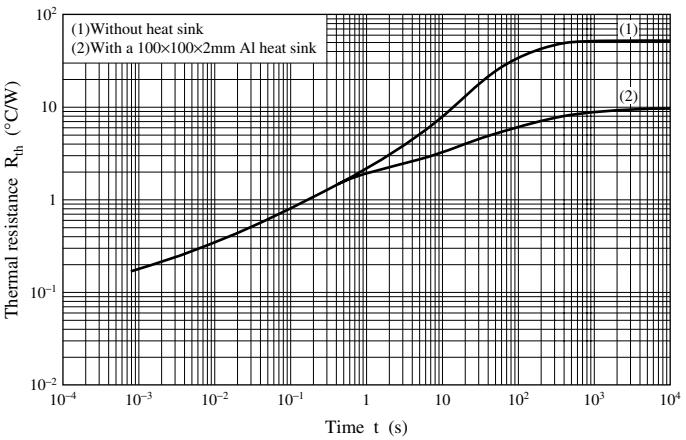
t_{on}, t_{stg}, t_f — I_C



Safe operation area



R_{th} — t



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