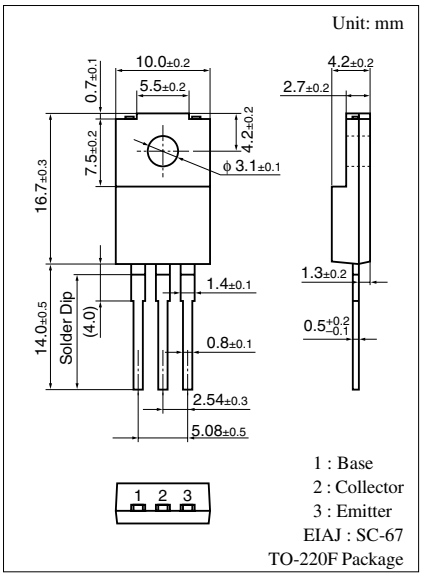
2SB0951, 2SB0951A (2SB951, 2SB951A)

Silicon PNP epitaxial planar type Darlington

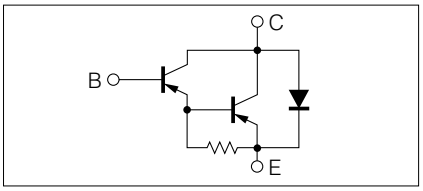
For midium-speed switching
Complementary to 2SD1277 and 2SD1277A



■ 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

Internal Connection



■ Absolute Maximum Ratings $T_C = 25°C$

Parameter		Symbol	Rating	Unit
Collector to base voltage	2SB0951	V_{CBO}	−60	V
	2SB0951A		−80	
Collector to emitter voltage	2SB0951	V_{CEO}	−60	V
	2SB0951A		−80	
Emitter to base voltage		V_{EBO}	−7	V
Peak collector current		I_{CP}	−12	A
Collector current		I_C	−8	A
Collector power dissipation	$T_C = 25°C$	P_C	45	W
	$T_a = 25°C$		2	
Junction temperature		T_j	150	°C
Storage temperature		T_{stg}	−55 to +150	°C

■ Electrical Characteristics $T_C = 25°C$

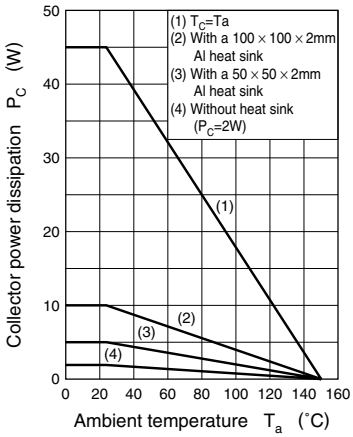
Parameter		Symbol	Conditions	Min	Typ	Max	Unit
Collector cutoff current	2SB0951	I_{CBO}	V_{CB} = −60 V, I_E = 0			−100	μA
	2SB0951A		V_{CB} = −80 V, I_E = 0			−100	
Emitter cutoff current		I_{EBO}	V_{EB} = −7 V, I_C = 0			−2	mA
Collector to emitter voltage	2SB0951	V_{CEO}	I_C = −30 mA, I_B = 0	−60			V
	2SB0951A			−80			
Forward current transfer ratio		h_{FE1} *	V_{CE} = −3 V, I_C = −4 A	2 000		10 000	
		h_{FE2}	V_{CE} = −3 V, I_C = −8 A	500			
Collector to emitter saturation voltage		$V_{CE(sat)}$	I_C = −4 A, I_B = −8 mA			−1.5	V
Base to emitter saturation voltage		$V_{BE(sat)}$	I_C = −4 A, I_B = −8 mA			−2	V
Transition frequency		f_T	V_{CE} = −10 V, I_C = −1 A, f = 1 MHz		20		MHz
Turn-on time		t_{on}	I_C = −4 A, I_{B1} = −8 mA, I_{B2} = 8 mA, V_{CC} = −50 V		0.5		μs
Storage time		t_{stg}			2		μs
Fall time		t_f			1		μs

Note) *: Rank classification

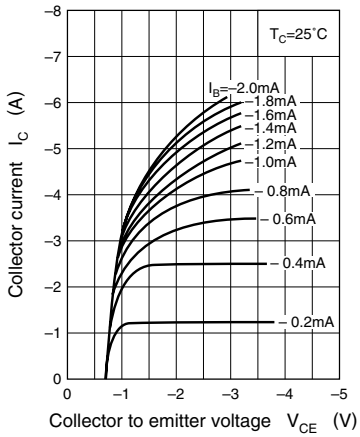
Rank	Q	P
h_{FE1}	2 000 to 5 000	4 000 to 10 000

Note.) The Part numbers in the Parenthesis show conventional part number.

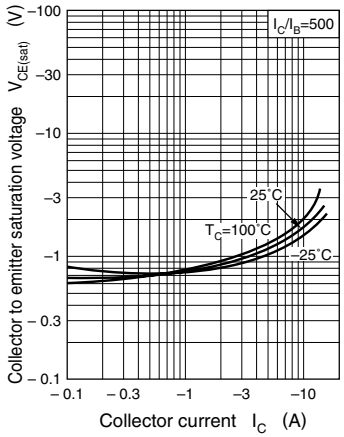
P_C — T_a



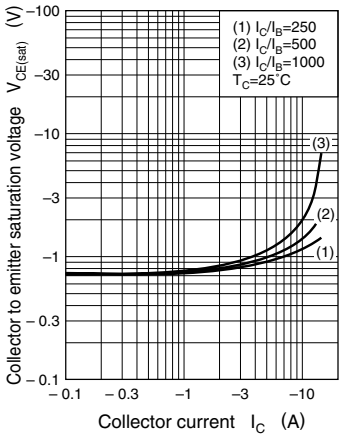
I_C — V_{CE}



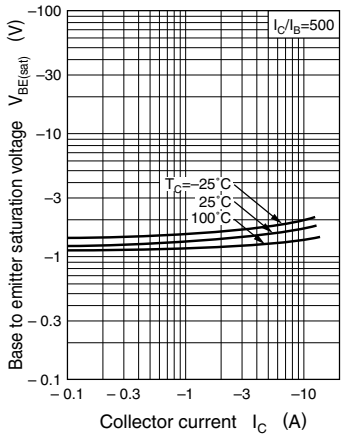
$V_{CE(sat)}$ — I_C



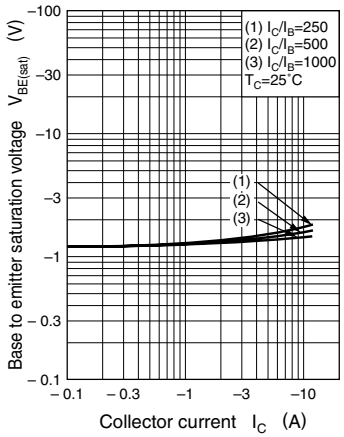
$V_{CE(sat)}$ — I_C



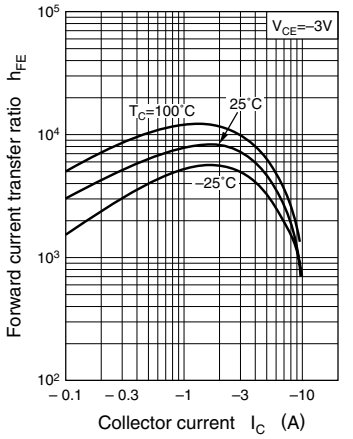
$V_{BE(sat)}$ — I_C



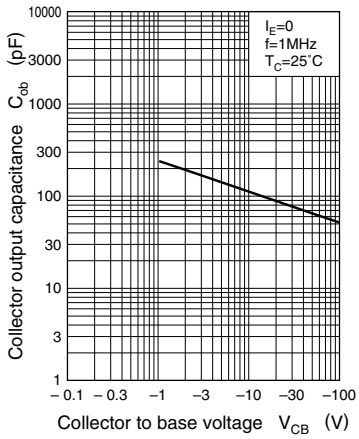
$V_{BE(sat)}$ — I_C



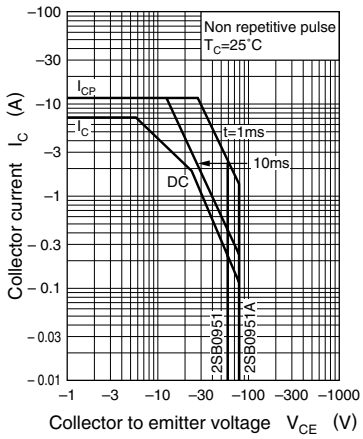
h_{FE} — I_C



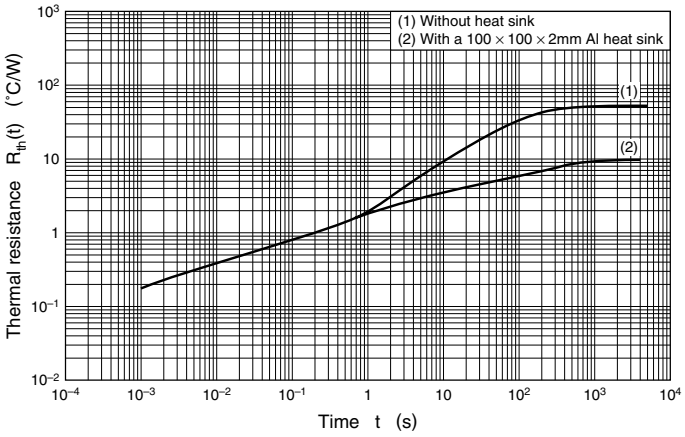
C_{ob} — V_{CB}



Area of safe operation (ASO)



$R_{th(t)}$ — t


(1) Without heat sink
(2) With a 100 × 100 × 2mm Al heat sink
(1)
(2)
Thermal resistance $R_{th}(t)$ (°C/W)
10^3
10^2
10
1
10^{-1}
10^{-2}
10^{-4}
10^{-3}
10^{-2}
10^{-1}
1
10
10^2
10^3
10^4
Time t (s)

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