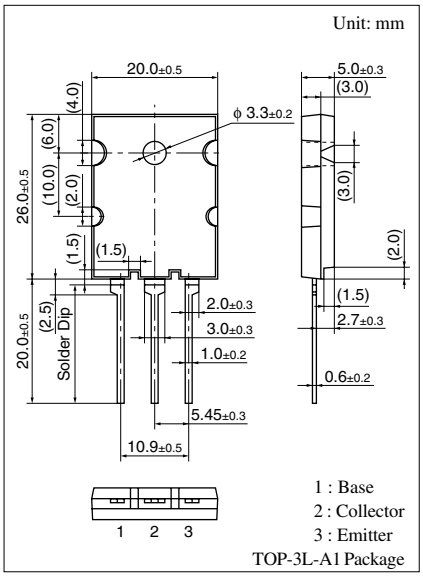
2SB1317

Silicon PNP triple diffusion planar type

For high power amplification
Complementary to 2SD1975



■ Features

- Excellent current I_C characteristics of forward current transfer ratio h_{FE} vs. collector
- Wide area of safe operation (ASO)
- High transition frequency f_T
- Optimum for the output stage of a Hi-Fi audio amplifier

■ Absolute Maximum Ratings $T_C = 25°C$

Parameter		Symbol	Rating	Unit
Collector to base voltage		V_{CBO}	−180	V
Collector to emitter voltage		V_{CEO}	−180	V
Emitter to base voltage		V_{EBO}	−5	V
Peak collector current		I_{CP}	−25	A
Collector current		I_C	−15	A
Collector power dissipation	$T_C = 25°C$	P_C	150	W
	$T_a = 25°C$		3.5	
Junction temperature		T_j	150	°C
Storage temperature		T_{stg}	−55 to +150	°C

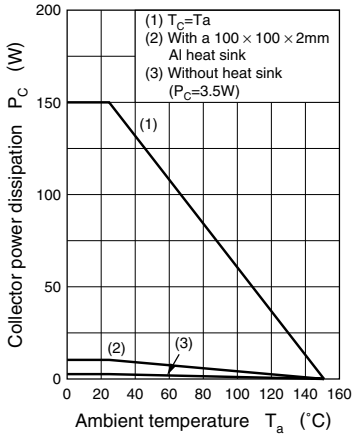
■ Electrical Characteristics $T_C = 25°C$

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Collector cutoff current	I_{CBO}	$V_{CB} = -180$ V, $I_E = 0$			−50	μA
Emitter cutoff current	I_{EBO}	$V_{EB} = -3$ V, $I_C = 0$			−50	μA
Forward current transfer ratio	h_{FE1}	$V_{CE} = -5$ V, $I_C = -20$ mA	20			
	h_{FE2} *	$V_{CE} = -5$ V, $I_C = -1$ A	60		200	
	h_{FE3}	$V_{CE} = -5$ V, $I_C = -8$ A	20			
Base to emitter voltage	V_{BE}	$V_{CE} = -5$ V, $I_C = -8$ A			−1.8	V
Collector to emitter saturation voltage	$V_{CE(sat)}$	$I_C = -10$ A, $I_B = -1$ A			−2.5	V
Transition frequency	f_T	$V_{CE} = -5$ V, $I_C = -0.5$ A, f = 1 MHz		20		MHz
Collector output capacitance	C_{ob}	$V_{CB} = -10$ V, $I_E = 0$, f = 1 MHz		450		pF

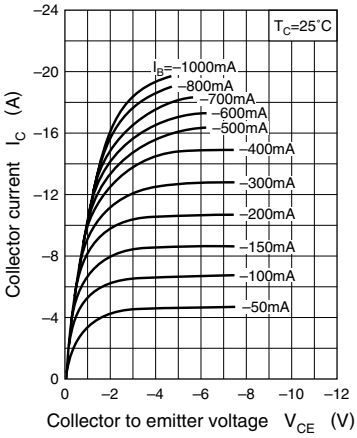
Note) ∗: Rank classification

Rank	Q	S	P
h_{FE2}	60 to 120	80 to 160	100 to 200

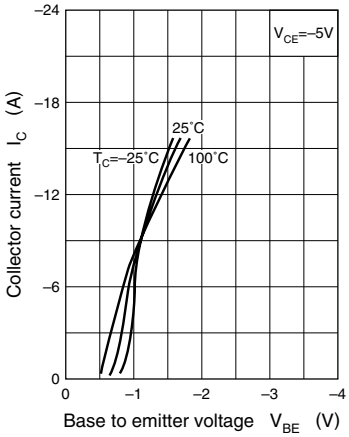
P_C — T_a



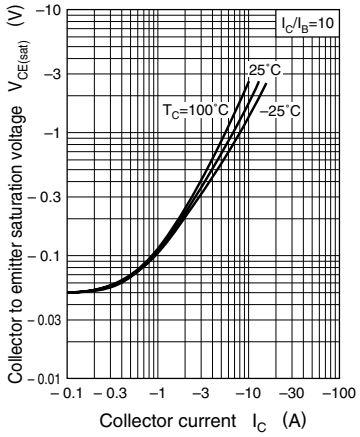
I_C — V_{CE}



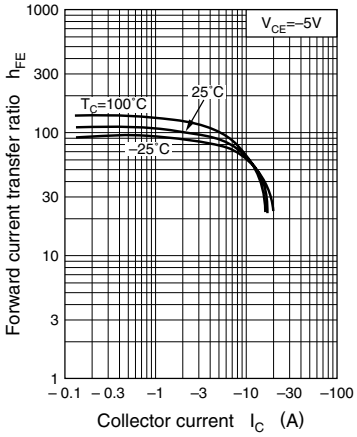
I_C — V_{BE}



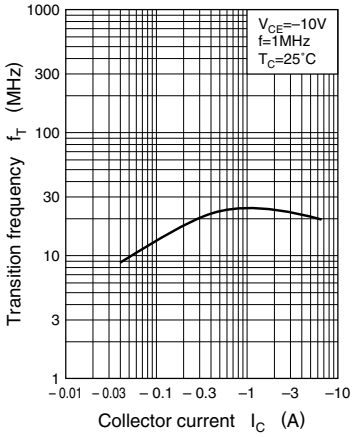
$V_{CE(sat)}$ — I_C



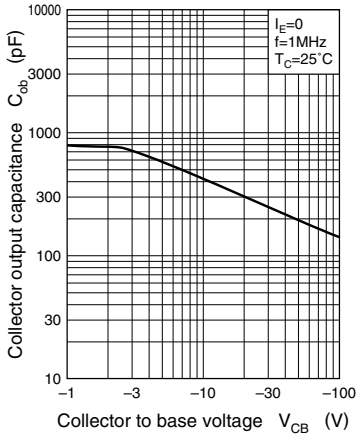
h_{FE} — I_C



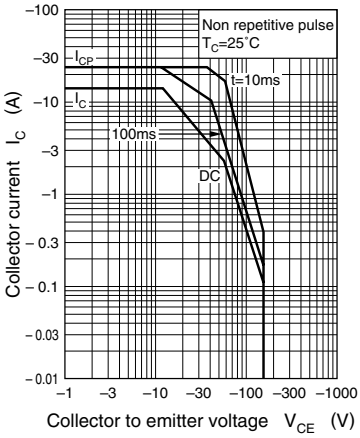
f_T — I_C



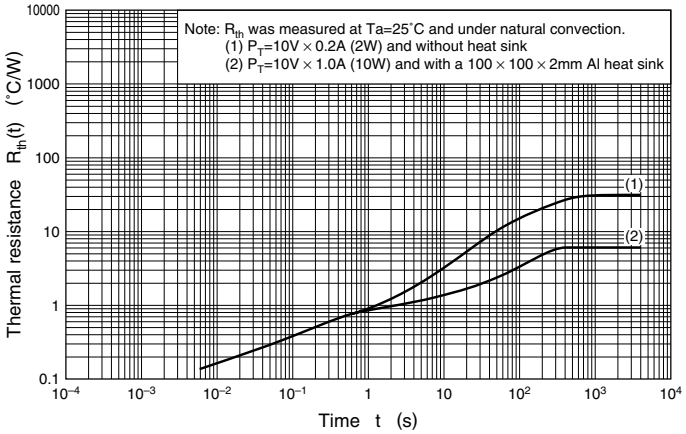
C_{ob} — V_{CB}



Area of safe operation (ASO)



$R_{th(t)}$ — t


Note: R_{th} was measured at Ta=25˚C and under natural convection.
(1) P_T=10V × 0.2A (2W) and without heat sink
(2) P_T=10V × 1.0A (10W) and with a 100 × 100 × 2mm Al heat sink
Thermal resistance R_{th}(t) (˚C/W)
10000
1000
100
10
1
0.1
10^{-4}
10^{-3}
10^{-2}
10^{-1}
1
10
10^{2}
10^{3}
10^{4}
Time t (s)
(1)
(2)

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