Low frequency transistor (–20V, –5A)

2SB1386 / 2SB1412 / 2SB1326

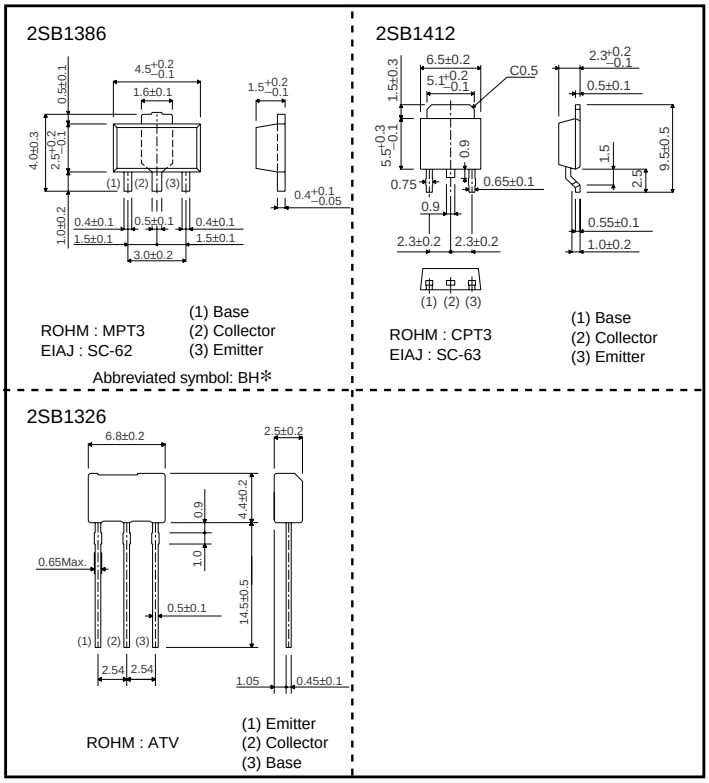
●Features

1) Low $V_{CE(sat)}$.
   $V_{CE(sat)}$ = –0.35V (Typ.)
   (I_C/I_B = –4A / –0.1A)
2) Excellent DC current gain characteristics.
3) Complements the 2SD2098 / 2SD2118 / 2SD2097.

●Structure

Epitaxial planar type
PNP silicon transistor

●External dimensions (Unit : mm)



* Denotes h_{FE}

●**Absolute maximum ratings** (Ta=25°C)

Parameter		Symbol	Limits	Unit
Collector-base voltage		V_{CBO}	–30	V
Collector-emitter voltage		V_{CEO}	–20	V
Emitter-base voltage		V_{EBO}	–6	V
Collector current		I_C	–5	A(DC)
			–10	A(Pulse) ✻1
Collector power dissipation	2SB1386	P_C	0.5	W
			2	W ✻2
	2SB1412		1	W
			10	W(Tc=25°C)
	2SB1326		1	W ✻3
Junction temperature		Tj	150	°C
Storage temperature		Tstg	–55 to 150	°C

✻1 Single pulse, Pw=10ms
✻2 When mounted on a 40×40×0.7 mm ceramic board.
✻3 Printed circuit board glass epoxy board 1.6 mm thick with copper plating 100mm² or larger.

●**Electrical characteristics** (Ta=25°C)

Parameter		Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-base breakdown voltage		BV_{CBO}	–30	–	–	V	I_C= –50μA
Collector-emitter breakdown voltage		BV_{CEO}	–20	–	–	V	I_C= –1mA
Emitter-base breakdown voltage		BV_{EBO}	–6	–	–	V	I_E= –50μA
Collector cutoff current		I_{CBO}	–	–	–0.5	μA	V_{CB}= –20V
Emitter cutoff current		I_{EBO}	–	–	–0.5	μA	V_{EB}= –5V
Collector-emitter saturation voltage		$V_{CE(sat)}$	–	0.35	–1.0	V	I_C/I_B= –4A/ –0.1A ✻
DC current transfer ratio	2SB1386,2SB1412	h_{FE}	82	–	390	–	V_{CE}= –2V, I_C= –0.5A ✻
	2SB1326		120	–	390	–	V_{CE}= –2V, I_C= –0.5A ✻
Transition frequency		f_T	–	120	–	MHz	V_{CE}= –6V, I_E=50mA, f=100MHz
Output capacitance		Cob	–	60	–	pF	V_{CB}= –20V, I_E=0A, f=1MHz

✻ Measured using pulse current.

●**Packaging specifications and h_{FE}**

Type	h_{FE}	Package	Taping		
		Code	T100	TL	TV2
		Basic ordering unit (pieces)	1000	2500	2500
2SB1386	PQR		○	–	–
2SB1412	PQR		–	○	–
2SB1326	QR		–	–	○

h_{FE} values are classified as follows :

Item	P	Q	R
h_{FE}	82 to 180	120 to 270	180 to 390

●**Electrical characteristic curves**

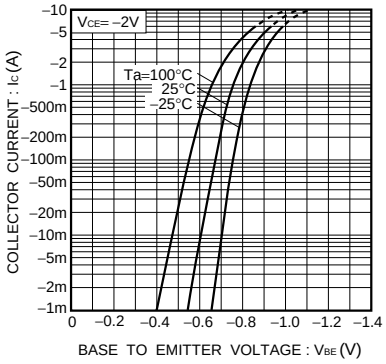


Fig.1 Grounded emitter propagation characteristics

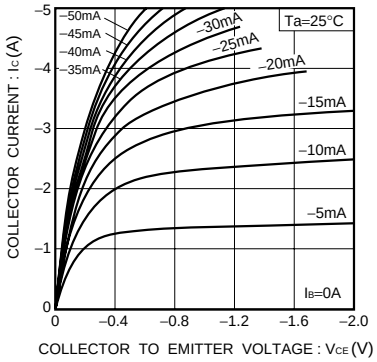


Fig.2 Grounded emitter output characteristics

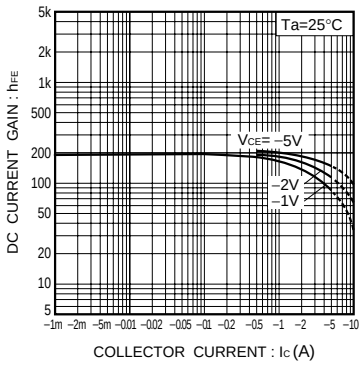


Fig.3 DC current gain vs. collector current (Ⅰ)

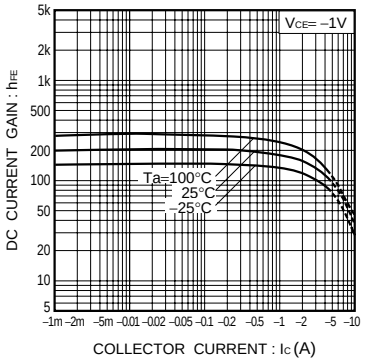


Fig.4 DC current gain vs. collector current (Ⅱ)

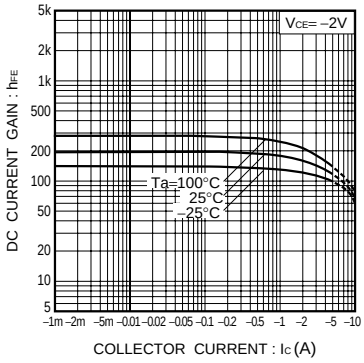


Fig.5 DC current gain vs. collector current (Ⅲ)

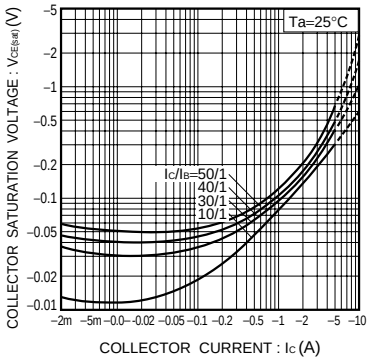


Fig.6 Collector-emitter saturation voltage vs. collector current (Ⅰ)

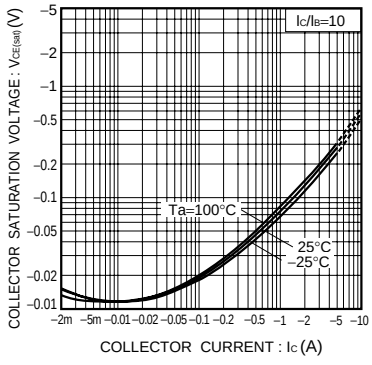


Fig.7 Collector-emitter saturation voltage vs. collector current (Ⅱ)

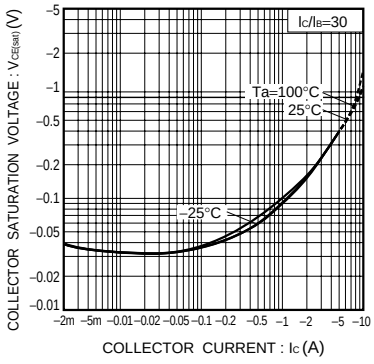


Fig.8 Collector-emitter saturation voltage vs. collector current (Ⅲ)

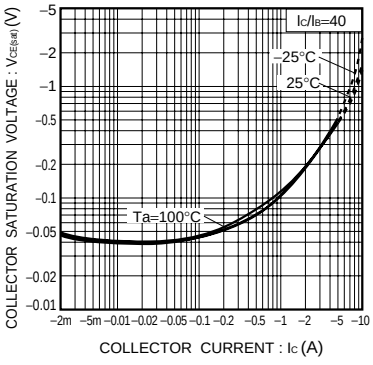


Fig.9 Collector-emitter saturation voltage vs. collector current (Ⅳ)

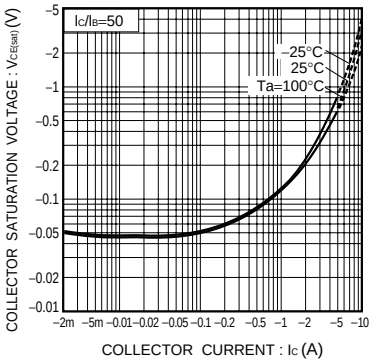


Fig.10 Collector-emitter saturation voltage vs. collector current (V)

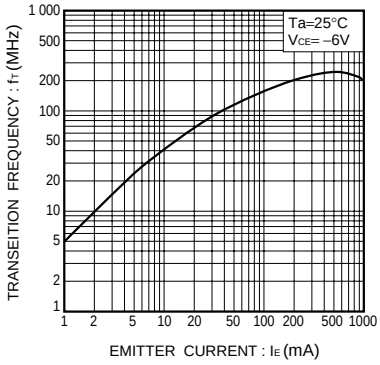


Fig.11 Gain bandwidth product vs. emitter current

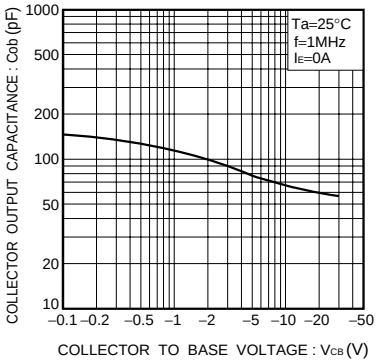


Fig.12 Collector output capacitance vs. collector-base voltage

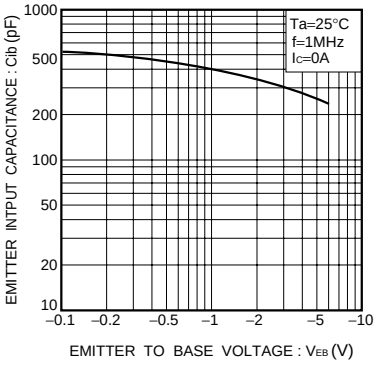


Fig.13 Emitter input capacitance vs. emitter-base voltage

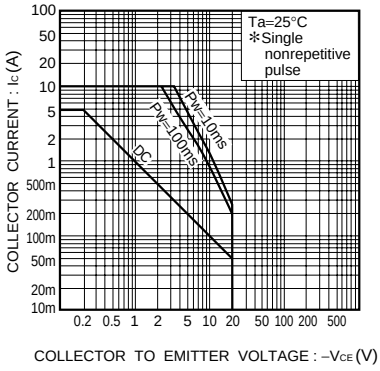


Fig.14 Safe operation area (2SB1412)

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