

Low Frequency Transistor (−20V, −5A)

2SB1386 / 2SB1412 / 2SB1326 / 2SB1436

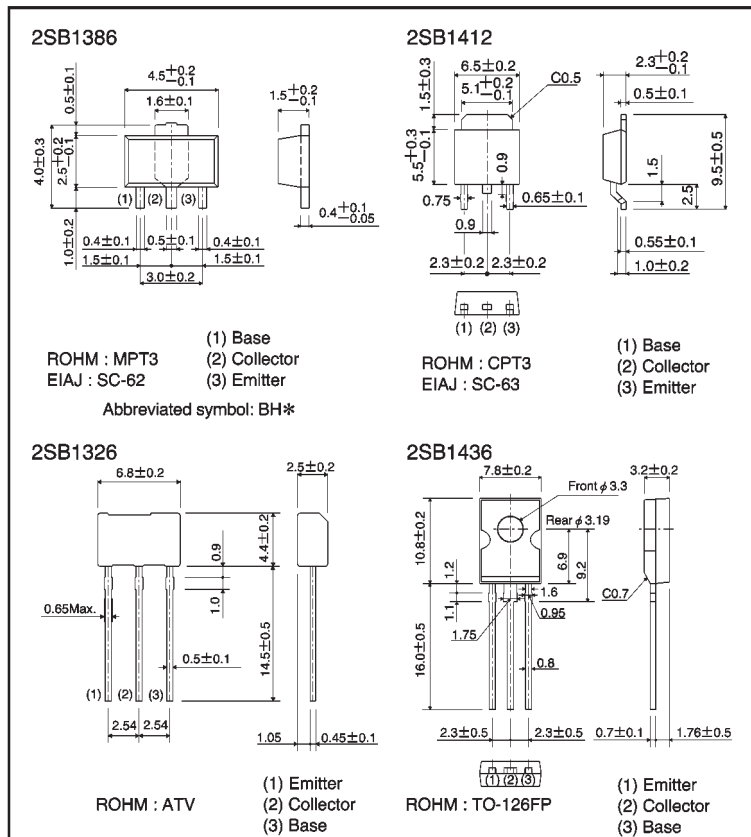
●Features

- 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 / 2SD2166.

●Structure

Epitaxial planar type
PNP silicon transistor

●External dimensions (Units: 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 (T _C =25°C)
	2SB1326		1	W *3
	2SB1436		1.5	W
			5	W (T _C =25°C)
Junction temperature		T _J	150	°C
Storage temperature		T _{stg}	−55~+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 =−50 μA
Collector-emitter breakdown voltage		BV _{CEO}	−20	—	—	V	I _C =−1mA
Emitter-base breakdown voltage		BV _{EBO}	−6	—	—	V	I _E =−50 μA
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)}	—	—	−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	—	
	2SB1436		180	—	390	—	
Transition frequency		f _r	—	120	—	MHz	V _{CE} =−6V, I _E =50mA, f=30MHz
Output capacitance		C _{ob}	—	60	—	pF	V _{CB} =−20V, I _E =0A, f=1MHz

* Measured using pulse current.

● Packaging specifications and h_{FE}

Type	h_{FE}	Package	Taping			Bulk
		Code	T100	TL	TV2	—
		Basic ordering unit (pieces)	1000	2500	2500	1000
2SB1386	PQR		○	—	—	—
2SB1412	PQR		—	○	—	—
2SB1326	QR		—	—	○	—
2SB1436	R		—	—	—	○

h_{FE} values are classified as follows:

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

● Electrical characteristic curves

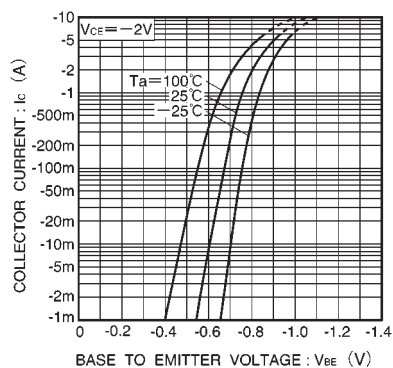


Fig.1 Grounded emitter propagation characteristics

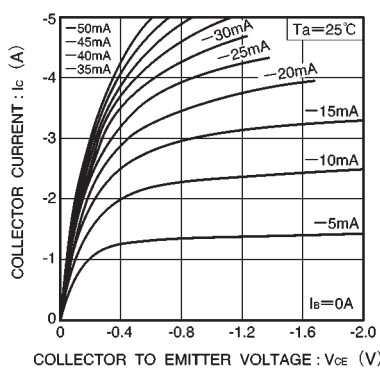


Fig.2 Grounded emitter output characteristics

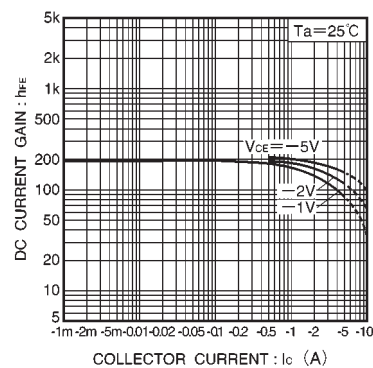


Fig.3 DC current gain vs. collector current (I)

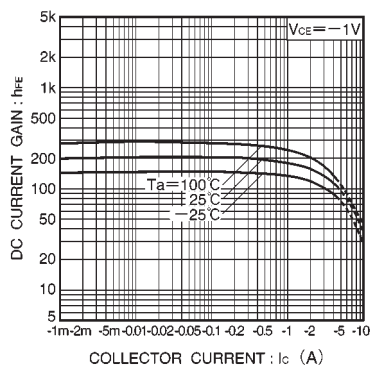


Fig.4 DC current gain vs. collector current (I)

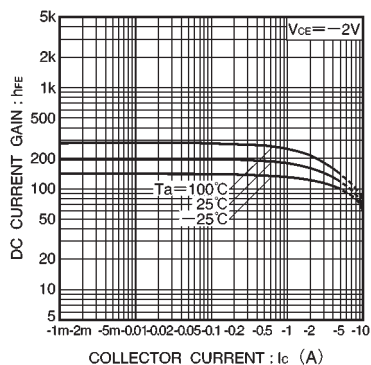


Fig.5 DC current gain vs. collector current (III)

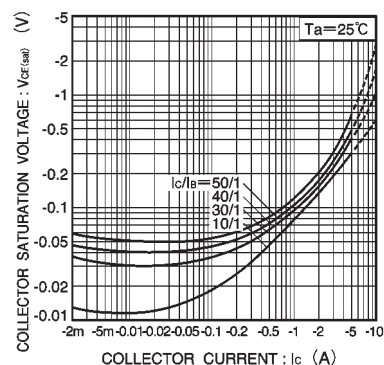


Fig.6 Collector-emitter saturation voltage vs. collector current (I)

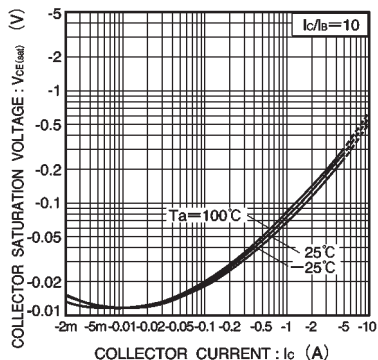


Fig.7 Collector-emitter saturation voltage vs. collector current (I)

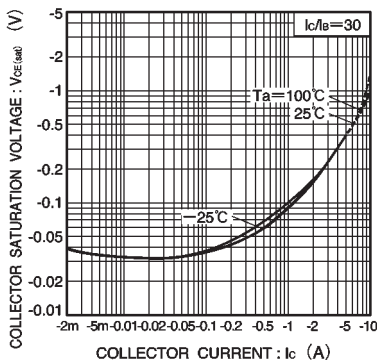


Fig.8 Collector-emitter saturation voltage vs. collector current (II)

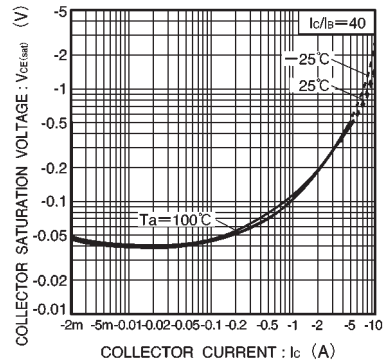


Fig.9 Collector-emitter saturation voltage vs. collector current (IV)

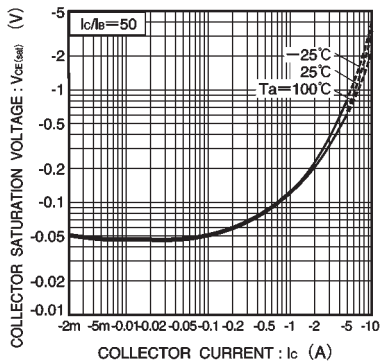


Fig.10 Collector-emitter saturation voltage vs. collector current (V)

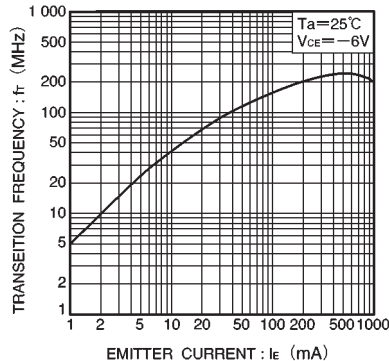


Fig.11 Gain bandwidth product vs. emitter current

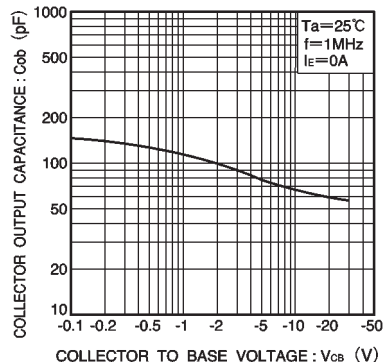


Fig.12 Collector output capacitance vs. collector-base voltage

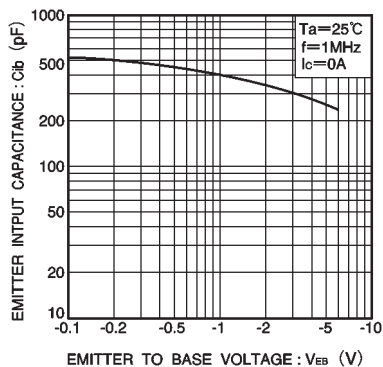


Fig.13 Emitter input capacitance vs. emitter-base voltage

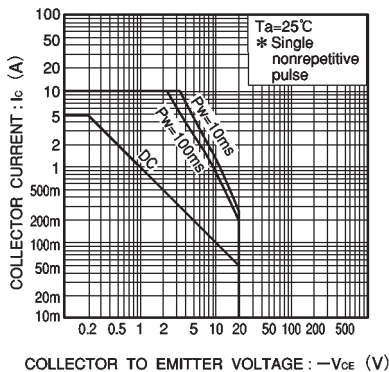


Fig.14 Safe operation area (2SB1412)