

# Medium power transistor (−32V, −2A)

## 2SB1188 / 2SB1182 / 2SB1240

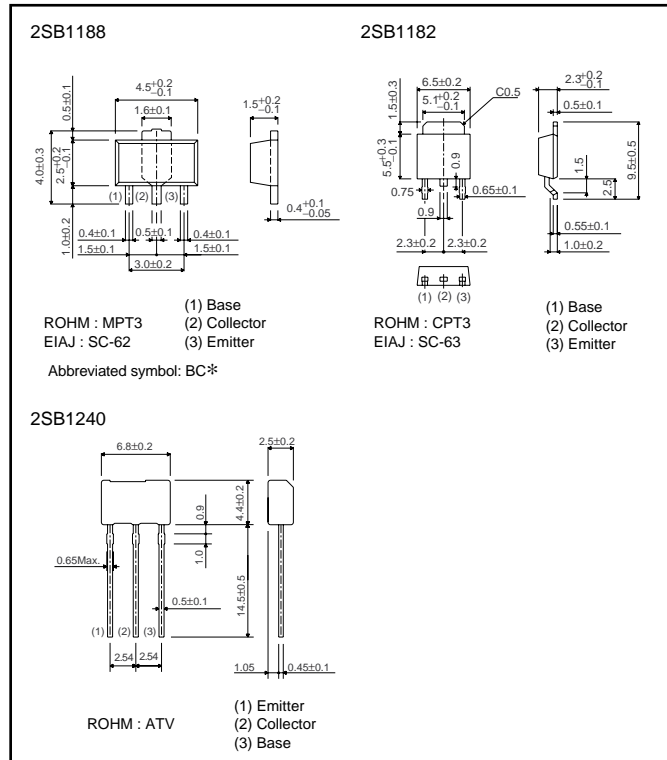
●Features

- 1) Low  $V_{CE(sat)}$ .  
 $V_{CE(sat)} = -0.5V$  (Typ.)  
 $(I_c/I_B = -2A / -0.2A)$
- 2) Complements the 2SD1766 / 2SD1758 / 2SD1862.

●Structure

Epitaxial planar type  
 PNP silicon transistor

●External dimensions (Unit : mm)



\* Denotes hFE

●Absolute maximum ratings (Ta=25°C)

Parameter	Symbol	Limits	Unit
Collector-base voltage	$V_{CBO}$	-40	V
Collector-emitter voltage	$V_{CEO}$	-32	V
Emitter-base voltage	$V_{EBO}$	-5	V
Collector current	$I_c$	-2	A(DC)
		-3	A (Pulse)*1
Collector power dissipation	$P_c$	0.5	W
		2	W *2
		10	W (Tc=25°C)
2SB1240		1	W *3
Junction temperature	$T_j$	150	°C
Storage temperature	$T_{stg}$	-55 to 150	°C

\*1 Single pulse, Pw=100ms

\*2 When mounted on a 40x40x0.7 mm ceramic board.

\*3 Printed circuit board, 1.7mm thick, collector copper plating 100mm² or larger.

Transistors

●Electrical characteristics (Ta=25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-base breakdown voltage	BV <sub>CB0</sub>	-40	-	-	V	I <sub>c</sub> = -50μA
Collector-emitter breakdown voltage	BV <sub>CE0</sub>	-32	-	-	V	I <sub>c</sub> = -1mA
Emitter-base breakdown voltage	BV <sub>EB0</sub>	-5	-	-	V	I <sub>E</sub> = -50μA
Collector cutoff current	I <sub>CB0</sub>	-	-	-1	μA	V <sub>CB</sub> = -20V
Emitter cutoff current	I <sub>EB0</sub>	-	-	-1	μA	V <sub>EB</sub> = -4V
Collector-emitter saturation voltage	V <sub>CE(sat)</sub>	-	-0.5	-0.8	V	I <sub>c</sub> /I <sub>B</sub> = -2A/ -0.2A *
DC current transfer ratio	h <sub>FE</sub>	82	-	390	-	V <sub>CE</sub> = -3V, I <sub>c</sub> = -0.5A *
Transition frequency	f <sub>T</sub>	-	100	-	MHz	V <sub>CE</sub> = -5V, I <sub>E</sub> =0.5A, f=100MHz
Output capacitance	C <sub>ob</sub>	-	50	-	pF	V <sub>CB</sub> = -10V, I <sub>E</sub> =0A, f=1MHz

\* Measured using pulse current.

●Packaging specifications and h<sub>FE</sub>

Type	h <sub>FE</sub>	Package	Taping		
		Code	T100	TL	TV2
		Basic ordering unit (pieces)	1000	2500	2500
2SB1188	PQR	○	-	-	-
2SB1182	PQR	-	○	-	-
2SB1240	PQR	-	-	○	-

h<sub>FE</sub> values are classified as follows :

Item	P	Q	R
h <sub>FE</sub>	82 to 180	120 to 270	180 to 390

●Electrical characteristic curves

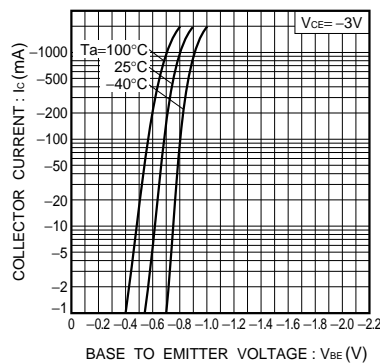


Fig.1 Grounded emitter propagation characteristics

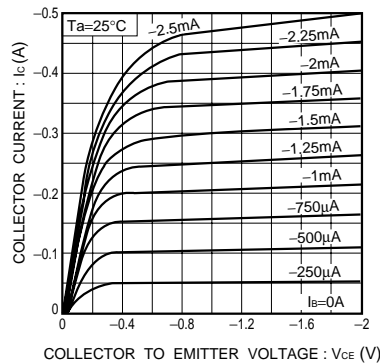


Fig.2 Grounded emitter output characteristics

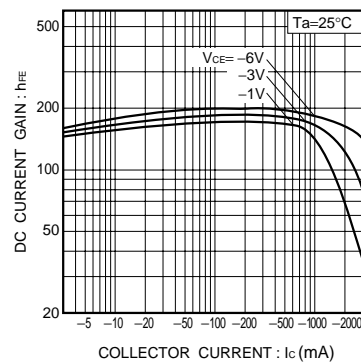


Fig.3 DC current gain vs. collector current (I)

Transistors

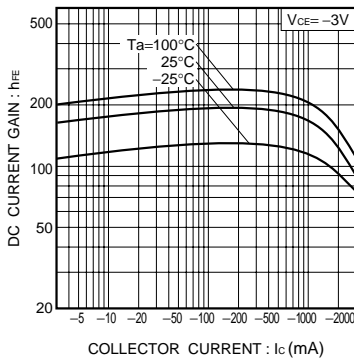


Fig.4 DC current gain vs. collector current (II)

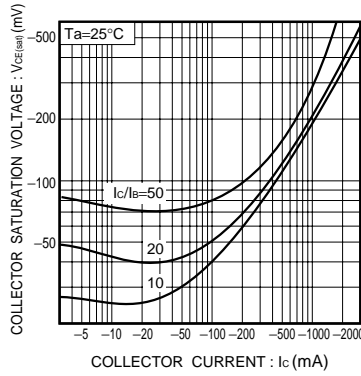


Fig.5 Collector-emitter saturation voltage vs. collector current (I)

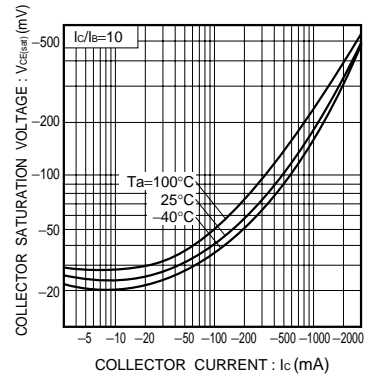


Fig.6 Collector-emitter saturation voltage vs. collector current (II)

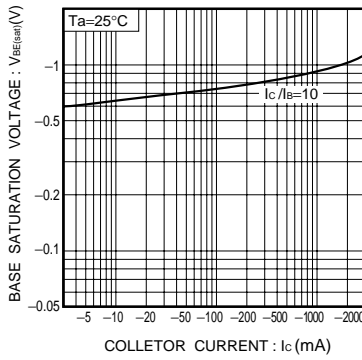


Fig.7 Base-emitter saturation voltage vs. collector current

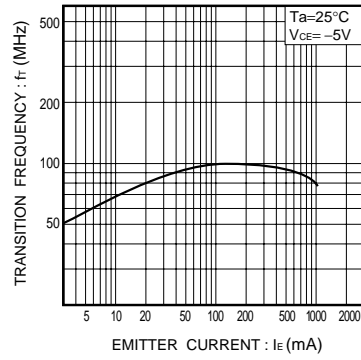


Fig.8 Gain bandwidth product vs. emitter current

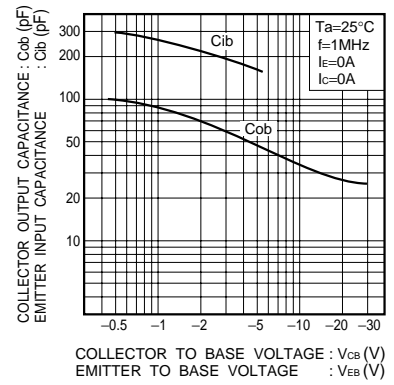


Fig.9 Collector output capacitance vs. collector-base voltage  
Emitter input capacitance vs. emitter-base voltage

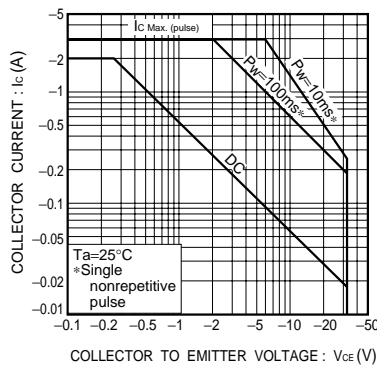


Fig.10 Safe operation area (2SB1188)

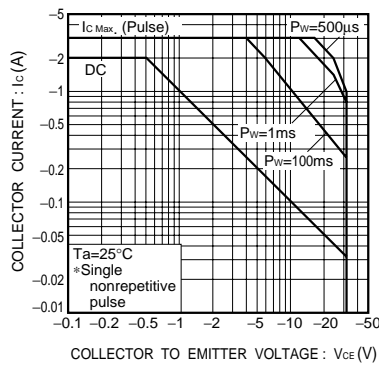


Fig.11 Safe operation area (2SB1182)

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