

# Medium power transistor (−32V, −2A)

## 2SB1188 / 2SB1182 / 2SB1240

### ●Features

1) Low  $V_{CE(sat)}$ .

$$V_{CE(sat)} = -0.5V \text{ (Typ.)}$$

$$(I_C/I_B = -2A / -0.2A)$$

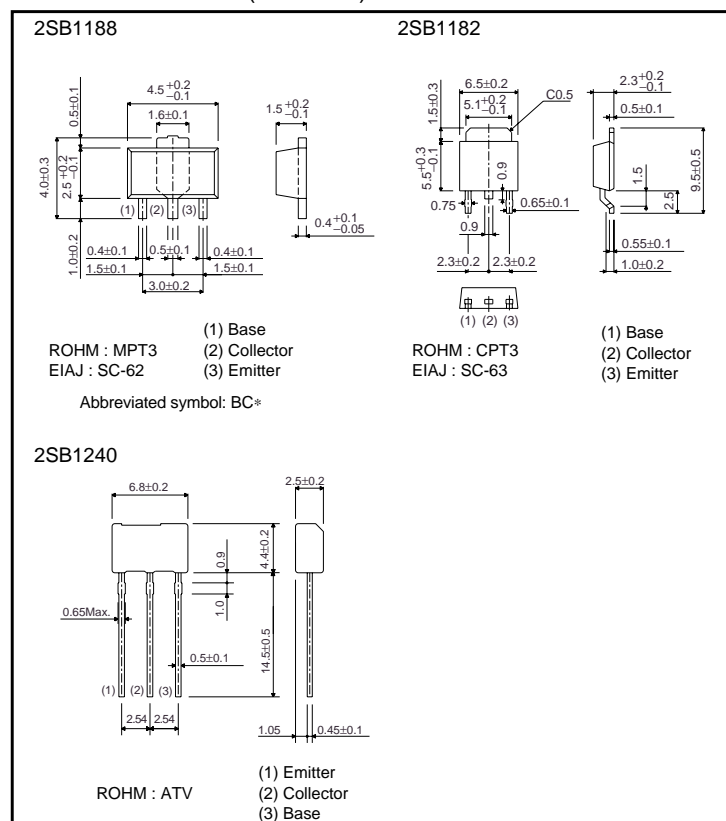
2) Complements the 2SD1766 /  
2SD1758 / 2SD1862

### ●Structure

Epitaxial planar type

PNP silicon transistor

### ●External dimensions (Units : mm)



\* Denotes hFE

### ●Absolute maximum ratings ( $T_a=25^\circ\text{C}$ )

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	2SB1188	$P_C$	0.5	W
	2SB1182		2	W *2
	2SB1240		10	W( $T_C=25^\circ\text{C}$ )
			1	W *3
Junction temperature		$T_j$	150	$^\circ\text{C}$
Storage temperature		$T_{stg}$	−55~+150	$^\circ\text{C}$

\*1 Single pulse,  $P_w=100\text{ms}$

\*2 When mounted on a 40×40×0.7 mm ceramic board.

\*3 Printed circuit board, 1.7mm thick, collector copper plating 100mm<sup>2</sup> or larger.

## Transistors

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

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-base breakdown voltage	$BV_{CBO}$	-40	-	-	V	$I_C = -50\mu A$
Collector-emitter breakdown voltage	$BV_{CEO}$	-32	-	-	V	$I_C = -1mA$
Emitter-base breakdown voltage	$BV_{EBO}$	-5	-	-	V	$I_E = -50\mu A$
Collector cutoff current	$I_{CBO}$	-	-	-1	$\mu A$	$V_{CB} = -20V$
Emitter cutoff current	$I_{EBO}$	-	-	-1	$\mu A$	$V_{EB} = -4V$
Collector-emitter saturation voltage	$V_{CE(sat)}$	-	-0.5	-0.8	V	$I_C/I_B = -2A/-0.2A$ *
DC current transfer ratio	$h_{FE}$	82	-	390	-	$V_{CE} = -3V$ , $I_C = -0.5A$ *
Transition frequency	$f_T$	-	100	-	MHz	$V_{CE} = -5V$ , $I_E = 0.5A$ , $f = 30MHz$
Output capacitance	$C_{ob}$	-	50	-	pF	$V_{CB} = -10V$ , $I_E = 0A$ , $f = 1MHz$

\* 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
2SB1188	PQR		○	-	-
2SB1182	PQR		-	○	-
2SB1240	PQR		-	-	○

 $h_{FE}$  values are classified as follows :

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

## ●Electrical characteristic curves

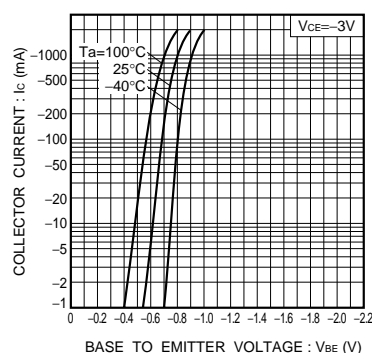


Fig.1 Grounded emitter propagation characteristics

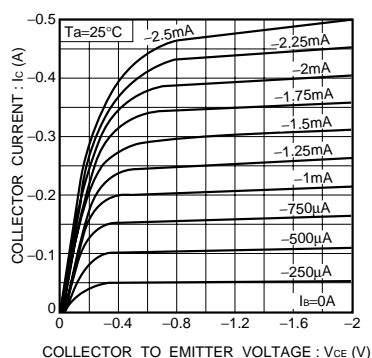
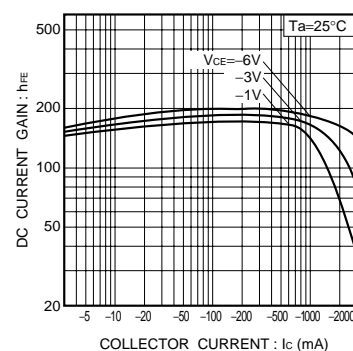


Fig.2 Grounded emitter output characteristics

Fig.3 DC current gain vs. collector current ( $I_C$ )

## Transistors

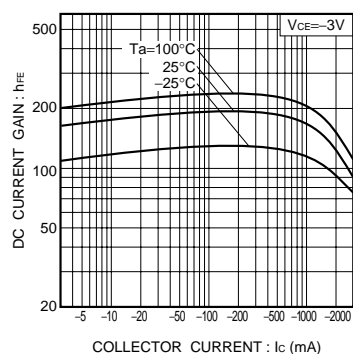


Fig.4 DC current gain vs. collector current ( II )

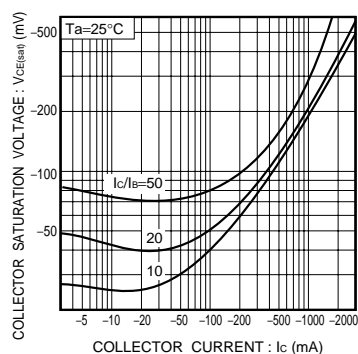


Fig.5 Collector-emitter saturation voltage vs. collector current ( I )

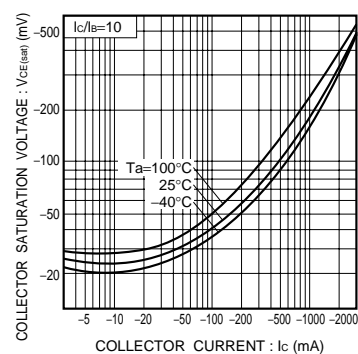


Fig.6 Collector-emitter saturation voltage vs. collector current ( II )

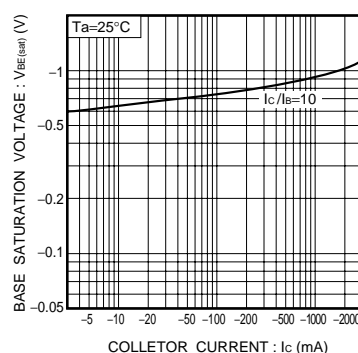


Fig.7 Base-emitter saturation voltage vs. collector current

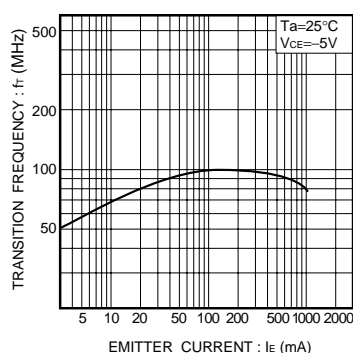


Fig.8 Gain bandwidth product vs. emitter current

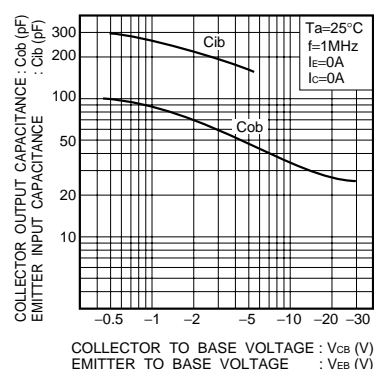


Fig.9 Collector output capacitance vs. collector-base voltage  
Emitter input capacitance vs. emitter-base voltage

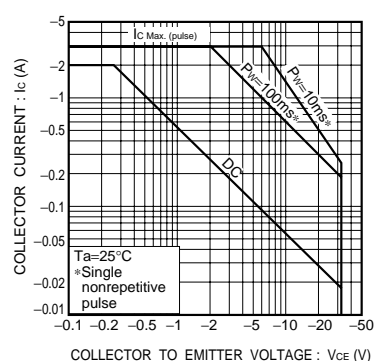


Fig.10 Safe operation area (2SB1188)

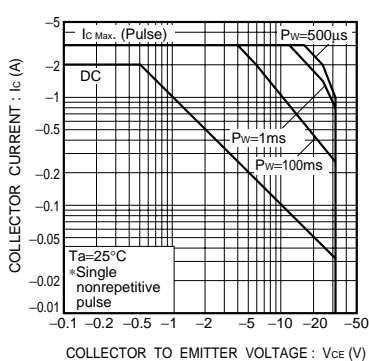


Fig.11 Safe operation area (2SB1182)

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