

# 2SB1440

## Silicon PNP epitaxial planar type

For low-frequency output amplification

Complementary to 2SD2185

### ■ Features

- Low collector to emitter saturation voltage  $V_{CE(sat)}$ .
- Mini Power type package, allowing downsizing of the equipment and automatic insertion through the tape packing and the magazine packing.

### ■ Absolute Maximum Ratings $T_a = 25^\circ\text{C}$

Parameter	Symbol	Rating	Unit
Collector to base voltage	$V_{CBO}$	-50	V
Collector to emitter voltage	$V_{CEO}$	-50	V
Emitter to base voltage	$V_{EBO}$	-5	V
Peak collector current	$I_{CP}$	-3	A
Collector current	$I_C$	-2	A
Collector power dissipation*	$P_C$	1	W
Junction temperature	$T_j$	150	$^\circ\text{C}$
Storage temperature	$T_{stg}$	-55 to +150	$^\circ\text{C}$

Note) \*: Printed circuit board: Copper foil area of 1 cm<sup>2</sup> or more, and the board thickness of 1.7 mm for the collector portion.

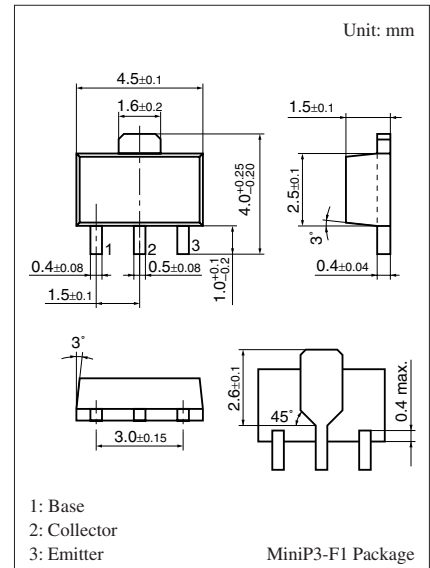
### ■ Electrical Characteristics $T_a = 25^\circ\text{C}$

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Collector to base voltage	$V_{CBO}$	$I_C = -10 \mu\text{A}$ , $I_E = 0$	-50			V
Collector to emitter voltage	$V_{CEO}$	$I_C = -1 \text{ mA}$ , $I_B = 0$	-50			V
Emitter to base voltage	$V_{EBO}$	$I_E = -10 \mu\text{A}$ , $I_C = 0$	-5			V
Collector cutoff current	$I_{CBO}$	$V_{CB} = -20 \text{ V}$ , $I_E = 0$			-0.1	$\mu\text{A}$
Forward current transfer ratio* <sup>1</sup>	$h_{FE1}$ <sup>*2</sup>	$V_{CE} = -2 \text{ V}$ , $I_C = -200 \text{ mA}$	120		340	
	$h_{FE2}$	$V_{CE} = -2 \text{ V}$ , $I_C = -1 \text{ A}$	60			
Collector to emitter saturation voltage* <sup>1</sup>	$V_{CE(sat)}$	$I_C = -1 \text{ A}$ , $I_B = -50 \text{ mA}$		-0.2	-0.3	V
Base to emitter saturation voltage* <sup>1</sup>	$V_{BE(sat)}$	$I_C = -1 \text{ A}$ , $I_B = -50 \text{ mA}$		-0.85	-1.2	V
Transition frequency	$f_T$	$V_{CB} = -10 \text{ V}$ , $I_E = 50 \text{ mA}$ , $f = 200 \text{ MHz}$		150		MHz
Collector output capacitance	$C_{ob}$	$V_{CB} = -10 \text{ V}$ , $I_E = 0$ , $f = 1 \text{ MHz}$		45	60	pF

Note) \*1: Pulse measurement

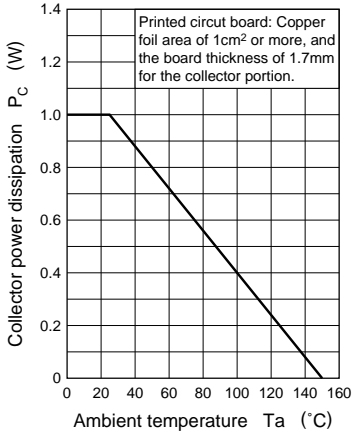
\*2:  $h_{FE1}$  Rank classification

Rank	R	S
$h_{FE1}$	120 to 240	170 to 340

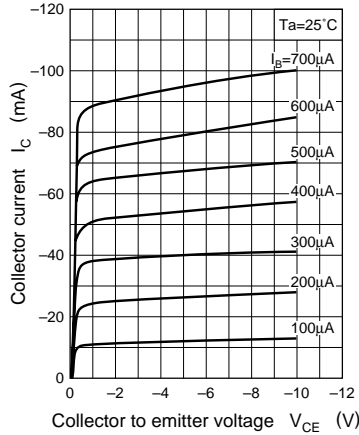


Marking Symbol: 11

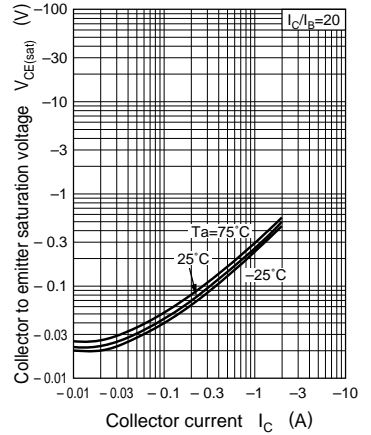
$P_C - T_a$



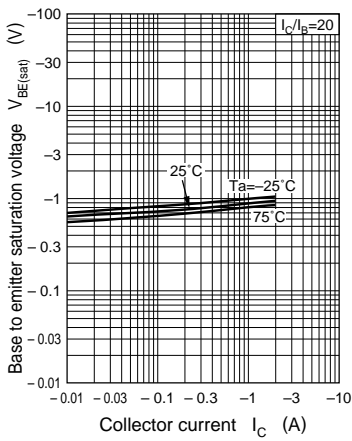
$I_C - V_{CE}$



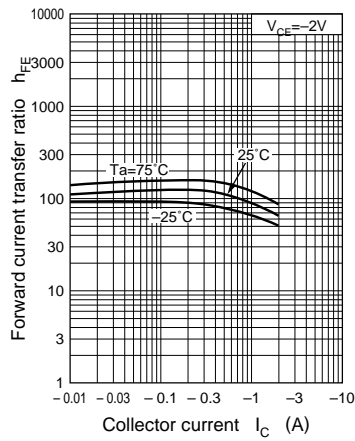
$V_{CE(sat)} - I_C$



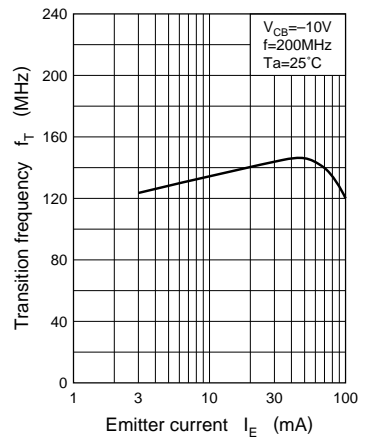
$V_{BE(sat)} - I_C$



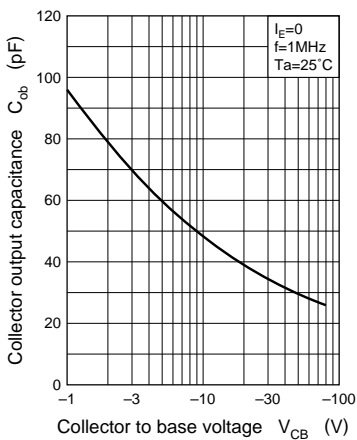
$h_{FE} - I_C$



$f_T - I_E$



$C_{ob} - V_{CB}$



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