

# Low $V_{CE(sat)}$ Transistor (–20V, –3A)

## 2SB1424 / 2SA1585S

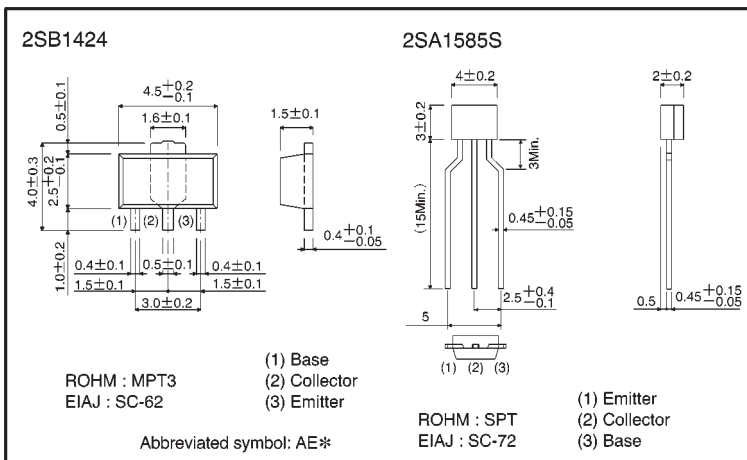
### ●Features

- 1) Low  $V_{CE(sat)}$ .  
 $V_{CE(sat)} = -0.2V$  (Typ.)  
 $(I_C/I_B = -2A / -0.1A)$
- 2) Excellent DC current gain characteristics.
- 3) Complements the 2SD2150 / 2SC4115S.

### ●Structure

Epitaxial planar type  
PNP silicon transistor

### ●External dimensions (Units: mm)



\* Denotes  $h_{FE}$

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

Parameter	Symbol	Limits	Unit
Collector-base voltage	$V_{CBO}$	–20	V
Collector-emitter voltage	$V_{CEO}$	–20	V
Emitter-base voltage	$V_{EBO}$	–6	V
Collector current	2SB1424	–3	A
	2SA1585S	–2	
		$I_{CP}$	A (Pulse) *
Collector power dissipation	2SB1424	0.6	W
	2SA1585S	0.4	
Junction temperature	$T_j$	150	$^\circ C$
Storage temperature	$T_{stg}$	–55~+150	$^\circ C$

\* Single pulse  $P_w=10ms$

●Electrical characteristics (Ta = 25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-base breakdown voltage	BV <sub>CBO</sub>	−20	—	—	V	I <sub>C</sub> = −50 μA
Collector-emitter breakdown voltage	BV <sub>CEO</sub>	−20	—	—	V	I <sub>C</sub> = −1mA
Emitter-base breakdown voltage	BV <sub>EBO</sub>	−6	—	—	V	I <sub>E</sub> = −50 μA
Collector cutoff current	I <sub>CBO</sub>	—	—	−0.1	μA	V <sub>CB</sub> = −20V
Emitter cutoff current	I <sub>EBO</sub>	—	—	−0.1	μA	V <sub>EB</sub> = −5V
Collector-emitter saturation voltage	V <sub>CE (sat)</sub>	—	—	−0.5	V	I <sub>C</sub> /I <sub>B</sub> = −2A/−0.1A
DC current transfer ratio	h <sub>FE</sub>	120	—	390	—	V <sub>CE</sub> = −2V, I <sub>C</sub> = −0.1A
Transition frequency	f <sub>T</sub>	—	240	—	MHz	V <sub>CE</sub> = −2V, I <sub>E</sub> = 0.5A, f = 100MHz
Output capacitance	C <sub>ob</sub>	—	35	—	pF	V <sub>CB</sub> = −10V, I <sub>E</sub> = 0A, f = 1MHz

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

Type	h <sub>FE</sub>	Package	Taping	
		Code	TP	T100
		Basic ordering unit (pieces)	5000	1000
2SA1585S	QR		○	—
2SB1424	QR		—	○

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

Item	Q	R
h <sub>FE</sub>	120~270	180~390

●Electrical characteristic curves

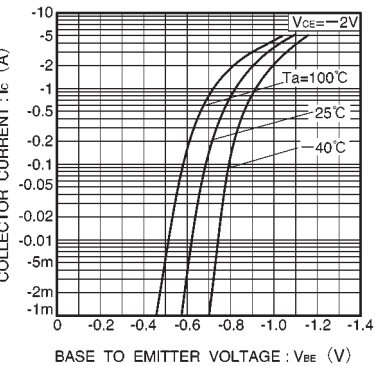


Fig.1 Grounded emitter propagation characteristics

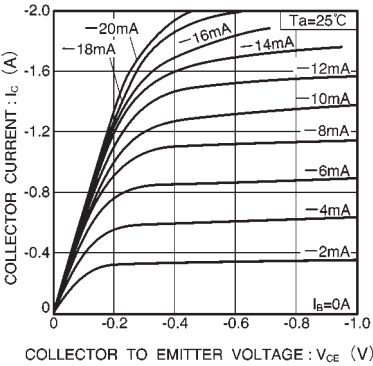


Fig.2 Grounded emitter output characteristics ( I )

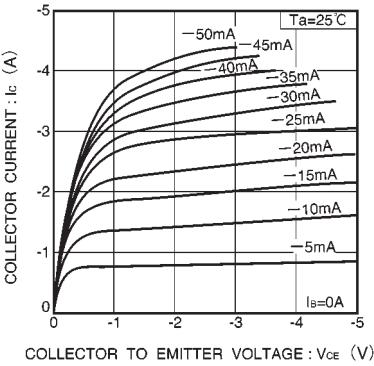


Fig.3 Grounded emitter output characteristics ( II )

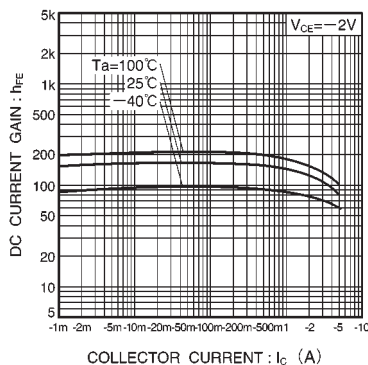


Fig.4 DC current gain vs. collector current

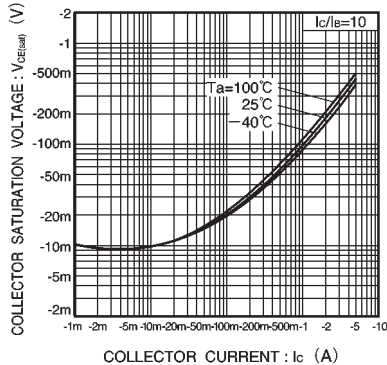


Fig.5 Collector-emitter saturation voltage vs. collector current ( I )

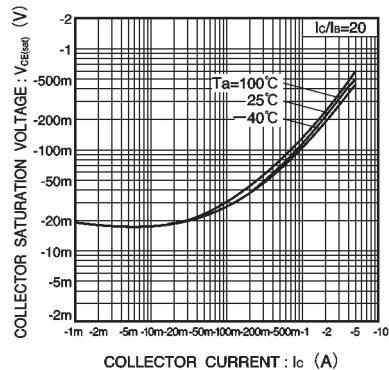


Fig.6 Collector-emitter saturation voltage vs. collector current ( II )

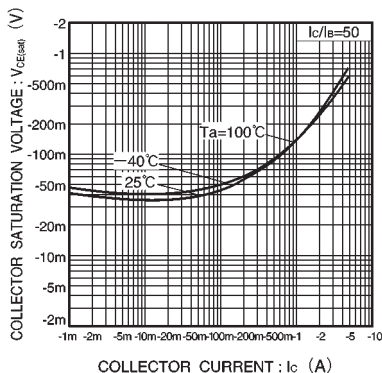


Fig.7 Collector-emitter saturation voltage vs. collector current ( III )

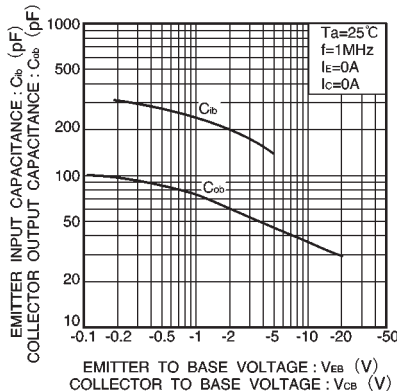


Fig.8 Gain bandwidth product vs. emitter current  
Collector output capacitance vs. collector-base voltage

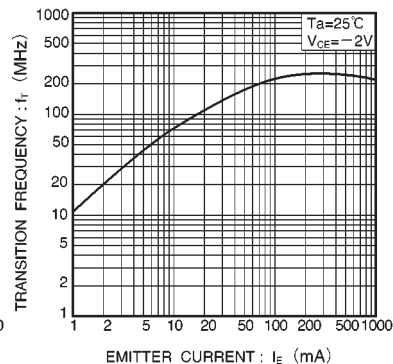


Fig.9 Emitter input capacitance vs. emitter base voltage