

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

## 2SB1424 / 2SA1585S

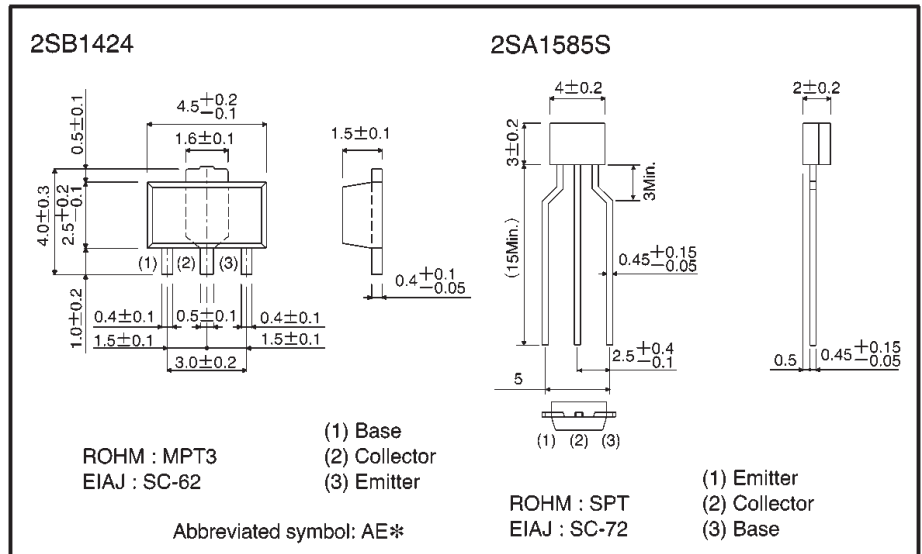
●Features

- 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)



●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	
	$I_{CP}$	–5	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	$BV_{CBO}$	-20	—	—	V	$I_C = -50 \mu A$
Collector-emitter breakdown voltage	$BV_{CEO}$	-20	—	—	V	$I_C = -1mA$
Emitter-base breakdown voltage	$BV_{EBO}$	-6	—	—	V	$I_E = -50 \mu A$
Collector cutoff current	$I_{CBO}$	—	—	-0.1	$\mu A$	$V_{CB} = -20V$
Emitter cutoff current	$I_{EBO}$	—	—	-0.1	$\mu A$	$V_{EB} = -5V$
Collector-emitter saturation voltage	$V_{CE(sat)}$	—	—	-0.5	V	$I_C/I_B = -2A/-0.1A$
DC current transfer ratio	$h_{FE}$	120	—	390	—	$V_{CE} = -2V, I_C = -0.1A$
Transition frequency	$f_T$	—	240	—	MHz	$V_{CE} = -2V, I_E = 0.5A, f = 100MHz$
Output capacitance	$C_{ob}$	—	35	—	pF	$V_{CB} = -10V, I_E = 0A, f = 1MHz$

●Packaging specifications and  $f_{FE}$

Type	$h_{FE}$	Package	Taping	
		Code	TP	T100
		Basic ordering unit (pieces)	5000	1000
2SA1585S	QR	○	—	—
2SB1424	QR	—	○	—

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

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

●Electrical characteristic curves

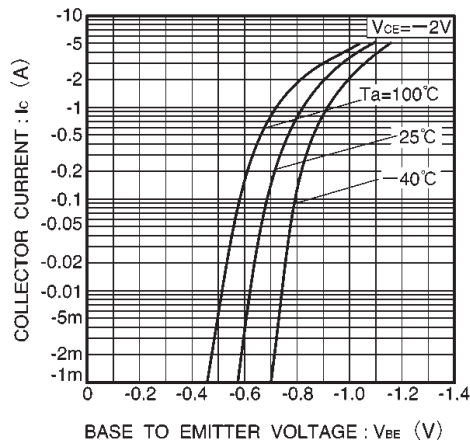


Fig.1 Grounded emitter propagation characteristics

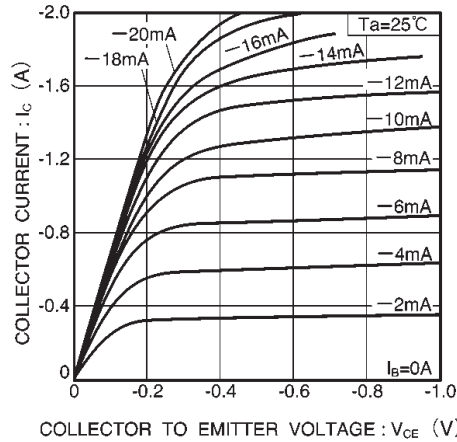


Fig.2 Grounded emitter output characteristics ( I )

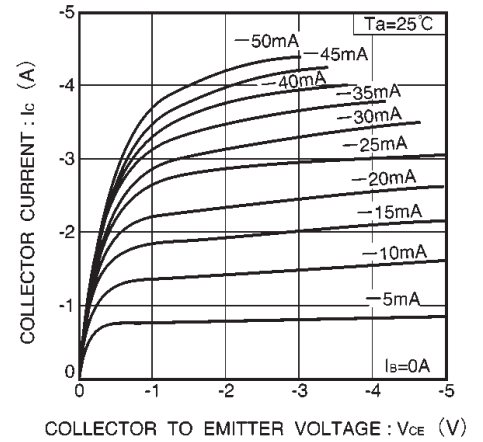


Fig.3 Grounded emitter output characteristics ( II )

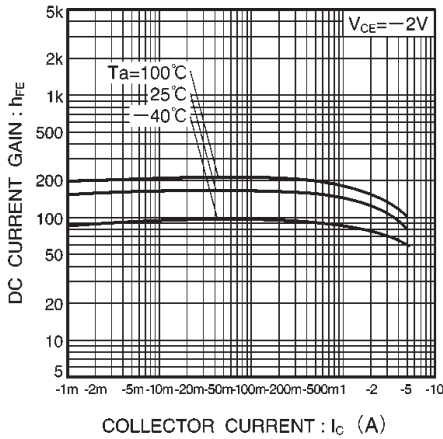


Fig.4 DC current gain vs. collector current

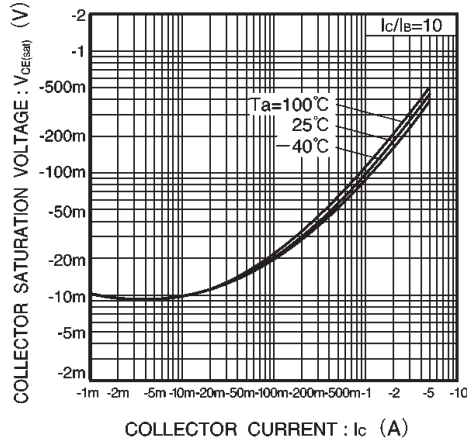


Fig.5 Collector-emitter saturation voltage vs. collector current ( I )

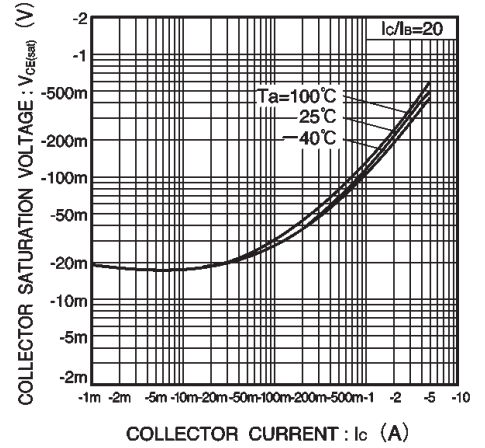


Fig.6 Collector-emitter saturation voltage vs. collector current ( II )

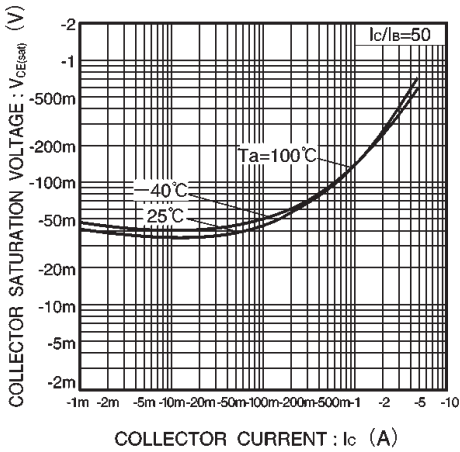


Fig.7 Collector-emitter saturation voltage vs. collector current ( III )

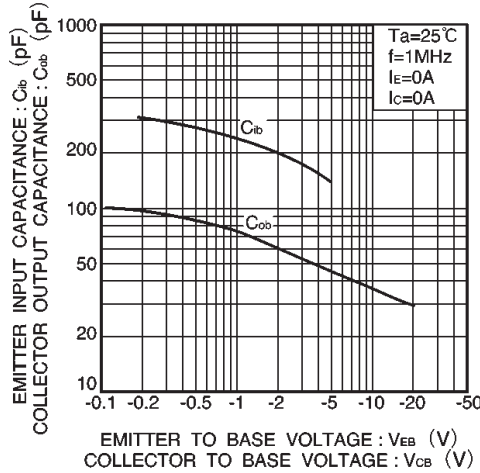


Fig.8 Gain bandwidth product vs. emitter current  
Collector output capacitance vs. collector-base voltage

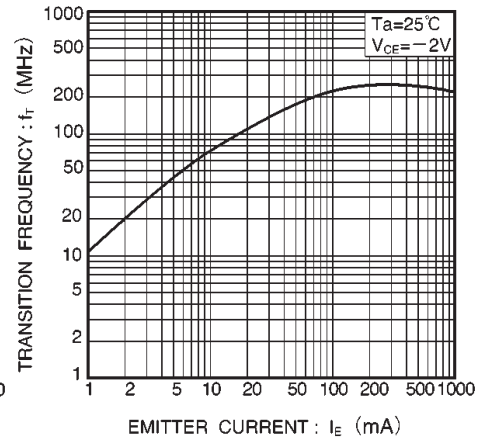


Fig.9 Emitter input capacitance vs. emitter base voltage