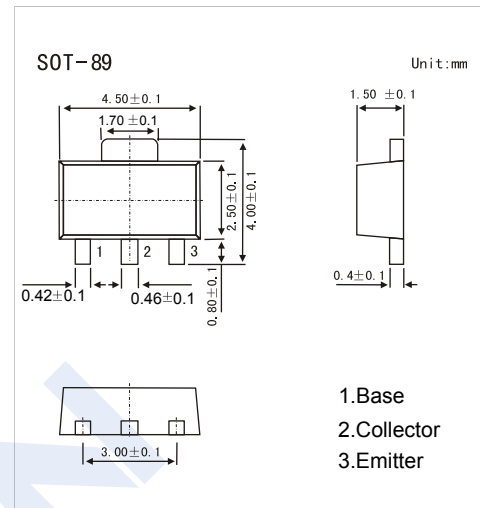


## PNP Transistors

### 2SB1386-HF

#### ■ Features

- Low  $V_{CE(sat)}$ .  
 $V_{CE(sat)} = -0.35V$  (Typ.)  
( $I_C/I_B = -4A / -0.1A$ )
- Excellent DC current gain
- Epitaxial planar type
- PNP silicon transistor
- Pb-Free Package May be Available. The G-Suffix Denotes a Pb-Free Lead Finish



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

Parameter	Symbol	Rating	Unit
Collector-base voltage	$V_{CB0}$	-30	V
Collector-emitter voltage	$V_{CE0}$	-20	V
Emitter-base voltage	$V_{EB0}$	-6	V
Collector current	$I_C$	-5	A
Collector current(Pulse)	$I_{CP}^*$	-10	A
Collector power dissipation	$P_C$	0.5	W
Junction temperature	$T_j$	150	$^\circ C$
Storage temperature	$T_{stg}$	-55 to +150	$^\circ C$

\* Single pulse,  $P_w=10ms$

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Collector-base breakdown voltage	$BV_{CB0}$	$I_C=-50 \mu A$	-30			V
Collector-emitter breakdown voltage	$BV_{CE0}$	$I_C=-1mA$	-20			V
Emitter-base breakdown voltage	$BV_{EB0}$	$I_E=-50 \mu A$	-6			V
Collector cutoff current	$I_{CB0}$	$V_{CB}=-20V$			-0.5	$\mu A$
Emitter cutoff current	$I_{EB0}$	$V_{EB}=-5V$			-0.5	$\mu A$
DC current transfer ratio	$V_{CE(sat)}$	$I_C=-4A, I_B=-0.1A$		0.35	-1	V
Collector-emitter saturation voltage	$h_{FE}$	$V_{CE}=-2V, I_C=-0.5A$	82		390	
Output capacitance	$C_{ob}$	$V_{CE}=-6V, I_E=50mA, f=30MHz$		120		pF
Transition frequency	$f_T$	$V_{CB}=-20V, I_E=0A, f=1MHz$		60		MHz

#### ■ $h_{FE}$ Classification

Type	2SB1386-P-HF	2SB1386-Q-HF	2SB1386-R-HF
Range	82-180	120-270	180-390
Marking	BHP* <sub>F</sub>	BHQ* <sub>F</sub>	BHR* <sub>F</sub>

# PNP Transistors

## 2SB1386-HF

■ Typical Characteristics

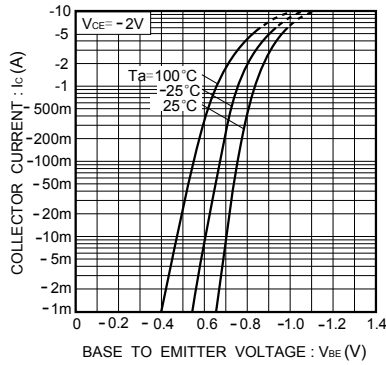


Fig.1 Grounded emitter propagation characteristics

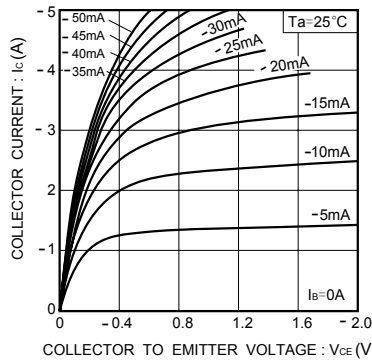


Fig.2 Grounded emitter output characteristics

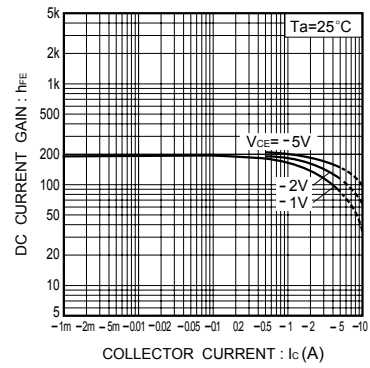


Fig.3 DC current gain vs. collector current ( I )

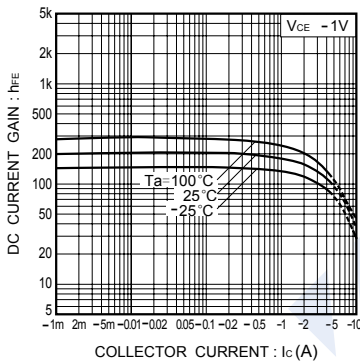


Fig.4 DC current gain vs. collector current ( II )

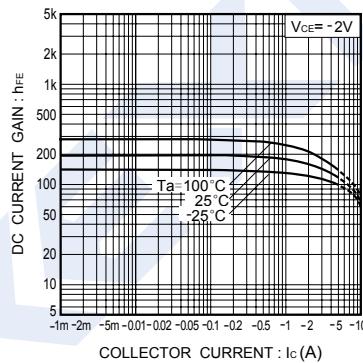


Fig.5 DC current gain vs. collector current ( III )

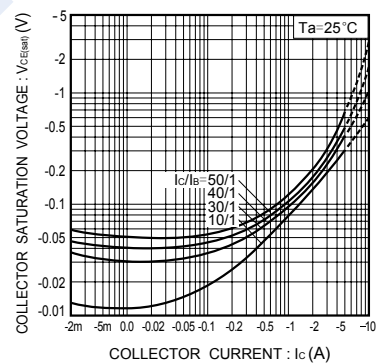


Fig.6 Collector-emitter saturation voltage vs. collector current ( I )

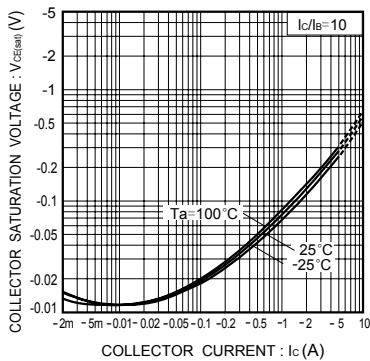


Fig.7 Collector-emitter saturation voltage vs. collector current ( II )

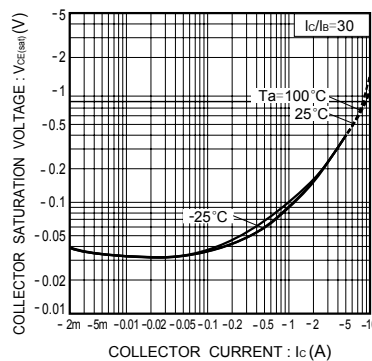


Fig.8 Collector-emitter saturation voltage vs. collector current ( III )

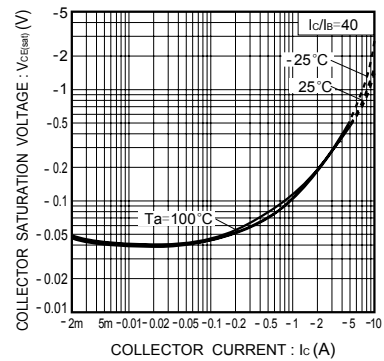


Fig.9 Collector-emitter saturation voltage vs. collector current ( IV )

## PNP Transistors 2SB1386-HF

### ■ Typical Characteristics

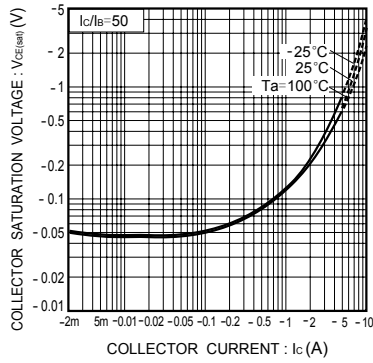


Fig.10 Collector-emitter saturation voltage vs. collector current (V)

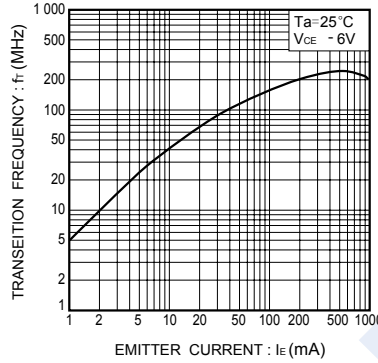


Fig.11 Gain bandwidth product vs. emitter current

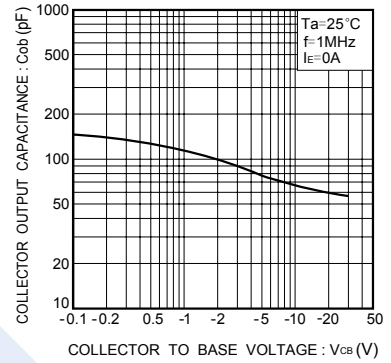


Fig.12 Collector output capacitance vs. collector-base voltage

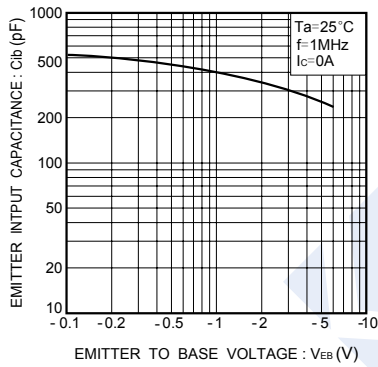


Fig.13 Emitter input capacitance vs. emitter-base voltage

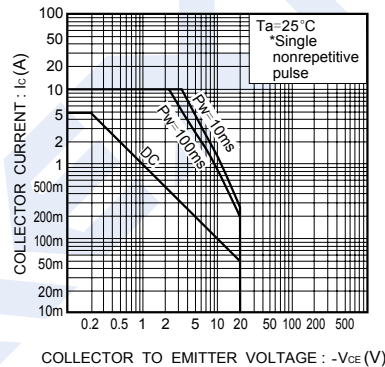


Fig.14 Safe operation area