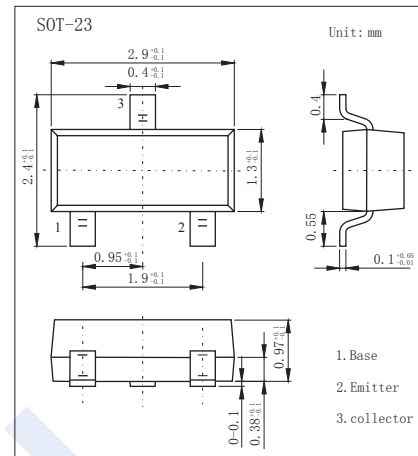


## PNP Transistors

### 2SA1052-HF

#### ■ Features

- Low frequency amplifier
- Pb-Free Package May be Available. The G-Suffix Denotes a Pb-Free Lead Finish



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

Parameter	Symbol	Rating	Unit
Collector to base voltage	$V_{CBO}$	-30	V
Collector to emitter voltage	$V_{CEO}$	-30	V
Emitter to base voltage	$V_{EBO}$	-5	V
Collector current	$I_C$	-100	mA
Emitter current	$I_E$	100	mA
Collector power dissipation	$P_C$	150	mW
Junction temperature	$T_j$	150	$^\circ\text{C}$
Storage temperature	$T_{stg}$	-55 to +150	$^\circ\text{C}$

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Collector- base breakdown voltage	$V_{CBO}$	$I_C = -100 \mu\text{A}, I_E = 0$	-30			V
Collector- emitter breakdown voltage	$V_{CEO}$	$I_C = -1 \text{ mA}, R_{BE} = \infty$	-30			
Emitter - base breakdown voltage	$V_{EBO}$	$I_E = -100 \mu\text{A}, I_C = 0$	-5			
Collector-base cut-off current	$I_{CBO}$	$V_{CB} = -20 \text{ V}, I_E = 0$			-0.1	$\mu\text{A}$
Emitter cut-off current	$I_{EBO}$	$V_{EB} = -4 \text{ V}, I_C = 0$			-0.1	
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C = -10 \text{ mA}, I_B = -1 \text{ mA}$			-0.2	V
Base-emitter saturation voltage	$V_{BE(sat)}$	$I_C = -10 \text{ mA}, I_B = -1 \text{ mA}$			-1.2	
Base-emitter voltage	$V_{BE}$	$V_{CE} = -12 \text{ V}, I_C = -2 \text{ mA}$			-0.75	
DC current gain	$h_{FE}$	$V_{CE} = -12 \text{ V}, I_C = -2 \text{ mA}$	100		500	

#### ■ $h_{FE}$ Classification

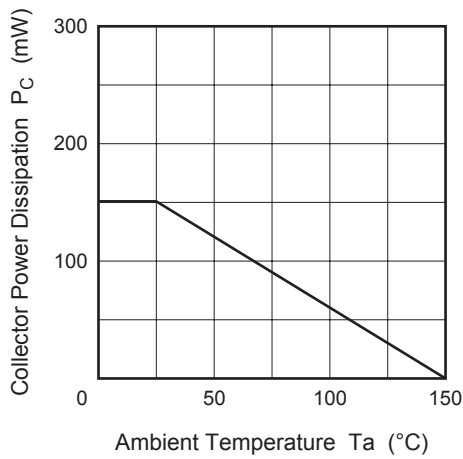
Type	2SA1052-B-HF	2SA1052-C-HF	2SA1052-D-HF
Range	100-200	160-320	250-500
Marking	MB <sub>F</sub>	MC <sub>F</sub>	MD <sub>F</sub>

## PNP Transistors

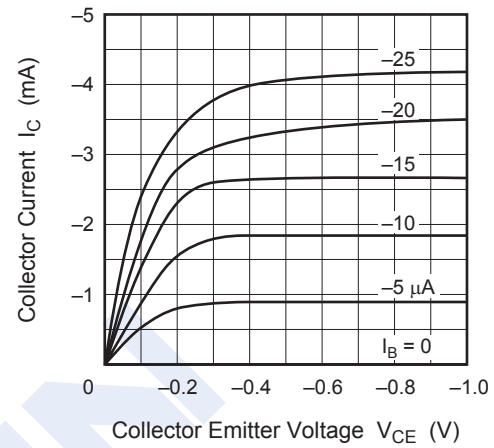
## 2SA1052-HF

## ■ Typical Characteristics

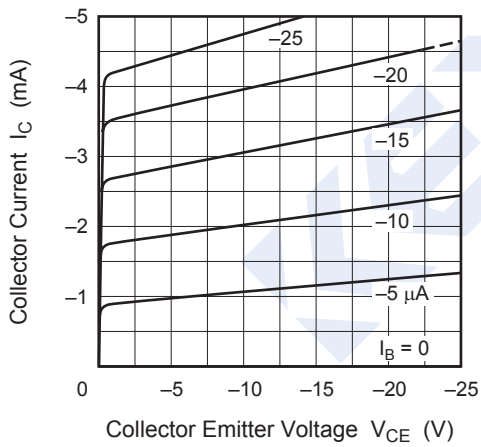
Maximum Collector Dissipation Curve



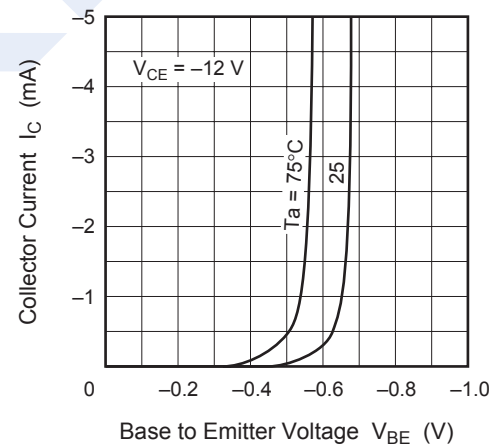
Typical Output Characteristics (1)



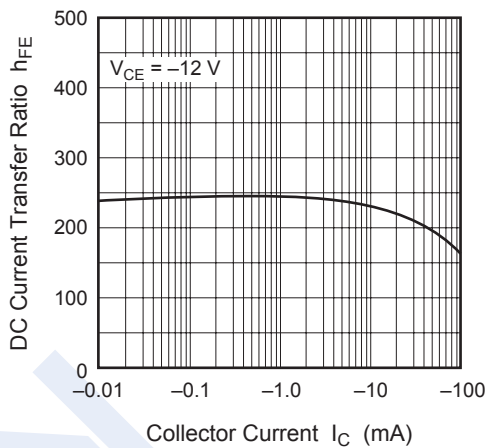
Typical Output Characteristics (2)



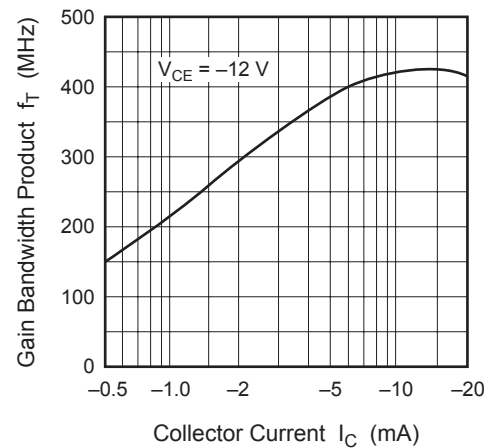
Typical Transfer Characteristics



DC Current Transfer Ratio vs. Collector Current



Gain Bandwidth Product vs. Collector Current



## PNP Transistors

### 2SA1052-HF

#### ■ Typical Characteristics

