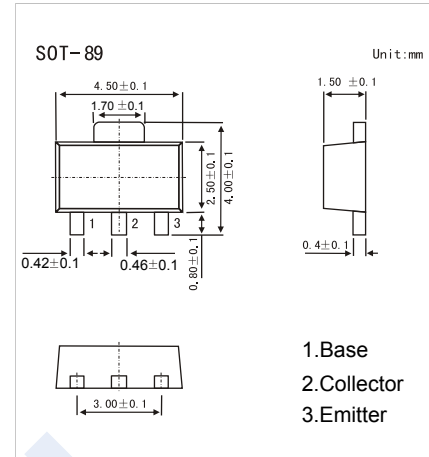


## PNP Transistors

### 2SA1416

#### ■ Features

- Adoption of FBET, MBIT Processes
- High Breakdown Voltage and Large Current Capacity
- Fast Switching Time
- Complementary to 2SC3646



#### ■ Absolute Maximum Ratings Ta = 25°C

Parameter	Symbol	Rating	Unit
Collector - Base Voltage	V <sub>CB0</sub>	-120	V
Collector - Emitter Voltage	V <sub>CEO</sub>	-100	
Emitter - Base Voltage	V <sub>EBO</sub>	-6	
Collector Current - Continuous	I <sub>C</sub>	-1	A
Collector Current - Pulsed	I <sub>CP</sub>	-2	
Collector Power Dissipation	P <sub>C</sub>	500	mW
Junction Temperature	T <sub>J</sub>	150	°C
Storage Temperature range	T <sub>stg</sub>	-55 to 150	

#### ■ Electrical Characteristics Ta = 25°C

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Collector- base breakdown voltage	V <sub>CB0</sub>	I <sub>C</sub> = -100 μA, I <sub>E</sub> =0	-120			V
Collector- emitter breakdown voltage	V <sub>CEO</sub>	I <sub>C</sub> = -1 mA, R <sub>BE</sub> =∞	-100			
Emitter - base breakdown voltage	V <sub>EBO</sub>	I <sub>E</sub> = -100 μA, I <sub>C</sub> =0	-6			
Collector-base cut-off current	I <sub>CBO</sub>	V <sub>CB</sub> = -100 V, I <sub>E</sub> =0			-0.1	μA
Emitter cut-off current	I <sub>EBO</sub>	V <sub>EB</sub> = -4V, I <sub>C</sub> =0			-0.1	
Collector-emitter saturation voltage	V <sub>CE(sat)</sub>	I <sub>C</sub> =-400mA, I <sub>B</sub> =- 40mA		-0.2	-0.6	V
Base - emitter saturation voltage	V <sub>BE(sat)</sub>	I <sub>C</sub> =-400mA, I <sub>B</sub> =- 40mA		-0.85	-1.2	
DC current gain	h <sub>FE</sub>	V <sub>CE</sub> = -5V, I <sub>C</sub> = -100mA	100		400	
Turn-on time	t <sub>on</sub>	See Test Circuit.		80		ns
Storage time	t <sub>s</sub>			700		
Fall time	t <sub>f</sub>			40		
Output capacitance	C <sub>ob</sub>	V <sub>CB</sub> = -10V, I <sub>E</sub> = 0, f= 1MHz		13		pF
Transition frequency	f <sub>T</sub>	V <sub>CE</sub> = -10V, I <sub>E</sub> = -100mA		120		MHz

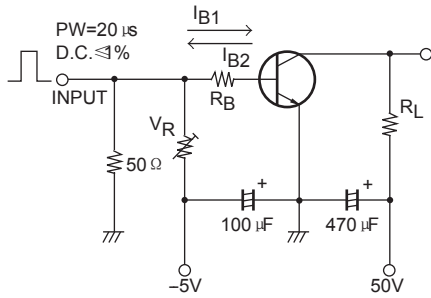
#### ■ Classification of h<sub>FE</sub>

Marking	ABR*	ABS*	ABT*
Range	100-200	140-280	200-400

# PNP Transistors

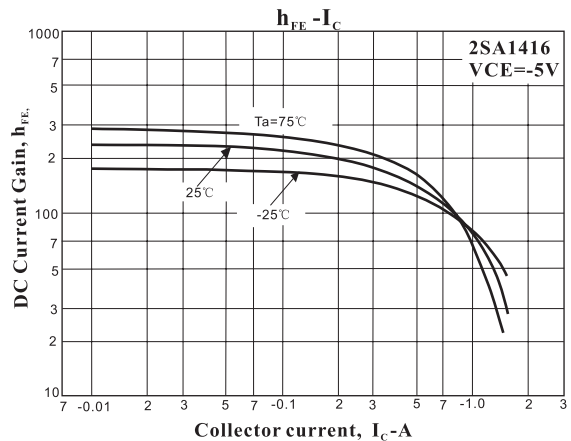
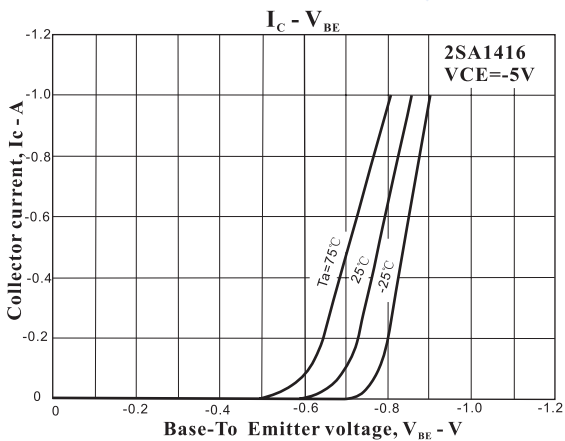
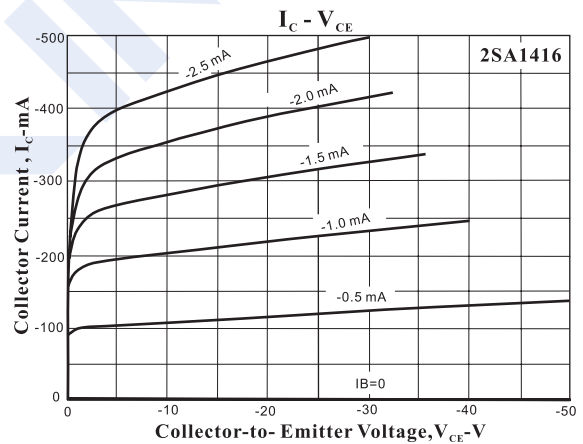
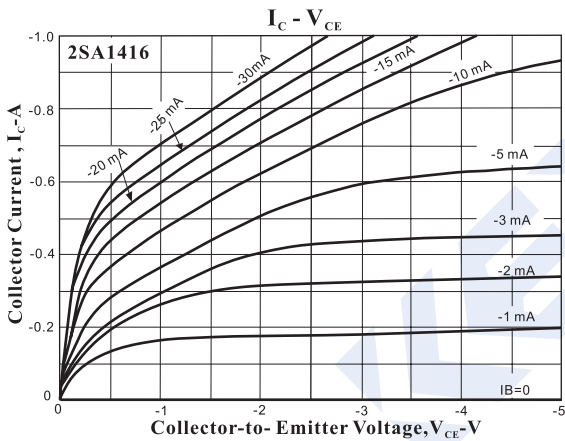
## 2SA1416

### Test Circuit



$I_C = 10I_{B1} = -10I_{B2} = 400\text{mA}$   
 (For PNP, the polarity is reversed)

### Typical Characteristics



# PNP Transistors

## 2SA1416

■ Typical Characteristics

