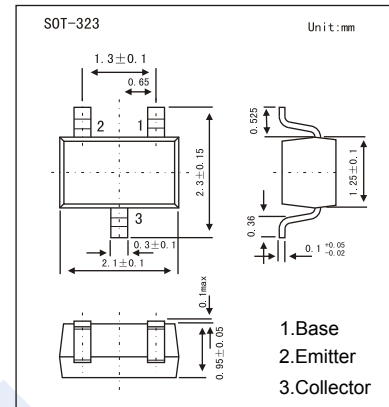


## PNP Transistors

### 2SA1685

#### ■ Features

- Fast switching speed.
- High gain-bandwidth product.
- Low saturation voltage.
- Complementary to 2SC4443



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

Parameter	Symbol	Rating	Unit
Collector - Base Voltage	V <sub>CBO</sub>	-40	V
Collector - Emitter Voltage	V <sub>CEO</sub>	-20	
Emitter - Base Voltage	V <sub>EBO</sub>	-5	
Collector Current - Continuous	I <sub>C</sub>	-150	mA
Collector Current -Pulse	I <sub>Cp</sub>	-300	
Collector Power Dissipation	P <sub>C</sub>	150	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>CBO</sub>	I <sub>C</sub> = -100 uA, I <sub>E</sub> =0	-40			V
Collector- emitter breakdown voltage	V <sub>CEO</sub>	I <sub>C</sub> = -1 mA, R <sub>BE</sub> = ∞	-20			
Emitter - base breakdown voltage	V <sub>EBO</sub>	I <sub>E</sub> = -100 uA, I <sub>C</sub> =0	-5			
Collector-base cut-off current	I <sub>CBO</sub>	V <sub>CB</sub> = -30 V, I <sub>E</sub> =0			-0.1	uA
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> =-10 mA, I <sub>B</sub> =-1 mA		-0.07	-0.2	V
Base - emitter saturation voltage	V <sub>BE(sat)</sub>	I <sub>C</sub> =-10 mA, I <sub>B</sub> =-1 mA		-0.75	-1	
DC current gain	h <sub>FE</sub>	V <sub>CE</sub> = -1V, I <sub>C</sub> = -10 mA	60		180	
Delay Time	t <sub>d</sub>	See specified Test Circuit		14	20	ns
Rise Time	t <sub>r</sub>			11	20	
Storage time	t <sub>stg</sub>			80	180	
Fall time	t <sub>f</sub>			16	25	
Collector output capacitance	C <sub>ob</sub>		V <sub>CB</sub> = -10V, f=1MHz		2.9	
Transition frequency	f <sub>r</sub>	V <sub>CE</sub> = -10V, I <sub>C</sub> = -10 mA		400		MHz

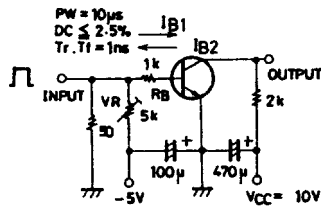
#### ■ Classification of h<sub>FE</sub>

Type	2SA1685-YL3	2SA1685-YL4
Range	60-120	90-180
Marking	YL3	YL4

## PNP Transistors

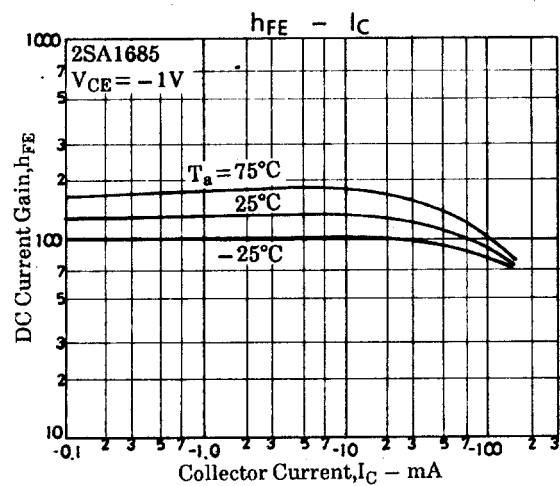
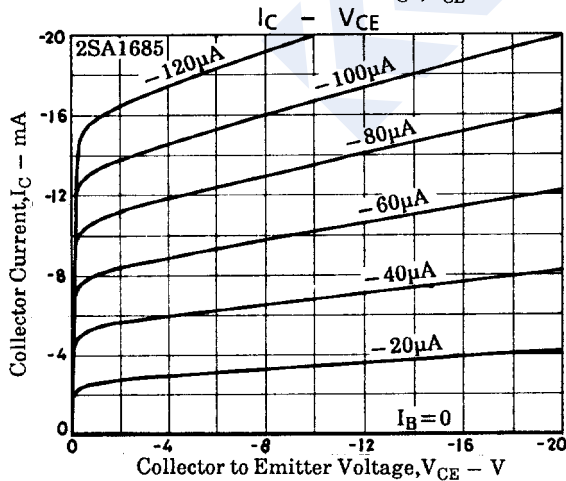
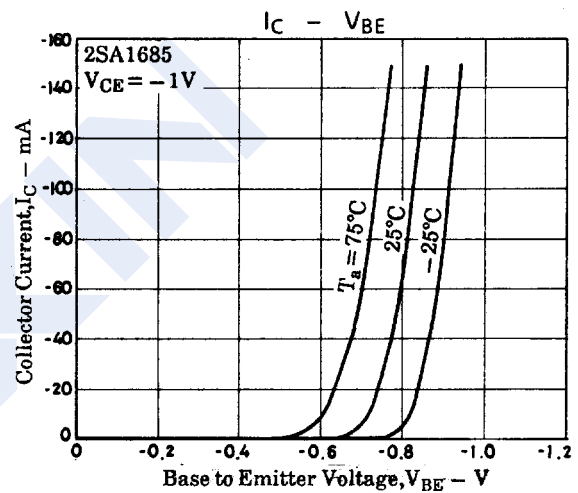
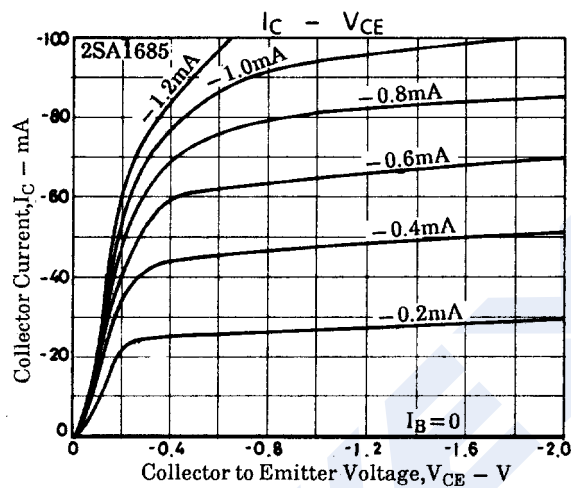
## 2SA1685

## Switching Time Test Circuit



$5I_{B1} = -5I_{B2} = I_C = 50mA$   
 (For PNP, the polarity is reversed.)  
 Unit (resistance :  $\Omega$ , capacitance : F)

## ■ Typical Characteristics



### PNP Transistors

### 2SA1685

■ Typical Characteristics

