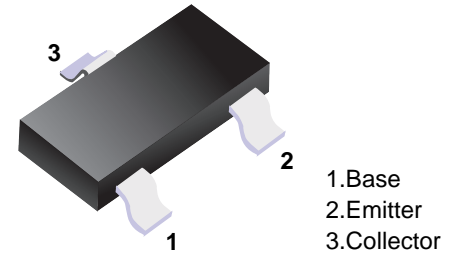


# S9013

## ■ NPN Transistors



■ Simplified outline(SOT-23)

### ■ Features

- Excellent hFE linearity
- Collector Current :Ic=0.5A

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

Parameter	Symbol	Rating	Unit
Collector - Base Voltage	V <sub>CB0</sub>	40	V
Collector - Emitter Voltage	V <sub>CE0</sub>	25	V
Emitter - Base Voltage	V <sub>EB0</sub>	5	V
Collector Current - Continuous	I <sub>c</sub>	500	mA
Collector Power Dissipation	P <sub>c</sub>	300	mW
Junction Temperature	T <sub>j</sub>	150	°C
Storage Temperature	T <sub>stg</sub>	-55 to 150	°C

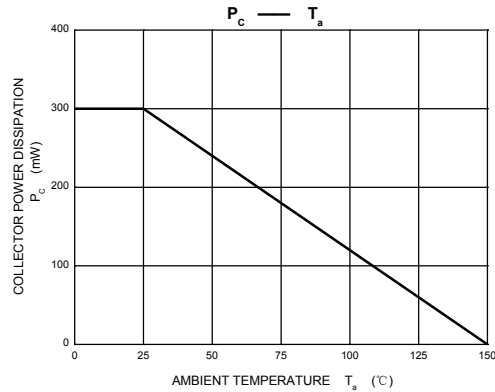
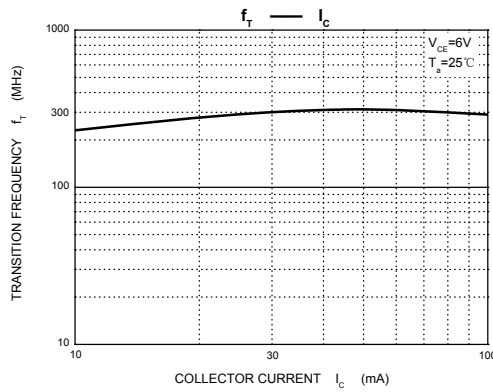
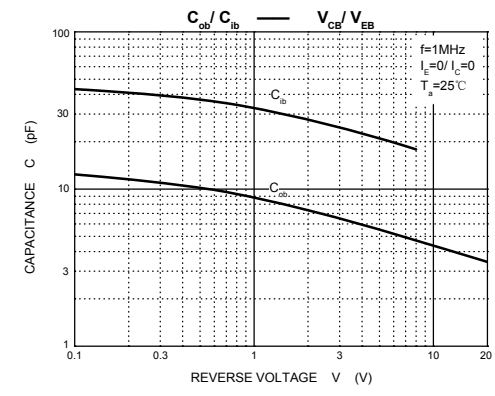
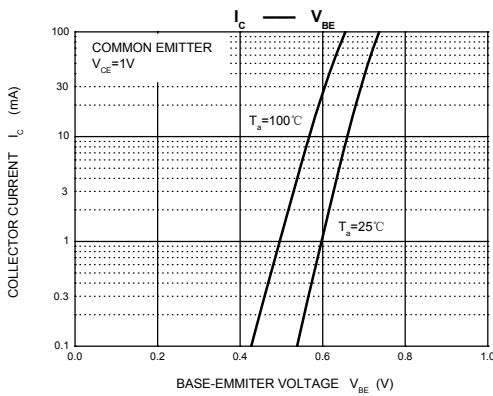
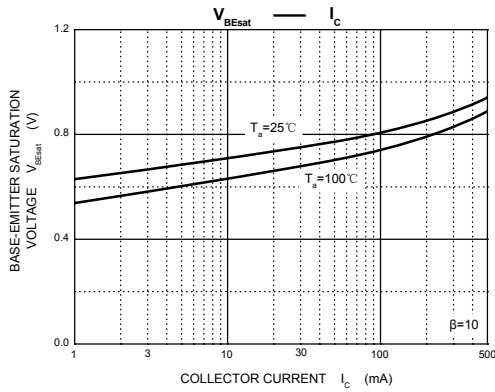
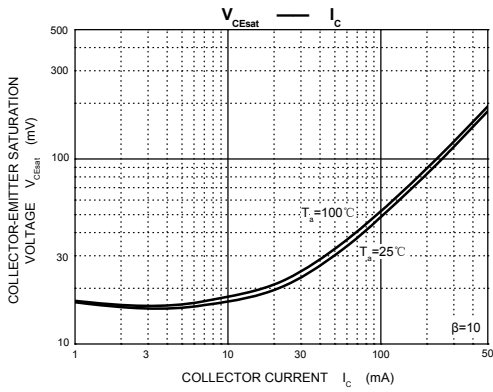
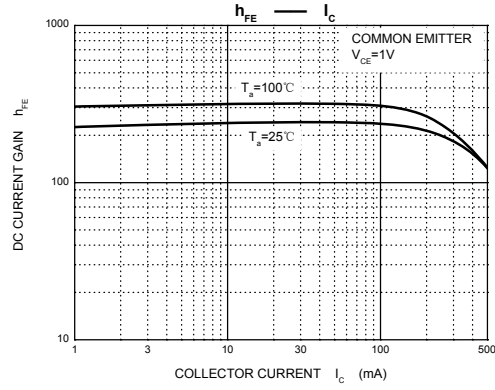
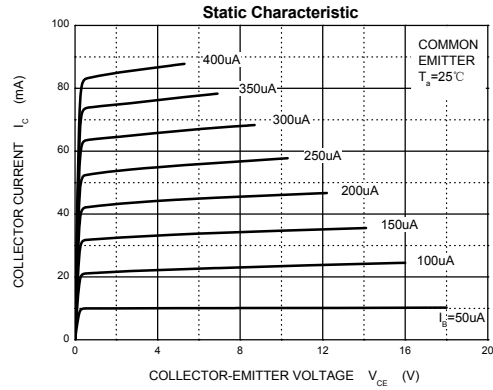
### ■ Electrical Characteristics Ta = 25°C

Parameter	Symbol	Testconditions	Min	Typ	Max	Unit
Collector - base breakdown voltage	V <sub>CB0</sub>	I <sub>c</sub> = 100 μ A, I <sub>E</sub> =0	40			V
Collector - emitter breakdown voltage	V <sub>CE0</sub>	I <sub>c</sub> = 0.1mA, I <sub>B</sub> =0	25			V
Emitter - base breakdown voltage	V <sub>EB0</sub>	I <sub>E</sub> =100 μ A, I <sub>c</sub> =0	5			V
Collector cut - off current	I <sub>CB0</sub>	V <sub>CB</sub> =40 V, I <sub>E</sub> =0			0.1	μ A
Collector cut -off current	I <sub>CE0</sub>	V <sub>CE</sub> =20V, I <sub>B</sub> =0			1	μ A
Emitter cut - off current	I <sub>EB0</sub>	V <sub>EB</sub> = 5V, I <sub>c</sub> =0			0.1	μ A
DC current gain	h <sub>FE</sub>	V <sub>CE</sub> =1V, I <sub>c</sub> = 50mA	120		400	
		V <sub>CE</sub> =1V, I <sub>c</sub> =500mA	40			
Collector - emitter saturation voltage	V <sub>CE(sat)</sub>	I <sub>c</sub> =500 mA, I <sub>B</sub> = 50mA			0.6	V
Base - emitter saturation voltage	V <sub>BE(sat)</sub>	I <sub>c</sub> =500 mA, I <sub>B</sub> = 50mA			1.2	V
Transition frequency	f <sub>t</sub>	V <sub>CE</sub> =6V, I <sub>c</sub> = 20mA,f=30MHz	150			MHz

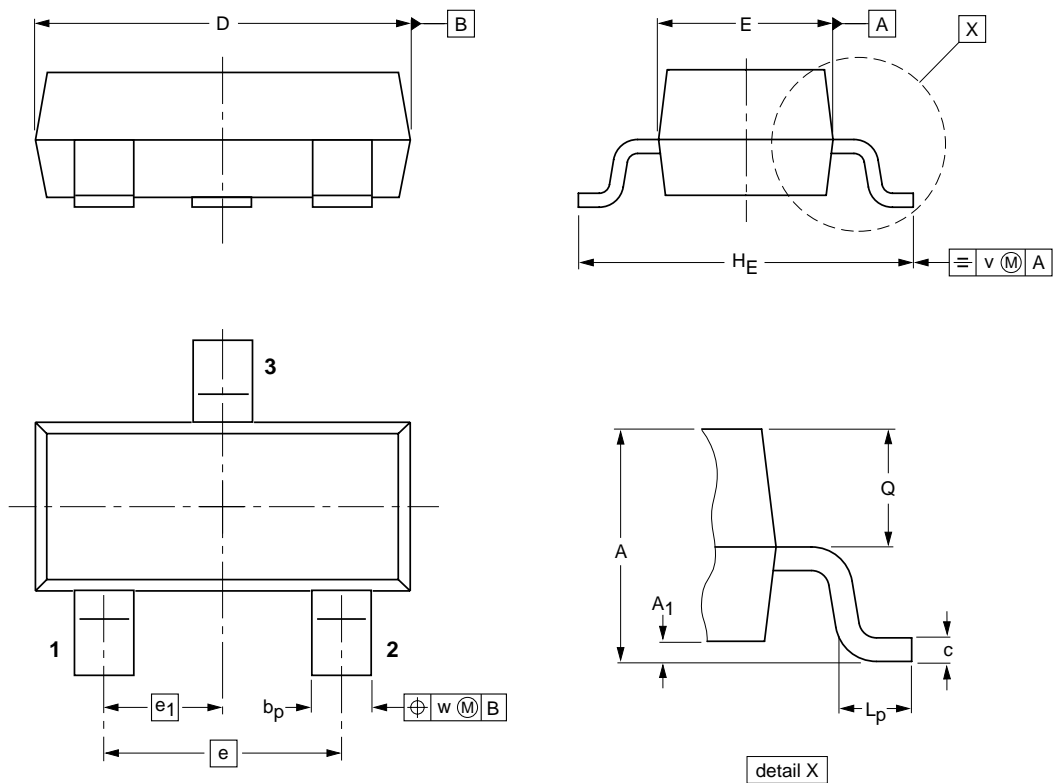
### ■ Classification of hfe(1)

Type	S9013	S9013-L	S9013-H	S9013-J
Range	200-350	120-200	144-202	300-400
Marking	J3			

■ Typical Characteristics



■ SOT-23



DIMENSIONS (mm are the original dimensions)

UNIT	A	A <sub>1</sub> max.	b <sub>p</sub>	c	D	E	e	e <sub>1</sub>	H <sub>E</sub>	L <sub>p</sub>	Q	v	w
mm	1.1 0.9	0.1	0.48 0.38	0.15 0.09	3.0 2.8	1.4 1.2	1.9	0.95	2.5 2.1	0.45 0.15	0.55 0.45	0.2	0.1