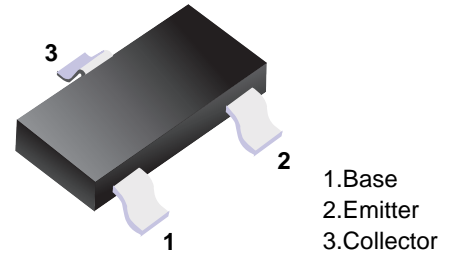


■ **NPN Transistors**



■ **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 _{CB0}	40	V
Collector - Emitter Voltage	V _{CE0}	25	V
Emitter - Base Voltage	V _{EB0}	5	V
Collector Current - Continuous	I _c	500	mA
Collector Power Dissipation	P _c	300	mW
Junction Temperature	T _j	150	°C
Storage Temperature	T _{stg}	-55 to 150	°C

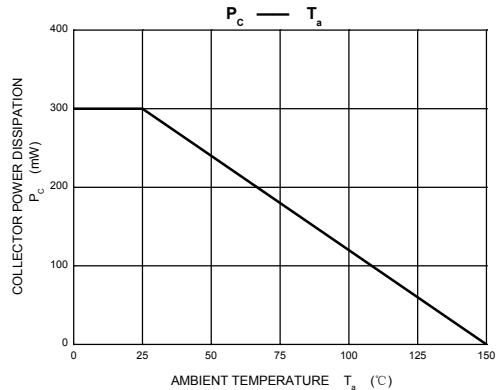
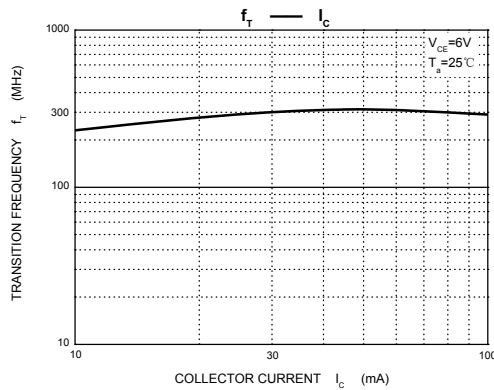
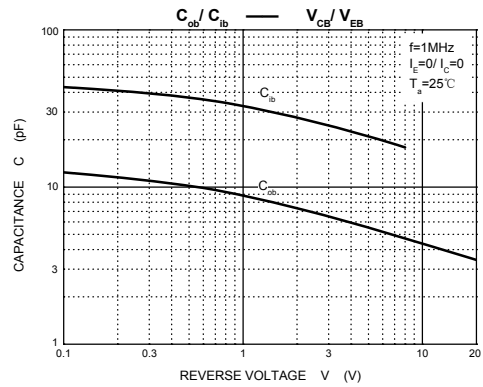
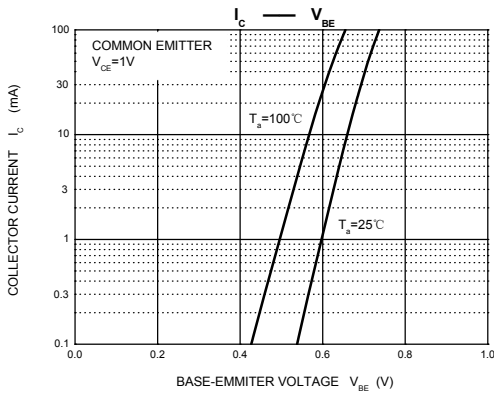
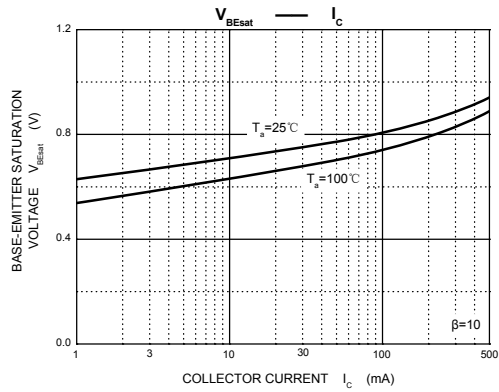
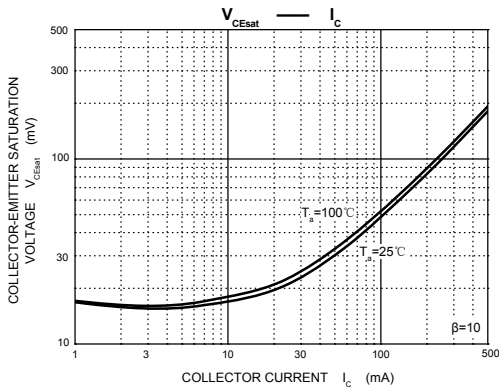
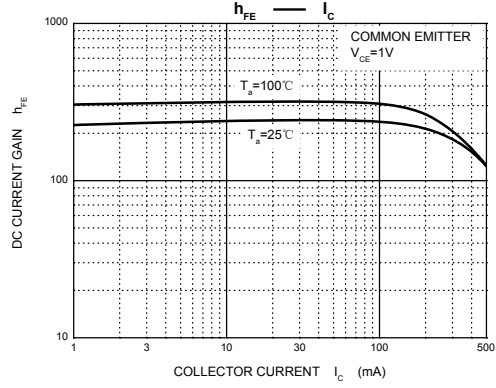
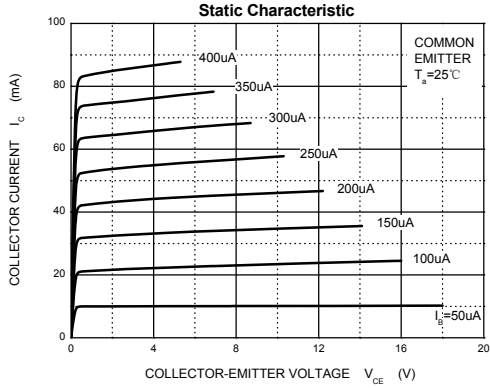
■ **Electrical Characteristics Ta = 25°C**

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

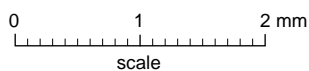
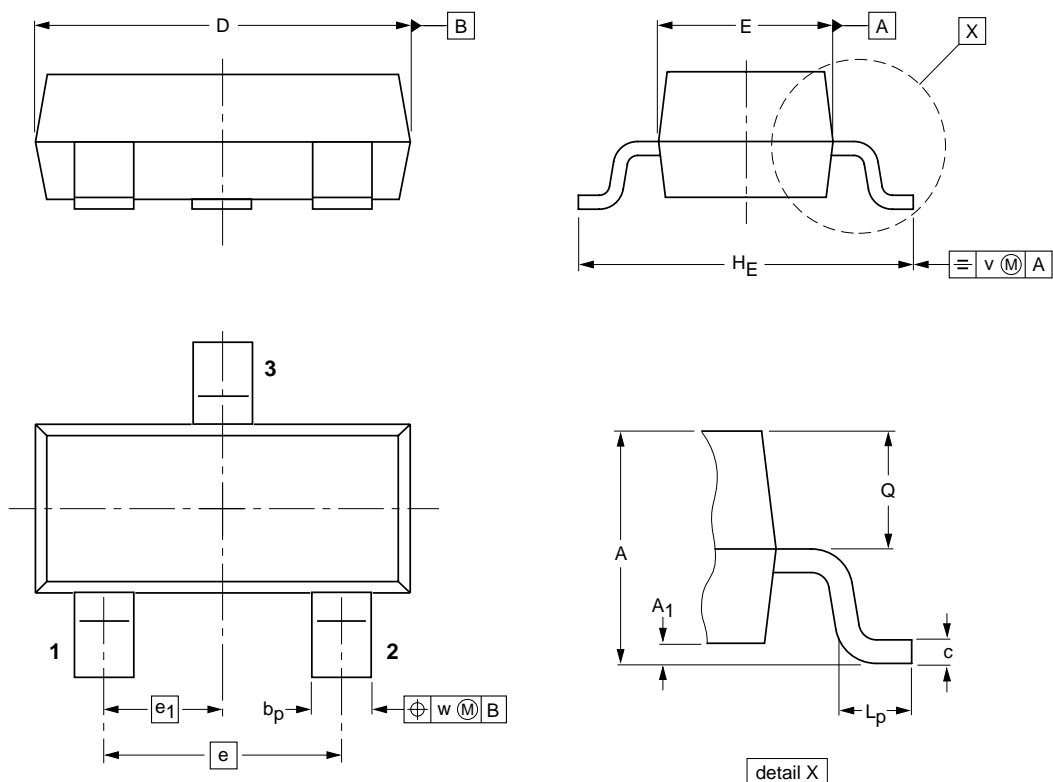
■ **Classification of h_{FE}(1)**

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 ₁ max.	b _p	c	D	E	e	e ₁	H _E	L _p	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