BORN SEMICONDUCTOR

S9013W

NPN Plastic-Encapsulate Transistor

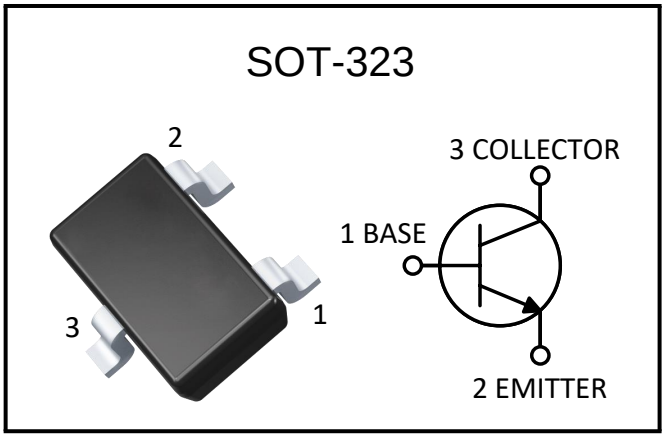
Features

- V_{CE}=25V
- I_C=0.5A
- Excellent hFE Linearity.

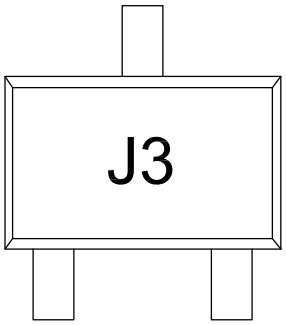
Description

- Complementary to S9012W
- High Stability and High Reliability
- SOT-323 Plastic Package.

Package



Marking



Ordering information

Order code	Package	Marking	Base qty	Delivery mode
S9013W	SOT-323	J3	3K	Tape and reel

Absolute Maximum Ratings @T_A=25°C unless otherwise noted

Symbol	Parameter	Value	Unit
V_{CBO}	Collector-Base Voltage	40	V
V_{CEO}	Collector-Emitter Voltage	25	V
V_{EBO}	Emitter-Base Voltage	5	V
I_C	Collector Current	0.5	A
P_C	Collector Power Dissipation	200	mW
$R_{\theta JA}$	Thermal resistance From junction to ambient	400	°C/W
T_J,T_{stg}	Operation Junction And Storage Temperature Range	-55 to + 150	°C

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Electrical Characteristics (T_A=+25°C, unless otherwise specified)

Symbol	Parameter	Test condition	Min.	Typ.	Max.	Unit
$V_{(BR)CBO}$	Collector-base breakdown voltage	I_C=100μA, I_E=0	40	–	–	V
$V_{(BR)CEO}$	Collector-emitter breakdown voltage	I_C=0.1mA,I_B=0	25	–	–	
$V_{(BR)EBO}$	Emitter-base breakdown voltage	I_E=100μA,I_C=0	5	–	–	
I_{CEO}	Collector cut-off current	V_{CE}= 20V,I_B=0	–	–	0.1	uA
I_{CBO}	Collector cut-off current	V_{CB}=40V,I_E=0	–	–	0.1	
I_{EBO}	Emitter cut-off current	V_{EB}=5V,I_C=0	–	–	0.1	
$h_{FE(1)}$	DC current gain	V_{CE}=1V,I_C=50mA	120	–	400	
$h_{FE(1)}$	DC current gain	V_{CE}=1V,I_C=500mA	50	–	–	
$V_{CE(sat)}$	Collector-emitter saturation voltage	I_C=500mA,I_B=50mA	–	–	0.6	V
$V_{BE(sat)}$	Base-emitter saturation voltage	I_C=500mA,I_B=50mA	–	–	1.2	
f_T	Transition frequency	V_{CE}=6V,I_C=20mA,f=30MHZ	150	–	–	MHZ
C_{ob}	Collector output capacitance	V_{CB}=6V,I_E=0V,f=1MHZ	–	–	8	PF
$h_{FE(1)}$Rank	(120~200)	(200~350)	(300~400)			

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Typical Performance Characteristics(T_J = 25 °C, unless otherwise noted)

Figure 1 : Static Characteristic

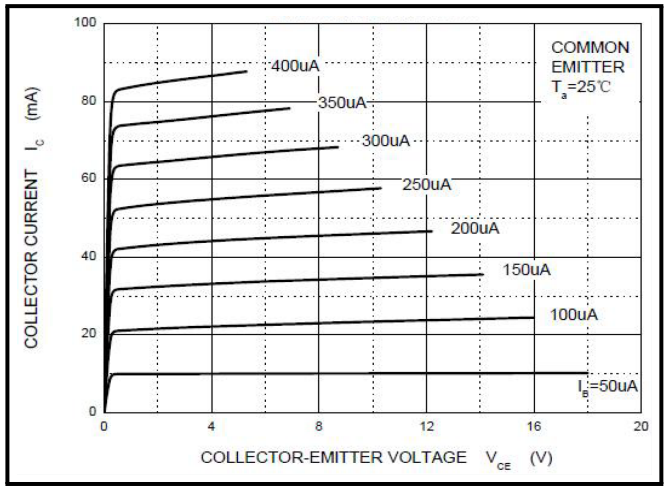


Figure 2 :h_{FE}—I_C

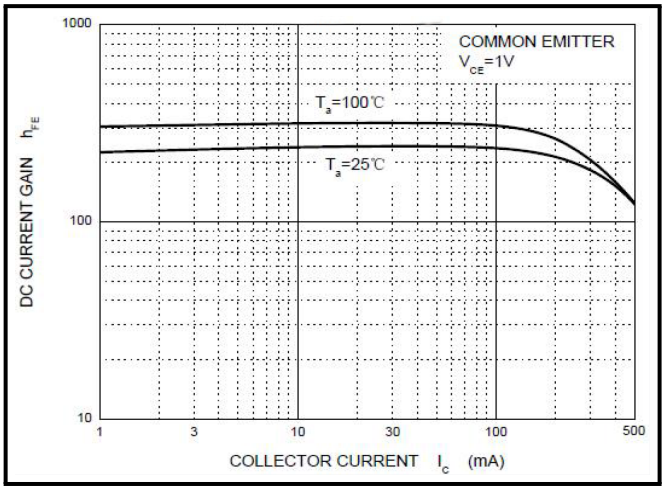


Figure 3 : $V_{CE(sat)}$— I_C

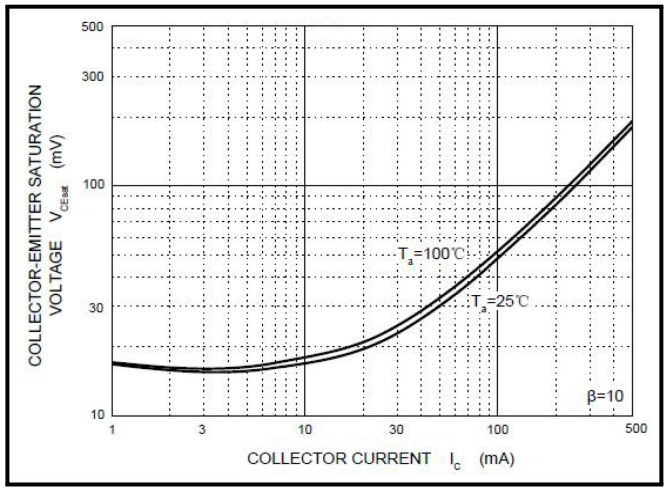
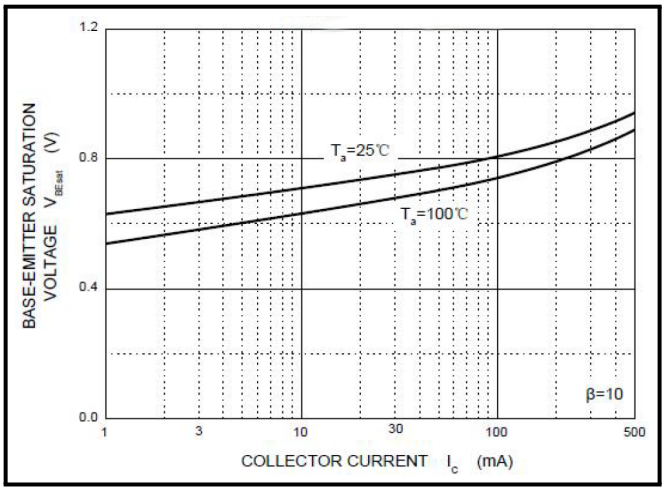


Figure 4 : $V_{BE(sat)}$—I_C



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Figure 5 :I_C —— V_{BE}

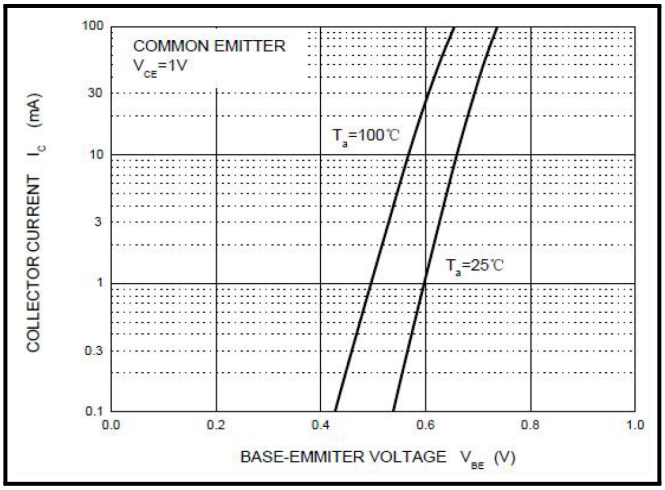


Figure 6 : C_{ob}/C_{Ib}—— V_{CB}/V_{EB}

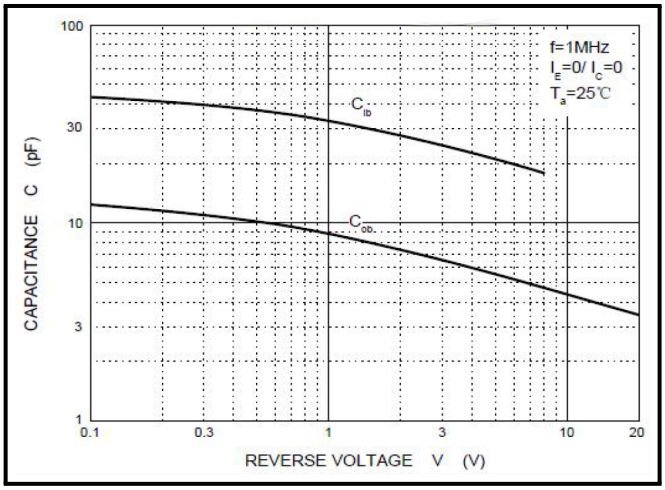


Figure 7 : fT——I_C

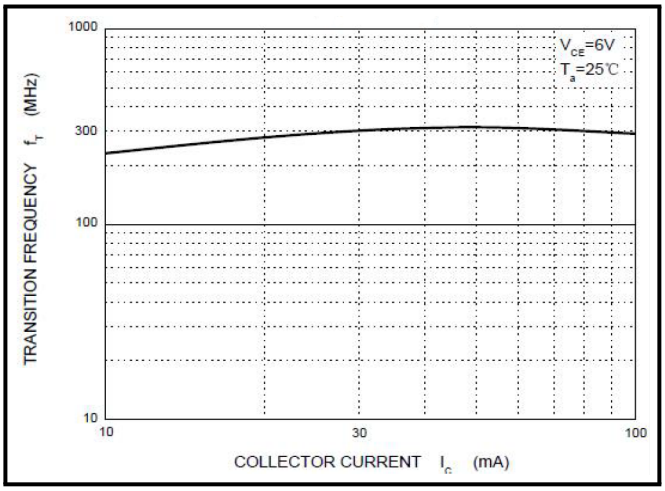
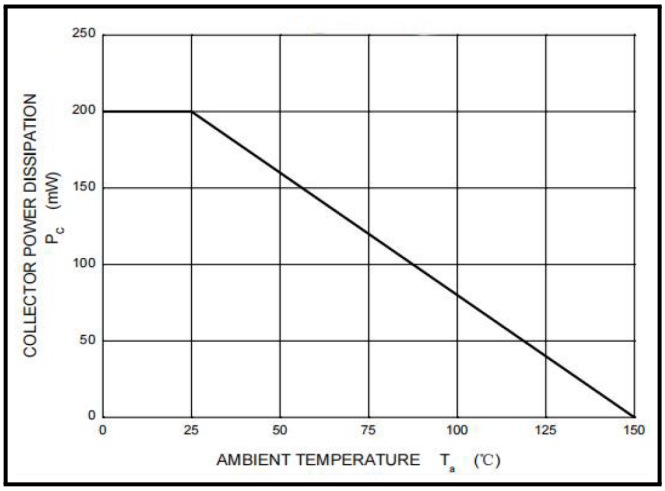


Figure 8 : P_C——T_a



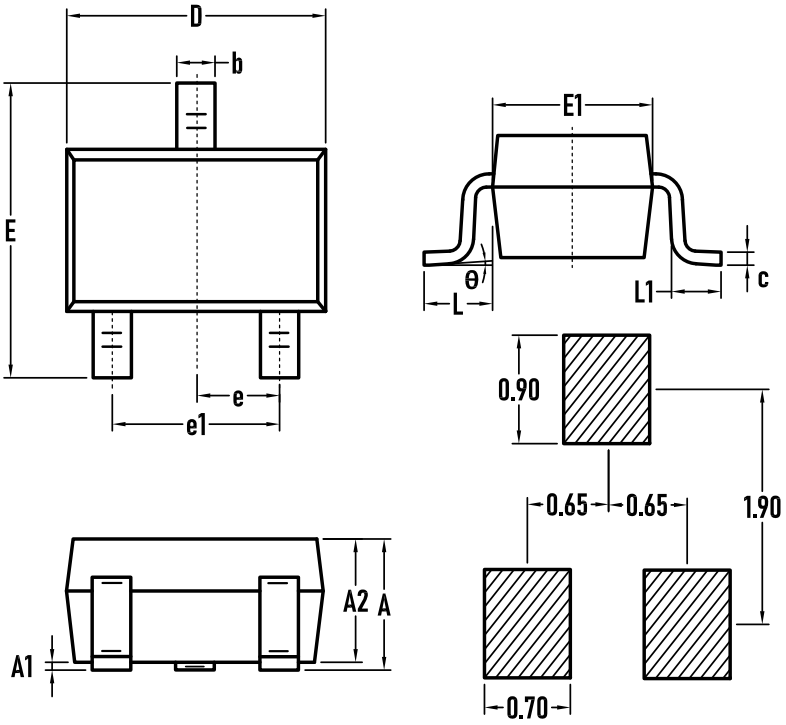
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Outline Drawing - SOT-323



SYMBOL	MILLIMETER		
	MIN.	Typ.	MAX.
A	0.90	1.00	1.10
A1	0.00	0.05	0.10
A2	0.90	0.95	1.00
b	0.20	0.30	0.40
c	0.08	0.12	0.15
D	2.00	2.10	2.20
E	2.15	2.30	2.45
E1	1.15	1.25	1.35
e		0.650Typ.	
e1	1.20	1.30	1.40
L1	0.26	0.36	0.46
L		0.525REF	
θ	0°	4°	8°

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