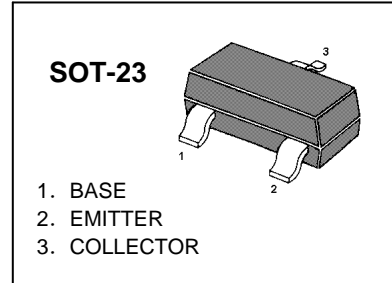


**S9013-ML TRANSISTOR (NPN)**

**FEATURES**

- High Collector Current.
- Complementary to S9012.
- Excellent  $h_{FE}$  Linearity.



**MARKING: J3**

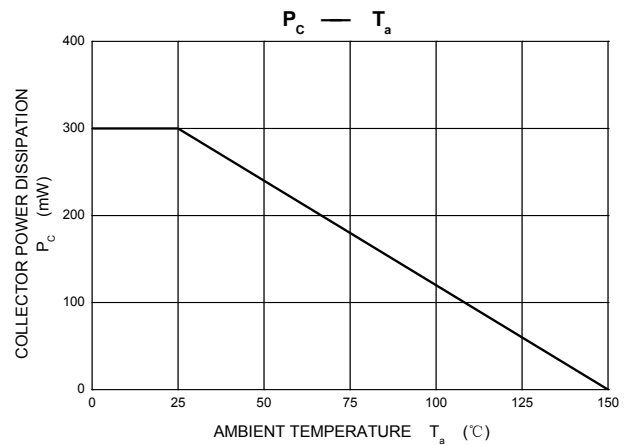
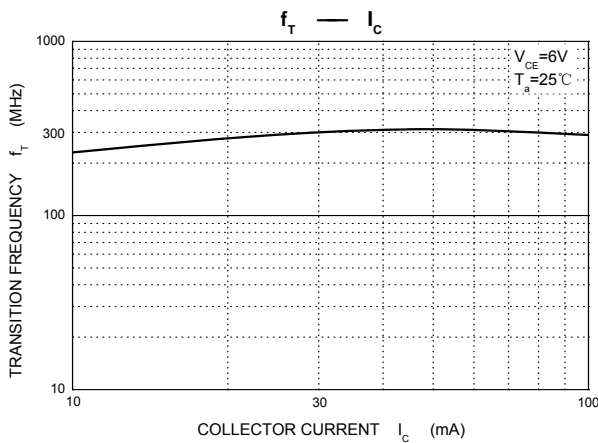
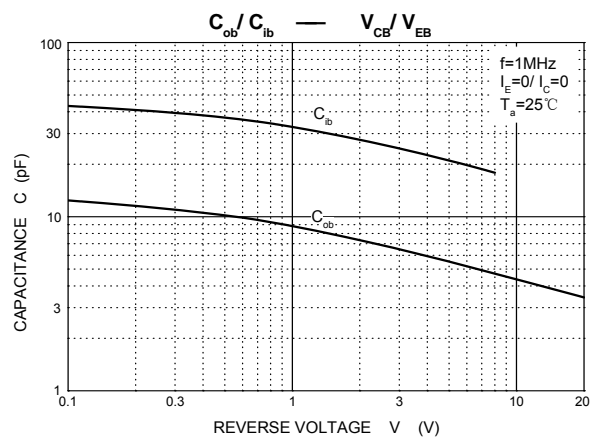
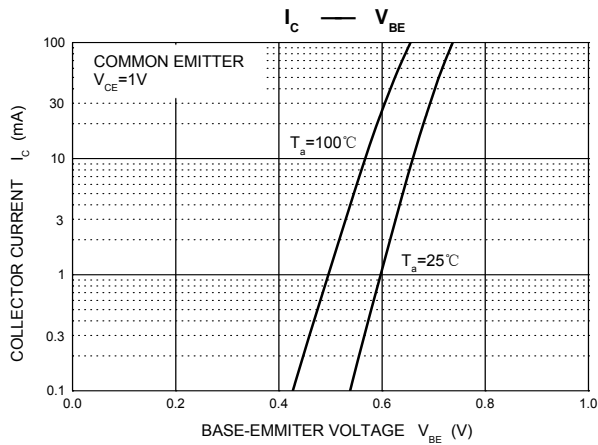
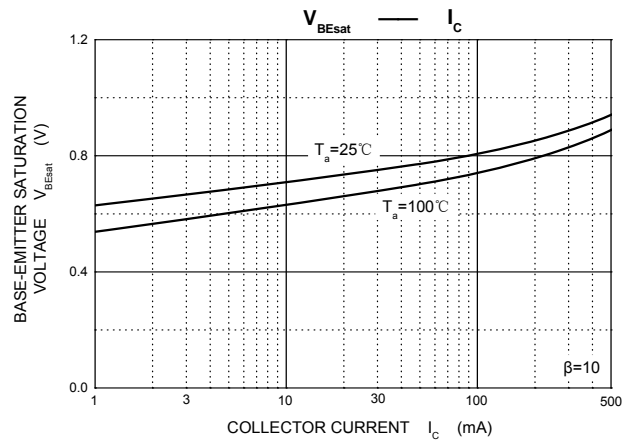
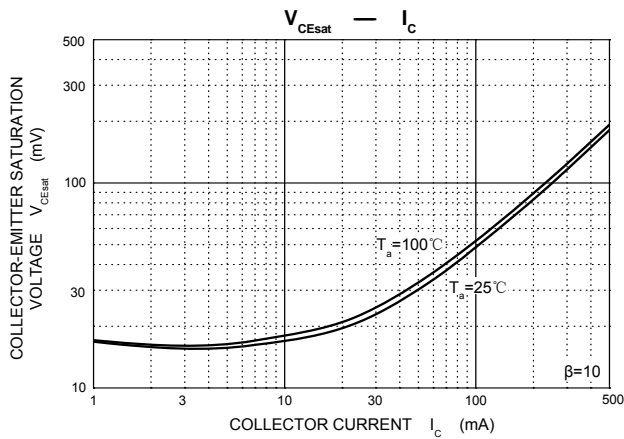
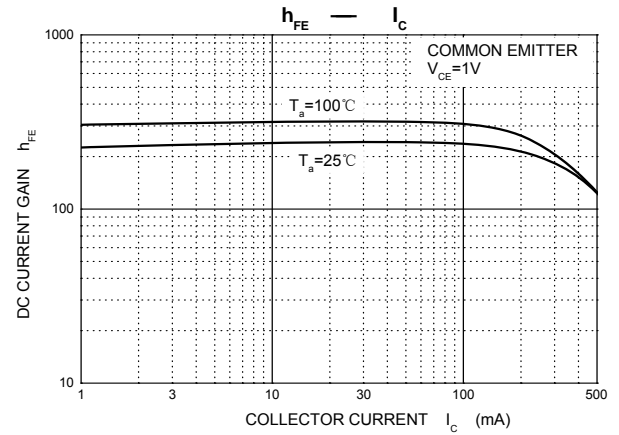
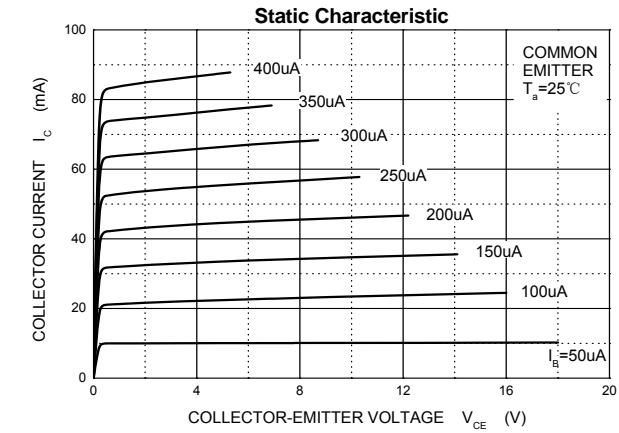
**MAXIMUM RATINGS ( $T_A=25^{\circ}\text{C}$  unless otherwise noted)**

Symbol	Parameter	Value	Units
$V_{CBO}$	Collector-Base Voltage	40	V
$V_{CEO}$	Collector-Emitter Voltage	25	V
$V_{EBO}$	Emitter-Base Voltage	5	V
$I_C$	Collector Current -Continuous	500	mA
$P_C$	Collector Power Dissipation	300	mW
$T_j$	Junction Temperature	150	$^{\circ}\text{C}$
$T_{stg}$	Storage Temperature	-55-150	$^{\circ}\text{C}$

**ELECTRICAL CHARACTERISTICS ( $T_{amb}=25^{\circ}\text{C}$  unless otherwise specified)**

Parameter	Symbol	Test conditions	MIN	TYP	MAX	UNIT
Collector-base breakdown voltage	$V_{(BR)CBO}$	$I_C=100\mu\text{A}, I_E=0$	40			V
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	$I_C=0.1\text{mA}, I_B=0$	25			V
Emitter-base breakdown voltage	$V_{(BR)EBO}$	$I_E=100\mu\text{A}, I_C=0$	5			V
Collector cut-off current	$I_{CBO}$	$V_{CB}=40\text{V}, I_E=0$			0.1	$\mu\text{A}$
Collector cut-off current	$I_{CEO}$	$V_{CE}=20\text{V}, I_B=0$			0.1	$\mu\text{A}$
Emitter cut-off current	$I_{EBO}$	$V_{EB}=5\text{V}, I_C=0$			0.1	$\mu\text{A}$
DC current gain	$h_{FE(1)}$	$V_{CE}=1\text{V}, I_C=50\text{mA}$	120		200	
	$h_{FE(2)}$	$V_{CE}=1\text{V}, I_C=500\text{mA}$	40			
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C=500\text{mA}, I_B=50\text{mA}$			0.6	V
Base-emitter saturation voltage	$V_{BE(sat)}$	$I_C=500\text{mA}, I_B=50\text{mA}$			1.2	V
Transition frequency	$f_T$	$V_{CE}=6\text{V}, I_C=20\text{mA}$ $f=30\text{MHz}$	150			MHz

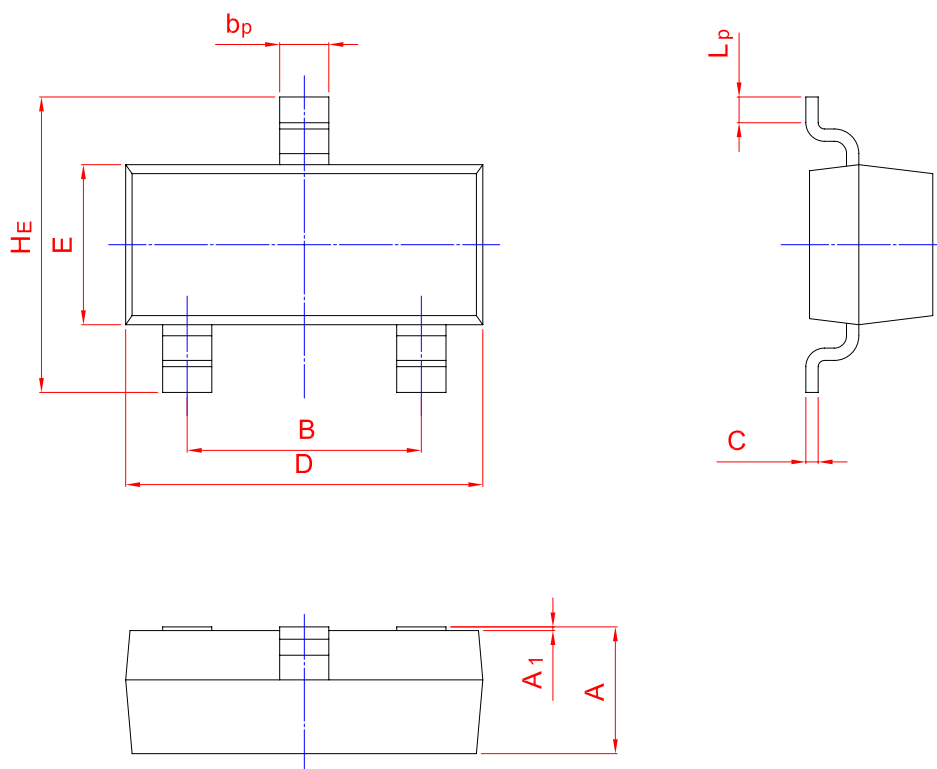
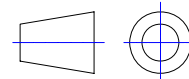
## Typical Characteristics



**PACKAGE OUTLINE**

Plastic surface mounted package; 3 leads

**SOT-23**



UNIT	A	B	bp	C	D	E	HE	A1	Lp
mm	1.40	2.04	0.50	0.19	3.10	1.65	3.00	0.100	0.50
	0.95	1.78	0.35	0.08	2.70	1.20	2.20	0.013	0.20

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