



SHENZHEN HAOLIN ELECTRONICS TECHNOLOGY CO., LTD

## SOT-23 Plastic-Encapsulate Transistors

**S9012** TRANSISTOR (PNP)

**SOT-23**



1. BASE  
2. EMITTER  
3. COLLECTOR

### FEATURES

- Complementary to S9013
- Excellent  $h_{FE}$  linearity

MARKING: 2T1

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)

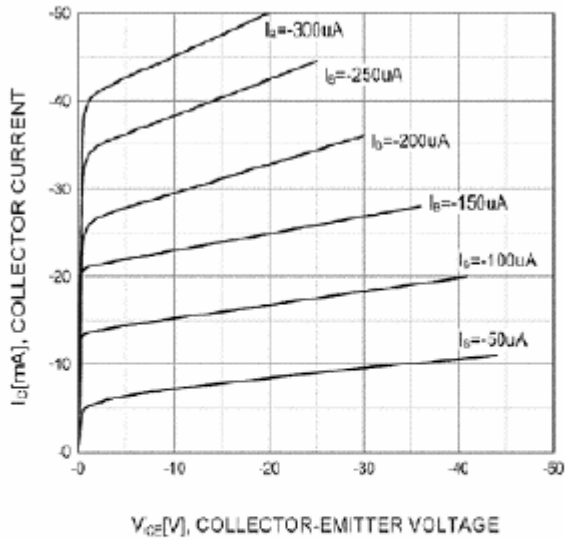
Parameter	Symbol	Test conditions	MIN	TYP	MAX	UNIT
Collector-base breakdown voltage	$V_{(BR)CBO}$	$I_C = -100 \mu\text{A}$ , $I_E = 0$	-40			V
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	$I_C = -1\text{mA}$ , $I_B = 0$	-25			V
Emitter-base breakdown voltage	$V_{(BR)EBO}$	$I_E = -100 \mu\text{A}$ , $I_C = 0$	-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	$h_{FE}$	$V_{CE} = -1\text{V}$ , $I_C = -50\text{mA}$	120		400	
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
Collector output capacitance	$C_{ob}$	$V_{CB} = -10\text{V}$ , $I_E = 0$ , $f = 1\text{MHz}$			5	pF

CLASSIFICATION OF  $h_{FE}$

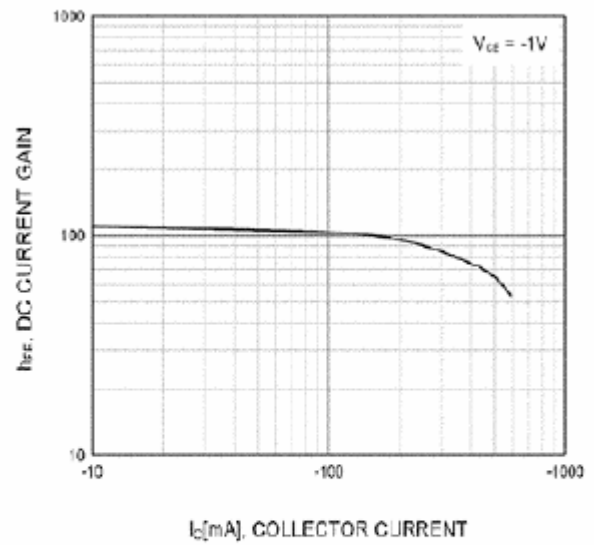
Rank	L	H	J
Range	120-200	200-350	300-400

# Typical Characteristics

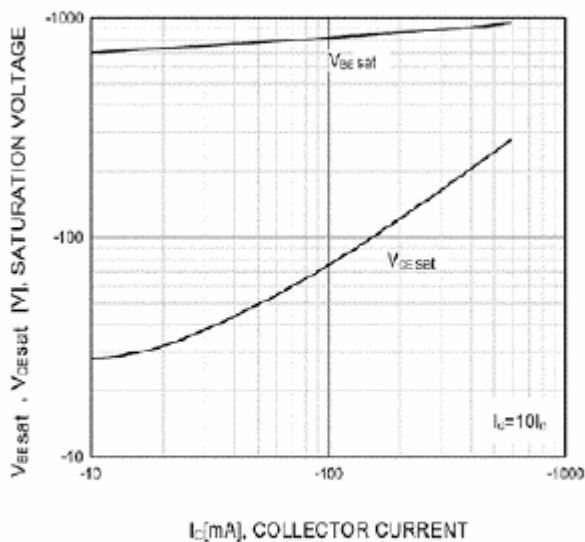
S9012



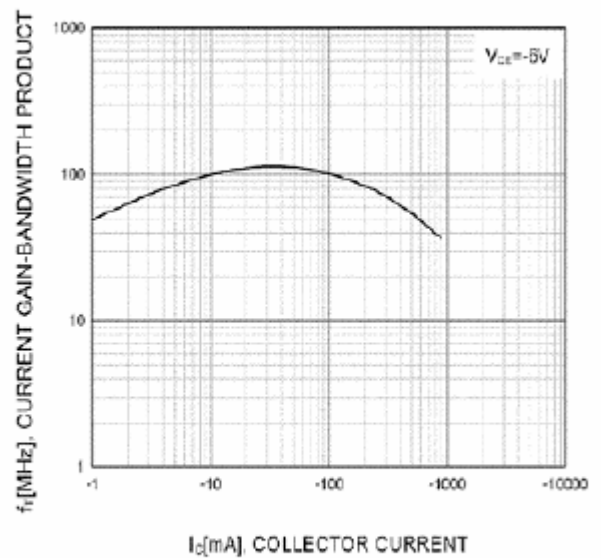
Static Characteristic



DC current Gain



Base-Emitter Saturation Voltage  
Collector-Emitter Saturation Voltage



Current Gain Bandwidth Product