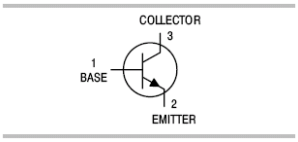
S9013L

Bipolar Transistor(NPN)

Features

- High collector current
- Complement to S9012L
- Excellent h_{FE} linearity



Mechanic al Data

- Case: DFN1006-3
- Molding compound: UL flammability classification rating 94V-0
- Terminal s: Tin-plated; solderability per MIL-STD-202, Method 208

DFN1006-3

Ordering Information

Part Number	Package	Shipping Quantity	Marking Code
S9013L	DFN1006-3	10000pcs / Tape & Reel	J3

Maximum Ratings (@ T_A = 25℃ unless otherwise specified)

Parameter	Symbol	Value	Unit
Collector-Base Voltage	V_{CBO}	40	V
Collector-Emitter Breakdown Voltage	V_{CEO}	25	V
Emitter-Base Breakdown Voltage	V_{EBO}	5	V
Collector Current (Continuous)	I_C	500	mA

Thermal Characteristics

Parameter	Symbol	Value	Unit
Power Dissipation *1	P_D	250	mW
Junction Temperature	T_J	150	°C
Storage Temperature Range	T_{STG}	-55 ~ +150	°C

Note 1: Device mounted on FR-4 PCB with minimum recommended pad layout

S9013L

Bipolar Transistor(NPN)

Electrical Characteristics (@ T_A = 25℃ unless otherwise specified)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	I_C = 100μA, I_E = 0	40	-	-	V
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	I_C = 0.1mA, I_B = 0	25	-	-	V
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	I_E = 100μA, I_C = 0	5	-	-	V
Collector Cut-off Current	I_{CBO}	V_{CB} = 40V, I_E = 0	-	-	0.1	μA
Collector Cut-off Current	I_{CEO}	V_{CE}=20V,I_B=0	-	-	0.1	μA
Emitter Cut-off Current	I_{EBO}	V_{EB} = 5V, I_C = 0	-	-	0.1	μA
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 = 0.5A, I_B = 0.05A	-	-	0.6	V
Base-emitter Saturation Voltage	$V_{BE(sat)}$	I_C = 0.5A, I_B = 0.05A	-	-	1.2	V
Current-Gain—Bandwidth Product	f_T	I_C = 0.02A, V_{CE} = 6V f = 30MHz	150	-	-	MHz

Classification Of h_{FE}

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

Ratings and Characteristic Curves (@ T_A = 25℃ unless otherwise specified)

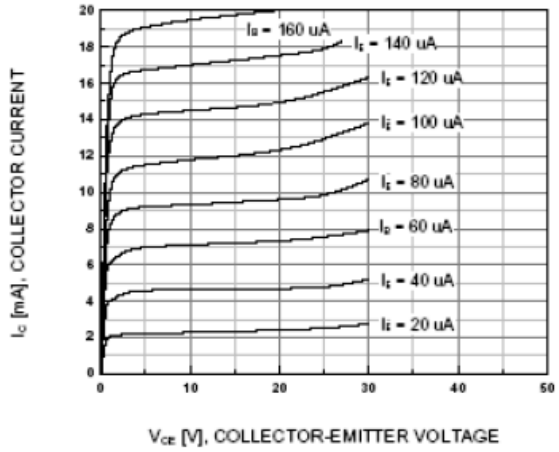


Figure 1. Static Characteristic

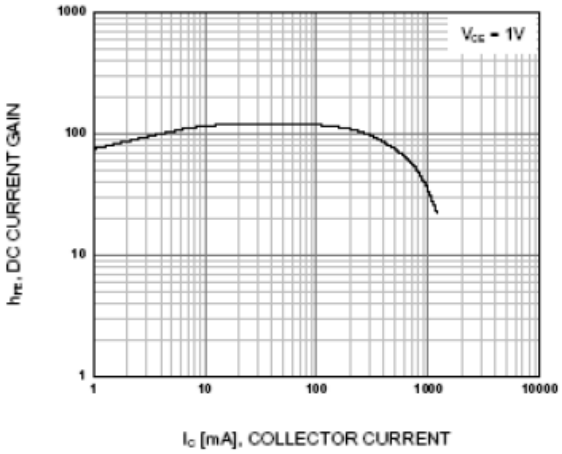


Figure 2. DC current Gain

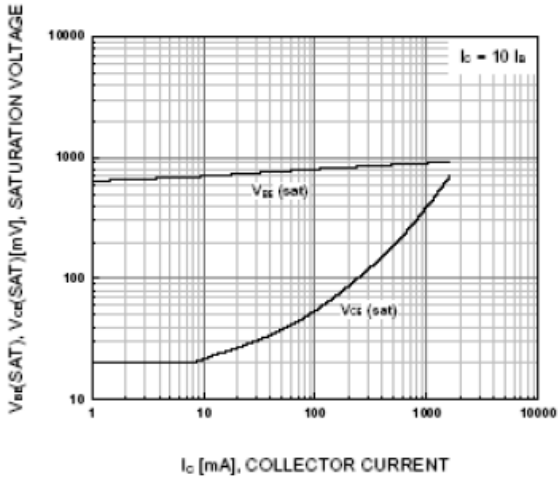


Figure 3. Base-Emitter Saturation Voltage
Collector-Emitter Saturation Voltage

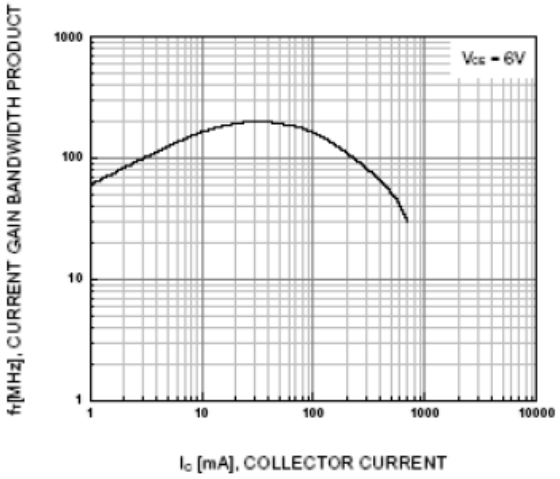
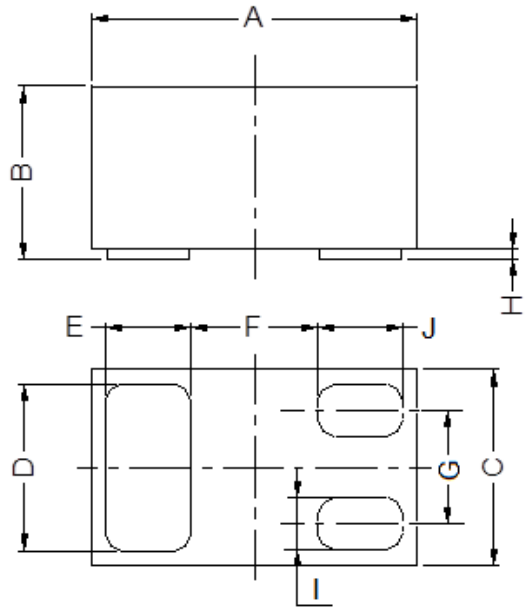


Figure 4. Current Gain Bandwidth Product

S9013L

Bipolar Transistor(NPN)

Package Outline Dimensions (Unit: mm)



DFN1006-3			
Dimension	**Min.**	**Typ.**	**Max.**
A	0.95	1.00	1.075
B	0.47	0.50	0.53
C	0.55	0.60	0.675
D	0.45	0.50	0.55
E/J	0.20	0.25	0.30
F	-	0.40	-
G	-	0.35	-
H	0	0.03	0.05
I	0.10	0.15	0.20

Package Outline Dimensions (Unit: mm)

DFN1006-3