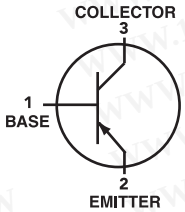
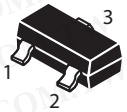
S9012

PNP General Purpose Transistors





SOT-23

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Collector-Emitter Voltage	V_{CEO}	-25	Vdc
Collector-Base Voltage	V_{CBO}	-40	Vdc
Emitter-Base VOltage	V_{EBO}	-5	Vdc
Collector Current-Continuous	I_C	-500	mAdc

THERMAL CHARACTERISTICS

Characteristics	Symbol	Max	Unit
Total Device Dissipation FR-5 Board (1) TA=25°C Derate above 25°C	P_D	225 1.8	mW mW/°C
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	556	°C/W
Total Device Dissipation Alumina Substrate, (2) TA=25°C Derate above 25°C	P_D	300 2.4	mW mW/°C
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	417	°C/W
Junction and Storage, Temperature	$T_{J,Tstg}$	-55 to +150	°C

DEVICE MARKING

S9012=2T1

ELECTRICAL CHARACTERISTICS

Characteristics	Symbol	Min	Max	Unit
OFF CHARACTERISTICS				
Collector-Emitter Breakdown Voltage (I_C=-0.1mAdc .I_B=0)	$V_{(BR)CEO}$	-25	-	Vdc
Collector-Base Breakdown Voltage (I_C=-100μAdc.I_E=0)	$V_{(BR)CBO}$	-40	-	Vdc
Emitter-Base Breakdown Voltage (I_E=-100μAdc.I_C=0)	$V_{(BR)EBO}$	-5.0	-	Vdc
Collector Cutoff Current (V_{CE}=-20Vdc, I_E= 0)	I_{CEO}	-	-0.1	uAdc
Collector Cutoff Current (V_{CB}=-40Vdc,I_E=0)	I_{CBO}	-	-0.1	uAdc
Emitter Cutoff Current (V_{EB}=-5.0Vdc,I_C=0)	I_{EBO}	-	-0.1	uAdc

1.FR-5=1.0 x 0.75 x 0.062 in
2.Alumina=0.4 x 0.3 x 0.024 in. 99.5% alumina

S9012

ELECTRICAL CHARACTERISTICS (T_A=25°C unless otherwise noted) (Countinued)

Characteristics	Symbol	Min	Max	Unit
ON CHARACTERISTICS				
DC Current Gain (I_C=-50 mAdc, V_{CE}=-1.0 Vdc) (I_C=-500 mAdc, V_{CE}=-1.0 Vdc)	h_{FE} (1) h_{FE} (2)	120 40	350 -	- -
Collector-Emitter Saturation Voltage (I_C=-500 mAdc, I_B=-50mAdc)	$V_{CE(sat)}$	-	-0.6	Vdc
Base-Emitter Saturation Voltage (I_C=-500 mAdc, I_B=-50mAdc)	$V_{BE(sat)}$	-	-1.2	Vdc
Base-Emitter Voltage (I_E=-100mA)	V_{EBF}	-	-1.4	Vdc
SMALL-SIGNAL CHARACTERISTICS				
Current-Gain-Bandwidth Product (I_C=-20 mAdc, V_{CE}=-6 Vdc, f=30MHz)	f_T	150	- -	MHz

CLASSIFICATION OF h_{FE}

Rank	L	H
Range	120-200	200-350

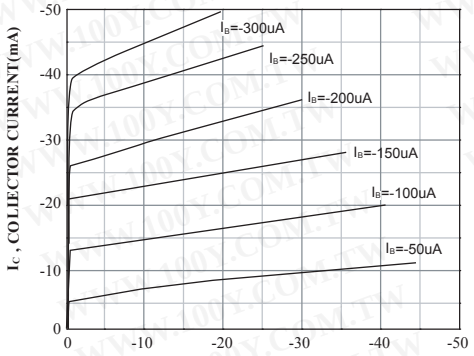


Figure 1. Static Characteristic

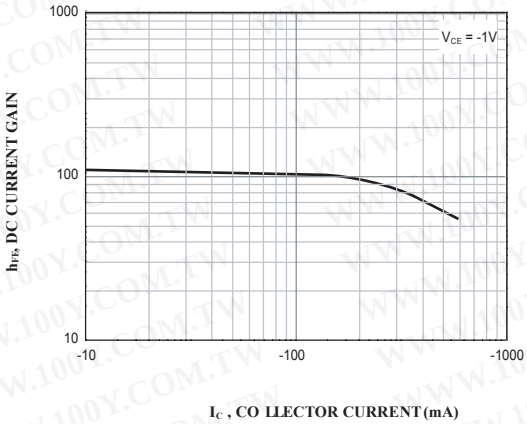


Figure 2. DC current Gain

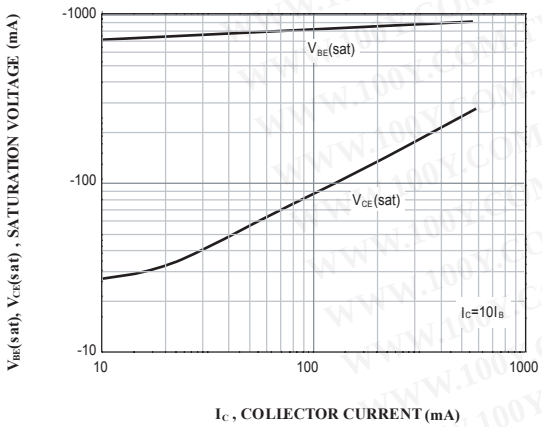


Figure 3. Base-Emitter Saturation Voltage
Collector-Emitter Saturation Voltage

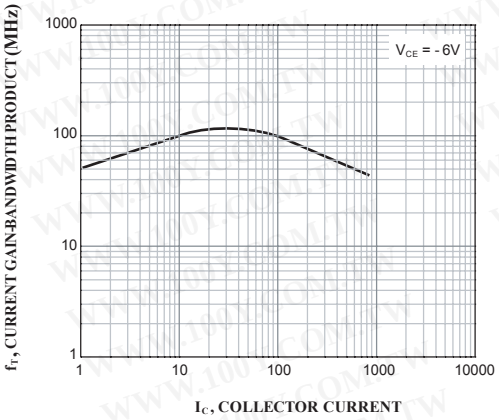


Figure 4. Current Gain Bandwidth Product