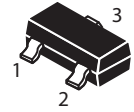
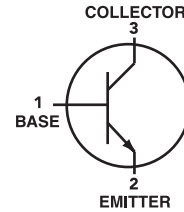


NPN General Purpose Transistors



SOT-23

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Collector-Emitter Voltage	V_{CEO}	18	Vdc
Collector-Base Voltage	V_{CBO}	25	Vdc
Emitter-Base Voltage	V_{EBO}	4.0	Vdc
Collector Current-Continuous	I_C	50	mAdc

THERMAL CHARACTERISTICS

Characteristics	Symbol	Max	Unit
Total Device Dissipation FR-5 Board (1) $T_A=25^{\circ}\text{C}$ Derate above 25°C	P_D	225	mW
		1.8	$\text{mW}/^{\circ}\text{C}$
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	556	$^{\circ}\text{C}/\text{W}$
Total Device Dissipation Alumina Substrate, (2) $T_A=25^{\circ}\text{C}$ Derate above 25°C	P_D	200	mW
		1.14	$\text{mW}/^{\circ}\text{C}$
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	875	$^{\circ}\text{C}/\text{W}$
Junction and Storage, Temperature	T_J, T_{stg}	-55 to +150	$^{\circ}\text{C}$

DEVICE MARKING

S9018=J8

ELECTRICAL CHARACTERISTICS

Characteristics	Symbol	Min	Max	Unit
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OFF CHARACTERISTICS

Collector-Emitter Breakdown Voltage ($I_C=100\mu\text{Adc}$, $I_B=0$)	$V_{(BR)CEO}$	18	-	Vdc
Collector-Base Breakdown Voltage ($I_C=100\mu\text{Adc}$, $I_E=0$)	$V_{(BR)CBO}$	25	-	Vdc
Emitter-Base Breakdown Voltage ($I_E=100\mu\text{Adc}$, $I_C=0$)	$V_{(BR)EBO}$	4.0	-	Vdc
Collector Cutoff Current ($V_{CE}=15\text{Vdc}$, $I_E=0$)	I_{CEO}	-	0.1	μAdc
Collector Cutoff Current ($V_{CB}=20\text{Vdc}$, $I_E=0$)	I_{CBO}	-	0.1	μAdc
Emitter Cutoff Current ($V_{EB}=3.0\text{Vdc}$, $I_C=0$)	I_{EBO}	-	0.1	μAdc

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

S9018**ELECTRICAL CHARACTERISTICS** ($T_A=25^\circ\text{C}$ unless otherwise noted) (Continued)

Characteristics	Symbol	Min	Max	Unit
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ON CHARACTERISTICS

DC Current Gain ($I_C=1.0\text{ mA dc}$, $V_{CE}=5.0\text{ V dc}$)	$h_{FE}^{(1)}$	70	190	-
Collector-Emitter Saturation Voltage ($I_C=10\text{ mA dc}$, $I_B=1.0\text{ mA dc}$)	$V_{CE(sat)}$	-	0.5	Vdc
Base-Emitter Saturation Voltage ($I_C=10\text{ mA dc}$, $I_B=1.0\text{ mA dc}$)	$V_{BE(sat)}$	-	1.4	Vdc

SMALL-SIGNAL CHARACTERISTICS

Current-Gain-Bandwidth Product ($I_C=5.0\text{ mA dc}$, $V_{CE}=5.0\text{ V dc}$, $f=400\text{ MHz}$)	f_T	600	-	MHz
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Typical Characteristics

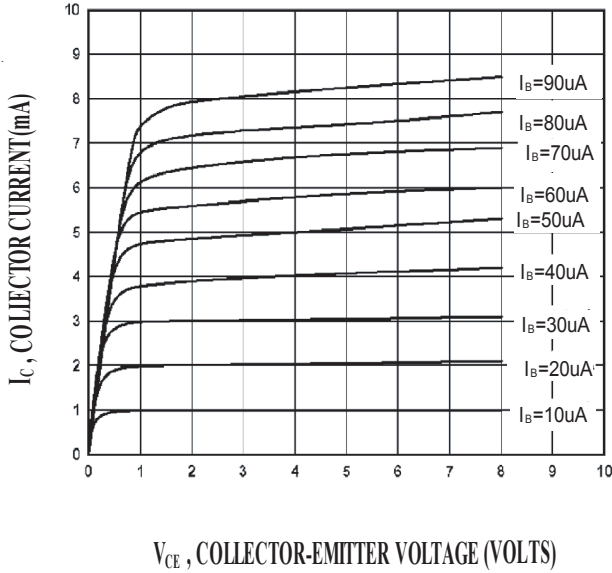


FIG1. Static Characteristic

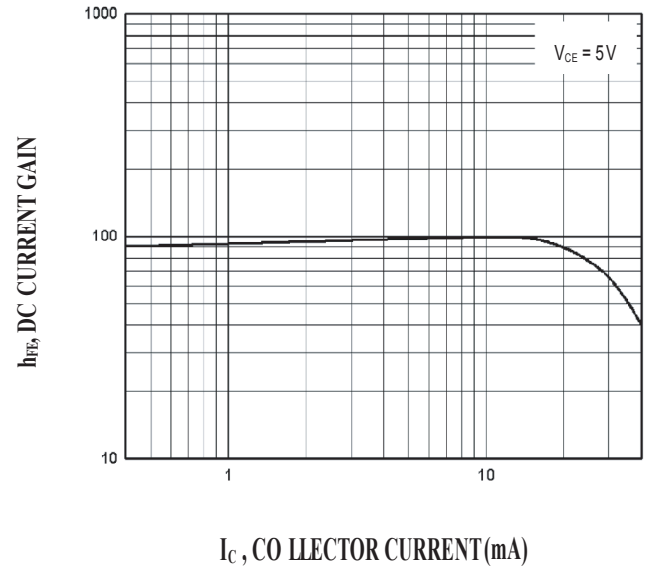
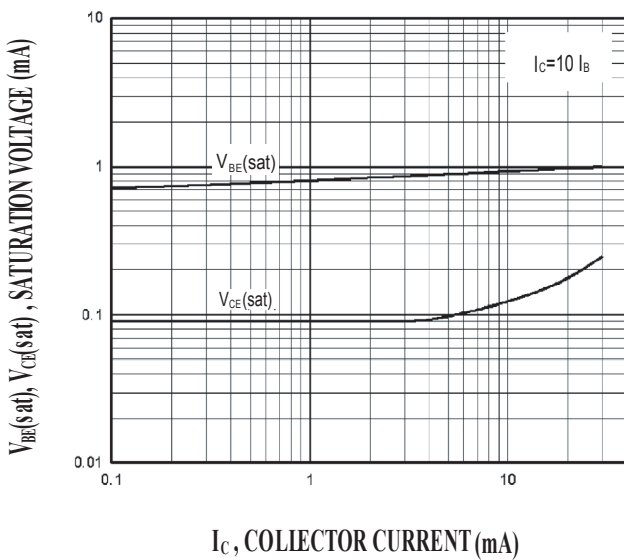


FIG2. DC Current Gain



**FIG3. Base-Emitter Saturation Voltage
Collector-Emitter Saturation Voltage**

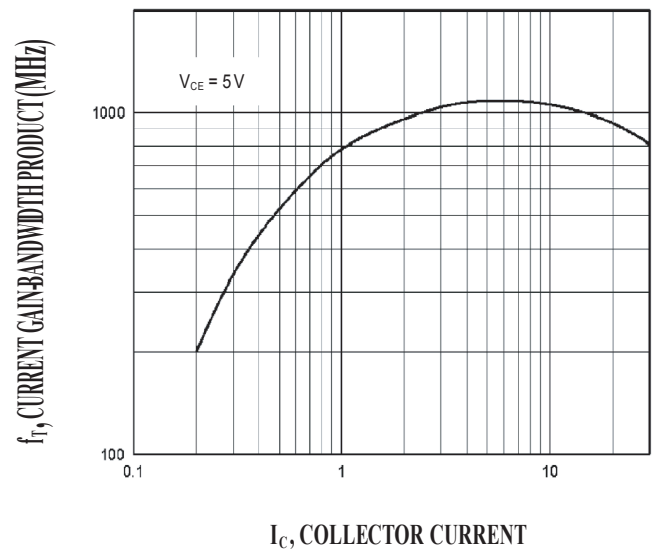


FIG4. Current Gain Bandwidth Product