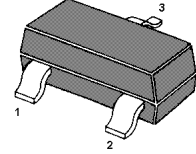


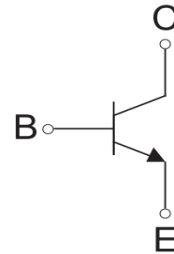
## NPN General Purpose Amplifier

For low noise, high gain, general purpose amplifier applications at collector currents from 1μA to 50mA.



1.Base 2.Emitter 3.Collector  
SOT-23 Plastic Package

### Equivalent Circuit



### Absolute Maximum Ratings ( $T_a = 25\text{ }^\circ\text{C}$ )

Parameter	Symbol	Value	Unit
Collector Emitter Voltage	$V_{CEO}$	25	V
Collector Base Voltage	$V_{CBO}$	30	V
Emitter Base Voltage	$V_{EBO}$	4.5	V
Collector Current - Continuous	$I_C$	100	mA
Total Device Dissipation Derate above 25°C	$P_{tot}$	200 2.8	mW mW/°C
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	357	°C/W
Operating and Storage Junction Temperature Range	$T_J, T_S$	-55 to +150	°C

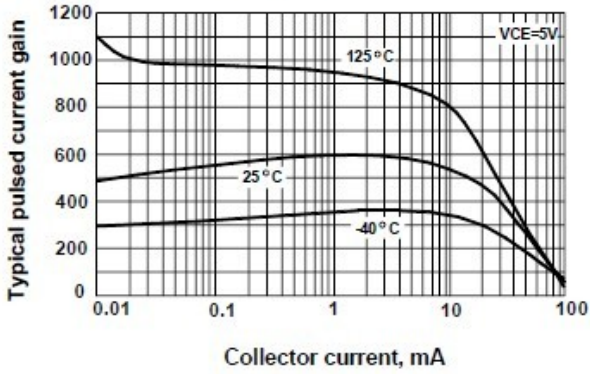


**Characteristics at  $T_{amb}=25\text{ }^{\circ}\text{C}$**

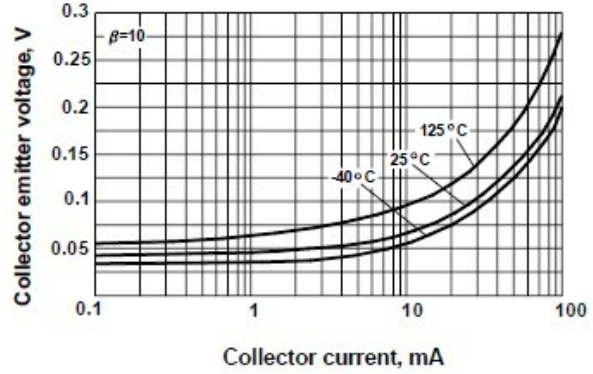
Parameter	Symbol	Min.	Max.	Unit
DC Current Gain at $V_{CE}=5\text{V}$ , $I_C=100\mu\text{A}$	$h_{FE}$	400	1200	-
at $V_{CE}=5\text{V}$ , $I_C=1\text{mA}$	$h_{FE}$	450	-	-
at $V_{CE}=5\text{V}$ , $I_C=10\text{mA}$	$h_{FE}$	400	-	-
Small Signal Current Gain at $V_{CE}=5\text{V}$ , $I_C=1\text{mA}$ , $f=1\text{KHz}$	$h_{fe}$	450	1800	-
Collector Base Breakdown Voltage at $I_C=100\mu\text{A}$	$V_{(BR)CBO}$	30	-	V
Collector Emitter Breakdown Voltage at $I_C=1\text{mA}$	$V_{(BR)CEO}$	25	-	V
Collector Emitter Saturation Voltage at $I_C=10\text{mA}$ , $I_B=1\text{mA}$	$V_{CEsat}$	-	0.5	V
Base Emitter On Voltage at $I_C=10\text{mA}$ , $V_{CE}=5\text{V}$	$V_{BEon}$	-	0.8	V
Collector Cutoff Current at $V_{CB}=15\text{V}$	$I_{CBO}$	-	50	nA
Emitter Cutoff Current at $V_{EB}=3\text{V}$	$I_{EBO}$	-	50	nA
at $V_{EB}=4.5\text{V}$	$I_{EBO}$	-	100	nA
Gain Bandwidth Product at $V_{CE}=5\text{V}$ , $I_C=500\mu\text{A}$ , $f=20\text{MHz}$	$f_T$	50	-	MHz
Collector Base Capacitance at $V_{CB}=5\text{V}$ , $f=100\text{KHz}$	$C_{cb}$	-	4	pF
Emitter Base Capacitance at $V_{BE}=0.5\text{V}$ , $f=100\text{KHz}$	$C_{eb}$	-	10	pF
Noise Figure at $V_{CE}=5\text{V}$ , $I_C=100\mu\text{A}$ , $R_s=10\text{K}\Omega$ , $f=10\text{Hz}$ to $15.7\text{KHz}$	NF	-	2	dB



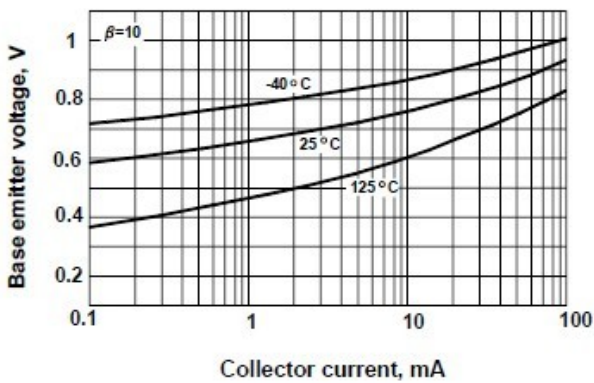
Typical pulsed current gain vs. collector current



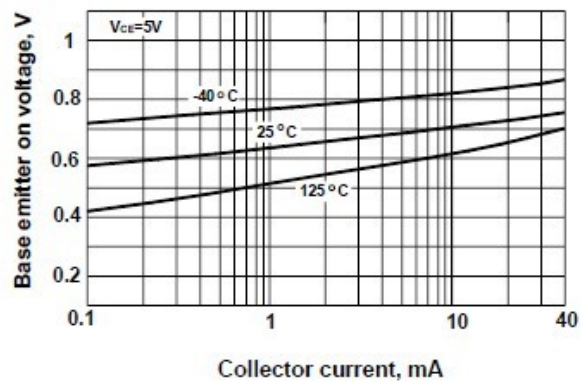
Collector emitter saturation voltage vs. collector current



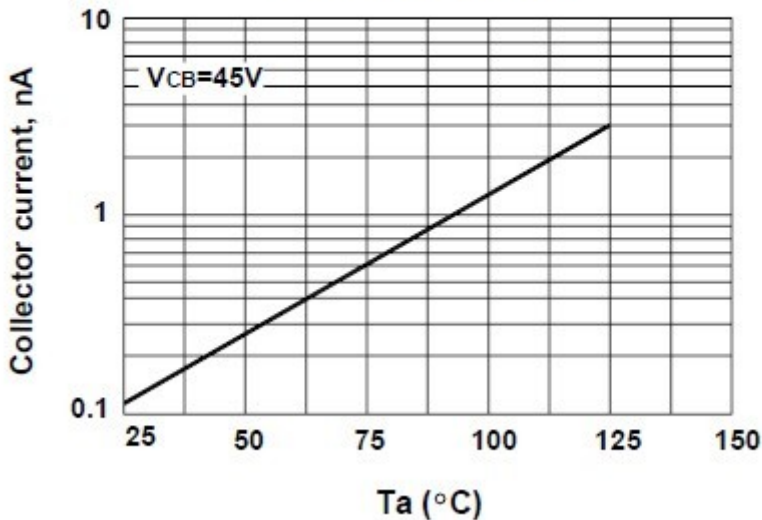
Base emitter saturation voltage vs. collector current



Base emitter on voltage vs. collector current

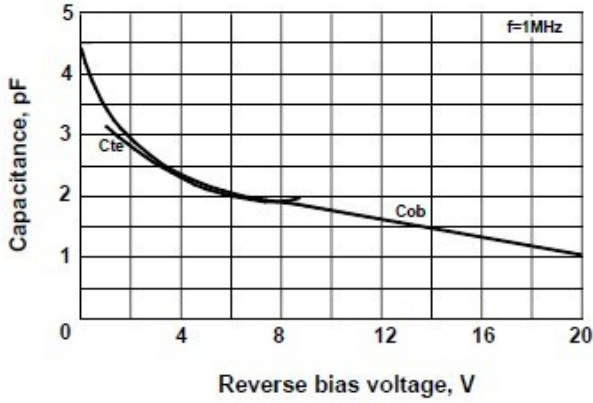


Collector cutoff current vs. ambient temperature

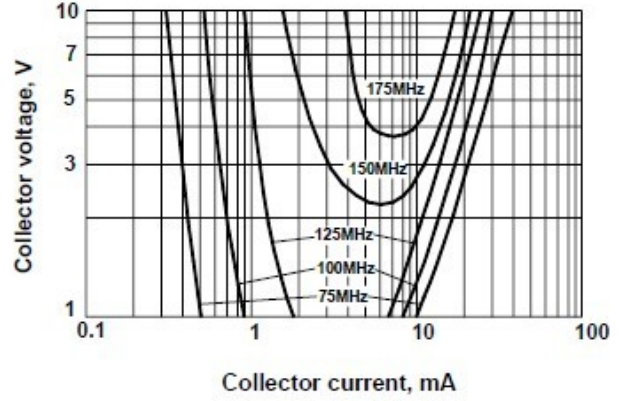




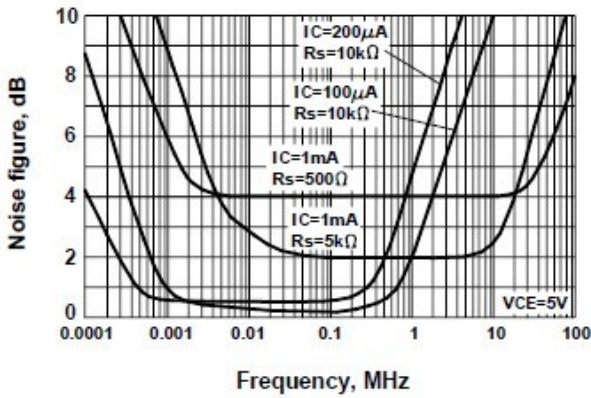
Input and output capacitance vs. reverse bias voltage



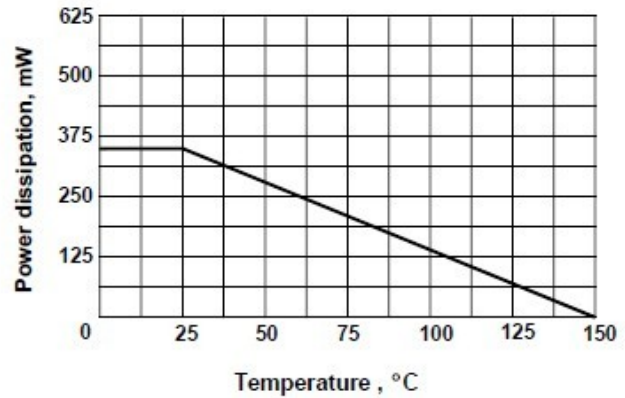
Contours of constant gain bandwidth product



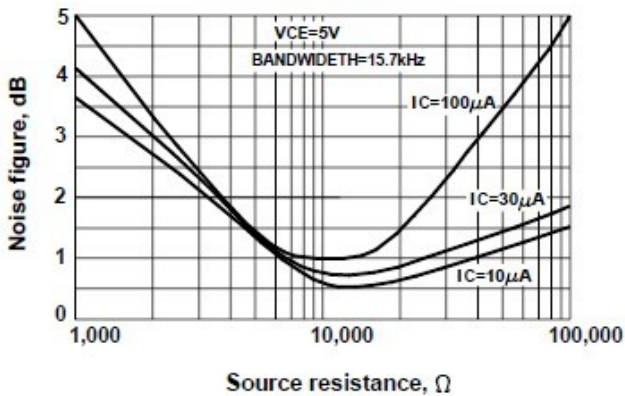
Noise figure vs. frequency



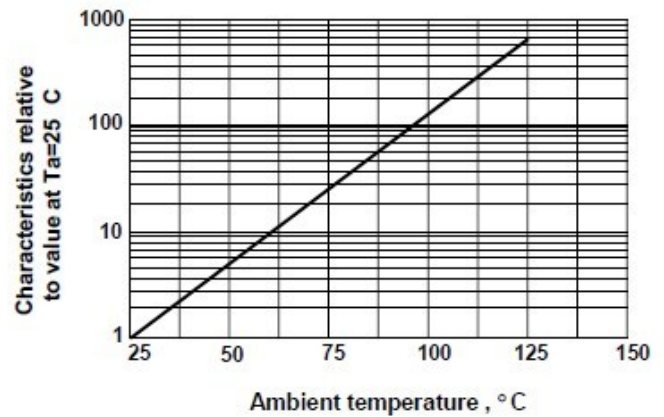
Power dissipation vs. ambient temperature



Wideband noise frequency vs. source resistance

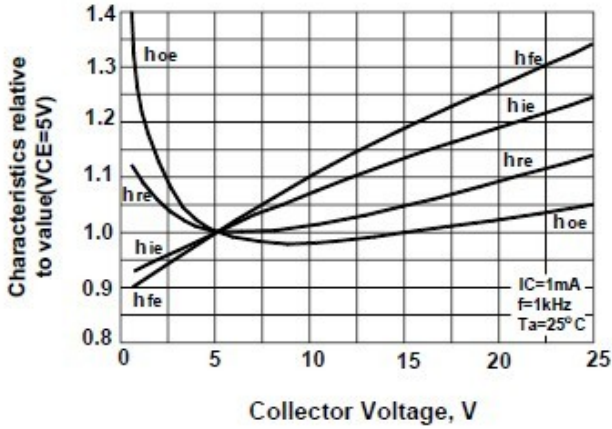


Normalized collector cutoff current vs. ambient temperature

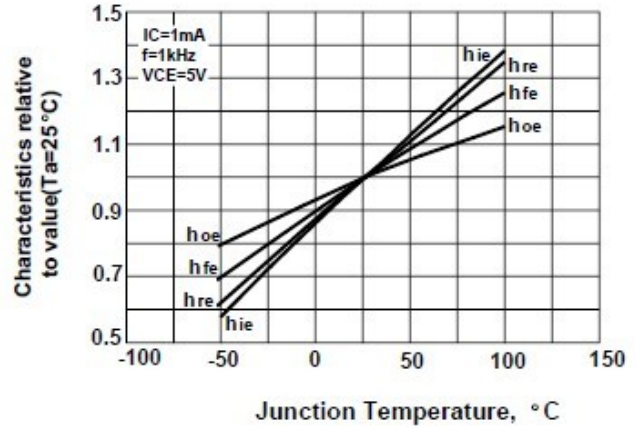




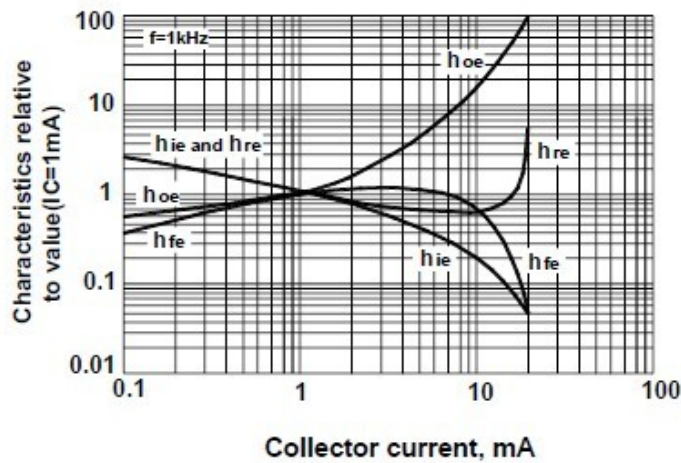
Typical common emitter characteristics



Typical common emitter characteristics



Typical common emitter characteristics

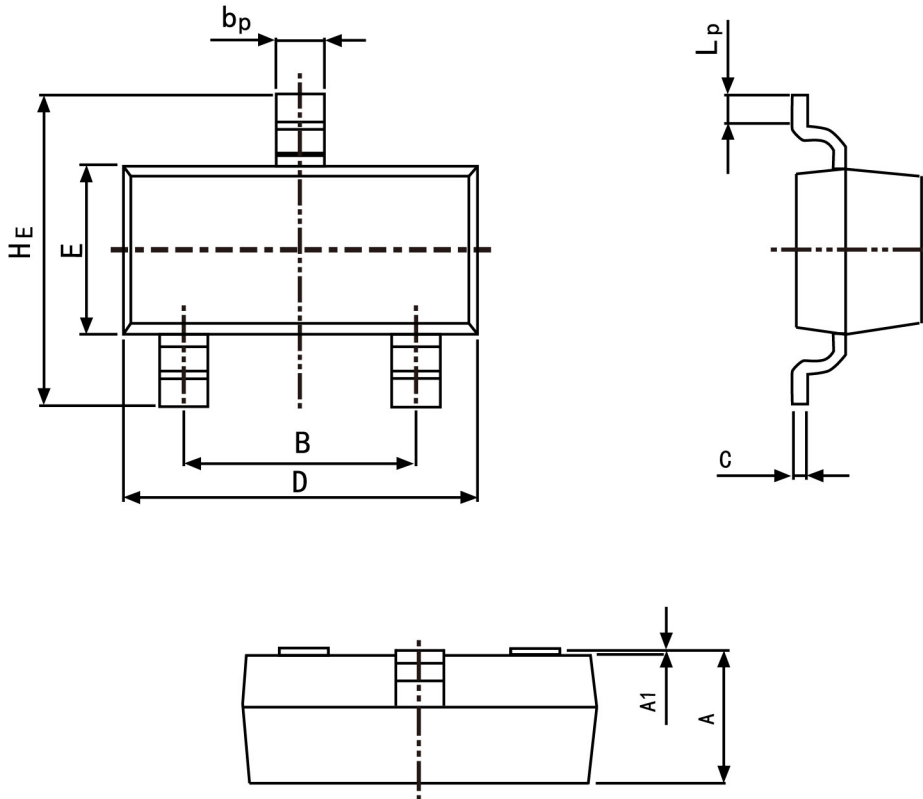




PACKAGE OUTLINE

Plastic surface mounted package; 3 leads

SOT-23



Symbol	Dimension in Millimeters	
	Min	Max
A	0.95	1.40
B	1.78	2.04
bp	0.35	0.50
C	0.08	0.19
D	2.70	3.10
E	1.20	1.65
HE	2.20	3.00
A1	0.100	0.013
Lp	0.20	0.50