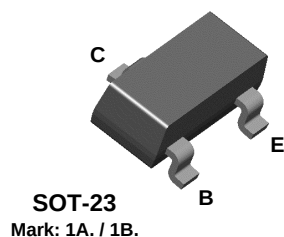
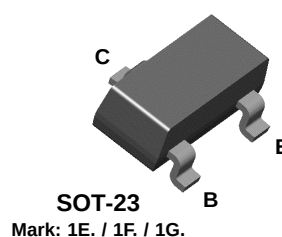


**BC846A
BC846B**



**BC847A
BC847B
BC847C**



NPN General Purpose Amplifier

This device is designed for low noise, high gain, general purpose amplifier applications at collector currents from 1.0 μ A to 50 mA.
Sourced from Process 07.

Absolute Maximum Ratings*

TA = 25°C unless otherwise noted

Symbol	Parameter	Value	Units
V _{CEO}	Collector-Emitter Voltage BC846 series	65	V
	BC847 series	45	V
V _{CES}	Collector-Base Voltage BC846 series	80	V
	BC847 series	50	V
V _{EBO}	Emitter-Base Voltage	6.0	V
I _C	Collector Current - Continuous	100	mA
T _J , T _{stg}	Operating and Storage Junction Temperature Range	-55 to +150	°C

*These ratings are limiting values above which the serviceability of any semiconductor device may be impaired.

NOTES:

- 1) These ratings are based on a maximum junction temperature of 150 degrees C.
- 2) These are steady state limits. The factory should be consulted on applications involving pulsed or low duty cycle operations.

Thermal Characteristics

TA = 25°C unless otherwise noted

Symbol	Characteristic	Max	Units
		*BC846 / BC847	
P _D	Total Device Dissipation Derate above 25°C	325 2.8	mW mW/°C
R _{θJA}	Thermal Resistance, Junction to Ambient	357	°C/W

*Device mounted on FR-4 PCB 40 mm X 40 mm X 1.5 mm.

NPN General Purpose Amplifier

(continued)

BC846A / BC846B / BC847A / BC847B / BC847C

Electrical Characteristics

TA = 25°C unless otherwise noted

Symbol	Parameter	Test Conditions	Min	Max	Units
OFF CHARACTERISTICS					
$V_{(BR)CEO}$	Collector-Emitter Breakdown Voltage	$I_C = 10 \text{ mA}$, $I_B = 0$	846A / B 847A / B 65 45		V
$V_{(BR)CES}$	Collector-Base Breakdown Voltage	$I_C = 10 \text{ }\mu\text{A}$, $I_E = 0$	846A / B 847A / B 80 50		V
$V_{(BR)EBO}$	Emitter-Base Breakdown Voltage	$I_E = 10 \text{ }\mu\text{A}$, $I_C = 0$	6.0		V
I_{CBO}	Collector-Cutoff Current	$V_{CB} = 30 \text{ V}$ $V_{CB} = 30 \text{ V}$, $T_A = 150^\circ\text{C}$		15 5.0	nA μA

ON CHARACTERISTICS

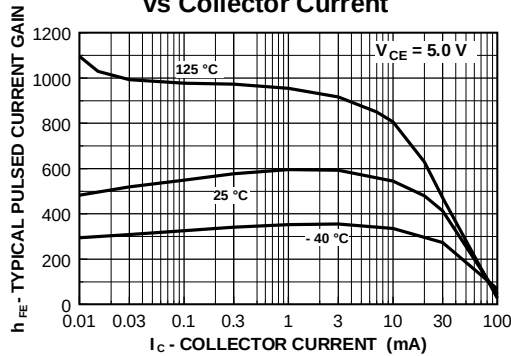
h_{FE}	DC Current Gain	$I_C = 2.0 \text{ mA}$, $V_{CE} = 5.0 \text{ V}$ 846A / 847A 846B / 847B 847C	110 200 420	220 450 800	
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	$I_C = 10 \text{ mA}$, $I_B = 0.5 \text{ mA}$ $I_C = 100 \text{ mA}$, $I_B = 5.0 \text{ mA}$		0.25 0.6	V V
$V_{BE(on)}$	Base-Emitter On Voltage	$I_C = 2.0 \text{ mA}$, $V_{CE} = 5.0 \text{ V}$ $I_C = 10 \text{ mA}$, $V_{CE} = 5.0 \text{ V}$	0.58	0.70 0.77	V V

SMALL SIGNAL CHARACTERISTICS

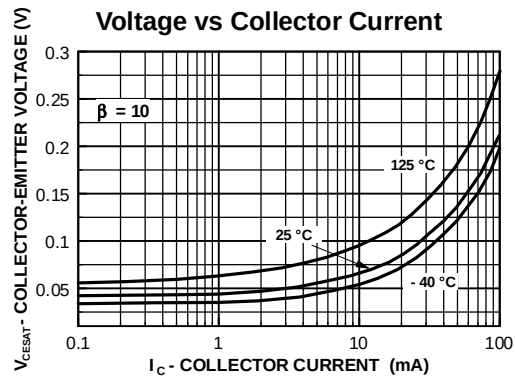
f_T	Current Gain - Bandwidth Product	$I_C = 10 \text{ mA}$, $V_{CE} = 5.0$, $f = 100 \text{ MHz}$	100		MHz
C_{obo}	Output Capacitance	$V_{CB} = 10 \text{ V}$, $f = 1.0 \text{ MHz}$		4.5	pF
NF	Noise Figure	$I_C = 0.2 \text{ mA}$, $V_{CE} = 5.0$, $R_S = 2.0 \text{ k}\Omega$, $f = 1.0 \text{ kHz}$, $BW = 200 \text{ Hz}$		10	dB

Typical Characteristics

Typical Pulsed Current Gain vs Collector Current



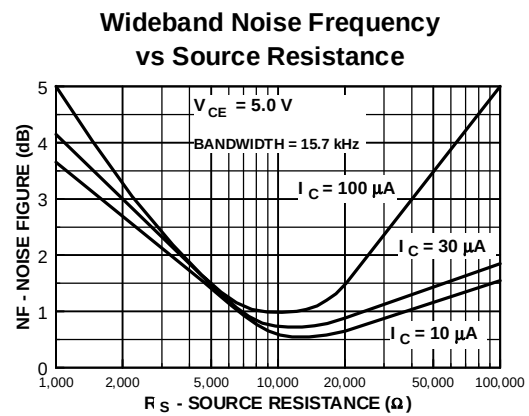
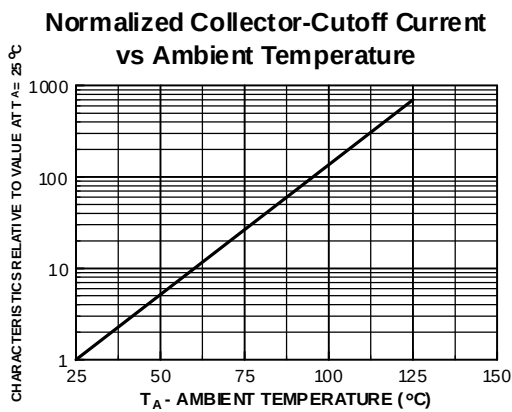
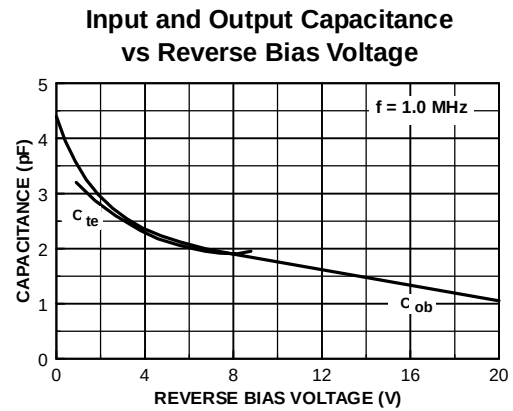
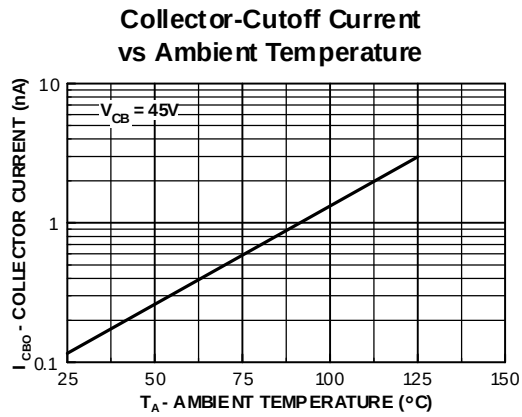
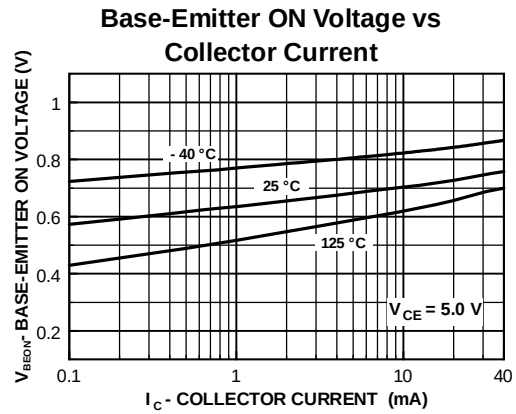
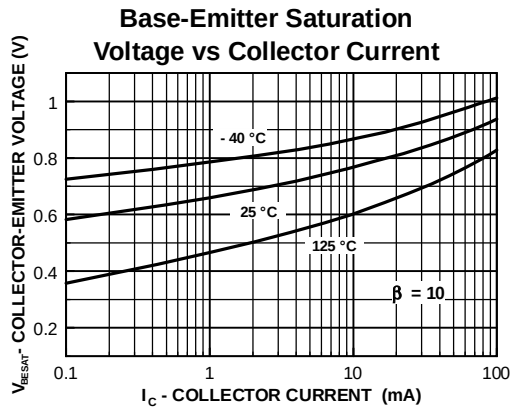
Collector-Emitter Saturation Voltage vs Collector Current



NPN General Purpose Amplifier (continued)

BC846A / BC846B / BC847A / BC847B / BC847C

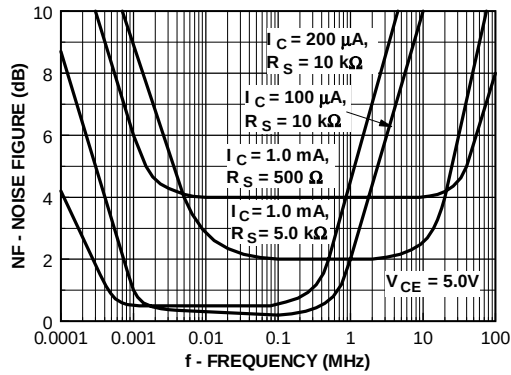
Typical Characteristics



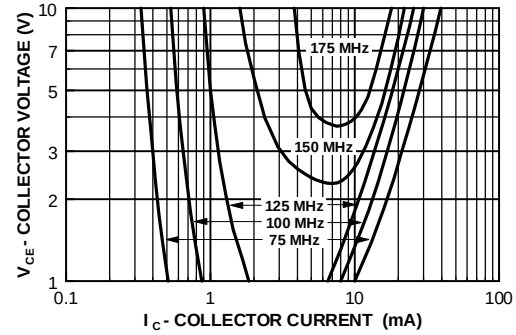
NPN General Purpose Amplifier (continued)

Typical Characteristics (continued)

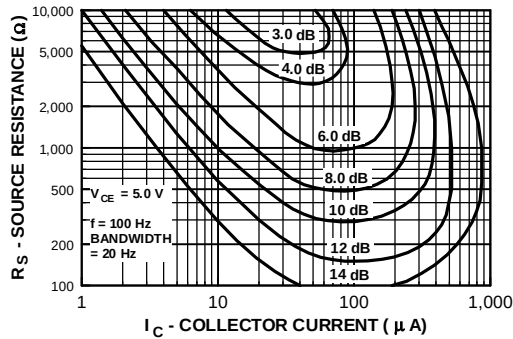
Noise Figure vs Frequency



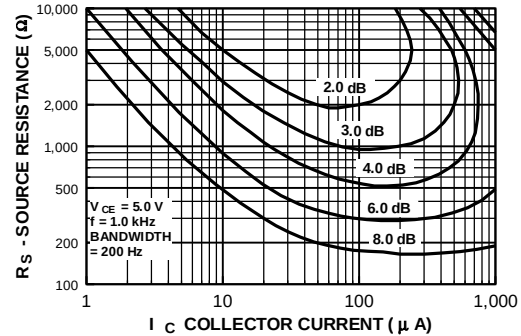
Contours of Constant Gain Bandwidth Product (f_T)



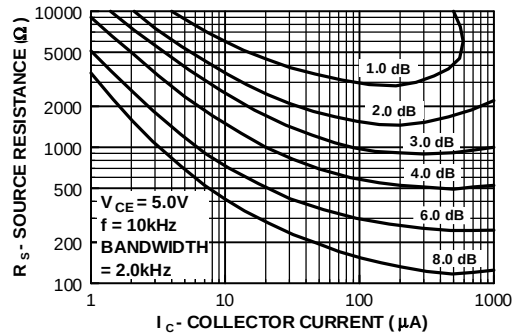
Contours of Constant Narrow Band Noise Figure



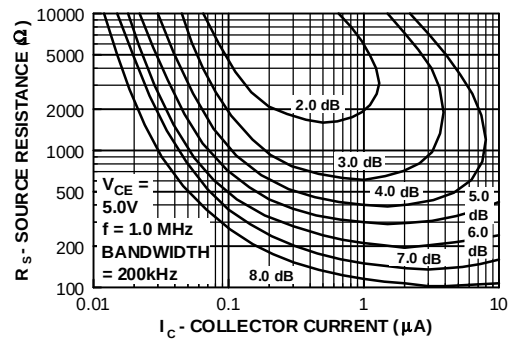
Contours of Constant Narrow Band Noise Figure



Contours of Constant Narrow Band Noise Figure



Contours of Constant Narrow Band Noise Figure

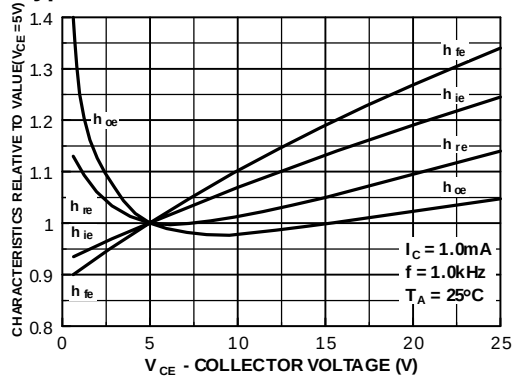


BC846A / BC846B / BC847A / BC847B / BC847C

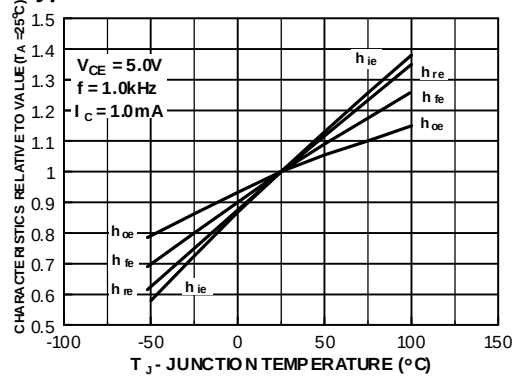
NPN General Purpose Amplifier (continued)

Typical Common Emitter Characteristics ($f = 1.0 \text{ kHz}$)

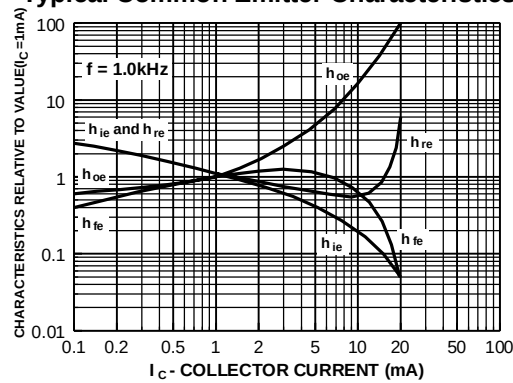
Typical Common Emitter Characteristics



Typical Common Emitter Characteristics



Typical Common Emitter Characteristics



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EnSigna™	OPTOLOGIC™	SMART START™	
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