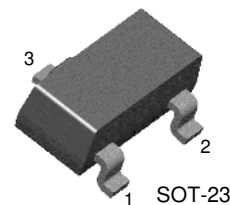


BC846/847/848/849/850

Switching and Amplifier Applications

- Suitable for automatic insertion in thick and thin-film circuits
- Low Noise: BC849, BC850
- Complement to BC856 ... BC860



1. Base 2. Emitter 3. Collector

NPN Epitaxial Silicon Transistor

Absolute Maximum Ratings $T_a=25^\circ\text{C}$ unless otherwise noted

Symbol	Parameter	Value	Units
V_{CBO}	Collector-Base Voltage		
	: BC846	80	V
	: BC847/850	50	V
	: BC848/849	30	V
V_{CEO}	Collector-Emitter Voltage		
	: BC846	65	V
	: BC847/850	45	V
	: BC848/849	30	V
V_{EBO}	Emitter-Base Voltage		
	: BC846/847	6	V
	: BC848/849/850	5	V
I_{C}	Collector Current (DC)	100	mA
P_{C}	Collector Power Dissipation	310	mW
T_{J}	Junction Temperature	150	$^\circ\text{C}$
T_{STG}	Storage Temperature	-65 ~ 150	$^\circ\text{C}$

Electrical Characteristics $T_a=25^\circ\text{C}$ unless otherwise noted

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Units
I_{CBO}	Collector Cut-off Current	$V_{\text{CB}}=30\text{V}, I_{\text{E}}=0$			15	nA
h_{FE}	DC Current Gain	$V_{\text{CE}}=5\text{V}, I_{\text{C}}=2\text{mA}$	110		800	
$V_{\text{CE}}(\text{sat})$	Collector-Emitter Saturation Voltage	$I_{\text{C}}=10\text{mA}, I_{\text{B}}=0.5\text{mA}$		90	250	mV
		$I_{\text{C}}=100\text{mA}, I_{\text{B}}=5\text{mA}$		200	600	mV
$V_{\text{BE}}(\text{sat})$	Collector-Base Saturation Voltage	$I_{\text{C}}=10\text{mA}, I_{\text{B}}=0.5\text{mA}$		700		mV
		$I_{\text{C}}=100\text{mA}, I_{\text{B}}=5\text{mA}$		900		mV
$V_{\text{BE}}(\text{on})$	Base-Emitter On Voltage	$V_{\text{CE}}=5\text{V}, I_{\text{C}}=2\text{mA}$	580	660	700	mV
		$V_{\text{CE}}=5\text{V}, I_{\text{C}}=10\text{mA}$			720	mV
f_{T}	Current Gain Bandwidth Product	$V_{\text{CE}}=5\text{V}, I_{\text{C}}=10\text{mA}, f=100\text{MHz}$		300		MHz
C_{ob}	Output Capacitance	$V_{\text{CB}}=10\text{V}, I_{\text{E}}=0, f=1\text{MHz}$		3.5	6	pF
C_{ib}	Input Capacitance	$V_{\text{EB}}=0.5\text{V}, I_{\text{C}}=0, f=1\text{MHz}$		9		pF
NF	Noise Figure	: BC846/847/848		2	10	dB
		: BC849/850	$f=1\text{KHz}, R_{\text{G}}=2\text{K}\Omega$	1.2	4	dB
		: BC849	$V_{\text{CE}}=5\text{V}, I_{\text{C}}=200\mu\text{A}$	1.4	4	dB
		: BC850	$R_{\text{G}}=2\text{K}\Omega, f=30\sim 15000\text{Hz}$	1.4	3	dB

h_{FE} Classification

Classification	A	B	C
h _{FE}	110 ~ 220	200 ~ 450	420 ~ 800

Marking Code

Type	846			847			848			849			850		
	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C
Mark	8AA	8AB	8AC	8BA	8BB	8BC	8CA	8CB	8CC	8DA	8DB	8DC	8EA	8EB	8EC

Typical Characteristics

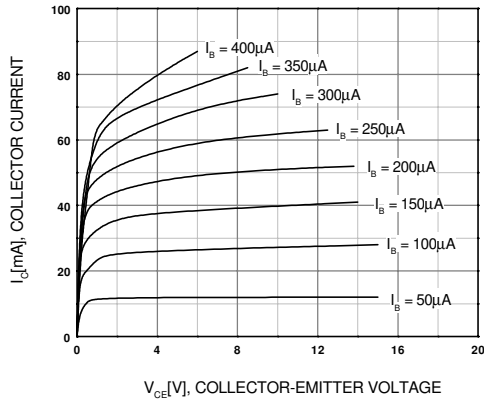


Figure 1. Static Characteristic

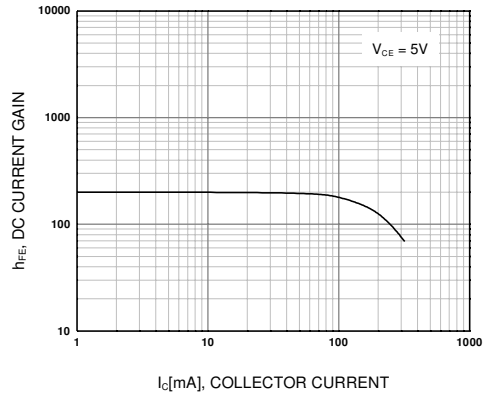


Figure 2. DC current Gain

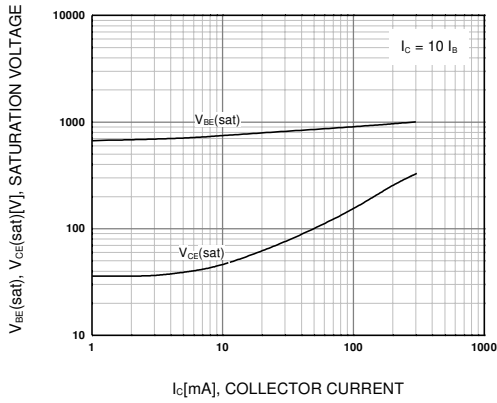


Figure 3. Base-Emitter Saturation Voltage
Collector-Emitter Saturation Voltage

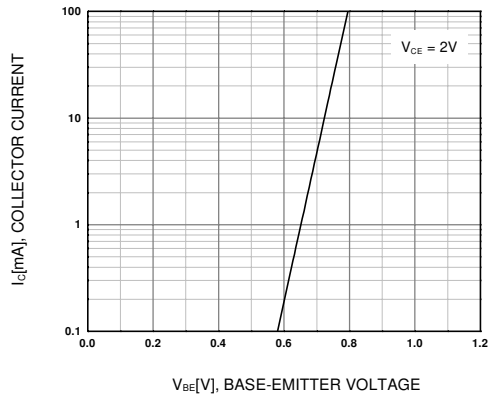


Figure 4. Base-Emitter On Voltage

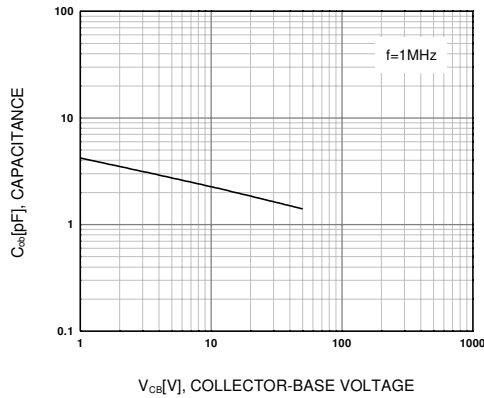


Figure 5. Collector Output Capacitance

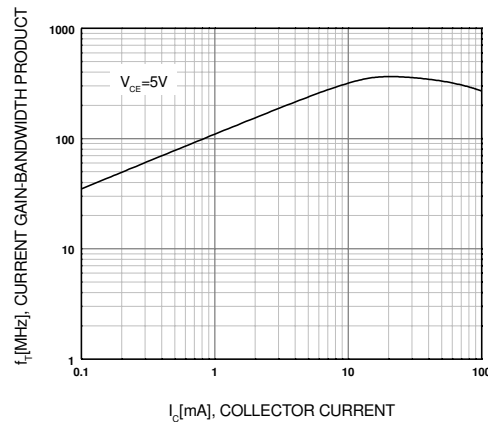
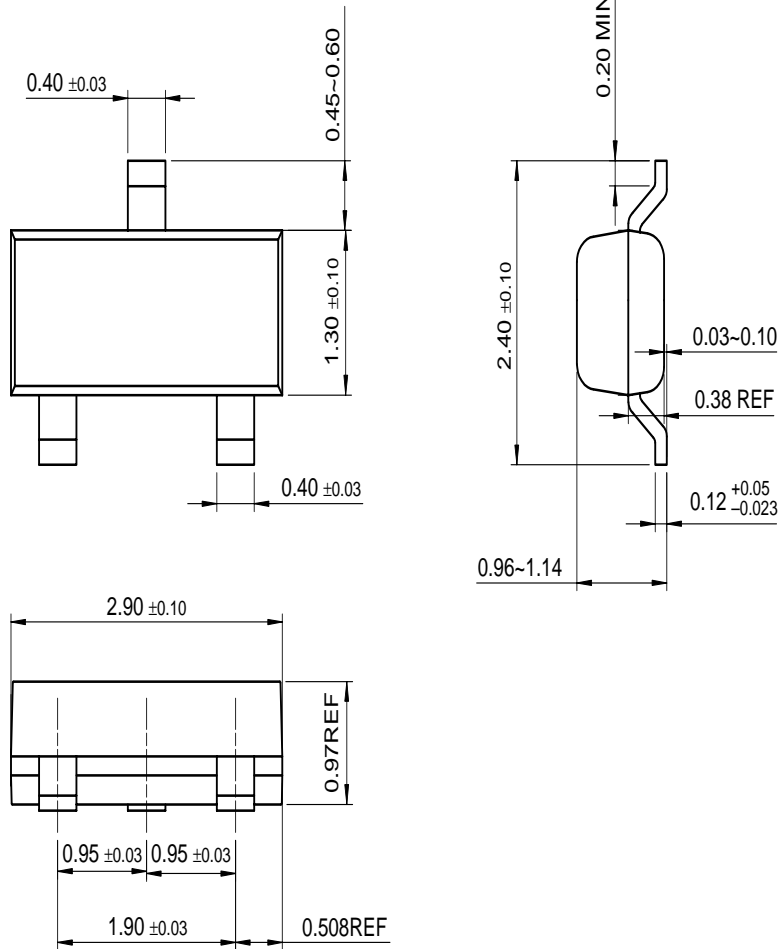


Figure 6. Current Gain Bandwidth Product

Package Dimensions

SOT-23



Dimensions in Millimeters

BC846/847/848/849/850

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CROSSVOLT™	FRFET™	MicroPak™	QFET™	SuperSOT™-8
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EcoSPARK™	GTO™	MSX™	QT Optoelectronics™	TinyLogic™
E ² CMOS™	HiSeC™	MSXPro™	Quiet Series™	TruTranslation™
EnSigna™	I ² C™	OCX™	RapidConfigure™	UHC™
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The Power Franchise™		OPTOLOGIC®	SILENT SWITCHER®	VCX™
Programmable Active Droop™		OPTOPLANAR™	SMART START™	

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2. A critical component is any component of a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or system, or to affect its safety or effectiveness.

PRODUCT STATUS DEFINITIONS

Definition of Terms

Datasheet Identification	Product Status	Definition
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No Identification Needed	Full Production	This datasheet contains final specifications. Fairchild Semiconductor reserves the right to make changes at any time without notice in order to improve design.
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