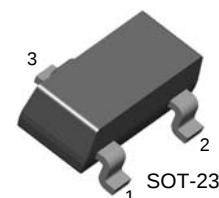


BC846 - BC850

NPN Epitaxial Silicon Transistor

Features

- 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

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 to 150	$^\circ\text{C}$

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

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	$V_{CB}=30\text{V}, I_E=0$			15	nA
h_{FE}	DC Current Gain	$V_{CE}=5\text{V}, I_C=2\text{mA}$	110		800	
$V_{CE}(\text{sat})$	Collector-Emitter Saturation Voltage	$I_C=10\text{mA}, I_B=0.5\text{mA}$ $I_C=100\text{mA}, I_B=5\text{mA}$		90 200	250 600	mV mV
$V_{BE}(\text{sat})$	Collector-Base Saturation Voltage	$I_C=10\text{mA}, I_B=0.5\text{mA}$ $I_C=100\text{mA}, I_B=5\text{mA}$		700 900		mV mV
$V_{BE}(\text{on})$	Base-Emitter On Voltage	$V_{CE}=5\text{V}, I_C=2\text{mA}$ $V_{CE}=5\text{V}, I_C=10\text{mA}$	580	660	700 720	mV mV
f_T	Current Gain Bandwidth Product	$V_{CE}=5\text{V}, I_C=10\text{mA}, f=100\text{MHz}$		300		MHz
C_{ob}	Output Capacitance	$V_{CB}=10\text{V}, I_E=0, f=1\text{MHz}$		3.5	6	pF
C_{ib}	Input Capacitance	$V_{EB}=0.5\text{V}, I_C=0, f=1\text{MHz}$		9		pF
NF	Noise Figure	$V_{CE}=5\text{V}, I_C=200\mu\text{A}$ $R_G=2\text{K}\Omega, f=1\text{KHz}$		2	10	dB
	: BC846/847/848			1.2	4	dB
	: BC849	$V_{CE}=5\text{V}, I_C=200\mu\text{A}$ $R_G=2\text{K}\Omega, f=30\sim 15000\text{Hz}$		1.4	4	dB
	: BC850			1.4	3	dB

* Pulse Test: Pulse Width $\leq 300\mu\text{s}$, Duty Cycles $\leq 2\%$

h_{FE} Classification

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

Ordering Information

Device(note1)	Device Marking	Package	Packing Method	Qty(pcs)	Pin Difinitions
BC846AMTF	8AA	SOT-23	Tape & Reel	3000	1.Base 2.Emitter 3.Collector
BC846BMTF	8AB	SOT-23	Tape & Reel	3000	1.Base 2.Emitter 3.Collector
BC846CMTF	8AC	SOT-23	Tape & Reel	3000	1.Base 2.Emitter 3.Collector
BC847AMTF	8BA	SOT-23	Tape & Reel	3000	1.Base 2.Emitter 3.Collector
BC847BMTF	8BB	SOT-23	Tape & Reel	3000	1.Base 2.Emitter 3.Collector
BC847CMTF	8BC	SOT-23	Tape & Reel	3000	1.Base 2.Emitter 3.Collector
BC848AMTF	8CA	SOT-23	Tape & Reel	3000	1.Base 2.Emitter 3.Collector
BC848BMTF	8CB	SOT-23	Tape & Reel	3000	1.Base 2.Emitter 3.Collector
BC848CMTF	8CC	SOT-23	Tape & Reel	3000	1.Base 2.Emitter 3.Collector
BC849AMTF	8DA	SOT-23	Tape & Reel	3000	1.Base 2.Emitter 3.Collector
BC849BMTF	8DB	SOT-23	Tape & Reel	3000	1.Base 2.Emitter 3.Collector
BC849CMTF	8DC	SOT-23	Tape & Reel	3000	1.Base 2.Emitter 3.Collector
BC850AMTF	8EA	SOT-23	Tape & Reel	3000	1.Base 2.Emitter 3.Collector
BC850BMTF	8EB	SOT-23	Tape & Reel	3000	1.Base 2.Emitter 3.Collector
BC850CMTF	8EC	SOT-23	Tape & Reel	3000	1.Base 2.Emitter 3.Collector

Note1 : Affix "-A,-B,-C" means hFE classification.

Affix "-M" means SOT-23 package.

Affix "-TF" means the tape & reel type packing.

Typical Performance Characteristics

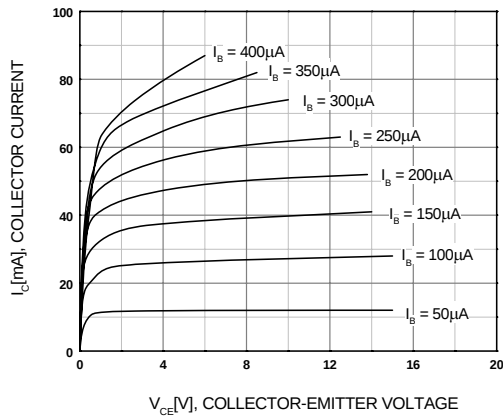


Figure 1. Static Characteristic

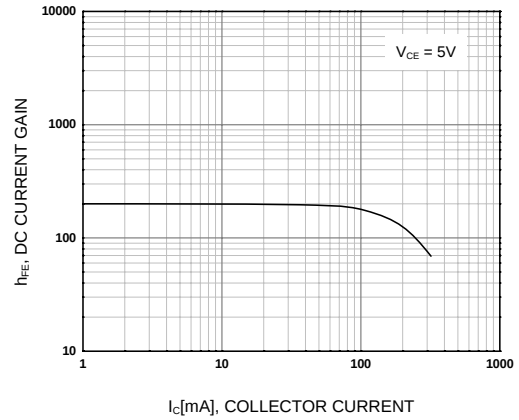


Figure 2. DC current Gain

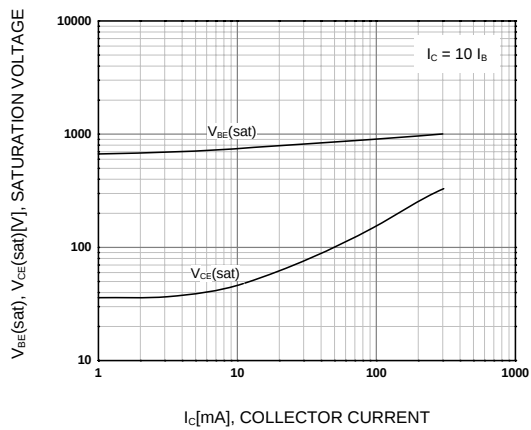


Figure 3. Base-Emitter Saturation Voltage
Collector-Emitter Saturation Voltage

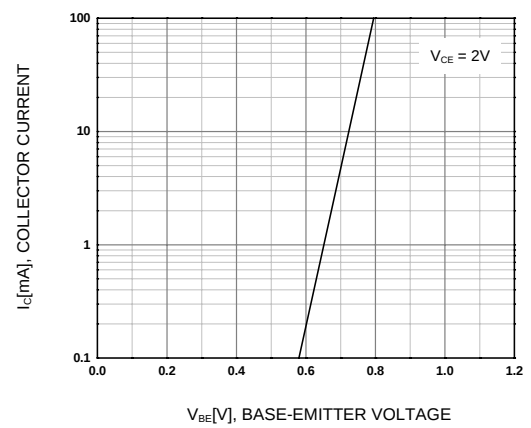


Figure 4. Base-Emitter On Voltage

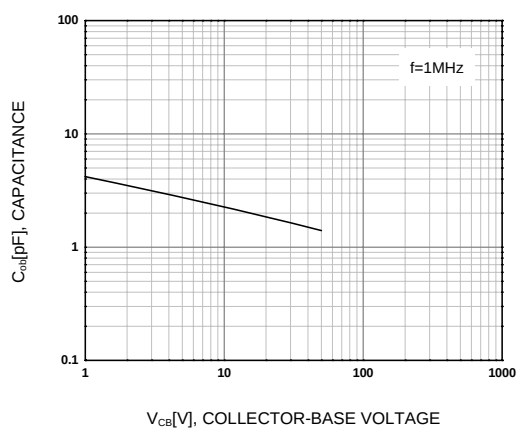


Figure 5. Collector Output Capacitance

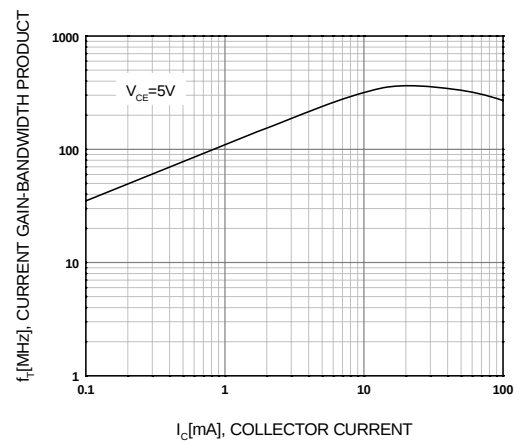
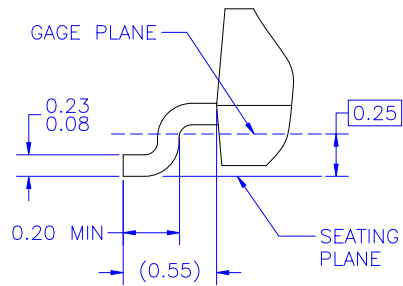
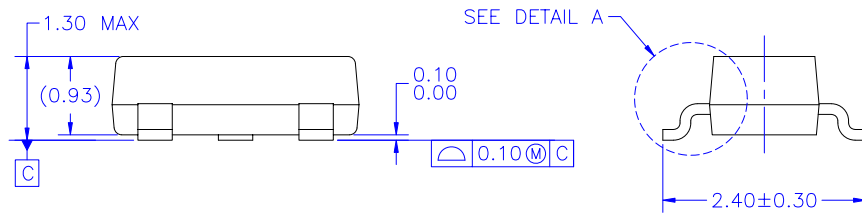
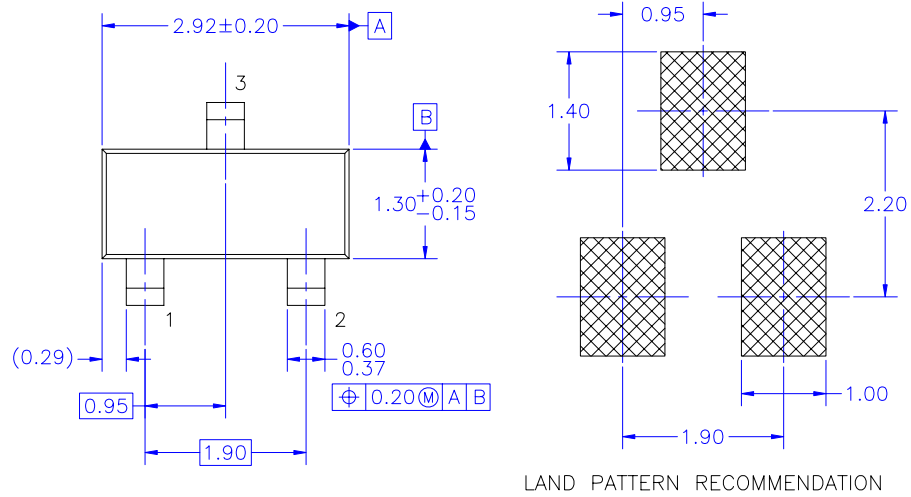


Figure 6. Current Gain Bandwidth Product

Physical Dimensions

SOT-23



DETAIL A
SCALE: 2X

NOTES: UNLESS OTHERWISE SPECIFIED

- A) REFERENCE JEDEC REGISTRATION TO-236, VARIATION AB, ISSUE H.
- B) ALL DIMENSIONS ARE IN MILLIMETERS.
- C) DIMENSIONS ARE INCLUSIVE OF BURRS, MOLD FLASH AND TIE BAR EXTRUSIONS.
- D) DIMENSIONING AND TOLERANCING PER ASME Y14.5M - 1994.
- E) DRAWING FILE NAME: MA03DREV9

Dimensions in Millimeters



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CorePLUS™	Green FPS™ e-Series™	QFET®	TinyBoost™
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CTL™	IntelliMAX™	RapidConfigure™	TinyLogic®
Current Transfer Logic™	ISOPLANAR™	 ™	TINYOPTO™
DEUXPEED®	MegaBuck™	Saving our world, 1mW/W/kW at a time™	TinyPower™
Dual Cool™	MICROCOUPLER™	SignalWise™	TinyPWM™
EcoSPARK®	MicroFET™	SmartMax™	TinyWire™
EfficientMax™	MicroPak™	SMART START™	TriFault Detect™
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 ®	MillerDrive™	STEALTH™	µSerDes™
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FACT Quiet Series™	mWSaver™	SuperSOT™-6	Ultra FRFET™
FACT®	OptoHiT™	SuperSOT™-8	UniFET™
FAST®	OPTOLOGIC®	SupreMOS®	VCX™
FastvCore™	OPTOPLANAR®	SyncFET™	VisualMax™
FETBench™	 ®	Sync-Lock™	XS™
FlashWriter®*	PDP SPM™	 SYSTEM GENERAL®*	
FPS™			

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Datasheet Identification	Product Status	Definition
Advance Information	Formative / In Design	Datasheet contains the design specifications for product development. Specifications may change in any manner without notice.
Preliminary	First Production	Datasheet contains preliminary data; supplementary data will be published at a later date. Fairchild Semiconductor reserves the right to make changes at any time without notice to improve design.
No Identification Needed	Full Production	Datasheet contains final specifications. Fairchild Semiconductor reserves the right to make changes at any time without notice to improve the design.
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Rev. I53



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