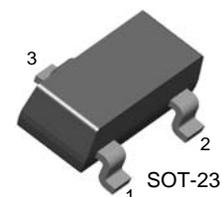


BC846 - BC850

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	$I_C=10\text{mA}, I_B=0.5\text{mA}$		90	250	mV
		$I_C=100\text{mA}, I_B=5\text{mA}$		200	600	mV
$V_{BE}(\text{sat})$	Collector-Base Saturation Voltage	$I_C=10\text{mA}, I_B=0.5\text{mA}$		700		mV
		$I_C=100\text{mA}, I_B=5\text{mA}$		900		mV
$V_{BE}(\text{on})$	Base-Emitter On Voltage	$V_{CE}=5\text{V}, I_C=2\text{mA}$	580	660	700	mV
		$V_{CE}=5\text{V}, I_C=10\text{mA}$			720	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	: BC846/847/848 : BC849/850	$V_{CE}=5\text{V}, I_C=200\mu\text{A}$	2	10	dB
			$R_G=2\text{K}\Omega, f=1\text{KHz}$	1.2	4	dB
		: BC849 : BC850	$V_{CE}=5\text{V}, I_C=200\mu\text{A}$	1.4	4	dB
			$R_G=2\text{K}\Omega, f=30\sim 15000\text{Hz}$	1.4	3	dB

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

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 h_{FE} classification.

Affix "-M" means SOT-23 package.

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

Typical Performance Characteristics

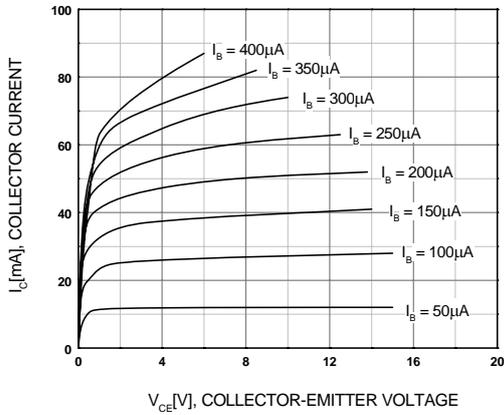


Figure 1. Static Characteristic

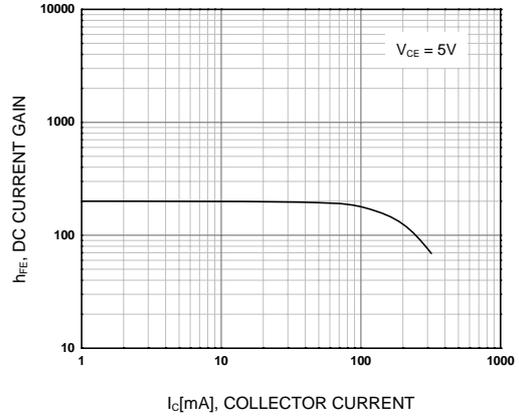


Figure 2. DC current Gain

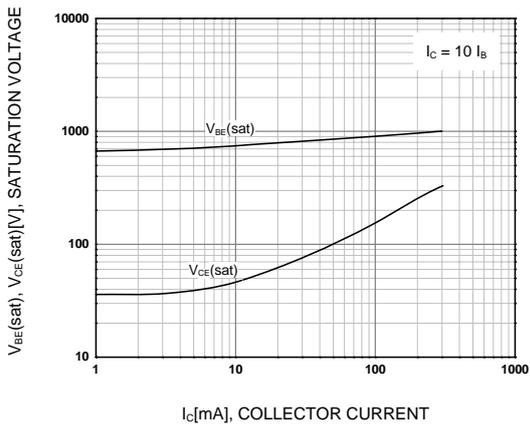


Figure 3. Base-Emitter Saturation Voltage
Collector-Emitter Saturation Voltage

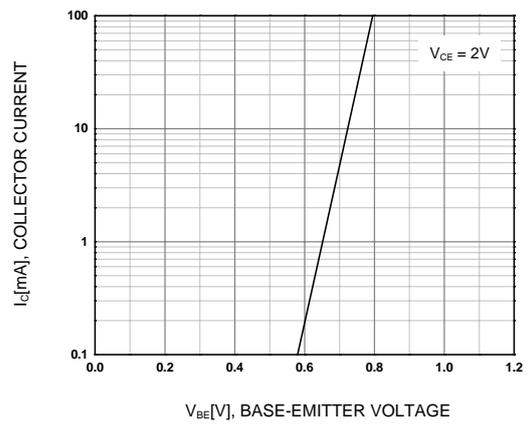


Figure 4. Base-Emitter On Voltage

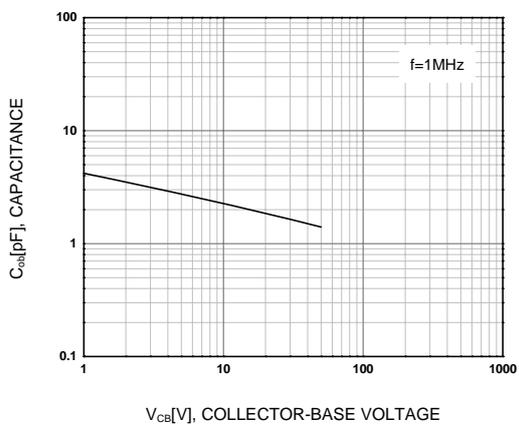


Figure 5. Collector Output Capacitance

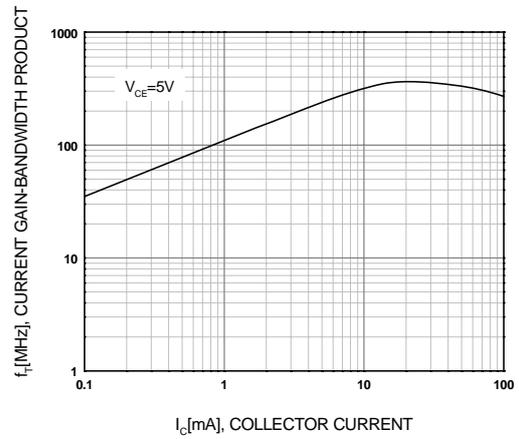
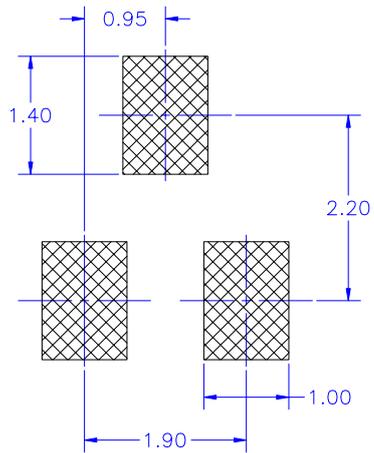
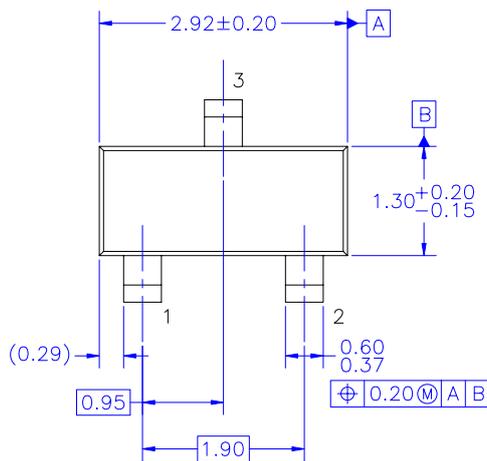


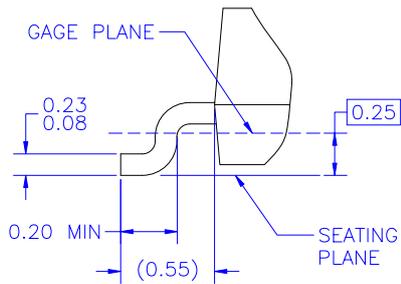
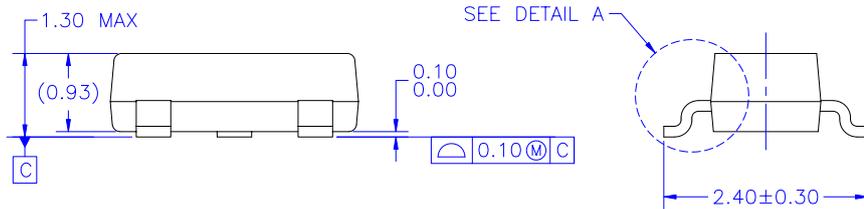
Figure 6. Current Gain Bandwidth Product

Physical Dimensions

SOT-23



LAND PATTERN RECOMMENDATION



DETAIL A
SCALE: 2X

NOTES: UNLESS OTHERWISE SPECIFIED

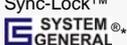
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- B) ALL DIMENSIONS ARE IN MILLIMETERS.
- C) DIMENSIONS ARE INCLUSIVE OF BURRS, MOLD FLASH AND TIE BAR EXTRUSIONS.
- D) DIMENSIONING AND TOLERANCING PER ASME Y14.5M - 1994.
- E) DRAWING FILE NAME: MA03DREV9

Dimensions in Millimeters



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CTL™	IntelliMAX™	RapidConfigure™	TINYOPTO™
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Dual Cool™	MICROCOUPLER™	SignalWise™	TinyWire™
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