

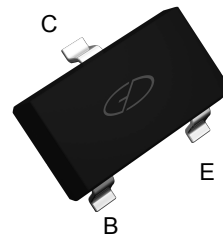
# BC847x Series NPN Small Signal Transistor

## Features

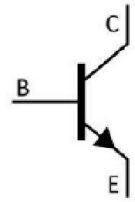
- Ideally Suited for Automatic Insertion
- Complementary PNP Types Available (BC857x series)
- RoHS Compliant

## Applications

- For Switching and RF Amplifier Applications



Package:SOT-23



Schematic Diagram

## Classifications

$h_{FE}$ Classification	BC847A	BC847B	BC847C
$h_{FE}$ Range	110-220	200-450	420-800

## Absolute Maximum Ratings ( $T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Rating	UNIT
Collector-Base Voltage	$V_{CBO}$	50	V
Collector-Emitter Voltage	$V_{CEO}$	45	V
Emitter-Base Voltage	$V_{EBO}$	6.0	V
Peak Collector Current	$I_{cm}$	300	mA
Collector Current-Continuous	$I_C$	100	mA
Collector Power Dissipation	$P_C$	350	mW
Operating Temperature	$T_J$	150	$^\circ\text{C}$
Storage Temperature Range	$T_{STG}$	-55 to +150	$^\circ\text{C}$

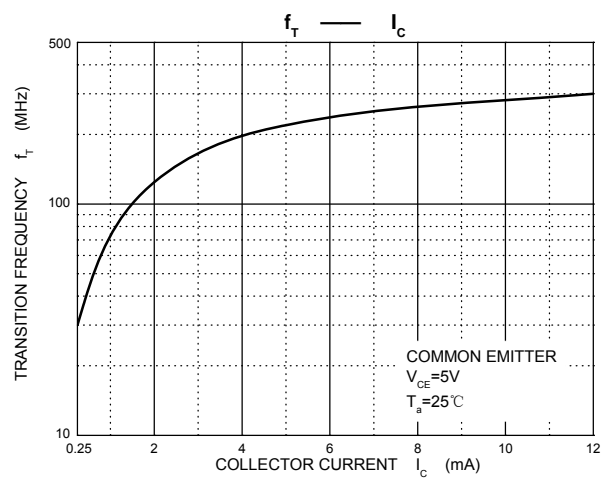
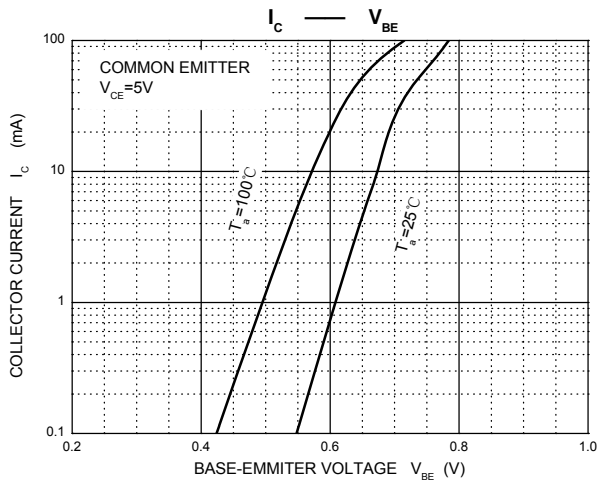
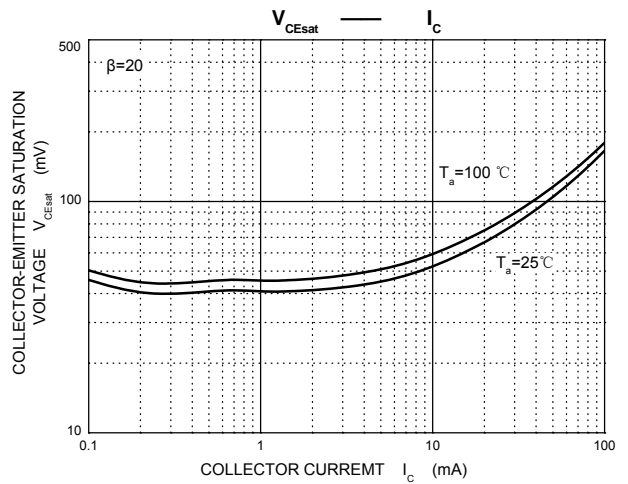
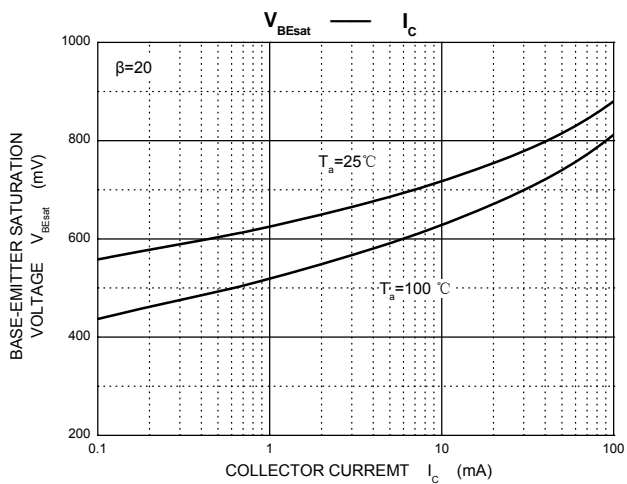
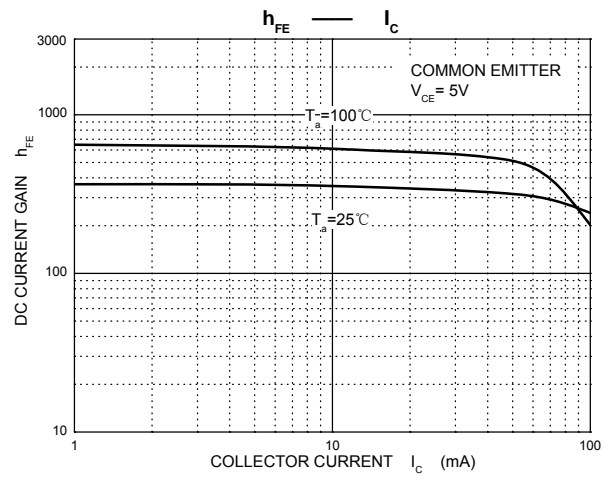
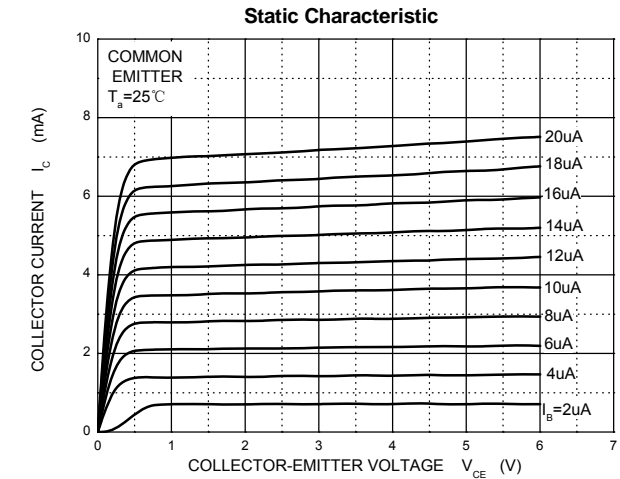
## Electrical Characteristics ( $T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Test Condition.	Min.	Typ.	Max.	Unit
Collector Cut-off Current	$I_{CBO}$	$V_{CB}=30\text{V}$ $I_E=0$	-	-	0.015	$\mu\text{A}$
DC Current Gain	$h_{FE}$	$V_{CE}=5.0\text{V}$ $I_C=2.0\text{mA}$	110	-	800	
Collector-Emitter Saturation Voltage	$V_{CE(sat)1}$	$I_C=10\text{mA}$ $I_B=0.5\text{mA}$	-	0.09	0.25	V
	$V_{CE(sat)2}$	$I_C=100\text{mA}$ $I_B=5.0\text{mA}$	-	0.2	0.6	V
Base-Emitter Saturation Voltage	$V_{BE(sat)1}$	$I_C=10\text{mA}$ $I_B=0.5\text{mA}$	-	0.7	-	V
	$V_{BE(sat)2}$	$I_C=100\text{mA}$ $I_B=5.0\text{mA}$	-	0.9	-	V
Base-Emitter Voltage	$V_{BE(1)}$	$V_{CE}=5.0\text{V}$ $I_C=2.0\text{mA}$	0.58	-	0.7	V
	$V_{BE(2)}$	$V_{CE}=5.0\text{V}$ $I_C=10\text{mA}$	-	-	0.75	V
Transition Frequency	$f_T$	$V_{CE}=5.0\text{V}$ $I_C=10\text{mA}$ $f=100\text{MHz}$	-	300	-	MHz
Collector Output Capacitance	$C_{ob}$	$V_{CB}=10\text{V}$ $I_E=0$ $f=1.0\text{MHz}$	-	2.5	4.5	pF
Noise Figure	NF	$V_{CE}=6.0\text{V}$ $I_C=0.1\text{mA}$ $R_g=10\text{K}\Omega$ $f=1.0\text{KHz}$	-	1.0	10	dB

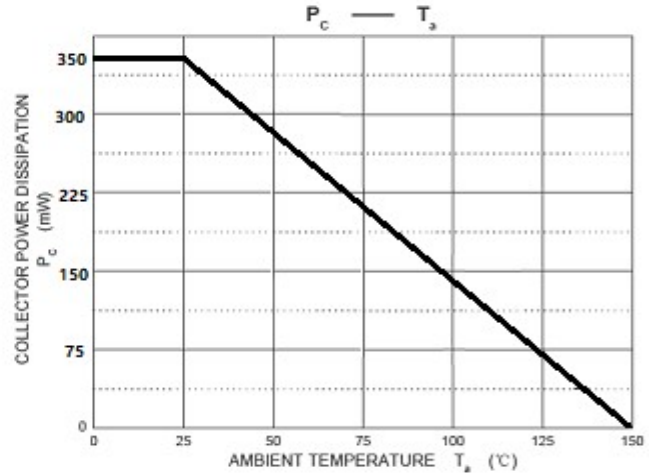
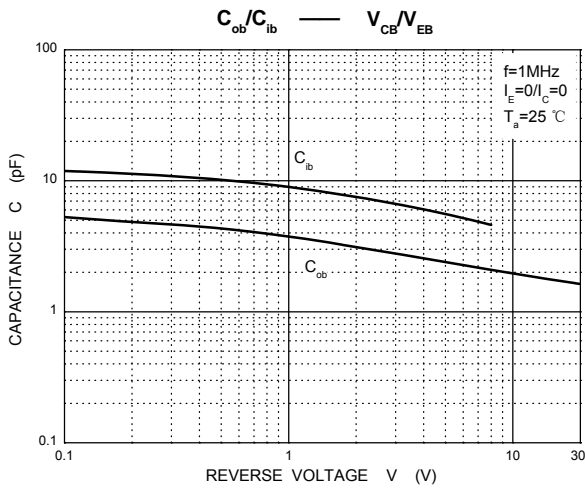
## Thermal Characteristics

Parameter	Symbol	Value	Unit
Typical Thermal Resistance from Junction to Ambient	$R_{\theta JA}$	410	$^\circ\text{C/W}$

**Ratings and Characteristic Curves**

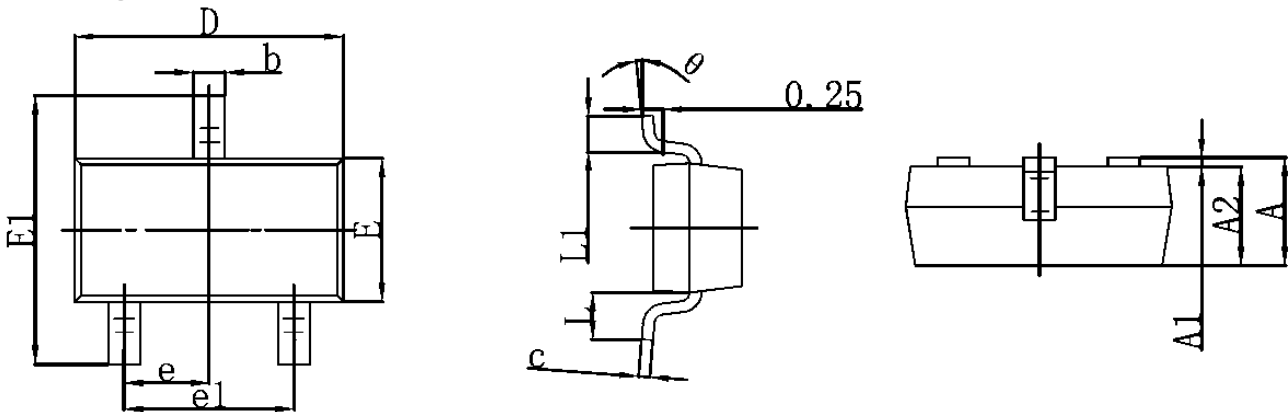


**Ratings and Characteristic Curves**



**Package Outline Dimensions**

**SOT-23**



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.900	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.050	0.035	0.041
b	0.300	0.500	0.012	0.020
c	0.080	0.150	0.003	0.006
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.950 TYP		0.037 TYP	
e1	1.800	2.000	0.071	0.079
L	0.550 REF		0.022 REF	
L1	0.300	0.500	0.012	0.020
$\theta$	0 $^\circ$	8 $^\circ$	0 $^\circ$	8 $^\circ$