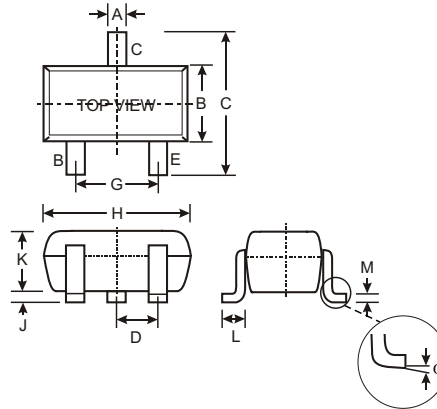


### Features

- Epitaxial Die Construction
- Complementary PNP Type Available (BC857AT,BT,CT)
- Ultra-Small Surface Mount Package
- Also Available in Lead Free Version

### Mechanical Data

- Case: SOT-523, Molded Plastic
- Case material - UL Flammability Rating Classification 94V-0
- Moisture sensitivity: Level 1 per J-STD-020A
- Terminals: Solderable per MIL-STD-202, Method 208
- Also Available in Lead Free Plating (Matte Tin Finish). Please see Ordering Information, Note 3, on Page 1
- Terminal Connections: See Diagram
- Marking Code: See Table Below & Diagram on Page 2
- Ordering Information: See Table Below
- Date Code Information: See Page 2
- Weight: 0.002 grams (approx.)



SOT-523			
Dim	Min	Max	Typ
A	0.15	0.30	0.22
B	0.75	0.85	0.80
C	1.45	1.75	1.60
D	—	—	0.50
G	0.90	1.10	1.00
H	1.50	1.70	1.60
J	0.00	0.10	0.05
K	0.60	0.80	0.75
L	0.10	0.30	0.22
M	0.10	0.20	0.12
N	0.45	0.65	0.50
$\alpha$	0°	8°	—
All Dimensions in mm			

Type	Marking
BC847AT	1E
BC847BT	1F
BC847CT	1M

### Maximum Ratings @ $T_A = 25^\circ\text{C}$ unless otherwise specified

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	$V_{CB0}$	50	V
Collector-Emitter Voltage	$V_{CE0}$	45	V
Emitter-Base Voltage	$V_{EB0}$	6.0	V
Collector Current	$I_C$	100	mA
Power Dissipation (Note 1)	$P_d$	150	mW
Thermal Resistance, Junction to Ambient (Note 1)	$R_{\theta JA}$	833	$^\circ\text{C}/\text{W}$
Operating and Storage Temperature Range	$T_J, T_{STG}$	-55 to +150	$^\circ\text{C}$

### Ordering Information (Note 2)

Device	Packaging	Shipping
BC847AT-7	SOT-523	3000/Tape & Reel
BC847BT-7	SOT-523	3000/Tape & Reel
BC847CT-7	SOT-523	3000/Tape & Reel

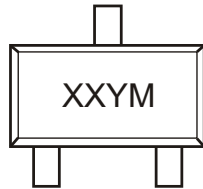
- Notes:
1. Device mounted on FR-4 PCB, 1 inch x 0.85 inch x 0.062 inch; pad layout as shown on Diodes Inc. suggested pad layout document AP02001, which can be found on our website at <http://www.diodes.com/datasheets/ap02001.pdf>.
  2. For Packaging Details, go to our website at <http://www.diodes.com/datasheets/ap02007.pdf>.
  3. For Lead Free version (with Lead Free terminal finish) part number, please add "-F" suffix to part number above. Example: BC847CT-7-F.

**Electrical Characteristics** @ T<sub>A</sub> = 25°C unless otherwise specified

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
DC Current Gain (Note 4) Current Gain A B C Current Gain A B C	h <sub>FE</sub>	—	—	—	—	V <sub>CE</sub> = 5.0V, I <sub>C</sub> = 2.0mA
		—	150	—		
		—	270	—		
		110	—	220		
		200	290	450		
		420	520	800		
Collector-Emitter Saturation Voltage (Note 4)	V <sub>CE(SAT)</sub>	—	—	250 600	mV	I <sub>C</sub> = 10mA, I <sub>B</sub> = 0.5mA I <sub>C</sub> = 100mA, I <sub>B</sub> = 5.0mA
Base-Emitter Saturation Voltage (Note 4)	V <sub>BE(SAT)</sub>	—	700 900	—	mV	I <sub>C</sub> = 10mA, I <sub>B</sub> = 0.5mA I <sub>C</sub> = 100mA, I <sub>B</sub> = 5.0mA
Base-Emitter Voltage (Note 4)	V <sub>BE</sub>	580 —	660 —	700 770	mV	V <sub>CE</sub> = 5.0V, I <sub>C</sub> = 2.0mA V <sub>CE</sub> = 5.0V, I <sub>C</sub> = 10mA
Collector-Emitter Cutoff Current (Note 4)	I <sub>CBO</sub> I <sub>CBO</sub>	—	—	15	nA μA	V <sub>CB</sub> = 30V
				5.0		V <sub>CB</sub> = 30V, T <sub>A</sub> = 150°C
Gain Bandwidth Product	f <sub>T</sub>	100	—	—	MHz	V <sub>CE</sub> = 5.0V, I <sub>C</sub> = 10mA, f = 100MHz
Output Capacitance	C <sub>OBO</sub>	—	—	4.5	pF	V <sub>CB</sub> = 10V, f = 1.0MHz
Noise Figure	BC847BT BC847CT	NF	—	10	dB	V <sub>CE</sub> = 5V, R <sub>S</sub> = 2.0kΩ, f = 1.0kHz, BW = 200Hz
				4.0		

Notes: 4. Short duration pulse test used to minimize self-heating effect.

**Marking Information**



XX = Product Type Marking Code (See Page 1), e.g. 1E = BC847AT  
 YM = Date Code Marking  
 Y = Year (ex: N = 2002)  
 M = Month (ex: 9 = September)

Date Code Key

Year	1998	1999	2000	2001	2002	2003	2004
Code	J	K	L	M	N	P	R

Month	Jan	Feb	March	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Code	1	2	3	4	5	6	7	8	9	O	N	D

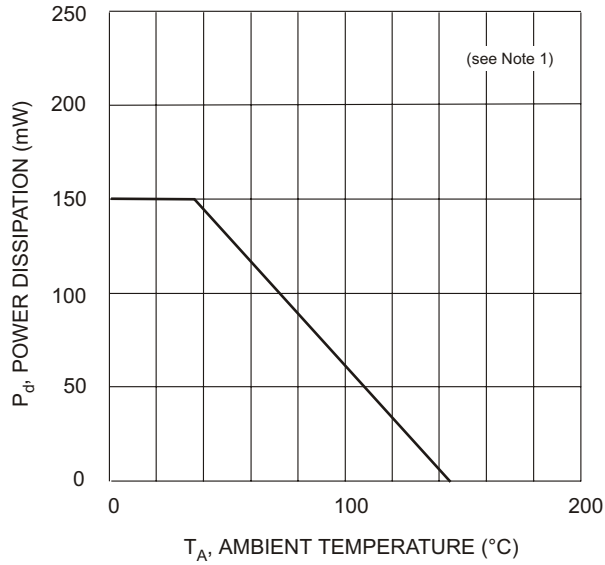


Fig. 1, Power Derating Curve

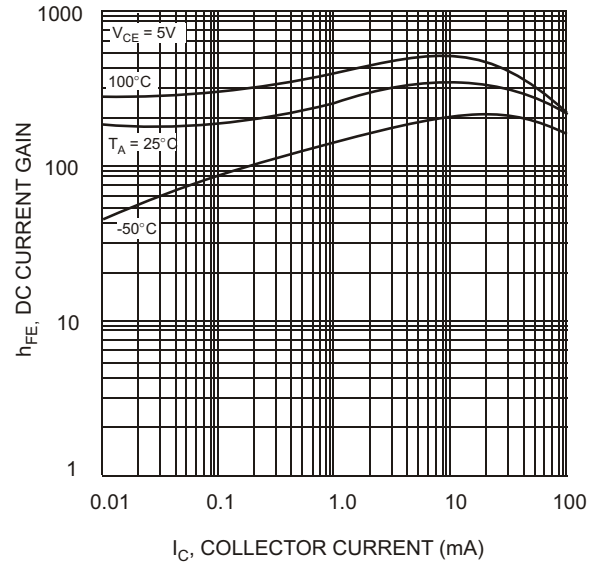


Fig. 2, DC Current Gain vs. Collector Current

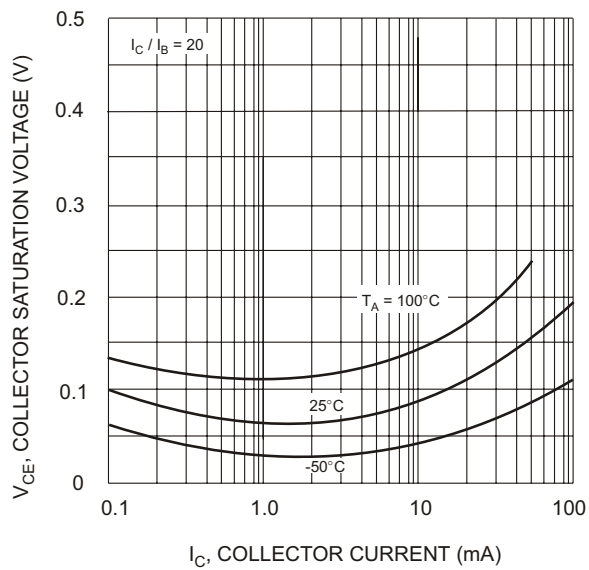


Fig. 3, Collector Saturation Voltage vs. Collector Current

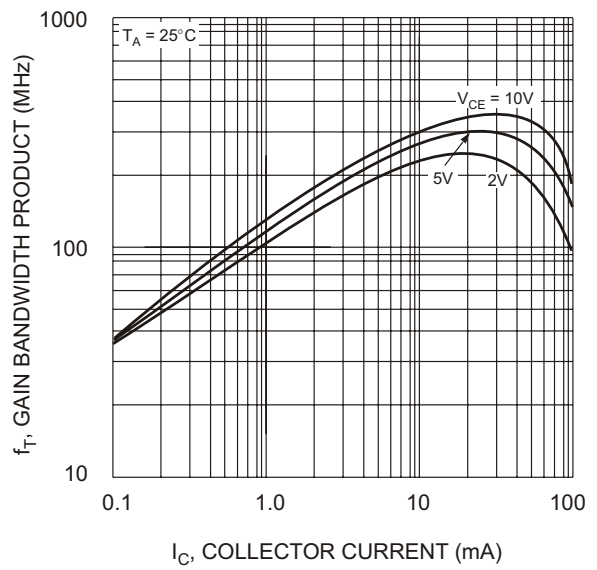


Fig. 4, Gain Bandwidth Product vs. Collector Current

Notes: 1. Device mounted on FR-4 PCB, 1 inch x 0.85 inch x 0.062 inch; pad layout as shown on Diodes Inc. suggested pad layout document AP02001, which can be found on our website at <http://www.diodes.com/datasheets/ap02001.pdf>.