



# BC847AT, BT, CT

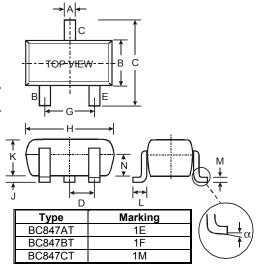
# NPN SMALL SIGNAL SURFACE MOUNT TRANSISTOR

### **Features**

- Epitaxial Die Construction
- Complementary PNP Types Available (BC857AT,BT,CT)
- Ultra-Small Surface Mount Package
- Lead Free/RoHS Compliant (Note 2)
- "Green" Device (Note 4 and 5)

### **Mechanical Data**

- Case: SOT-523
- Case Material Molded Plastic. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020C
- Terminals: Solderable per MIL-STD-202, Method 208
- Lead Free Plating (Matte Tin Finish annealed over Alloy 42 leadframe).
- Terminal Connections: See Diagram
- Marking Code: See Table
- Ordering Information: See Page 2
- Marking Information: See Page 2
- Weight: 0.002 grams (approximate)



SOT-523										
Dim	Min	Max	Тур							
Α	0.15	0.30	0.22							
В	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							
7	0.00	0.10	0.05							
K	0.60	0.80	0.75							
L	0.10	0.30	0.22							
М	0.10	0.20	0.12							
N	0.45	0.65	0.50							
α	0°	8°	_							
All D	All Dimensions in mm									

# **Maximum Ratings** @TA = 25°C unless otherwise specified

Characteristic	Symbol	Value	Unit		
Collector-Base Voltage	$V_{CBO}$	50	V		
Collector-Emitter Voltage	$V_{\sf CEO}$	45	V		
Emitter-Base Voltage	V <sub>EBO</sub>	6.0	V		
Collector Current	Ic	100	mA		
Power Dissipation (Note 1)	Pd	150	mW		
Thermal Resistance, Junction to Ambient (Note 1)	$R_{ heta JA}$	833	°C/W		
Operating and Storage Temperature Range	T <sub>i</sub> , T <sub>STG</sub>	-55 to +150	°C		

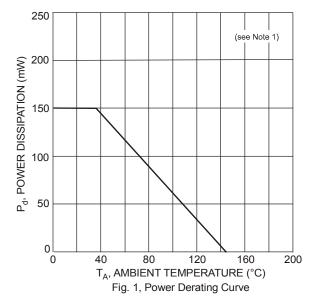
# Electrical Characteristics @T<sub>A</sub> = 25°C unless otherwise specified

	Characteristic	Symbol	Min	Тур	Max	Unit	Test Condition	
DC Current Gain	(Note 3)	Current Gain A B C	h <sub>FE</sub>	110 200 420	290 520	220 450 800	_	V <sub>CE</sub> = 5.0V, I <sub>C</sub> = 2.0mA
Collector-Emitter Saturation Voltage		(Note 3)	V <sub>CE(SAT)</sub>	_	_	250 600	mV	$I_C = 10 \text{mA}, I_B = 0.5 \text{mA}$ $I_C = 100 \text{mA}, I_B = 5.0 \text{mA}$
Base-Emitter Satura	tion Voltage	(Note 3)	V <sub>BE(SAT)</sub>	_	700 900	_	mV	$I_C$ = 10mA, $I_B$ = 0.5mA $I_C$ = 100mA, $I_B$ = 5.0mA
Base-Emitter Voltage	е	(Note 3)	$V_{BE}$	580 —	660 —	700 770	mV	$V_{CE} = 5.0V, I_{C} = 2.0mA$ $V_{CE} = 5.0V, I_{C} = 10mA$
Collector-Emitter Cu	toff Current	(Note 3)	I <sub>CBO</sub>	_	_	15 5.0	nΑ μΑ	V <sub>CB</sub> = 30V V <sub>CB</sub> = 30V, T <sub>A</sub> = 150°C
Gain Bandwidth Pro	duct		f⊤	100	_	_	MHz	$V_{CE} = 5.0V, I_{C} = 10mA,$ f = 100MHz
Output Capacitance		·	C <sub>OBO</sub>	_	_	4.5	pF	V <sub>CB</sub> = 10V, f = 1.0MHz
BC847BT Noise Figure BC847CT			NF	_	_	10 4.0	dB	$V_{CE}$ = 5V, R <sub>S</sub> = 2.0kΩ, f = 1.0kHz, BW = 200Hz

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. No purposefully added lead.
- Short duration pulse test used to minimize self-heating effect.
- 4. Diodes Inc.'s "Green" policy can be found on our website at http://www.diodes.com/products/lead\_free/index.php.
- 5. Product manufactured with Date Code UO (week 40, 2007) and newer are built with Green Molding Compound. Product manufactured prior to Date Code UO are built with Non-Green Molding Compound and may contain Halogens or Sb2O3 Fire Retardants.





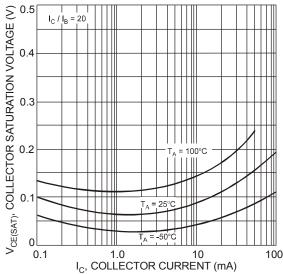


Fig. 3, Collector Saturation Voltage vs Collector Current

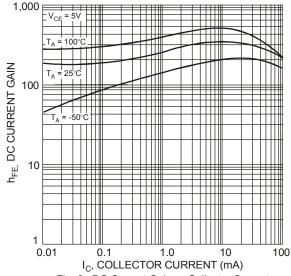
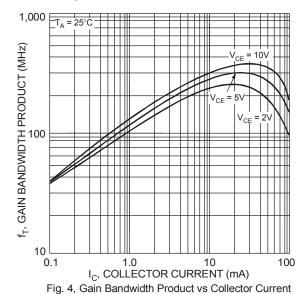


Fig. 2, DC Current Gain vs Collector Current

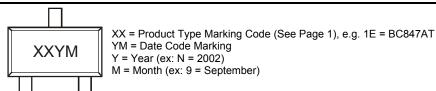


# Ordering Information (Note 4)

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

Notes: 4. For packaging details, go to our website at http://www.diodes.com/datasheets/ap02007.pdf.

# **Marking Information**



Date Code Key

Year	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Code	J	K	L	М	N	Р	R	S	Т	U	V	W	Χ	Υ	Z
Month	Jan	Fel	b	Mar	Apr	May	Ju	n	Jul	Aug	Sep	Oc	t	Nov	Dec
Code	1	2		3	4	5	6		7	8	9	Ω		N	



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