

<u>BC857AT, BT, CT</u>

PNP SMALL SIGNAL SURFACE MOUNT TRANSISTOR

Features

- Epitaxial Die Construction
- Complementary NPN Types Available (BC847AT,BT,CT)
- Ultra-Small Surface Mount Package
- Lead Free/RoHS Compliant (Note 2)
- Qualified to AEC-Q101 Standards for High Reliability
- "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 Below & Diagram on Page 2
- Ordering & Date Code 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						
С	1.45	1.75	1.60						
D	_		0.50						
G	0.90	1.10	1.00						
Н	1.50	1.70	1.60						
J	0.00	0.10	0.05						
Κ	0.60	0.80	0.75						
L	0.10	0.30	0.22						
М	0.10	0.20	0.12						
Ν	0.45	0.65	0.50						
α	0°	8°							
Ali D	imens	ions in	mm						

Maximum Ratings @T_A = 25°C unless otherwise specified

Characteristic		Symbol	Value	Unit		
Collector-Base Voltage		V _{CBO}	-50	V		
Collector-Emitter Voltage		V _{CEO}	-45	V		
Emitter-Base Voltage		V _{EBO}	-5.0	V		
Collector Current		Ιc	-100	mA		
Power Dissipation	(Note 1)	Pd	150	mW		
Thermal Resistance, Junction to Ambient	(Note 1)	$R_{ extsf{ heta}JA}$	833	°C/W		
Operating and Storage Temperature Range		T _j , T _{STG}	-55 to +150	°C		

Electrical Characteristics @T_A = 25°C unless otherwise specified

Characteristic		Symbol	Min	Тур	Max	Unit	Test Condition
Collector-Base Breakdown Voltage (Note 3)			-50	—	_	V	$I_{\rm C} = 10 \mu A, I_{\rm B} = 0$
Collector-Emitter Breakdown Voltage	(Note 3)	V _{(BR)CEO}	-45	_	_	V	$I_{\rm C} = 10 {\rm mA}, I_{\rm B} = 0$
Emitter-Base Breakdown Voltage	(Note 3)	V _{(BR)EBO}	-5	—	—	V	$I_{E} = 1 \mu A, I_{C} = 0$
DC Current Gain (Note 3)	Current Gain A B C	h _{FE}	125 220 420	 290 520	250 475 800	_	$V_{CE} = -5.0V, I_{C} = -2.0mA$
Collector-Emitter Saturation Voltage	(Note 3)	V _{CE(SAT)}			-300 -650	mV	$I_{C} = -10mA$, $I_{B} = -0.5mA$ $I_{C} = -100mA$, $I_{B} = -5.0mA$
Base-Emitter Saturation Voltage	(Note 3)	V _{BE(SAT)}		-700 -900		mV	$I_{C} = -10mA$, $I_{B} = -0.5mA$ $I_{C} = -100mA$, $I_{B} = -5.0mA$
Base-Emitter Voltage	(Note 3)	V _{BE(ON)}	-600	—	-750 -820	mV	$V_{CE} = -5.0V$, $I_{C} = -2.0mA$ $V_{CE} = -5.0V$, $I_{C} = -10mA$
Collector-Cutoff Current	(Note 3)		—	_	-15	NA	$V_{CB} = -30V$
		ICBO	_	—	-4.0	μA	V _{CB} = -30V, T _A = 150°C
Gain Bandwidth Product		f⊤	100	—	—	MHz	$V_{CE} = -5.0V, I_{C} = -10mA, f = 100MHz$
Output Capacitance		C _{OB}		_	4.5	pF	V _{CB} = -10V, f = 1.0MHz
Noise Figure		NF		_	10	dB	$\label{eq:loss} \begin{array}{l} I_{C} = -0.2 \text{mA}, \ V_{CE} = -5.0 \text{Vdc}, \\ R_{S} = 2.0 \text{K}\Omega, \ f = 1.0 \text{KHz}, \\ BW = 200 \text{Hz} \end{array}$

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

3. 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.

Notes:



Ordering Information (Note 6)

Device	Packaging	Shipping
BC857AT-7-F	SOT-523	3000/Tape & Reel
BC857BT-7-F	SOT-523	3000/Tape & Reel
BC857CT-7-F	SOT-523	3000/Tape & Reel

Notes: 6. For packaging details, go to our website at http://www.diodes.com/datasheets/ap02007.pdf.

Marking Information

XXYM

XX = Product Type Marking Code (See Page 1), e.g. 3V = BC857AT YM = Date Code Marking Y = Year (ex: N = 2002)

M = Month (ex: 9 = September)

Year	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Code	J	K	L	М	Ν	Р	R	S	Т	U	V	W	Х	Y	Z
Month	Jan	Fe	b I	Mar	Apr	May	Ju	n	Jul	Aug	Sep	Oc	t l	lov	Dec
Code	1	2		3	4	5	6		7	8	9	0		Ν	D



IMPORTANT NOTICE

Diodes Incorporated and its subsidiaries reserve the right to make modifications, enhancements, improvements, corrections or other changes without further notice to any product herein. Diodes Incorporated does not assume any liability arising out of the application or use of any product described herein; neither does it convey any license under its patent rights, nor the rights of others. The user of products in such applications shall assume all risks of such use and will agree to hold Diodes Incorporated and all the companies whose products are represented on our website, harmless against all damages.

LIFE SUPPORT

Diodes Incorporated products are not authorized for use as critical components in life support devices or systems without the expressed written approval of the President of Diodes Incorporated.