

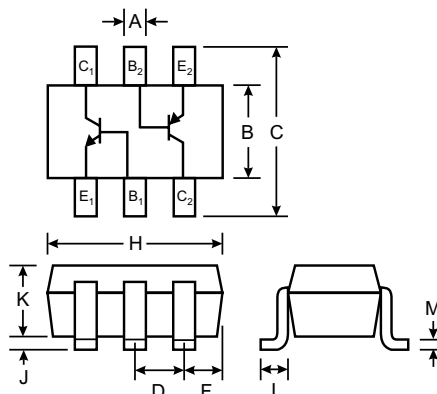
COMPLEMENTARY PAIR SMALL SIGNAL SURFACE MOUNT TRANSISTOR

Features

- Epitaxial Die Construction
- Two internal isolated NPN/PNP Transistors in one package
- Ultra-Small Surface Mount Package

Mechanical Data

- Case: SOT-363, Molded Plastic
- Terminals: Solderable per MIL-STD-202, Method 208
- Terminal Connections: See Diagram
- Marking: 7P
- Weight: 0.006 grams (approx.)



SOT-363		
Dim	Min	Max
A	0.10	0.30
B	1.15	1.35
C	2.00	2.20
D	0.65 Nominal	
F	0.30	0.40
H	1.80	2.20
J	—	0.10
K	0.90	1.00
L	0.25	0.40
M	0.10	0.25
All Dimensions in mm		

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

Characteristic	Symbol	Value	Unit
Power Dissipation at $T_{SB} = 50^\circ\text{C}$ (Note 1)	P_d	200	mW
Thermal Resistance, Junction to Ambient (Note 1)	$R_{\theta JA}$	625	$^\circ\text{C}/\text{W}$
Operating and Storage Temperature Range	T_j, T_{STG}	-65 to +150	$^\circ\text{C}$

Maximum Ratings @ $T_A = 25^\circ\text{C}$ unless otherwise specified **NPN BC847B Section**

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V_{CBO}	50	V
Collector-Emitter Voltage	V_{CEO}	45	V
Emitter-Base Voltage	V_{EBO}	6.0	V
Collector Current	I_C	100	mA
Peak Collector Current	I_{CM}	200	mA
Peak Emitter Current	I_{EM}	200	mA

Maximum Ratings @ $T_A = 25^\circ\text{C}$ unless otherwise specified **PNP BC857B Section**

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	I_C	-100	mA
Peak Collector Current	I_{CM}	-200	mA
Peak Emitter Current	I_{EM}	-200	mA

Notes: 1. Package mounted on FR4 printed circuit board, total device.

Electrical Characteristics @ $T_A = 25^\circ\text{C}$ unless otherwise specified **NPN BC847B Section**

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Base Breakdown Voltage (Note 2)	$V_{(BR)CBO}$	50	—	—	V	$I_C = 10\mu\text{A}$, $I_B = 0$
Collector-Emitter Breakdown Voltage (Note 2)	$V_{(BR)CEO}$	45	—	—	V	$I_C = 10\text{mA}$, $I_B = 0$
Emitter-Base Breakdown Voltage (Note 2)	$V_{(BR)EBO}$	5	—	—	V	$I_E = 1\mu\text{A}$, $I_C = 0$
DC Current Gain (Note 2)	h_{FE}	200	290	450	—	$V_{CE} = 5.0\text{V}$, $I_C = 2.0\text{mA}$
Collector-Emitter Saturation Voltage (Note 2)	$V_{CE(SAT)}$	—	90 200	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 Saturation Voltage (Note 2)	$V_{BE(SAT)}$	—	700 900	—	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 Voltage (Note 2)	$V_{BE(ON)}$	580 —	660 —	700 720	mV	$V_{CE} = 5.0\text{V}$, $I_C = 2.0\text{mA}$ $V_{CE} = 5.0\text{V}$, $I_C = 10\text{mA}$
Collector-Cutoff Current (Note 2)	I_{CBO} I_{CBO}	— —	— —	15 5.0	nA μA	$V_{CB} = 30\text{V}$ $V_{CB} = 30\text{V}$, $T_A = 150^\circ\text{C}$
Gain Bandwidth Product	f_T	100	300	—	MHz	$V_{CE} = 5.0\text{V}$, $I_C = 10\text{mA}$, $f = 100\text{MHz}$
Collector-Base Capacitance	C_{CBO}	—	3.5	6.0	pF	$V_{CB} = 10\text{V}$, $f = 1.0\text{MHz}$
Noise Figure	NF	—	2.0	10	dB	$V_{CE} = 5\text{V}$, $I_C = 200\mu\text{A}$, $R_G = 2.0\text{k}\Omega$, $f = 1.0\text{kHz}$, $\Delta f = 200\text{Hz}$

Electrical Characteristics @ $T_A = 25^\circ\text{C}$ unless otherwise specified **PNP BC857B Section**

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Base Breakdown Voltage (Note 2)	$V_{(BR)CBO}$	-50	—	—	V	$I_C = 10\mu\text{A}$, $I_B = 0$
Collector-Emitter Breakdown Voltage (Note 2)	$V_{(BR)CEO}$	-45	—	—	V	$I_C = 10\text{mA}$, $I_B = 0$
Emitter-Base Breakdown Voltage (Note 2)	$V_{(BR)EBO}$	-5	—	—	V	$I_E = 1\mu\text{A}$, $I_C = 0$
DC Current Gain (Note 2)	h_{FE}	220	290	475	—	$V_{CE} = 5.0\text{V}$, $I_C = 2.0\text{mA}$
Collector-Emitter Saturation Voltage (Note 2)	$V_{CE(SAT)}$	—	-75 -250	-300 -650	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 Saturation Voltage (Note 2)	$V_{BE(SAT)}$	—	-700 -850	— -950	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 Voltage (Note 2)	$V_{BE(ON)}$	-600 —	-650 —	-750 -820	mV	$V_{CE} = 5.0\text{V}$, $I_C = 2.0\text{mA}$ $V_{CE} = 5.0\text{V}$, $I_C = 10\text{mA}$
Collector-Cutoff Current (Note 2)	I_{CBO} I_{CBO}	— —	— —	-15 -4.0	nA μA	$V_{CB} = 30\text{V}$ $V_{CB} = 30\text{V}$, $T_A = 150^\circ\text{C}$
Gain Bandwidth Product	f_T	100	200	—	MHz	$V_{CE} = 5.0\text{V}$, $I_C = 10\text{mA}$, $f = 100\text{MHz}$
Collector-Base Capacitance	C_{CBO}	—	3	4.5	pF	$V_{CB} = 10\text{V}$, $f = 1.0\text{MHz}$
Noise Figure	NF	—	—	10	dB	$V_{CE} = 5\text{V}$, $I_C = 200\mu\text{A}$, $R_G = 2.0\text{k}\Omega$, $f = 1.0\text{kHz}$, $\Delta f = 200\text{Hz}$

Notes: 1. Package mounted on FR4 printed circuit board, total device.
2. Short duration pulse test to minimize self-heating effect.