BC847BVN

Lead-free Green

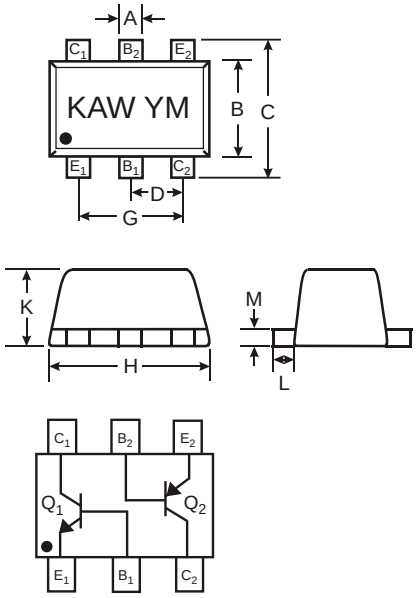
COMPLEMENTARY PAIR SMALL SIGNAL SURFACE MOUNT TRANSISTOR

Features

- Epitaxial Die Construction
- Two internally isolated NPN/PNP Transistors in one package
- Ultra-Small Surface Mount Package
- **Lead Free By Design/RoHS Compliant (Note 2)**
- **"Green" Device (Note 3)**

Mechanical Data

- Case: SOT-563
- Case Material: Molded Plastic, “Green” Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020C
- Terminals: Finish ¾ Matte Tin Finish annealed over Copper leadframe. Solderable per MIL-STD-202, Method 208
- Terminal Connections: See Diagram
- Marking (See Page 3): KAW
- Ordering & Date Code Information: See Page 4
- Weight: 0.003 grams (approximate)



SOT-563			
Dim	**Min**	**Max**	**Typ**
A	0.15	0.30	0.25
B	1.10	1.25	1.20
C	1.55	1.70	1.60
D		0.50	
G	0.90	1.10	1.00
H	1.50	1.70	1.60
K	0.56	0.60	0.60
L	0.10	0.30	0.20
M	0.10	0.18	¾
All Dimensions in mm			

Maximum Ratings @ T_A = 25°C unless otherwise specified — NPN, BC847B Type (Q_1)

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°C unless otherwise specified — PNP, BC857B Type (Q_2)

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

Thermal Characteristics

Characteristic	Symbol	Value	Unit
Power Dissipation (Note 1) @T_A = 25°C Total Device	P_d	150	mW
Thermal Resistance, Junction to Ambient (Note 1) @T_A = 25°C	$R_{\theta JA}$	833	°C/W
Operating and Storage Temperature Range	T_j, T_{STG}	-65 to +150	°C

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.
3. Diodes Inc.'s "Green" policy can be found on our website at http://www.diodes.com/products/lead_free/index.php.

Electrical Characteristics @ T_A = 25°C unless otherwise specified — NPN, BC847B Type (Q_1)

Characteristic (Note 4)	Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	50	—	—	V	I_C = 10μA, I_B = 0
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	45	—	—	V	I_C = 10mA, I_B = 0
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	6	—	—	V	I_E = 1μA, I_C = 0
DC Current Gain	h_{FE}	200	290	450	—	V_{CE} = 5.0V, I_C = 2.0mA
Collector-Emitter Saturation Voltage	$V_{CE(SAT)}$	—	90 200	250 600	mV	I_C = 10mA, I_B = 0.5mA I_C = 100mA, I_B = 5.0mA
Base-Emitter Saturation Voltage	$V_{BE(SAT)}$	—	700 900	—	mV	I_C = 10mA, I_B = 0.5mA I_C = 100mA, I_B = 5.0mA
Base-Emitter Voltage	$V_{BE(ON)}$	580 —	660 —	700 720	mV	V_{CE} = 5.0V, I_C = 2.0mA V_{CE} =5.0V, I_C = 10mA
Collector-Cutoff Current	I_{CBO}	— —	— —	15 5.0	nA μA	V_{CB} = 30V V_{CB} = 30V, T_A = 150°C
Gain Bandwidth Product	f_T	100	300	—	MHz	V_{CE} = 5.0V, I_C = 10mA, f = 100MHz
Collector-Base Capacitance	C_{CBO}	—	3.5	6.0	pF	V_{CB} = 10V, f = 1.0MHz

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

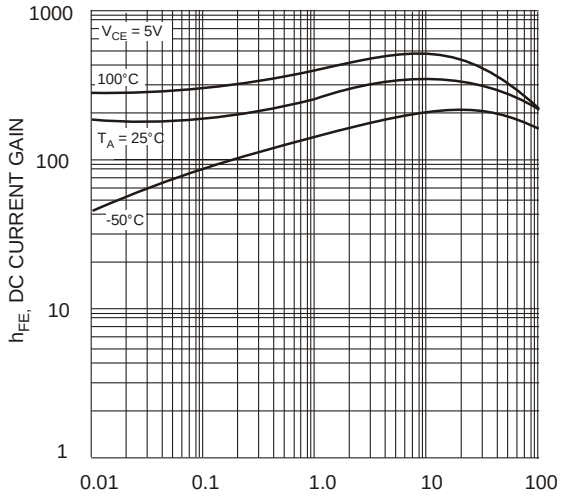


Fig. 1, DC Current Gain vs Collector Current (BC847B Type)

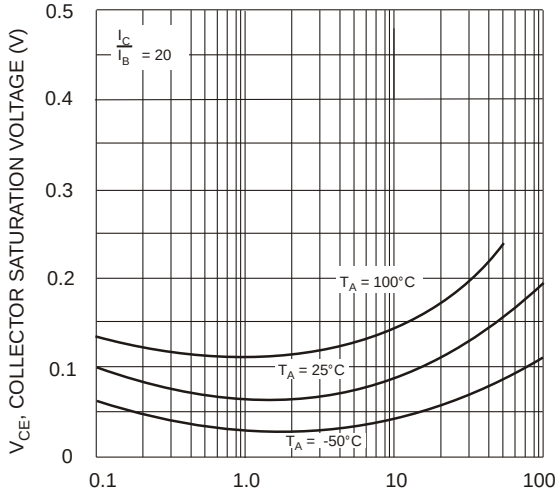


Fig. 2, Collector-Emitter Saturation Voltage vs Collector Current (BC847B Type)

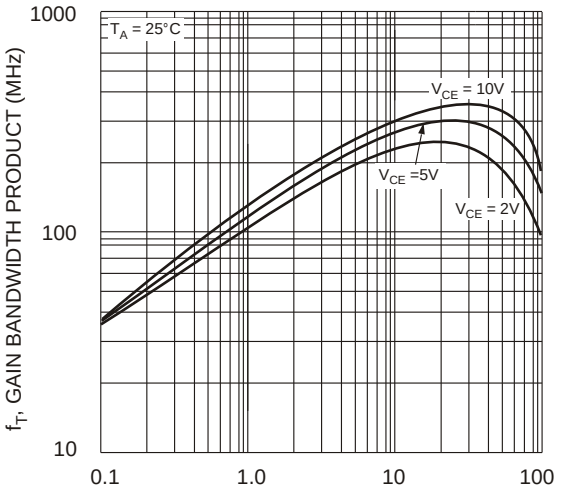


Fig. 3, Gain Bandwidth Product vs Collector Current (BC847B Type)

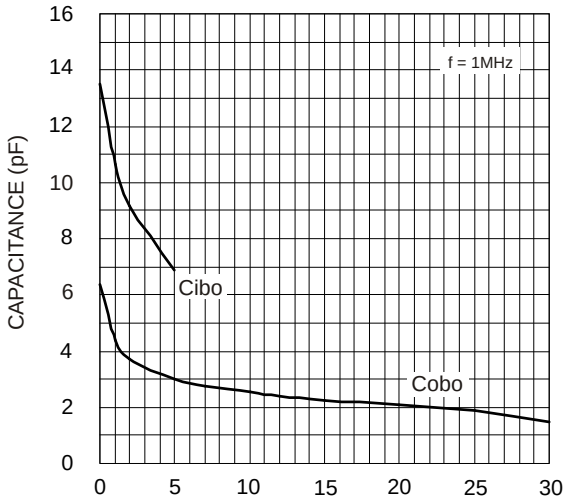


Fig. 4, Capacitance vs. Reverse Voltage (BC847B Type)

Electrical Characteristics @ T_A = 25°C unless otherwise specified — PNP, BC857B Type (Q_2)

Characteristic (Note 5)	Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	-50	—	—	V	I_C = -10μA, I_B = 0
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	-45	—	—	V	I_C = -10mA, I_B = 0
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	-5	—	—	V	I_E = -1μA, I_C = 0
DC Current Gain	h_{FE}	220	290	475	—	V_{CE} = -5.0V, I_C = -2.0mA
Collector-Emitter Saturation Voltage	$V_{CE(SAT)}$	—	-75 -250	-300 -650	mV	I_C = -10mA, I_B = -0.5mA I_C = -100mA, I_B = -5.0mA
Base-Emitter Saturation Voltage	$V_{BE(SAT)}$	—	-700 -850	— -950	mV	I_C = -10mA, I_B = -0.5mA I_C = -100mA, I_B = -5.0mA
Base-Emitter Voltage	$V_{BE(ON)}$	-600 —	-650 —	-750 -820	mV	V_{CE} = -5.0V, I_C = -2.0mA V_{CE} =- 5.0V, I_C = -10mA
Collector-Cutoff Current	I_{CBO}	— —	— —	-15 -4.0	nA μA	V_{CB} = -30V V_{CB} = -30V, T_A = 150°C
Gain Bandwidth Product	f_T	100	200	—	MHz	V_{CE} = -5.0V, I_C = -10mA, f = 100MHz
Collector-Base Capacitance	C_{CBO}	—	3	4.5	pF	V_{CB} = -10V, f = 1.0MHz

Note: 5. Short duration pulse test used to minimize self-heating effect.

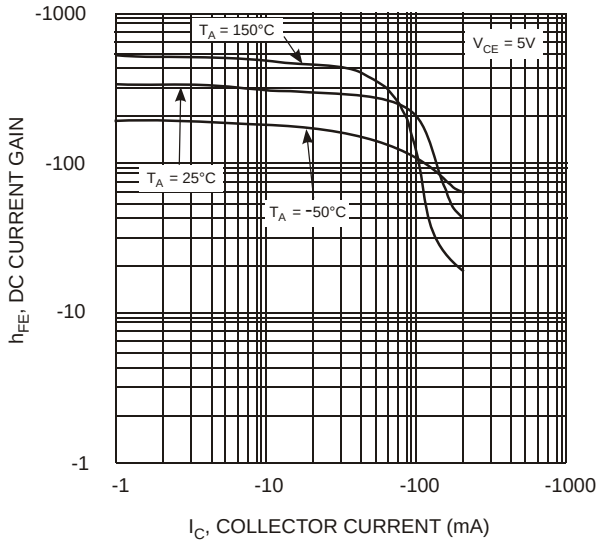


Fig. 5, DC Current Gain vs. Collector Current (BC857B Type)

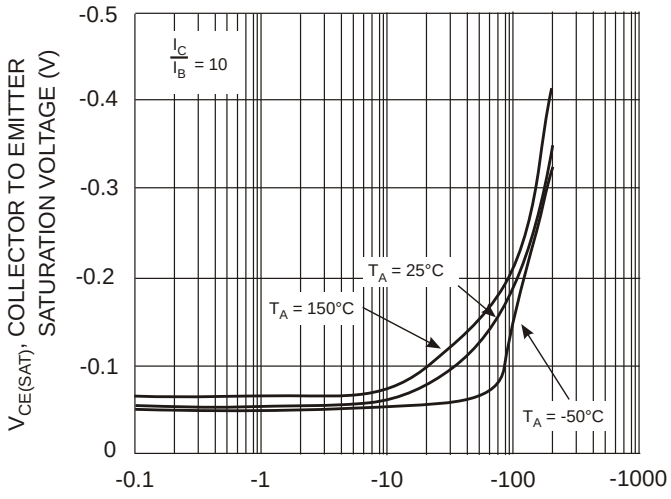


Fig. 6, Collector-Emitter Saturation Voltage vs. Collector Current (BC857B Type)

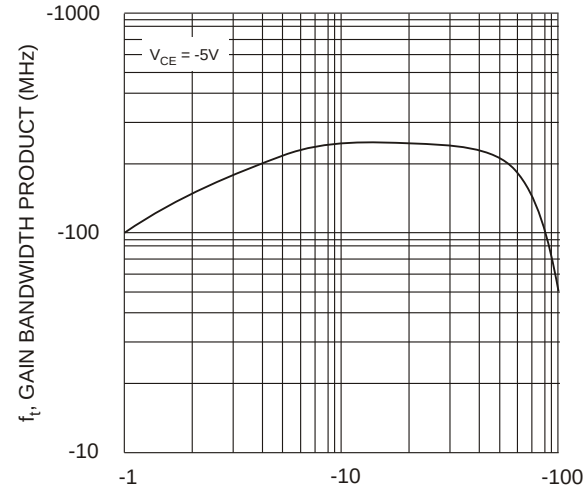


Fig. 7, Gain Bandwidth Product vs Collector Current (BC857B Type)

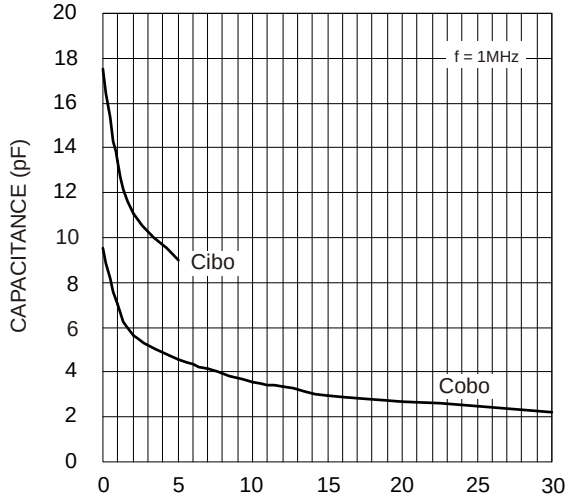


Fig. 8, Capacitance vs. Reverse Voltage (BC857B Type)

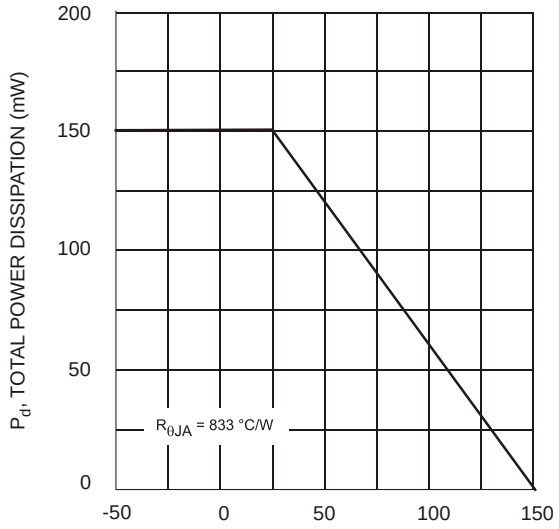


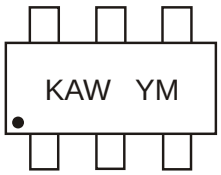
Fig. 9, Derating Curve - Total Device

Ordering Information (Note 6)

Device	Packaging	Shipping
BC847BVN-7	SOT-563	3000/Tape & Reel

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

Marking Information



KAW = Product Type Marking Code
YM = Date Code Marking
Y = Year ex: R = 2004
M = Month ex: 9 = September

Date Code Key

Year	2004	2005	2006	2007	2008	2009	2010	2011	2012
Code	R	S	T	U	V	W	X	Y	Z

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