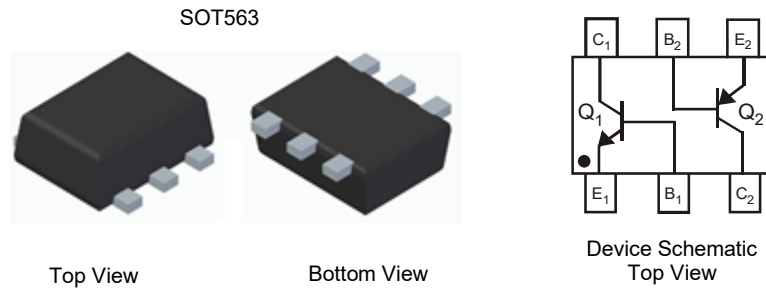


COMPLEMENTARY PAIR 45V SMALL-SIGNAL TRANSISTOR IN SOT563
Features

- Epitaxial Die Construction
- Two Internally Isolated NPN/PNP Transistors in One Package
- Ultra-Small Surface-Mount Package
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **An automotive-compliant part is available under a separate datasheet ([BC847BVNQ](#))**

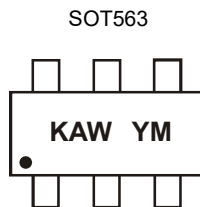
Mechanical Data

- Package: SOT563
- Package Material: Molded Plastic, UL Flammability Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Max Soldering Temperature +260°C for 30 secs as per JEDEC J-STD-020
- Terminals: Finish – Matte Tin Plated Leads, Solderable per MIL-STD-202, Method 208 ③
- Weight: 0.003 grams (Approximate)


Ordering Information (Note 4)

Orderable Part Number	Package	Marking	Reel Size (inches)	Tape Width (mm)	Packing	
					Qty.	Carrier
BC847BVN-7	SOT563	KAW	7	8	3,000	Reel

- Notes:
1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant.
 2. See <https://www.diodes.com/quality/lead-free/> for more information about Diodes Incorporated's definitions of Halogen- and Antimony-free, "Green" and Lead-free.
 3. Halogen- and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
 4. For packaging details, go to our website at <https://www.diodes.com/design/support/packaging/diodes-packaging/>.

Marking Information


KAW = Product Type Marking Code
 YM = Date Code Marking
 Y = Year (ex: M = 2025)
 M = Month (ex: 9 = September)

Date Code Key

Year	2005	-	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Code	S	-	M	N	P	R	S	T	U	V	W	X
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Code	1	2	3	4	5	6	7	8	9	O	N	D

Maximum Ratings: NPN, BC847B Type (Q₁) (@ T_A = +25°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	V
Collector Current	I _C	100	mA
Peak Pulse Collector Current (Single Pulse)	I _{CM}	200	mA
Peak Pulse Emitter Current (Single Pulse)	I _{EM}	200	mA

Maximum Ratings: PNP, BC857B Type (Q₂) (@ T_A = +25°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	V
Collector Current	I _C	-100	mA
Peak Pulse Collector Current (Single Pulse)	I _{CM}	-200	mA
Peak Pulse Emitter Current (Single Pulse)	I _{EM}	-200	mA

Thermal Characteristics – Total Device (@ T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Power Dissipation (Note 5) Total Device	P _D	150	mW
Thermal Resistance, Junction to Ambient (Note 5)	R _{θJA}	833	°C/W
Operating and Storage Temperature Range	T _J , T _{STG}	-55 to +150	°C

Note: 5. For a device surface-mounted on minimum recommended pad layout FR-4 PCB with single-sided 1oz copper, in still air conditions; the device is measured when operating in a steady-state condition.

Thermal Characteristics – Total Device

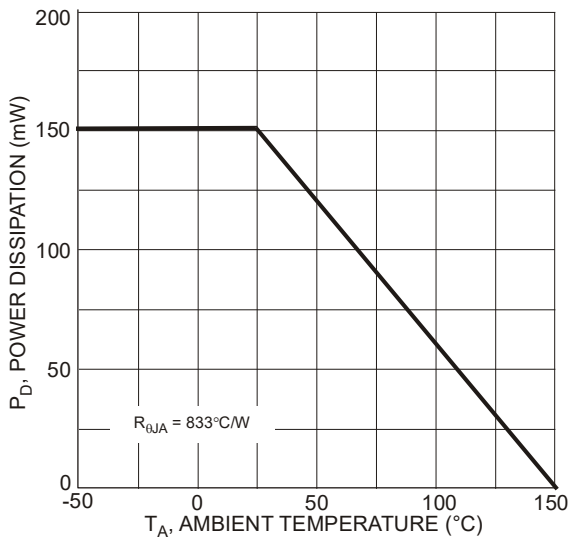


Figure 1. P_D vs. T_A

Electrical Characteristics: NPN, BC847B Type (Q₁) (@ T_A = +25°C, unless otherwise specified.)

Characteristic (Note 6)	Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	BV _{CB0}	50	—	—	V	I _C = 100μA, I _B = 0
Collector-Emitter Breakdown Voltage	BV _{CEO}	45	—	—	V	I _C = 10mA, I _B = 0
Emitter-Base Breakdown Voltage	BV _{EB0}	6	—	—	V	I _E = 100μA, 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	250	mV	I _C = 10mA, I _B = 0.5mA I _C = 100mA, I _B = 5.0mA
Base-Emitter Saturation Voltage	V _{BE(sat)}	—	700	—	mV	I _C = 10mA, I _B = 0.5mA I _C = 100mA, I _B = 5.0mA
Base-Emitter Voltage	V _{BE(on)}	580	660	700	mV	V _{CE} = 5.0V, I _C = 2.0mA V _{CE} = 5.0V, I _C = 10mA
Collector Cutoff Current	I _{CB0}	—	—	15	nA	V _{CB} = 30V
		—	—	5.0	μA	V _{CB} = 30V, T _A = +150°C
Transition Frequency	f _T	100	300	—	MHz	V _{CE} = 5.0V, I _C = 10mA, f = 100MHz
Collector-Base Capacitance	C _{cb0}	—	3.5	6.0	pF	V _{CB} = 10V, f = 1.0MHz

Note: 6. Short duration pulse test used to minimize self-heating effect.

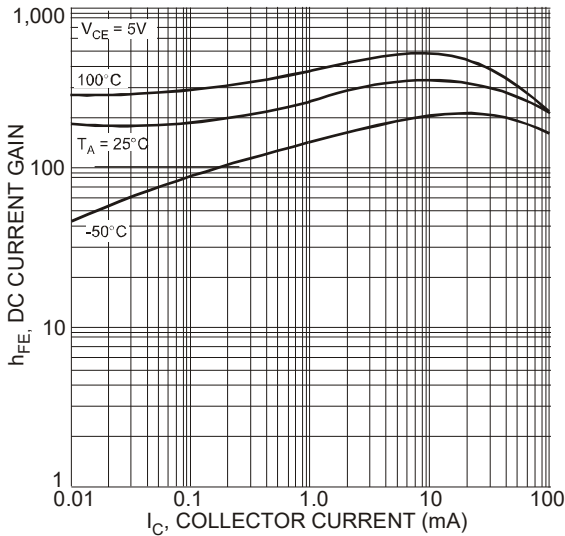


Figure 2. h_{FE} vs. I_C

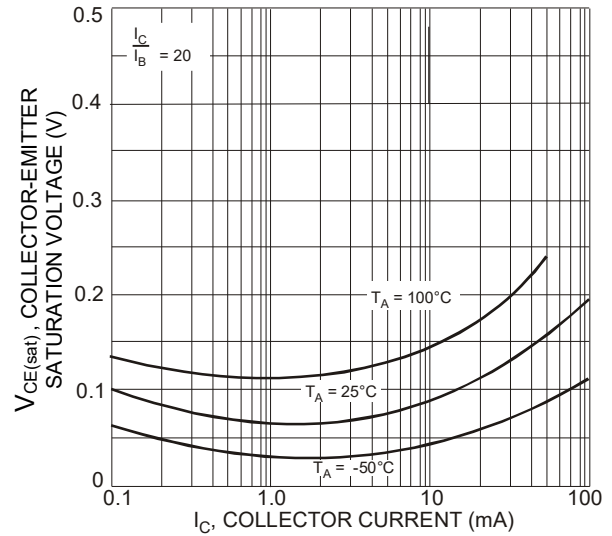


Figure 3. V_{CE(sat)} vs. I_C

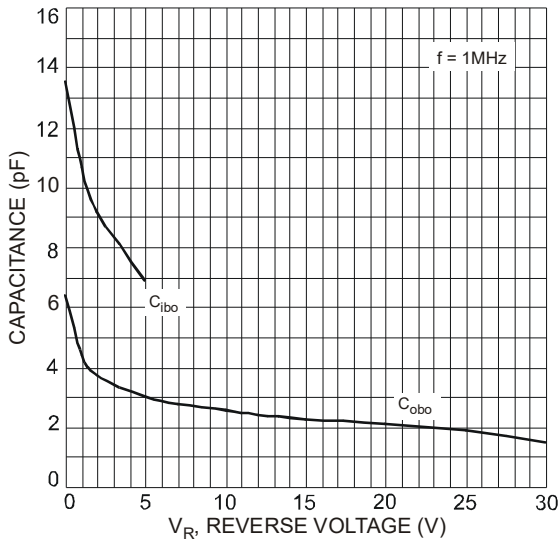


Figure 4. C vs. V_R

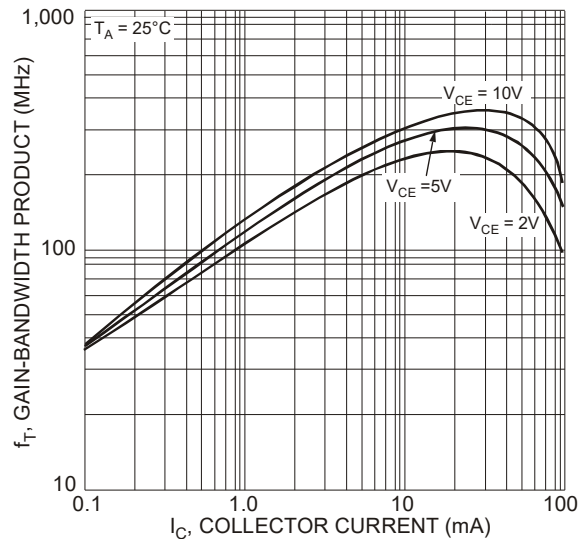


Figure 5. f_T vs. I_C

Electrical Characteristics: PNP, BC857B Type (Q₂) (@T_A = +25°C, unless otherwise specified.)

Characteristic (Note 6)	Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	BV _{CB0}	-50	—	—	V	I _C = -100μA, I _B = 0
Collector-Emitter Breakdown Voltage	BV _{CEO}	-45	—	—	V	I _C = -10mA, I _B = 0
Emitter-Base Breakdown Voltage	BV _{EB0}	-6	—	—	V	I _E = -100μA, 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
Transition Frequency	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: 6. Short duration pulse test used to minimize self-heating effect.

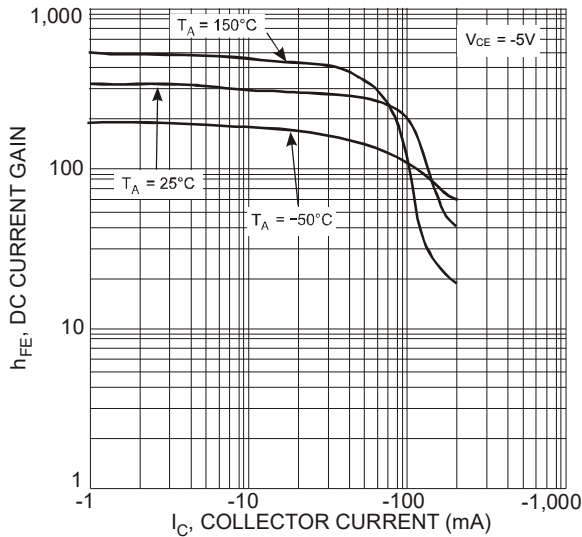


Figure 6. h_{FE} vs. I_C

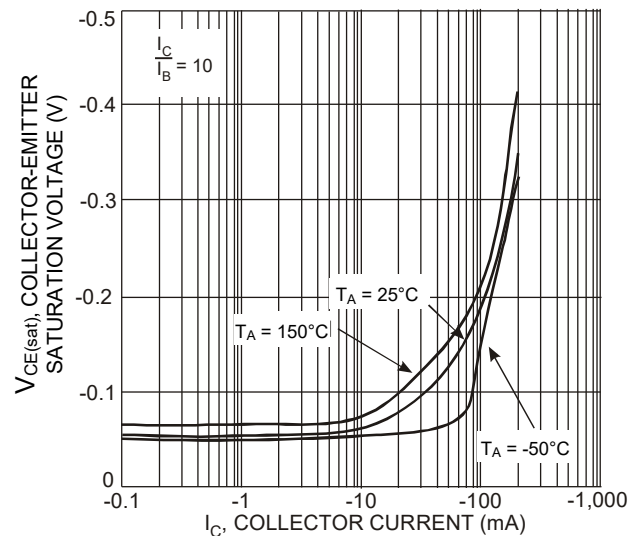


Figure 7. V_{CE(sat)} vs. I_C

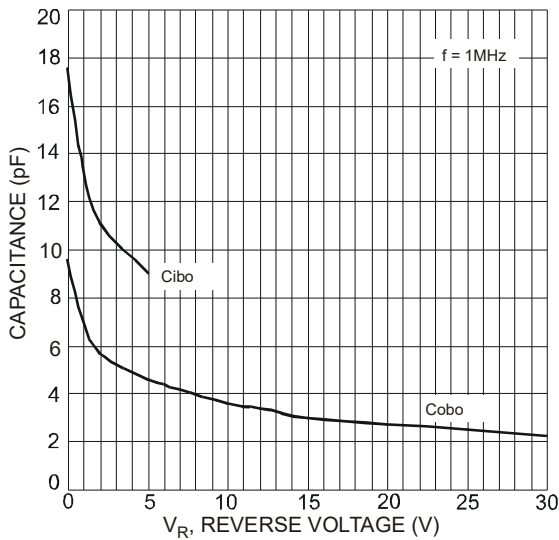


Figure 8. C vs. V_R

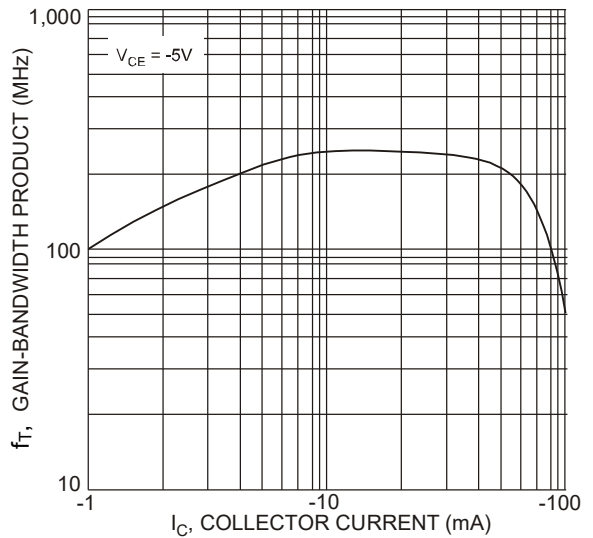
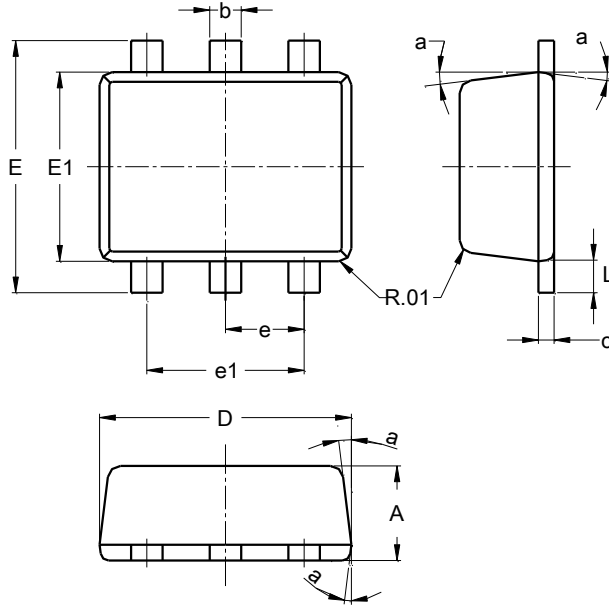


Figure 9. f_T vs. I_C

Package Outline Dimensions

Please see <http://www.diodes.com/package-outlines.html> for the latest version.

SOT563

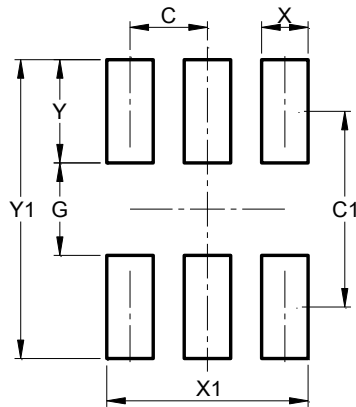


SOT563			
Dim	Min	Max	Typ
A	0.55	0.60	--
b	0.15	0.30	0.20
c	0.10	0.18	0.11
D	1.50	1.70	1.60
E	1.55	1.70	1.60
E1	1.10	1.25	1.20
e	--	--	0.50
e1	0.90	1.10	1.00
L	0.10	0.30	0.20
a	8°	9°	7°
All Dimensions in mm			

Suggested Pad Layout

Please see <http://www.diodes.com/package-outlines.html> for the latest version.

SOT563



Dimensions	Value (in mm)
C	0.500
C1	1.270
G	0.600
X	0.300
X1	1.300
Y	0.670
Y1	1.940

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