





NPN DUAL SMALL SIGNAL SURFACE MOUNT TRANSISTOR

Features

- Epitaxial Die Construction
- Ultra-Small Surface Mount Package
- Lead Free By Design/RoHS Compliant (Note 3)
- "Green" Device (Note 4)
- Qualified to AEC-Q101 Standards for High Reliability

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-020D
- Terminal Connections: See Diagram
- Terminals: Finish Matte Tin annealed over Copper leadframe.
 Solderable per MIL-STD-202, Method 208
- Marking Information: See Page 2
- Ordering Information: See Page 2
- Weight: 0.002 grams (approximate)



Device Schematic





Top View

Bottom View

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}	6.0	V
Collector Current	lc	100	mA

Thermal Characteristics

Characteristic	Symbol	Value	Unit
Power Dissipation (Note 2)	P _D	150	mW
Thermal Resistance, Junction to Ambient (Note 2)	$R_{ hetaJA}$	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 5)	V _{(BR)CBO}	50	_	_	V	$I_C = 10\mu A, I_B = 0$
Collector-Emitter Breakdown Voltage	(Note 5)	V _{(BR)CEO}	45	_	_	V	$I_C = 10 \text{mA}, I_B = 0$
Emitter-Base Breakdown Voltage	(Note 5)	V _{(BR)EBO}	6	_	_	V	$I_E = 1\mu A, I_C = 0$
DC Current Gain	(Note 5)	h _{FE}	200	290	450	_	$V_{CE} = 5.0V, I_{C} = 2.0mA$
Collector-Emitter Saturation Voltage	(Note 5)	V _{CE(SAT)}	-	_	100 300	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 5)	V _{BE(SAT)}	_	700 900	_	mV	I _C = 10mA, I _B = 0.5mA I _C = 100mA, I _B = 5.0mA
Base-Emitter Voltage	(Note 5)	V_{BE}	580 —	660 —	700 770	mV	$V_{CE} = 5.0V, I_{C} = 2.0mA$ $V_{CE} = 5.0V, I_{C} = 10mA$
Collector-Emitter Cutoff Current (Note 5)		I _{CBO}		_	15 5.0	nΑ μΑ	V _{CB} = 30V 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 _{OBO}	I	_	4.5	pF	V _{CB} = 10V, f = 1.0MHz
Noise Figure		NF	_	_	10	dB	$V_{CE} = 5V, R_S = 2.0k\Omega,$ f = 1.0kHz, BW = 200Hz

Notes:

- 1. Package is non-polarized. Parts may be on reel in orientation illustrated, 180° rotated, or mixed (both ways).
- 2. 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.
- 3. No purposefully added lead.
- 4. Diodes Inc's "Green" policy can be found on our website at http://www.diodes.com/products/lead_free/index.php
- 5. Short duration pulse test used to minimize self-heating effect.



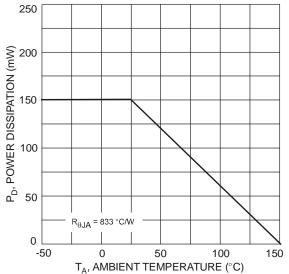


Fig. 1 Power Dissipation vs. Ambient Temperature (Note 2)

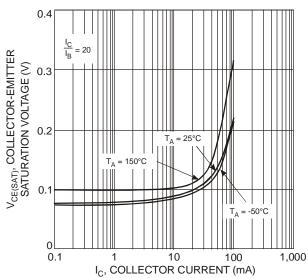


Fig. 3 Typical Collector Emitter Saturation Voltage vs. Collector Current

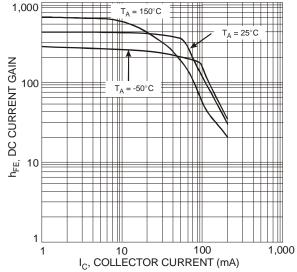


Fig. 2 Typical DC Current Gain vs. Collector Current

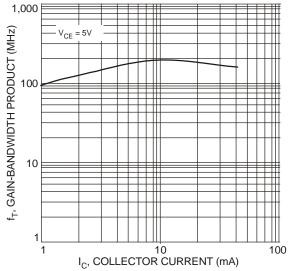


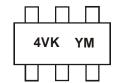
Fig. 4 Typical Gain-Bandwidth Product vs. Collector Current

Ordering Information (Note 6)

Part Number	Case	Packaging
BC847BVC-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



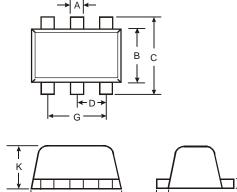
4VK = Product Type Marking Code YM = Date Code Marking Y = Year (ex: S = 2005) M = Month (ex: 9 = September)

Date Code Key

	-)											
Year	2005	2006	2007	2008	200	9 20	010	2011	2012	2013	2014	2015
Code	S	Т	U	V	W	1	X	Υ	Z	Α	В	С
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Code	1	2	3	4	5	6	7	8	9	0	N	D

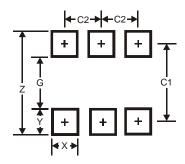


Package Outline Dimensions



SOT-563						
Dim	Min	Max	Тур			
A	0.15	0.30	0.20			
В	1.10	1.25	1.20			
O	1.55	1.70	1.60			
D	-	-	0.50			
G	0.90	1.10	1.00			
Н	1.50	1.70	1.60			
K	0.55	0.60	0.60			
L	0.10	0.30	0.20			
М	0.10	0.18	0.11			
All	All Dimensions in mm					

Suggested Pad Layout



Dimensions	Value (in mm)
Z	2.2
G	1.2
Х	0.375
Y	0.5
C1	1.7
C2	0.5



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