



**BFS17N**

**NPN RF TRANSISTOR IN SOT23**

## Features

- 3.2GHz unity gain for RF switching applications
- **Totally Lead-Free & Fully RoHS compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **Qualified to AEC-Q101 Standards for High Reliability**
- **PPAP capable (Note 4)**

## Applications

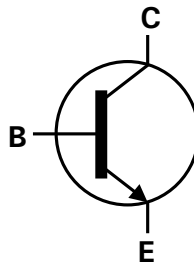
- RF switch

## Mechanical Data

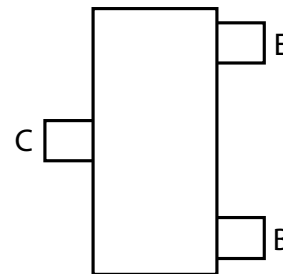
- Case: SOT23
- Case material: molded plastic. "Green" molding compound.
- UL Flammability Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish - Matte Tin Plated Leads, Solderable per MIL-STD-202, Method 208 **Ⓒ3**
- Weight: 0.008 grams (approximate)



Top View



Device symbol



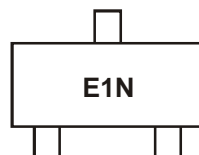
Top View  
Pin Out

## Ordering Information (Notes 4 & 5)

Product	Compliance	Marking	Reel size (inches)	Tape width (mm)	Quantity per reel
BFS17NTA	AEC-Q101	E1N	7	8	3,000
BFS17NQTA	Automotive	E1N	7	8	3,000

- Notes:
1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant.
  2. See <http://www.diodes.com> 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. Automotive products are AEC-Q101 qualified and are PPAP capable. Automotive, AEC-Q101 and standard products are electrically and thermally the same, except where specified.
  5. For packaging details, go to our website at <http://www.diodes.com>.

## Marking Information



E1N = Product type Marking Code

## Maximum Ratings (@T<sub>A</sub> = +25°C, unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V <sub>CBO</sub>	20	V
Collector-Emitter Voltage	V <sub>CEO</sub>	11	V
Emitter-Base Voltage	V <sub>EBO</sub>	3	V
Continuous Collector Current	I <sub>C</sub>	50	mA

## Thermal Characteristics (@T<sub>A</sub> = +25°C, unless otherwise specified.)

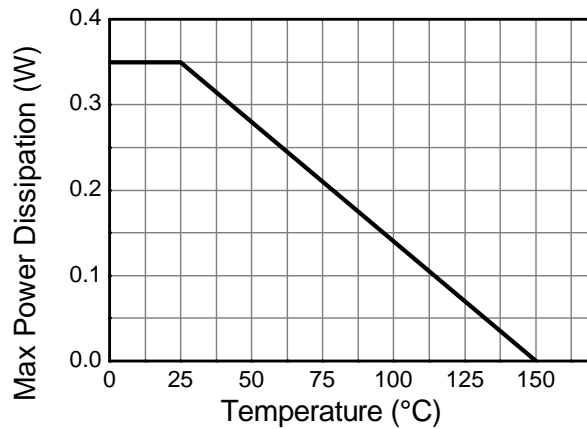
Characteristic	Symbol	Value	Unit
Power Dissipation	P <sub>D</sub>	310	mW
		350	
Thermal Resistance, Junction to Ambient	R <sub>θJA</sub>	403	°C/W
		357	
Thermal Resistance, Junction to Leads	R <sub>θJL</sub>	350	°C/W
Operating and Storage Temperature Range	T <sub>J</sub> , T <sub>STG</sub>	-55 to +150	°C

## ESD Ratings (Note 9)

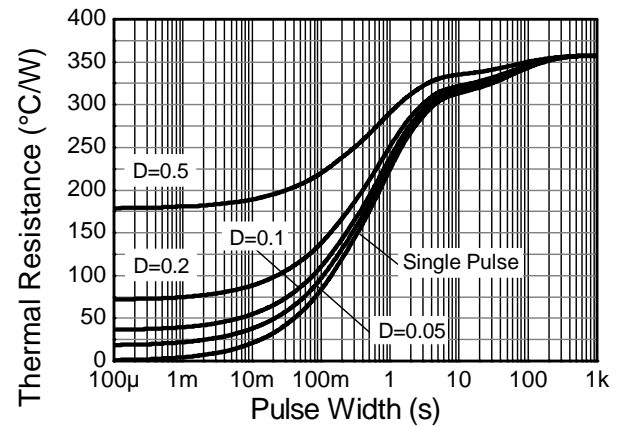
Characteristic	Symbol	Value	Unit	JEDEC Class
Electrostatic Discharge - Human Body Model	ESD HBM	2,000	V	2
Electrostatic Discharge - Machine Model	ESD MM	100	V	A

- Notes:
6. For the device mounted on minimum recommended pad layout FR4 PCB with high coverage of single sided 1oz copper in still air condition;
  7. Same as Note 6, expect the device is mounted on 15mm X 15mm X 1.6mm FR4 PCB
  8. Thermal resistance from junction to solder-point (at the end of the leads).
  9. Refer to JEDEC specification JESD22-A114 and JESD22-A115.

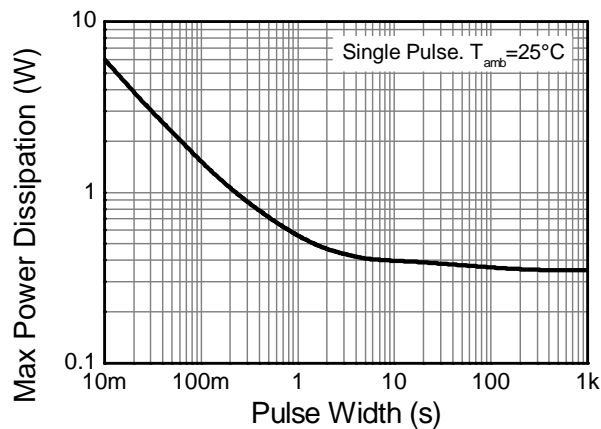
## Thermal Characteristics and Derating information



**Derating Curve**



**Transient Thermal Impedance**



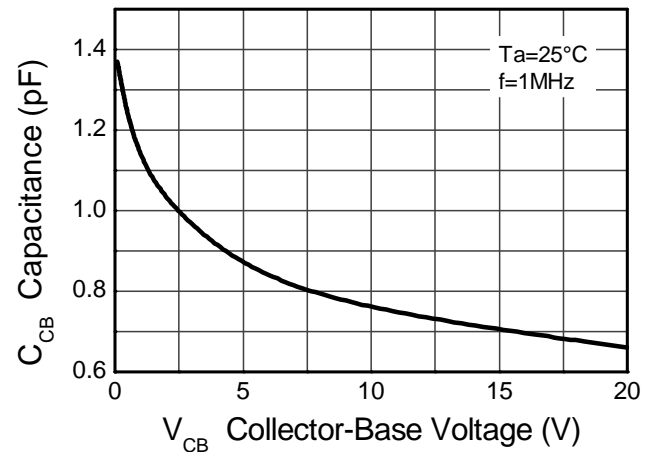
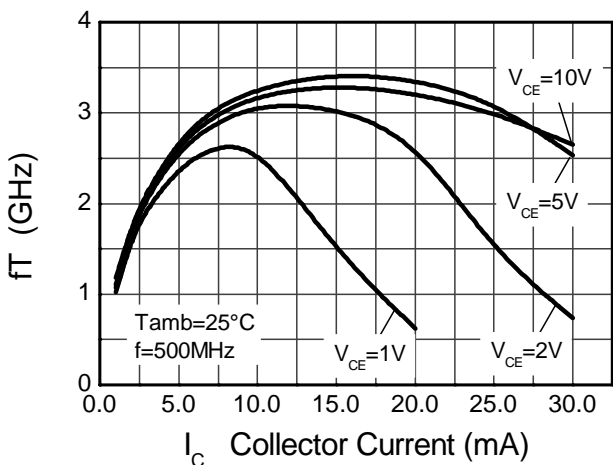
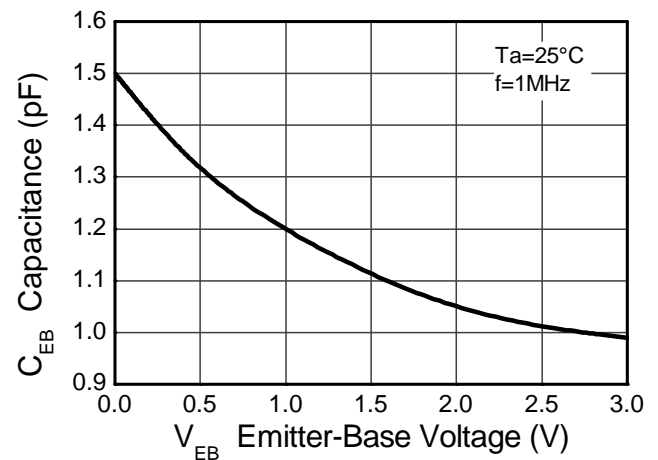
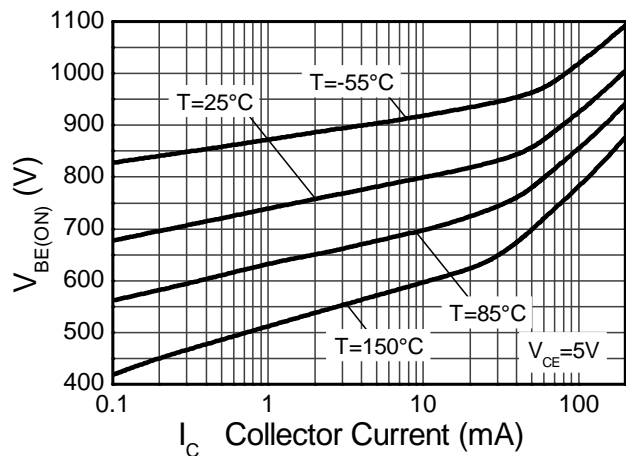
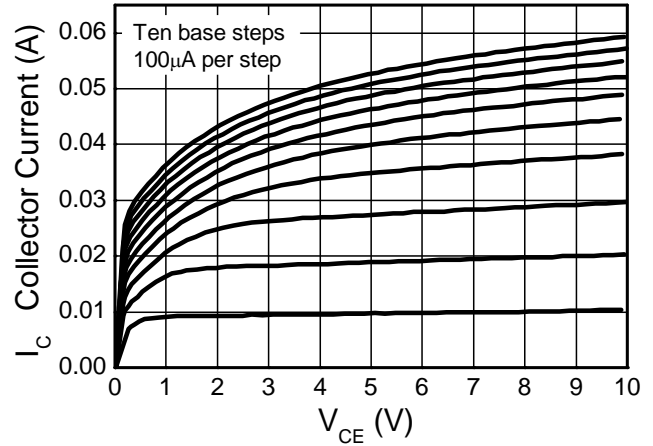
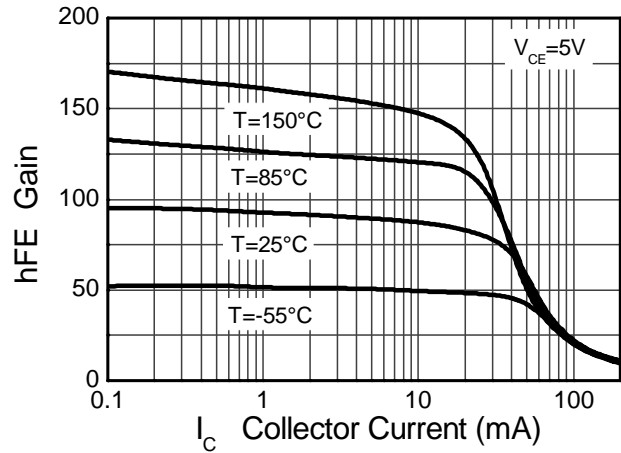
**Pulse Power Dissipation**

## Electrical Characteristics (@T<sub>A</sub> = +25°C, unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	BV <sub>CBO</sub>	20	–	–	V	I <sub>C</sub> = 10μA
Collector-Emitter Breakdown Voltage (Note 10)	BV <sub>CEO</sub>	11	–	–	V	I <sub>C</sub> = 1mA
Emitter-Base Breakdown Voltage	BV <sub>EBO</sub>	3	–	–	V	I <sub>E</sub> = 10μA
Collector Cutoff Current	I <sub>CBO</sub>	–	–	0.5	μA	V <sub>CB</sub> = 10V
Emitter Cutoff Current	I <sub>EBO</sub>	–	–	0.5	μA	V <sub>EB</sub> = 2V
Static Forward Current Transfer Ratio (Note 10)	h <sub>FE</sub>	56	–	180	–	I <sub>C</sub> = 5mA, V <sub>CE</sub> = 10V
Collector-Emitter Saturation Voltage (Note 10)	V <sub>CE(sat)</sub>	–	–	0.5	V	I <sub>C</sub> = 25mA, I <sub>B</sub> = 5mA
Transition Frequency (Note 10)	f <sub>T</sub>	1.4	3.2	–	GHz	I <sub>E</sub> = 25mA, V <sub>CE</sub> = 5V, f = 500MHz
Collector Output Capacitance (Note 10)	C <sub>ob</sub>	–	0.8	1.5	pF	V <sub>CB</sub> = 10V, f = 1MHz

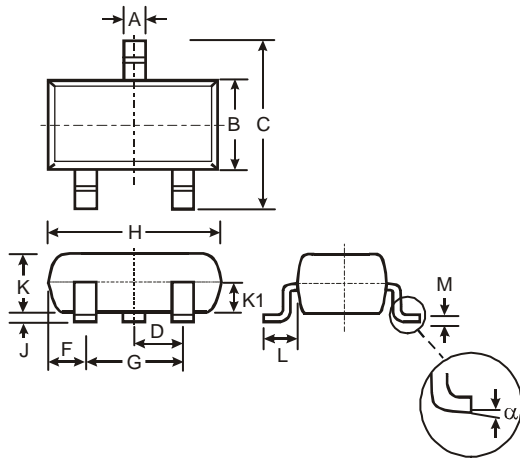
Notes: 10. Measured under pulsed conditions. Pulse width ≤ 300μs. Duty cycle ≤ 2%

**Typical Electrical Characteristics** (@ $T_A = +25^\circ\text{C}$ , unless otherwise specified.)



## Package Outline Dimensions

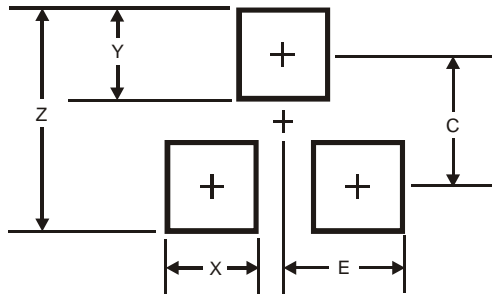
Please see AP02002 at <http://www.diodes.com/datasheets/ap02002.pdf> for latest version.



SOT23			
Dim	Min	Max	Typ
A	0.37	0.51	0.40
B	1.20	1.40	1.30
C	2.30	2.50	2.40
D	0.89	1.03	0.915
F	0.45	0.60	0.535
G	1.78	2.05	1.83
H	2.80	3.00	2.90
J	0.013	0.10	0.05
K	0.903	1.10	1.00
K1	-	-	0.400
L	0.45	0.61	0.55
M	0.085	0.18	0.11
$\alpha$	0°	8°	-
All Dimensions in mm			

## Suggested Pad Layout

Please see AP02001 at <http://www.diodes.com/datasheets/ap02001.pdf> for the latest version.



Dimensions	Value (in mm)
Z	2.9
X	0.8
Y	0.9
C	2.0
E	1.35

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