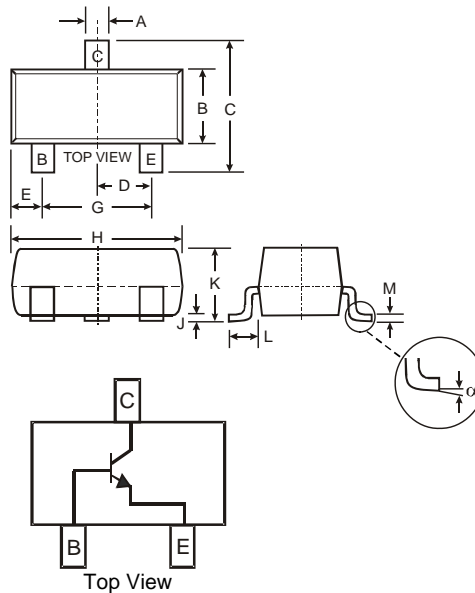


**Features**

- Epitaxial Planar Die Construction
- Ideal for Low Power Amplification and Switching
- High Collector Current Rating
- Complementary Version Available (DPBT8105)
- **Lead Free By Design/RoHS Compliant (Note 2)**
- **"Green Device" (Note 3)**
- **Qualified to AEC-Q101 Standards for High Reliability**



SOT-23		
Dim	Min	Max
A	0.37	0.51
B	1.20	1.40
C	2.30	2.50
D	0.89	1.03
E	0.45	0.60
G	1.78	2.05
H	2.80	3.00
J	0.013	0.10
K	0.903	1.10
L	0.45	0.61
M	0.085	0.180
$\alpha$	0°	8°
All Dimensions in mm		

**Mechanical Data**

- Case: SOT-23
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020C
- Terminals: Finish — Matte Tin annealed over Copper leadframe. Solderable per MIL-STD-202, Method 208
- Terminal Connections: See Diagram
- Marking Information: K81, See Page 3
- Ordering & Date Code Information: See Page 3
- Weight: 0.008 grams (approximate)

**Maximum Ratings** @T<sub>A</sub> = 25°C unless otherwise specified

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V <sub>CBO</sub>	80	V
Collector-Emitter Voltage	V <sub>CEO</sub>	60	V
Emitter-Base Voltage	V <sub>EBO</sub>	5	V
Collector Current - Continuous	I <sub>C</sub>	1	A
Peak Pulse Collector Current	I <sub>CM</sub>	2	A

**Thermal Characteristics**

Characteristic	Symbol	Value	Unit
Power Dissipation (Note 1) @ T <sub>A</sub> = 25°C	P <sub>D</sub>	600	mW
Thermal Resistance, Junction to Ambient (Note 1) @ T <sub>A</sub> = 25°C	R <sub>θJA</sub>	209	°C/W
Operating and Storage Temperature Range	T <sub>j</sub> , T <sub>STG</sub>	-55 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. Diode's Inc.'s "Green" policy can be found on our website at [http://www.diodes.com/products/lead\\_free/index.php](http://www.diodes.com/products/lead_free/index.php).

## Electrical Characteristics @T<sub>A</sub> = 25°C unless otherwise specified

Characteristic	Symbol	Min	Max	Unit	Test Condition
<b>OFF CHARACTERISTICS (Note 4)</b>					
Collector-Base Breakdown Voltage	V <sub>(BR)CBO</sub>	80	—	V	I <sub>C</sub> = 100μA, I <sub>E</sub> = 0
Collector-Emitter Breakdown Voltage	V <sub>(BR)CEO</sub>	60	—	V	I <sub>C</sub> = 10mA, I <sub>B</sub> = 0
Emitter-Base Breakdown Voltage	V <sub>(BR)EBO</sub>	5	—	V	I <sub>E</sub> = 100μA, I <sub>C</sub> = 0
Collector Cutoff Current	I <sub>CBO</sub>	—	100	nA	V <sub>CB</sub> = 60V, I <sub>E</sub> = 0
Collector Cutoff Current	I <sub>CES</sub>	—	100	nA	V <sub>CE(S)</sub> = 60V
Emitter Cutoff Current	I <sub>EBO</sub>	—	100	nA	V <sub>EB</sub> = 4V, I <sub>C</sub> = 0
<b>ON CHARACTERISTICS (Note 4)</b>					
DC Current Gain	h <sub>FE</sub>	100 100 80 30	— 300 — —	V	I <sub>C</sub> = 1mA, V <sub>CE</sub> = 5V I <sub>C</sub> = 500mA, V <sub>CE</sub> = 5V I <sub>C</sub> = 1A, V <sub>CE</sub> = 5V I <sub>C</sub> = 2A, V <sub>CE</sub> = 5V
Collector-Emitter Saturation Voltage	V <sub>CE(SAT)</sub>	— —	0.25 0.5	V	I <sub>C</sub> = 500mA, I <sub>B</sub> = 50mA I <sub>C</sub> = 1A, I <sub>B</sub> = 100mA
Base-Emitter Saturation Voltage	V <sub>BE(SAT)</sub>	—	1.1	V	I <sub>C</sub> = 1A, I <sub>B</sub> = 100mA
Base-Emitter Turn On Voltage	V <sub>BE(ON)</sub>	—	1.0	V	I <sub>C</sub> = 1A, V <sub>CE</sub> = 5V
<b>SMALL SIGNAL CHARACTERISTICS</b>					
Output Capacitance	C <sub>obo</sub>	—	10	pF	V <sub>CB</sub> = 10V, f = 1.0MHz
Current Gain-Bandwidth Product	f <sub>T</sub>	150	—	MHz	V <sub>CE</sub> = 10V, I <sub>C</sub> = 50mA, f = 100MHz

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

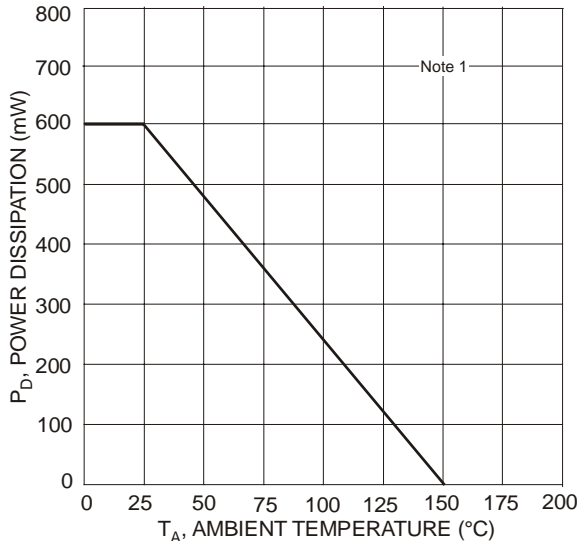


Fig. 1, Max Power Dissipation vs. Ambient Temperature

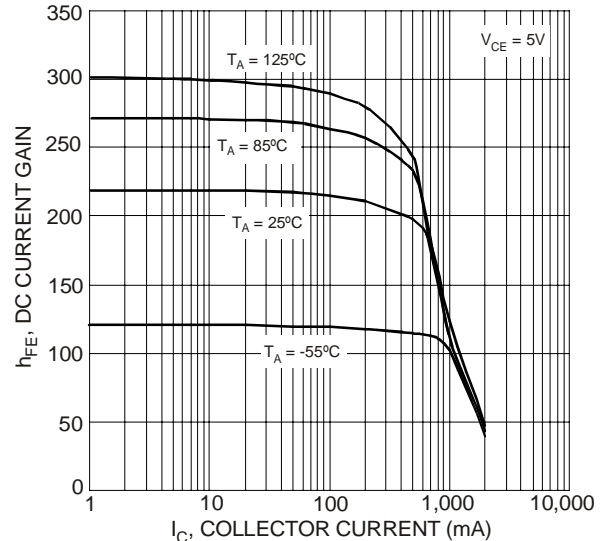


Fig. 2, DC Current Gain vs. Collector Current

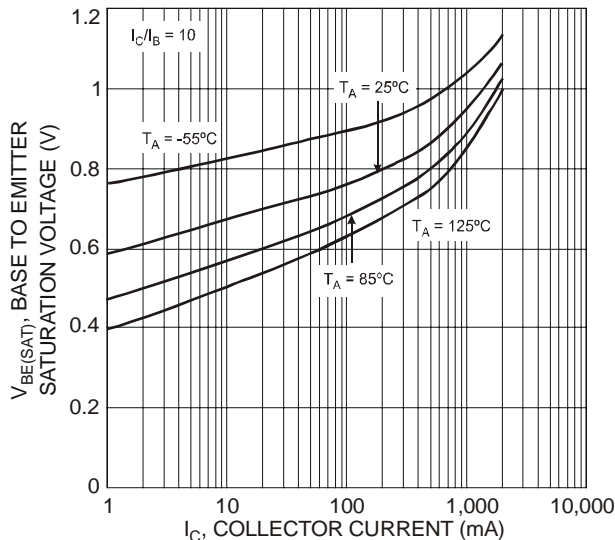


Fig. 3, Base-Emitter Saturation Voltage vs. Collector Current

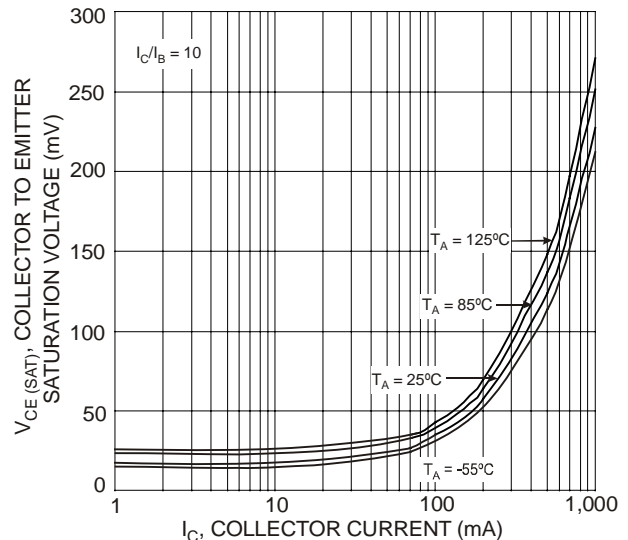


Fig. 4, Collector-Emitter Saturation Voltage vs. Collector Current

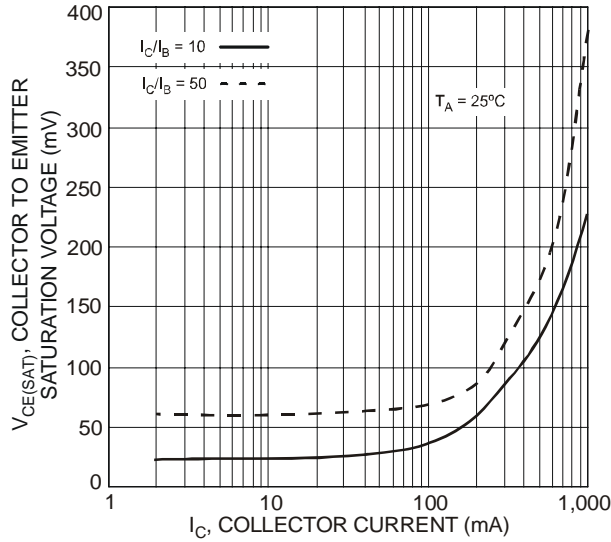


Fig. 5, Collector-Emitter Saturation Voltage vs. Collector Current

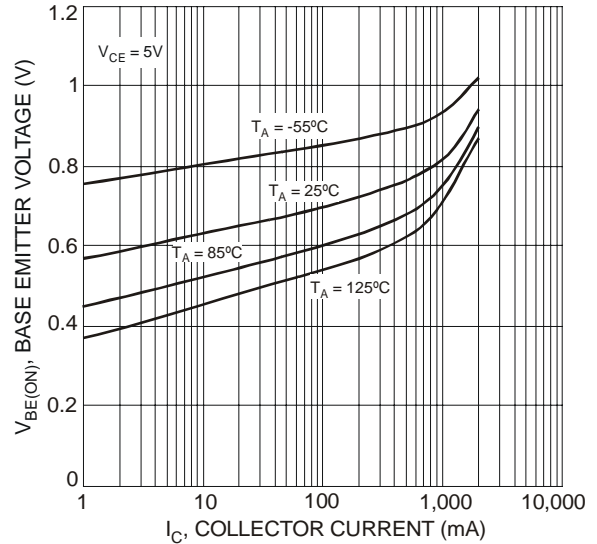


Fig. 6, Base-Emitter Voltage vs. Collector Current

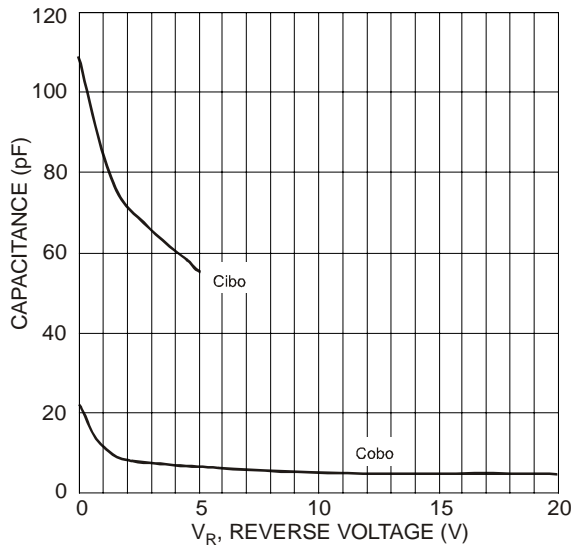


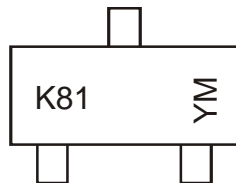
Fig. 7, Capacitance vs. Reverse Voltage

## Ordering Information (Note 5)

Device	Packaging	Shipping
DNBT8105-7	SOT-23	3000/Tape & Reel

Notes: 5. For packaging details, go to our website at <http://www.diodes.com/datasheets/ap02007.pdf>.

## Marking Information



K81 = Product Type Marking Code  
 YM = Date Code Marking  
 Y = Year ex: S = 2005  
 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	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Code	1	2	3	4	5	6	7	8	9	O	N	D

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