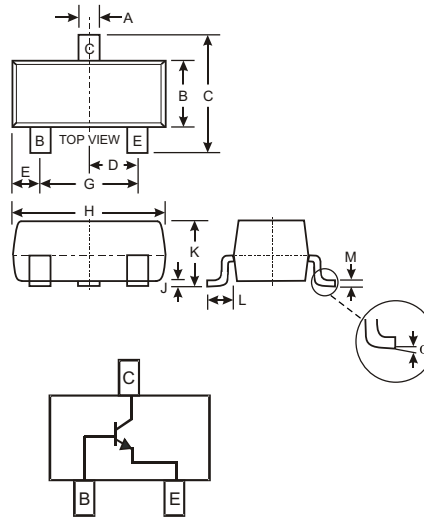


Features

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

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 (See Page 4): K81
 Ordering & Date Code Information: See Page 4
 Weight: 0.008 grams (approximate)



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
	0	8
All Dimensions in mm		

Maximum Ratings @ T_A = 25 C unless otherwise specified

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V _{CBO}	80	V
Collector-Emitter Voltage	V _{CEO}	60	V
Emitter-Base Voltage	V _{EBO}	5	V
Collector Current - Continuous	I _C	1	A
Peak Pulse Collector Current	I _{CM}	2	A

Thermal Characteristics

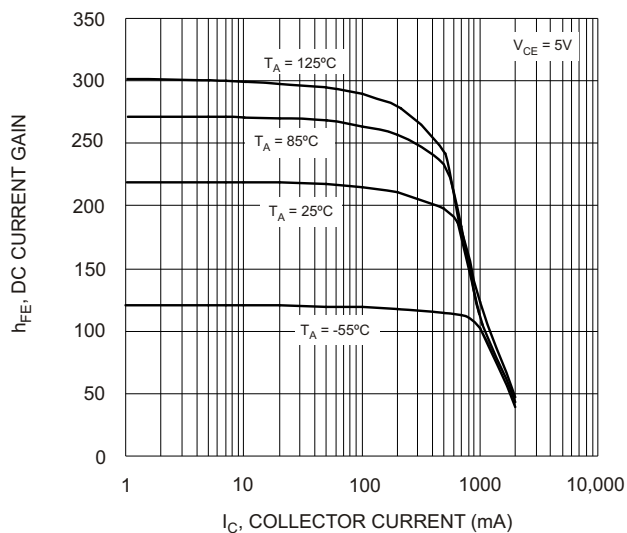
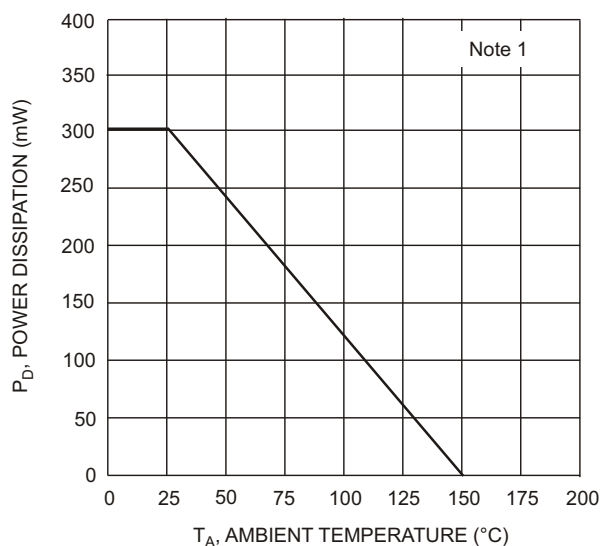
Characteristic	Symbol	Typ	Max	Unit
Power Dissipation (Note 1) @ T _A = 25 C	P _d		300	mW
Thermal Resistance, Junction to Ambient (Note 1) @ T _A = 25 C	R _{JA}		417	C/W
Operating and Storage Temperature Range	T _j , T _{STG}	-55 to +150		C

- Notes:
- 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>.
 - No purposefully added lead.
 - Diodes Inc.'s "Green" policy can be found on our website at http://www.diodes.com/products/lead_free/index.php.

Electrical Characteristics @ $T_A = 25^\circ\text{C}$ unless otherwise specified

Characteristic	Symbol	Min	Max	Unit	Test Condition
OFF CHARACTERISTICS (Note 4)					
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	80		V	$I_C = 100\text{ A}$, $I_E = 0$
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	60		V	$I_C = 10\text{mA}$, $I_B = 0$
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	5		V	$I_E = 100\text{ A}$, $I_C = 0$
Collector Cutoff Current	I_{CBO}		100	nA	$V_{CB} = 60\text{V}$, $I_E = 0$
Collector Cutoff Current	I_{CES}		100	nA	$V_{CES} = 60\text{V}$
Emitter Cutoff Current	I_{EBO}		100	nA	$V_{EB} = 4\text{V}$, $I_C = 0$
ON CHARACTERISTICS (Note 4)					
DC Current Gain	h_{FE}	100 100 80 30	300	V	$I_C = 1\text{mA}$, $V_{CE} = 5\text{V}$ $I_C = 500\text{mA}$, $V_{CE} = 5\text{V}$ $I_C = 1\text{A}$, $V_{CE} = 5\text{V}$ $I_C = 2\text{A}$, $V_{CE} = 5\text{V}$
Collector-Emitter Saturation Voltage	$V_{CE(SAT)}$		0.25 0.5	V	$I_C = 500\text{mA}$, $I_B = 50\text{mA}$ $I_C = 1\text{A}$, $I_B = 100\text{mA}$
Base-Emitter Saturation Voltage	$V_{BE(SAT)}$		1.1	V	$I_C = 1\text{A}$, $I_B = 100\text{mA}$
Base-Emitter Turn On Voltage	$V_{BE(ON)}$		1.0	V	$I_C = 1\text{A}$, $V_{CE} = 5\text{V}$
SMALL SIGNAL CHARACTERISTICS					
Output Capacitance	C_{obo}		10	pF	$V_{CB} = 10\text{V}$, $f = 1.0\text{MHz}$
Current Gain-Bandwidth Product	f_T	150		MHz	$V_{CE} = 10\text{V}$, $I_C = 50\text{mA}$, $f = 100\text{MHz}$

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

Typical Characteristics @ $T_A = 25^\circ\text{C}$ unless otherwise specified


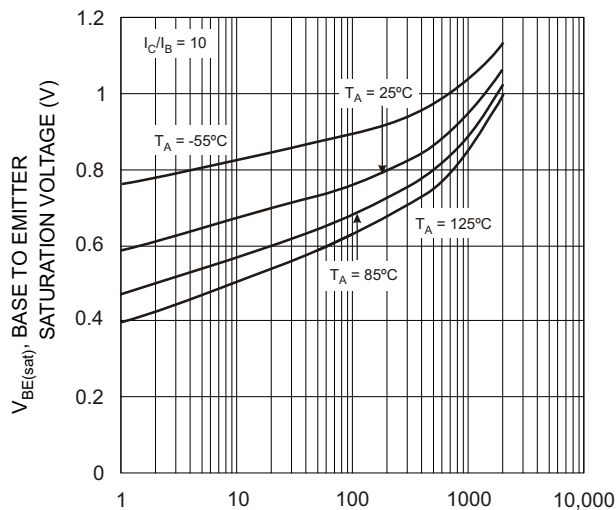


Fig. 3, Base-Emitter Saturation Voltage vs. Collector Current

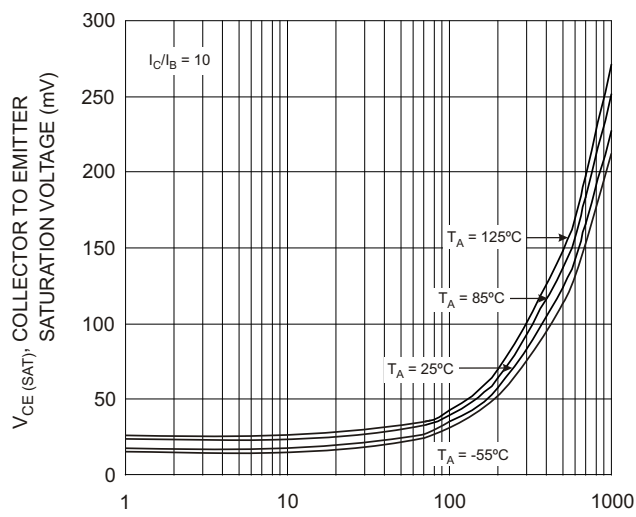


Fig. 4, Collector-Emitter Saturation Voltage vs. Collector Current

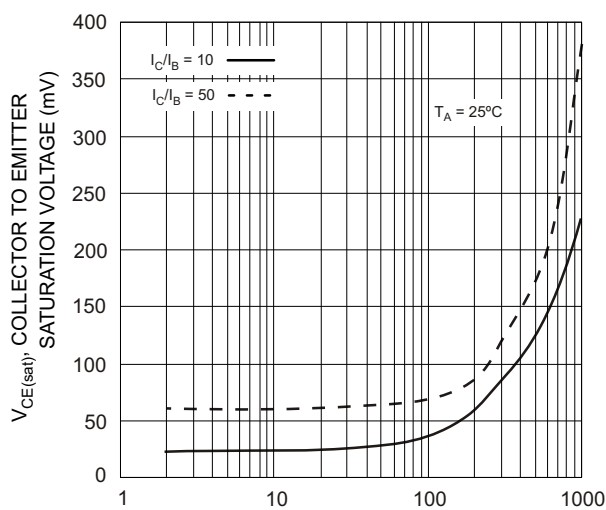


Fig. 5, Collector-Emitter Saturation Voltage vs. Collector Current

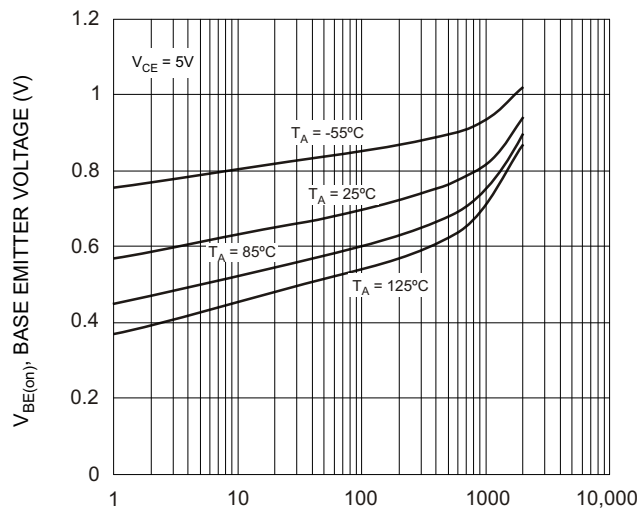


Fig. 6, Base-Emitter Voltage vs. Collector Current

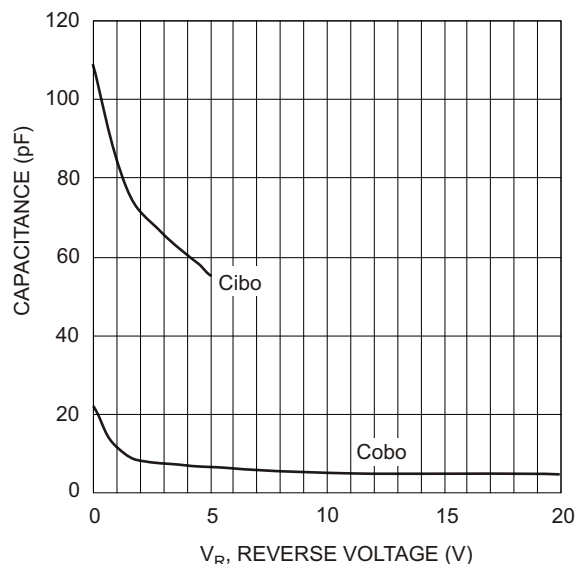
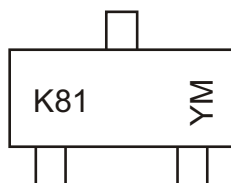


Fig. 7, Capacitance vs. Reverse Voltage

Ordering Information (Note 5)

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

Note: 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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