50V NPN SMALL SIGNAL SURFACE MOUNT TRANSISTOR

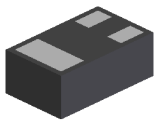
Features

- Epitaxial Die Construction
- Ultra-Small Leadless Surface Mount Package
- Ultra Low Profile (0.4mm max)
- Complementary PNP Type Available (DP0150ALP4/DP0150BLP4)
- **"Lead Free", RoHS Compliant (Note 1)**
- **Halogen and Antimony Free, "Green" Device (Note 2)**
- **Qualified to AEC-Q101Standards for High Reliability**

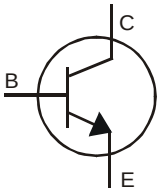
Mechanical Data

- Case: DFN1006H4-3
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish — NiPdAu over Copper leadframe. Solderable per MIL-STD-202, Method 208
- Weight: 0.0008 grams (approximate)

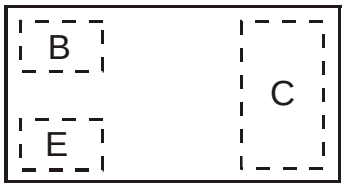
DFN1006H4-3



Bottom View



Device Symbol



Top View
Pin Configuration

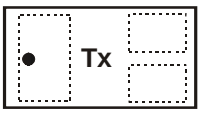
Ordering Information (Note 3)

Product	Marking	Reel size (inches)	Tape width (mm)	Quantity per reel
DN0150ALP4-7	T3	7	8	3,000
DN0150ALP4-7B	T3	7	8	10,000
DN0150BLP4-7	T4	7	8	3,000
DN0150BLP4-7B	T4	7	8	10,000

Notes:
1. No purposefully added lead.
2. Diodes Inc's "Green" policy can be found on our website at http://www.diodes.com
3. For packaging details, go to our website at http://www.diodes.com.

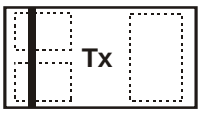
Marking Information

DN0150ALP4-7
DN0150BLP4-7



Top View
Dot Denotes
Collector Side

DN0150ALP4-7B
DN0150BLP4-7B



Top View
Bar Denotes Base
and Emitter Side

Tx = Product Type Marking Code
T5 = DN0150ALP4
T6 = DN0150BLP4

Maximum Ratings @T_A = 25°C unless otherwise specified

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V_{CBO}	60	V
Collector-Emitter Voltage	V_{CEO}	50	V
Emitter-Base Voltage	V_{EBO}	5	V
Collector Current – Continuous	I_C	100	mA
Peak Pulse Collector Current	I_{CM}	200	mA
Base Current	I_B	30	mA

Thermal Characteristics

Characteristic	Symbol	Value	Unit
Power Dissipation (Note 4)	P_D	450	mW
Thermal Resistance, Junction to Ambient (Note 4)	$R_{\theta JA}$	278	°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	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS							
Collector-Base Breakdown Voltage		$V_{(BR)CBO}$	60	—	—	V	I_C = 10μA, I_E = 0
Collector-Emitter Breakdown Voltage (Note 5)		$V_{(BR)CEO}$	50	—	—	V	I_C = 1mA, I_B = 0
Emitter-Base Breakdown Voltage		$V_{(BR)EBO}$	5	—	—	V	I_E = 10μA, I_C = 0
Collector Cut-Off Current		I_{CBO}	—	—	0.1	μA	V_{CB} = 60V, I_E = 0
Emitter Cut-Off Current		I_{EBO}	—	—	0.1	μA	V_{EB} = 5V, I_C = 0
ON CHARACTERISTICS (Note 5)							
Collector-Emitter Saturation Voltage		$V_{CE(SAT)}$	—	0.10	0.25	V	I_C = 100mA, I_B = 10mA
DC Current Gain	DN0150ALP4	h_{FE}	120	—	240	—	V_{CE} = 6V, I_C = 2mA
	DN0150BLP4		200	—	400		
SMALL SIGNAL CHARACTERISTICS							
Transition Frequency		f_T	60	—	—	MHz	V_{CE} = 10V, I_E = -1mA f = 30MHz
Output Capactiance		C_{ob}	—	1.3	—	pF	V_{CB} = 10V, I_E = 0, f = 1MHz

Notes: 4. Device mounted on FR-4 PCB with minimum recommended pad layout.
5. Measured under pulsed conditions. Pulse width = 300μs. Duty cycle ≤2%

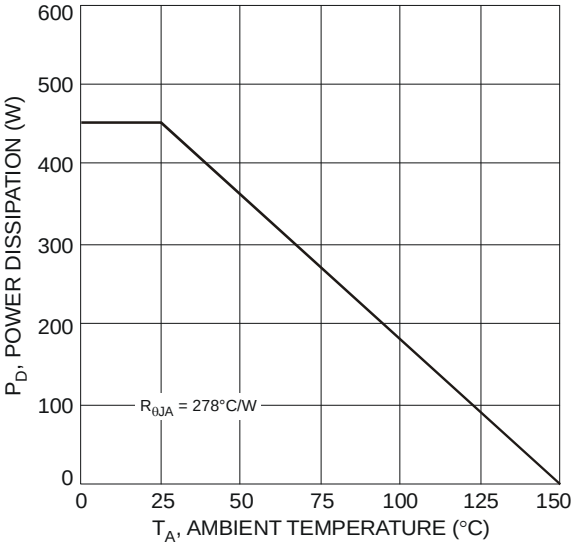


Fig. 1 Power Dissipation vs. Ambient Temperature (Note 3)

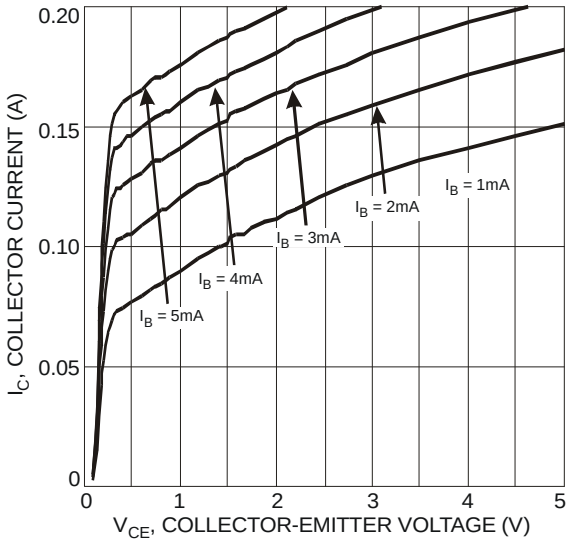


Fig. 2 Typical Collector Current
vs. Collector-Emitter Voltage (DN0150BLP4)

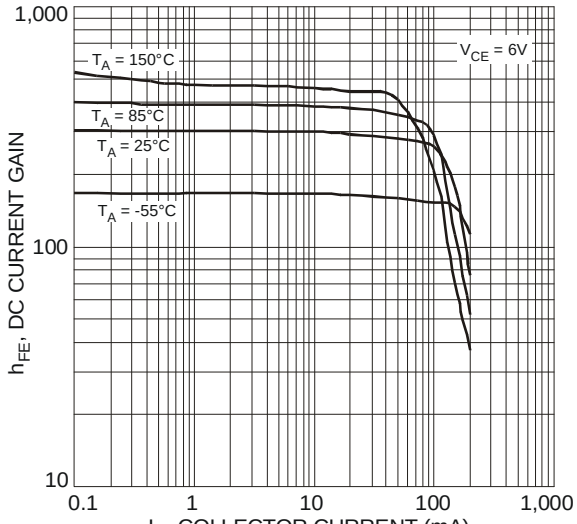


Fig. 3 Typical DC Current Gain
vs. Collector Current (DN0150BLP4)

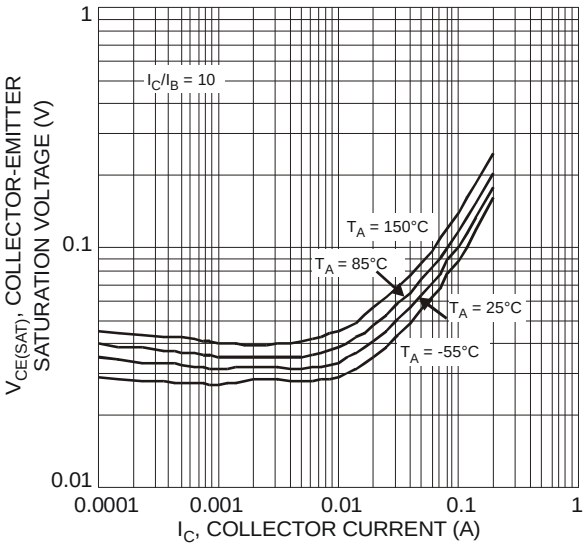


Fig. 4 Typical Collector-Emitter Saturation Voltage
vs. Collector Current

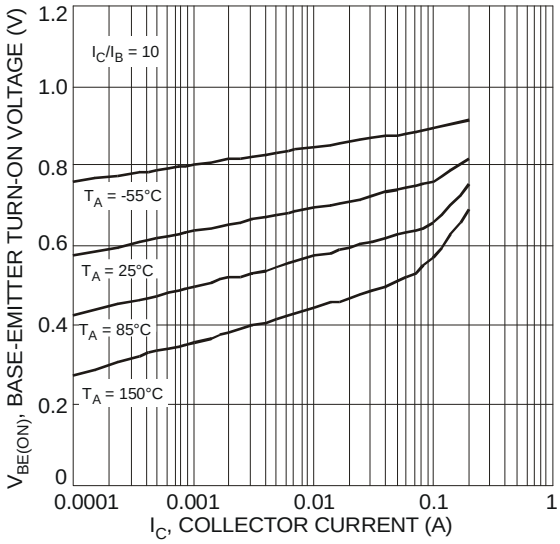


Fig. 5 Typical Base-Emitter Turn-On Voltage
vs. Collector Current

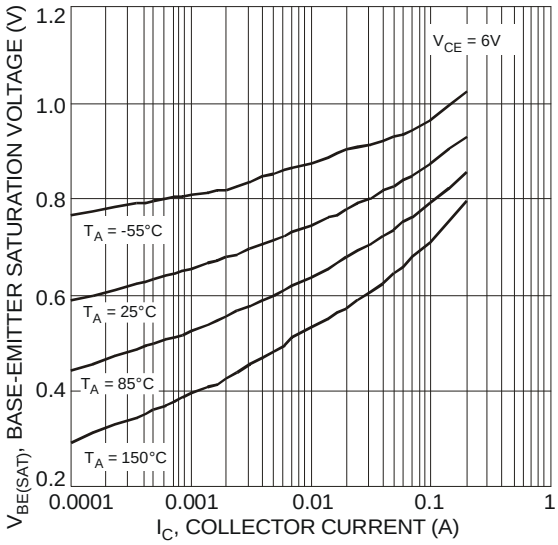


Fig. 6 Typical Base-Emitter Saturation Voltage
vs. Collector Current

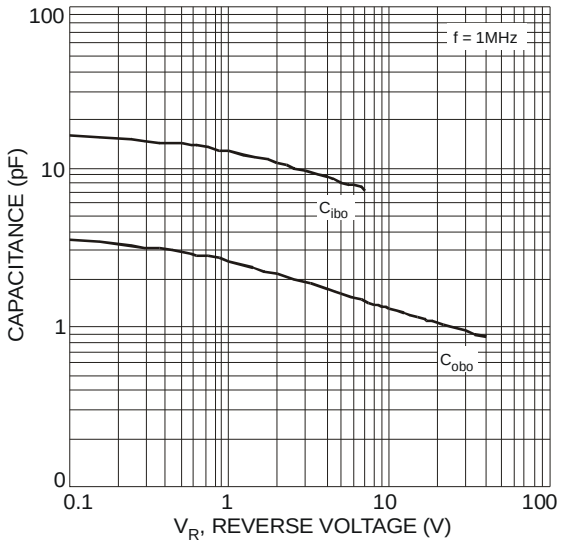


Fig. 7 Typical Capacitance Characteristics

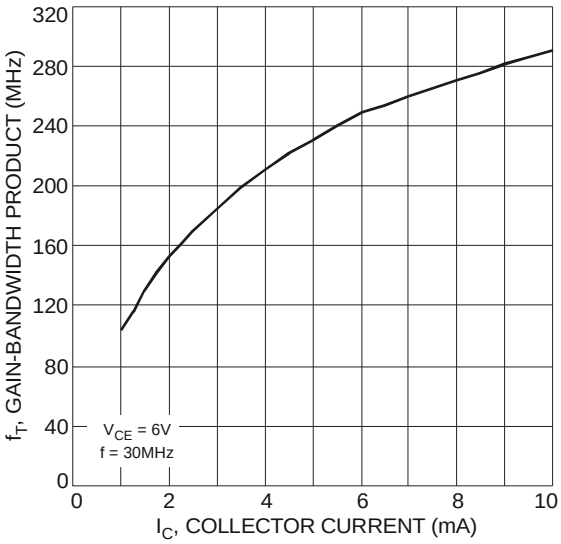
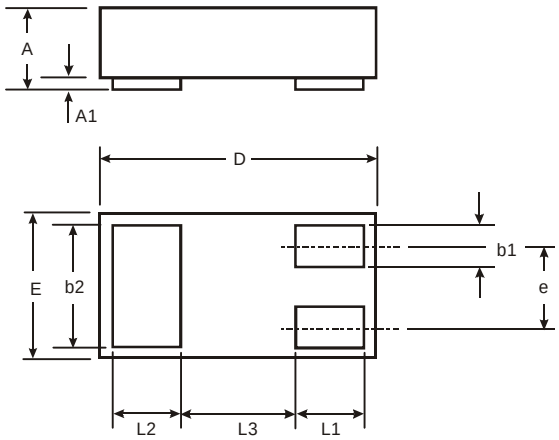


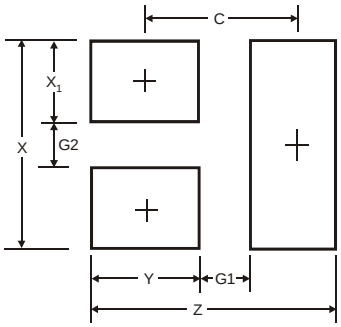
Fig. 8 Typical Gain-Bandwidth Product vs. Collector Current

Package Outline Dimensions



DFN1006H4-3			
Dim	**Min**	**Max**	**Typ**
A	—	0.40	—
A1	0	0.05	0.02
b1	0.10	0.20	0.15
b2	0.45	0.55	0.50
D	0.95	1.075	1.00
E	0.55	0.675	0.60
e	—	—	0.35
L1	0.20	0.30	0.25
L2	0.20	0.30	0.25
L3	—	—	0.40
All Dimensions in mm			

Suggested Pad Layout



Dimensions	Value (in mm)
Z	1.1
G1	0.3
G2	0.2
X	0.7
X1	0.25
Y	0.4
C	0.7

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