

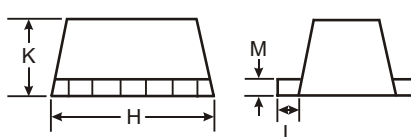
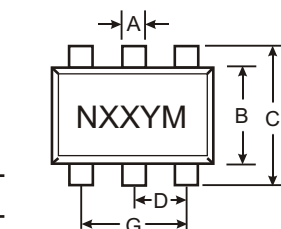
NPN PRE-BIASED SMALL SIGNAL SOT-563 DUAL SURFACE MOUNT TRANSISTOR

Features

- Epitaxial Planar Die Construction
- Complementary PNP Types Available (DDA)
- Built-In Biasing Resistors
- Lead-Free Device

Mechanical Data

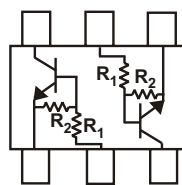
- Case: SOT-563, Molded Plastic
- Case material - UL Flammability Rating 94V-0
- Moisture sensitivity: Level 1 per J-STD-020A
- Terminals: Finish - Matte Tin Solderable per MIL-STD-202, Method 208 (Note 2)
- Terminal Connections: See Diagram
- Weight: 0.005 grams (approx.)



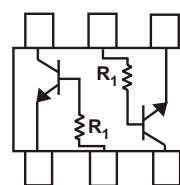
SEE NOTE 1

SOT-563			
Dim	Min	Max	Typ
A	0.15	0.30	0.25
B	1.10	1.25	1.20
C	1.55	1.70	1.60
D	0.50		
G	0.90	1.10	1.00
H	1.50	1.70	1.60
K	0.56	0.60	0.60
L	0.15	0.25	0.20
M	0.10	0.18	0.11
All Dimensions in mm			

P/N	R1	R2	MARKING
DDC124EH	22K Ω	22K Ω	N17
DDC144EH	47K Ω	47K Ω	N20
DDC143EH	4.7K Ω	4.7K Ω	N08
DDC114YH	10K Ω	47K Ω	N14
DDC123JH	2.2K Ω	47K Ω	N06
DDC114EH	10K Ω	10K Ω	N13
DDC143TH	4.7K Ω	-	N07
DDC114TH	10K Ω	-	N12



R₁, R₂



R₁ Only

SCHEMATIC DIAGRAM, TOP VIEW

Maximum Ratings @ T_A = 25°C unless otherwise specified

Characteristic	Symbol	Value	Unit
Supply Voltage	V _{CC}	50	V
Input Voltage	V _{IN}	DDC124EH -10 to +40 DDC144EH -10 to +40 DDC143EH -10 to +30 DDC114YH -6 to +40 DDC123JH -5 to +12 DDC114EH -10 to +40 DDC143TH -5 V _{max} DDC114TH -5 V _{max}	V
Output Current	I _O	DDC124EH 30 DDC144EH 30 DDC143EH 100 DDC114YH 70 DDC123JH 100 DDC114EH 50 DDC143TH 100 DDC114TH 100	mA
Output Current All	I _C (Max)	100	mA
Power Dissipation	P _d	150	mW
Thermal Resistance, Junction to Ambient Air (Note 3)	R _{θJA}	833	°C/W
Operating and Storage and Temperature Range	T _j , T _{STG}	-55 to +150	°C

- Note:
1. Package is non-polarized. Parts may be on reel in orientation illustrated, 180° rotated, or mixed (both ways).
 2. If lead-bearing terminal plating is required, please contact your Diodes Inc. sales representative for availability and minimum order details.
 3. Mounted on FR4 Board with recommended pad layout at <http://www.diodes.com/datasheets/ap02001.pdf>.

Electrical Characteristics @ T_A = 25°C unless otherwise specified

Characteristic (DDC143TH & DDC114TH only)	Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	BV _{CBO}	50	—	—	V	I _C = 50μA
Collector-Emitter Breakdown Voltage	BV _{CEO}	50	—	—	V	I _C = 1mA
Emitter-Base Breakdown Voltage	BV _{EBO}	5	—	—	V	I _E = 50μA
Collector Cutoff Current	I _{CBO}	—	—	0.5	μA	V _{CB} = 50V
Emitter Cutoff Current	I _{EBO}	—	—	0.5	μA	V _{EB} = 4V
Collector-Emitter Saturation Voltage	V _{CE(sat)}	—	—	0.3	V	I _C /I _B = 2.5mA / 0.25mA DDC143TH I _C /I _B = 1mA / 0.1mA DDC114TH
DC Current Transfer Ratio	h _{FE}	100	250	600	—	I _C = 1mA, V _{CE} = 5V
Gain-Bandwidth Product*	f _T	—	250	—	MHz	V _{CE} = 10V, I _E = -5mA, f = 100MHz

Characteristic		Symbol	Min	Typ	Max	Unit	Test Condition
Input Voltage	DDC124EH DDC144EH DDC143EH DDC114YH DDC123JH DDC114EH	V _{I(off)}	0.5 0.5 0.5 0.3 0.5 0.5	1.1 1.1 1.1 — — 1.1	—	V	V _{CC} = 5V, I _O = 100μA
	DDC124EH DDC144EH DDC143EH DDC114YH DDC123JH DDC114EH	V _{I(on)}	—	1.9 1.9 1.9 — — 1.9	3.0 3.0 3.0 1.4 1.1 3.0		V _O = 0.3V, I _O = 5mA V _O = 0.3V, I _O = 2mA V _O = 0.3V, I _O = 20mA V _O = 0.3V, I _O = 1mA V _O = 0.3V, I _O = 5mA V _O = 0.3V, I _O = 10mA
Output Voltage	DDC124EH DDC144EH DDC143EH DDC114YH DDC123JH DDC114EH	V _{O(on)}	—	0.1	0.3	V	I _O /I _I = 10mA / 0.5mA I _O /I _I = 10mA / 0.5mA I _O /I _I = 10mA / 0.5mA I _O /I _I = 5mA / 0.25mA I _O /I _I = 5mA / 0.25mA I _O /I _I = 10mA / 0.5mA
Input Current	DDC124EH DDC144EH DDC143EH DDC114YH DDC123JH DDC114EH	I _I	—	—	0.36 0.18 1.8 0.88 3.6 0.88	mA	V _I = 5V
Output Current		I _{O(off)}	—	—	0.5	μA	V _{CC} = 50V, V _I = 0V
DC Current Gain	DDC124EH DDC144EH DDC143EH DDC114YH DDC123JH DDC114EH	G _I	56 68 20 68 80 30	—	—	—	V _O = 5V, I _O = 5mA V _O = 5V, I _O = 5mA V _O = 5V, I _O = 10mA V _O = 5V, I _O = 10mA V _O = 5V, I _O = 10mA V _O = 5V, I _O = 5mA
Gain-Bandwidth Product*		f _T	—	250	—	MHz	V _{CE} = 10V, I _E = 5mA, f = 100MHz

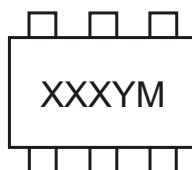
* Transistor - For Reference Only

Ordering Information (Note 4)

Device	Packaging	Shipping
DDC124EH-7	SOT-563	3000/Tape & Reel
DDC144EH-7	SOT-563	3000/Tape & Reel
DDC143EH-7	SOT-563	3000/Tape & Reel
DDC114YH-7	SOT-563	3000/Tape & Reel
DDC123JH-7	SOT-563	3000/Tape & Reel
DDC114EH-7	SOT-563	3000/Tape & Reel
DDC143TH-7	SOT-563	3000/Tape & Reel
DDC114TH-7	SOT-563	3000/Tape & Reel

Notes: 4. For Packaging Details, go to our website at <http://www.diodes.com/datasheets/ap02007.pdf>.

Marking Information



XXX = Product Type Marking Code (See Page 1)

YM = Date Code Marking

Y = Year ex: P = 2003

M = Month ex: 9 = September

Date Code Key

Year	2003	2004	2005	2006	2007	2008	2009
Code	P	R	S	T	U	V	W

Month	Jan	Feb	March	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Code	1	2	3	4	5	6	7	8	9	O	N	D

TYPICAL CURVES - DDC143EH

NEW PRODUCT

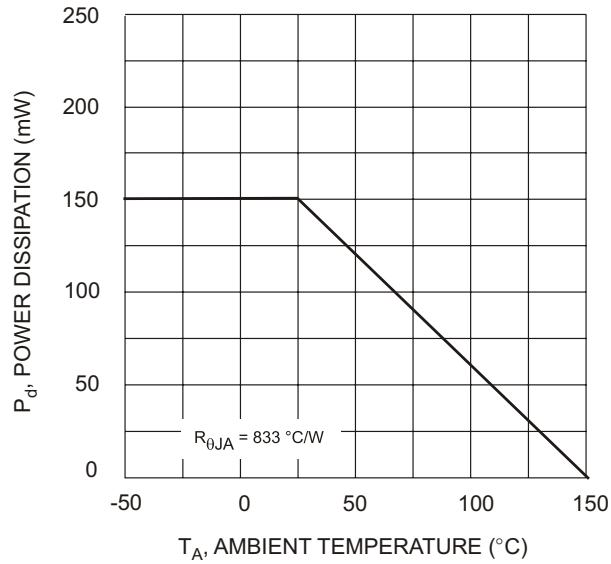


Fig. 1 Derating Curve

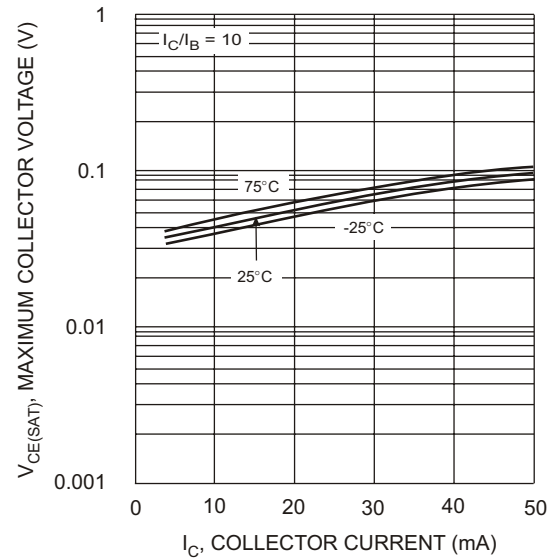
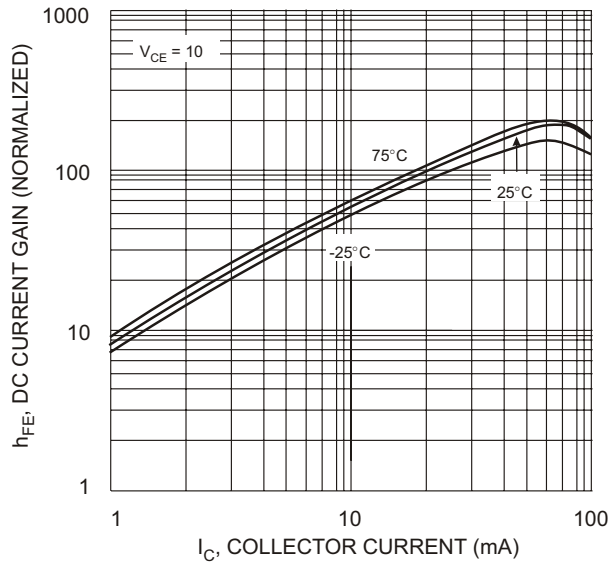

 Fig. 2 $V_{CE(SAT)}$ vs. I_C


Fig. 3 DC Current Gain

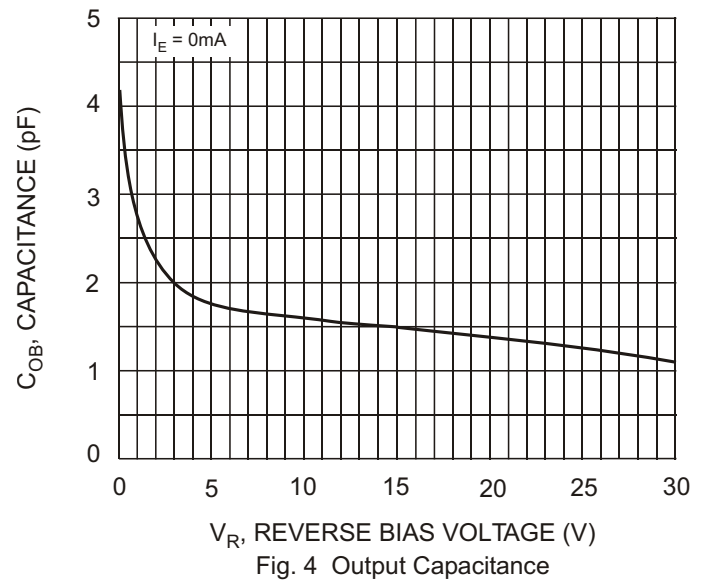


Fig. 4 Output Capacitance

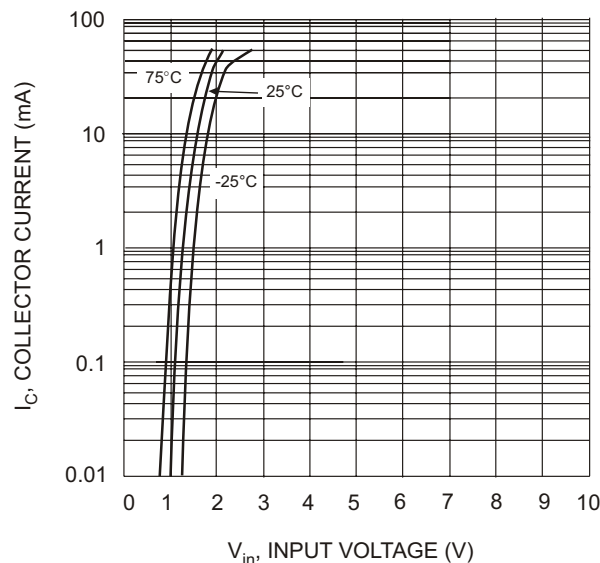


Fig. 5 Collector Current Vs. Input Voltage

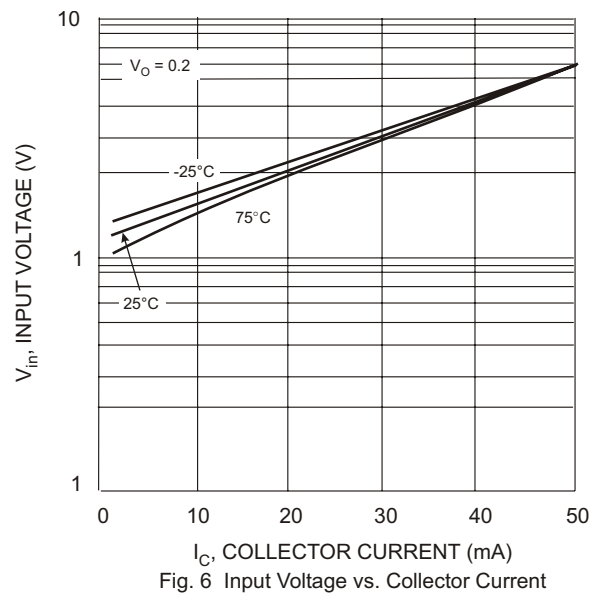


Fig. 6 Input Voltage vs. Collector Current