

**Features**

- Epitaxial Planar Die Construction
- Complementary NPN Types Available (DDC)
- Built-In Biasing Resistors
- **Lead Free By Design/RoHS Compliant (Note 3)**
- **"Green" Device (Note 4 and 5)**

**Mechanical Data**

- Case: SOT-563
- Case Material: Molded Plastic. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020C
- Terminals: Finish - Matte Tin annealed over Alloy 42 leadframe. Solderable per MIL-STD-202, Method 208
- Terminal Connections: See Diagram
- Weight: 0.005 grams (approximate)



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
<b>All Dimensions in mm</b>			

SEE NOTE 1

P/N	R1	R2	MARKING
DDA124EH	22KΩ	22KΩ	P17
DDA144EH	47KΩ	47KΩ	P20
DDA143EH	4.7KΩ	4.7KΩ	P08
DDA114YH	10KΩ	47KΩ	P14
DDA123JH	2.2KΩ	47KΩ	P06
DDA114EH	10KΩ	10KΩ	P13
DDA143TH	4.7KΩ	—	P07
DDA114TH	10KΩ	—	P12



SCHEMATIC DIAGRAM, TOP VIEW

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

Characteristic	Symbol	Value	Unit
Supply Voltage (6) to (1) and (3) to (4)	V <sub>CC</sub>	-50	V
Input Voltage (2) to (1) and (5) to (4)	V <sub>IN</sub>	DDA124EH: +10 to -40 DDA144EH: +10 to -40 DDA143EH: +10 to -30 DDA114YH: +6 to -40 DDA123JH: +5 to -12 DDA114EH: +10 to -40 DDA143TH: +5V max DDA114TH: +5V max	V
Output Current	I <sub>O</sub>	DDA124EH: -30 DDA144EH: -30 DDA143EH: -100 DDA114YH: -70 DDA123JH: -100 DDA114EH: -50 DDA143TH: -100 DDA114TH: -100	mA
Output Current	I <sub>C</sub> (Max)	-100	mA
Power Dissipation	P <sub>d</sub>	150	mW
Thermal Resistance, Junction to Ambient Air (Note 2)	R <sub>θJA</sub>	833	°C/W
Operating and Storage Temperature Range	T <sub>J</sub> , T <sub>STG</sub>	-55 to +150	°C

- Notes:
1. Package is non-polarized. Parts may be on reel in orientation illustrated, 180° rotated, or mixed (both ways).
  2. Mounted on FR4 Board with recommended pad layout at <http://www.diodes.com/datasheets/ap02001.pdf>.
  3. No purposefully added lead.
  4. Diodes 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).
  5. Product manufactured with Date Code UO (week 40, 2007) and newer are built with Green Molding Compound. Product manufactured prior to Date Code UO are built with Non-Green Molding Compound and may contain Halogens or Sb2O3 Fire Retardants.

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

Characteristic (DDA143TH & DDA114TH only)	Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	$BV_{CBO}$	-50	—	—	V	$I_C = -50\mu\text{A}$
Collector-Emitter Breakdown Voltage	$BV_{CEO}$	-50	—	—	V	$I_C = -1\text{mA}$
Emitter-Base Breakdown Voltage	$BV_{EBO}$	-5	—	—	V	$I_E = -50\mu\text{A}$
Collector Cutoff Current	$I_{CBO}$	—	—	-0.5	$\mu\text{A}$	$V_{CB} = -50\text{V}$
Emitter Cutoff Current	$I_{EBO}$	—	—	-0.5	$\mu\text{A}$	$V_{EB} = -4\text{V}$
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	—	—	-0.3	V	$I_C/I_B = -2.5\text{mA} / -0.25\text{mA}$ DDA143TH $I_C/I_B = -1\text{mA} / -0.1\text{mA}$ DDA114TH
DC Current Transfer Ratio	$h_{FE}$	100	250	600	—	$I_C = -1\text{mA}$ , $V_{CE} = -5\text{V}$
Gain-Bandwidth Product*	$f_T$	—	250	—	MHz	$V_{CE} = -10\text{V}$ , $I_E = 5\text{mA}$ , $f = 100\text{MHz}$

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Input Voltage	DDA124EH DDA144EH DDA143EH DDA114YH DDA123JH DDA114EH	-0.5 -0.5 -0.5 -0.3 -0.5 -0.5	-1.1 -1.1 -1.1 — — -1.1	—	V	$V_{CC} = -5\text{V}$ , $I_O = -100\mu\text{A}$
	DDA124EH DDA144EH DDA143EH DDA114YH DDA123JH DDA114EH	—	—	-1.9 -1.9 -1.9 -1.4 -1.1 -1.9	-3.0 -3.0 -3.0 -1.4 -1.1 -3.0	$V_O = -0.3\text{V}$ , $I_O = -5\text{mA}$ $V_O = -0.3\text{V}$ , $I_O = -2\text{mA}$ $V_O = -0.3\text{V}$ , $I_O = -20\text{mA}$ $V_O = -0.3\text{V}$ , $I_O = -1\text{mA}$ $V_O = -0.3\text{V}$ , $I_O = -5\text{mA}$ $V_O = -0.3\text{V}$ , $I_O = -10\text{mA}$
Output Voltage	DDA124EH DDA144EH DDA143EH DDA114YH DDA123JH DDA114EH	—	-0.1	-0.3	V	$I_O/I_I = -10\text{mA} / -0.5\text{mA}$ $I_O/I_I = -10\text{mA} / -0.5\text{mA}$ $I_O/I_I = -10\text{mA} / -0.5\text{mA}$ $I_O/I_I = -5\text{mA} / -0.25\text{mA}$ $I_O/I_I = -5\text{mA} / -0.25\text{mA}$ $I_O/I_I = -10\text{mA} / -0.5\text{mA}$
Input Current	DDA124EH DDA144EH DDA143EH DDA114YH DDA123JH DDA114EH	—	—	-0.36 -0.18 -1.8 -0.88 -3.6 -0.88	mA	$V_I = -5\text{V}$
Output Current	$I_{O(off)}$	—	—	-0.5	$\mu\text{A}$	$V_{CC} = -50\text{V}$ , $V_I = -0\text{V}$
DC Current Gain	DDA124EH DDA144EH DDA143EH DDA114YH DDA123JH DDA114EH	56 68 20 68 80 30	—	—	—	$V_O = -5\text{V}$ , $I_O = -5\text{mA}$ $V_O = -5\text{V}$ , $I_O = -5\text{mA}$ $V_O = -5\text{V}$ , $I_O = -10\text{mA}$ $V_O = -5\text{V}$ , $I_O = -10\text{mA}$ $V_O = -5\text{V}$ , $I_O = -10\text{mA}$ $V_O = -5\text{V}$ , $I_O = -5\text{mA}$
Gain-Bandwidth Product*	$f_T$	—	250	—	MHz	$V_{CE} = -10\text{V}$ , $I_E = -5\text{mA}$ , $f = 100\text{MHz}$

\* Transistor - For Reference Only

## Typical Curves - DDA143EH

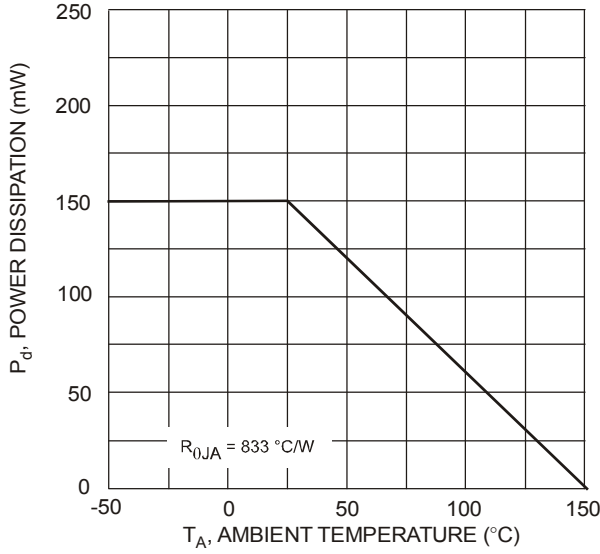


Fig. 1 Derating Curve



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

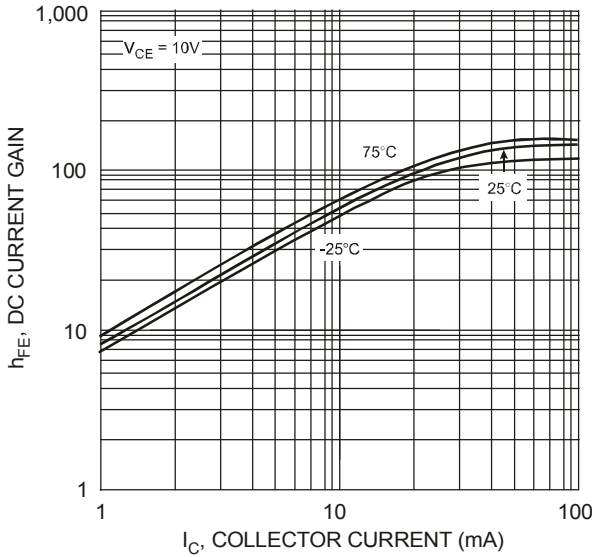


Fig. 3 DC Current Gain

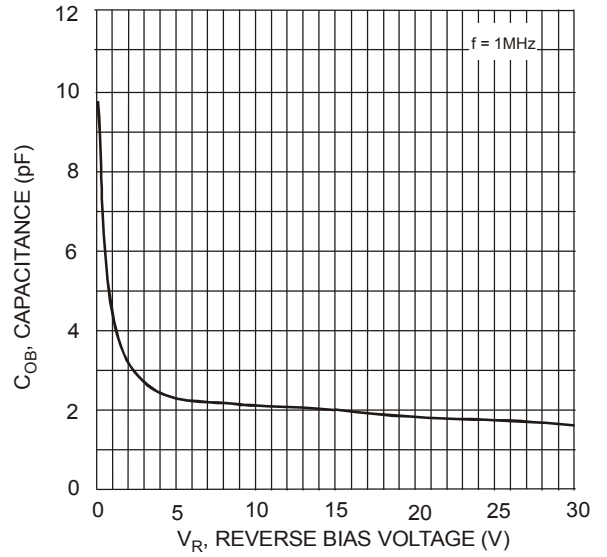


Fig. 4 Output Capacitance

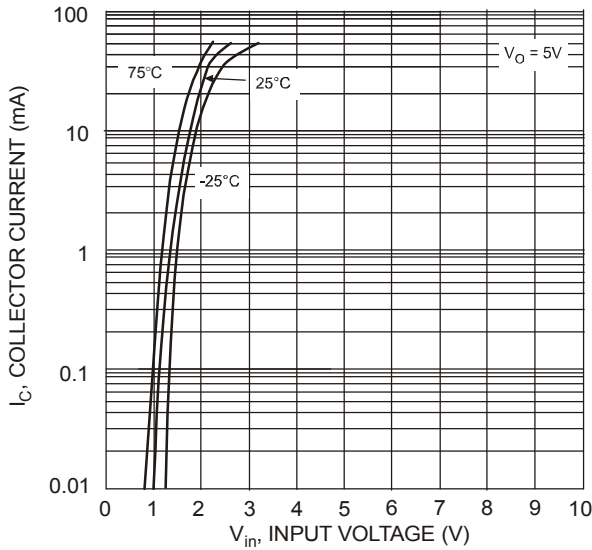


Fig. 5 Collector Current vs. Input Voltage

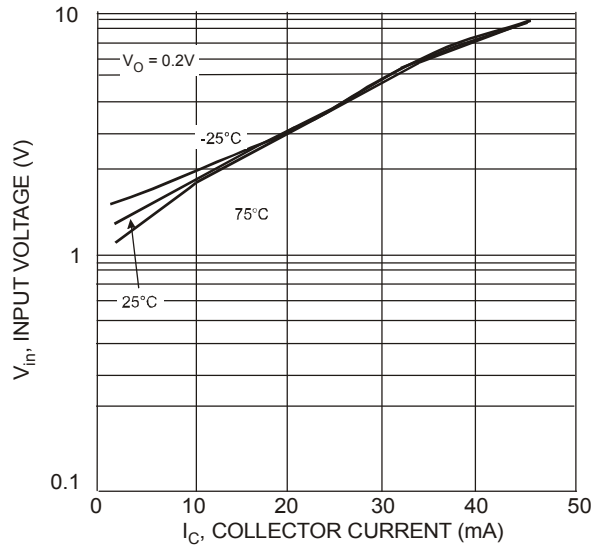


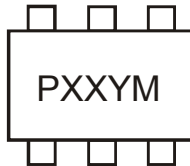
Fig. 6 Input Voltage vs. Collector Current

## Ordering Information (Note 6)

Device	Packaging	Shipping
DDA124EH-7	SOT-563	3000/Tape & Reel
DDA144EH-7	SOT-563	3000/Tape & Reel
DDA143EH-7	SOT-563	3000/Tape & Reel
DDA114YH-7	SOT-563	3000/Tape & Reel
DDA123JH-7	SOT-563	3000/Tape & Reel
DDA114EH-7	SOT-563	3000/Tape & Reel
DDA143TH-7	SOT-563	3000/Tape & Reel
DDA114TH-7	SOT-563	3000/Tape & Reel

Notes: 6. For packaging details, go to our website at <http://www.diodes.com/datasheets/ap02007.pdf>.

## Marking Information



PXX = Product Type Marking Code (See Page 1)  
 YM = Date Code Marking  
 Y = Year ex: T = 2006  
 M = Month ex: 9 = September

### Date Code Key

Year	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Code	P	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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