



**THE DATASHEET OF  
DDA114TH-7**



**PNP PRE-BIASED SMALL SIGNAL DUAL SURFACE MOUNT TRANSISTOR**
**Features**

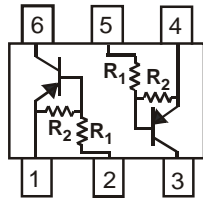
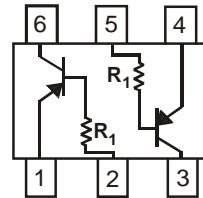
- Epitaxial Planar Die Construction
- Complementary NPN Types Available (DDC)
- Built-In Biasing Resistors
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **Qualified to AEC-Q101 Standards for High Reliability**

P/N	R1 (NOM)	R2 (NOM)
DDA124EH	22kΩ	22kΩ
DDA144EH	47kΩ	47kΩ
DDA143EH	4.7kΩ	4.7kΩ
DDA114YH	10kΩ	47kΩ
DDA123JH	2.2kΩ	47kΩ
DDA114EH	10kΩ	10kΩ
DDA143TH	4.7kΩ	—
DDA114TH	10kΩ	—

**Mechanical Data**

- Case: SOT563
- Case Material: Molded Plastic UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish – Matte Tin Annealed over Copper Leadframe. Solderable per MIL-STD-202, Method 208 (E3)
- Terminal Connections: See Diagram
- Weight: 0.005 grams (Approximate)

SCHEMATIC DIAGRAM, TOP VIEW


 R<sub>1</sub>, R<sub>2</sub> Device Schematic

 R<sub>1</sub> Only Device Schematic

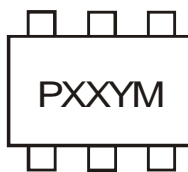
**Ordering Information** (Note 4)

Product	Compliance	Marking	Reel Size (inches)	Tape Width (mm)	Quantity per Reel
DDA124EH-7	AEC-Q101	P17	7	8	3,000
DDA144EH-7	AEC-Q101	P20	7	8	3,000
DDA143EH-7	AEC-Q101	P08	7	8	3,000
DDA114YH-7	AEC-Q101	P14	7	8	3,000
DDA123JH-7	AEC-Q101	P06	7	8	3,000
DDA114EH-7	AEC-Q101	P13	7	8	3,000
DDA143TH-7	AEC-Q101	P07	7	8	3,000
DDA114TH-7	AEC-Q101	P12	7	8	3,000

- Notes:
1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant.
  2. See [http://www.diodes.com/quality/lead\\_free.html](http://www.diodes.com/quality/lead_free.html) for more information about Diodes Incorporated's definitions of Halogen- and Antimony-free, "Green" and Lead-free.
  3. Halogen- and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
  4. For packaging details, go to our website at <http://www.diodes.com/products/packages.html>.

**Marking Information**

SOT563



PXX = Product Type Marking Code  
 YM = Date Code Marking  
 Y = Year ex: C = 2015  
 M = Month ex: 9 = September

Date Code Key

Year	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024		
Code	C	D	E	F	G	H	I	J	K	L		
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

**Maximum Ratings** (@T<sub>A</sub> = +25°C, unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Supply Voltage	V <sub>CC</sub>	-50	V
Input Voltage	V <sub>IN</sub>	+10 to -40 +10 to -40 +10 to -30 +6 to -40 +5 to -12 +10 to -40 +5V Max +5V Max	V
Output Current	I <sub>O</sub>	-30 -30 -100 -70 -100 -50 -100 -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 5)	R <sub>θJA</sub>	833	°C/W
Operating and Storage Temperature Range	T <sub>J</sub> , T <sub>STG</sub>	-55 to +150	°C

Note: 5. Mounted on FR4 Board with recommended pad layout at <http://www.diodes.com/package-outlines.html>.

**Electrical Characteristics** (@T<sub>A</sub> = +25°C unless otherwise specified.)

Characteristic (DDA143TH & DDA114TH only)	Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	BV <sub>CBO</sub>	-50	—	—	V	I <sub>C</sub> = -50μA
Collector-Emitter Breakdown Voltage	BV <sub>CEO</sub>	-50	—	—	V	I <sub>C</sub> = -1mA
Emitter-Base Breakdown Voltage	BV <sub>EBO</sub>	-5	—	—	V	I <sub>E</sub> = -50μA
Collector Cut-Off Current	I <sub>CBO</sub>	—	—	-0.5	μA	V <sub>CB</sub> = -50V
Emitter Cut-Off Current	I <sub>EBO</sub>	—	—	-0.5	μA	V <sub>EB</sub> = -4V
Collector-Emitter Saturation Voltage	V <sub>CE(SAT)</sub>	—	—	-0.3	V	I <sub>C</sub> /I <sub>B</sub> = -2.5mA / -0.25mA DDA143TH I <sub>C</sub> /I <sub>B</sub> = -1mA / -0.1mA DDA114TH
DC Current Transfer Ratio	h <sub>FE</sub>	100	250	600	—	I <sub>C</sub> = -1mA, V <sub>CE</sub> = -5V
Gain-Bandwidth Product*	f <sub>T</sub>	—	250	—	MHz	V <sub>CE</sub> = -10V, I <sub>E</sub> = 5mA, f = 100MHz

Characteristic		Symbol	Min	Typ	Max	Unit	Test Condition
Input Voltage	DDA124EH DDA144EH DDA143EH DDA114YH DDA123JH DDA114EH	V <sub>L(OFF)</sub>	-0.5 -0.5 -0.5 -0.3 -0.5 -0.5	-1.1 -1.1 -1.1 — — -1.1	—	V	V <sub>CC</sub> = -5V, I <sub>O</sub> = -100μA
	DDA124EH DDA144EH DDA143EH DDA114YH DDA123JH DDA114EH	V <sub>L(ON)</sub>	—	— — — — -1.9	-1.9 -1.9 -1.9 -1.4 -1.1 -3.0	V	V <sub>O</sub> = -0.3V, I <sub>O</sub> = -5mA V <sub>O</sub> = -0.3V, I <sub>O</sub> = -2mA V <sub>O</sub> = -0.3V, I <sub>O</sub> = -20mA V <sub>O</sub> = -0.3V, I <sub>O</sub> = -1mA V <sub>O</sub> = -0.3V, I <sub>O</sub> = -5mA V <sub>O</sub> = -0.3V, I <sub>O</sub> = -10mA
Output Voltage	DDA124EH DDA144EH DDA143EH DDA114YH DDA123JH DDA114EH	V <sub>O(ON)</sub>	—	-0.1	-0.3	V	I <sub>O</sub> /I <sub>L</sub> = -10mA / -0.5mA I <sub>O</sub> /I <sub>L</sub> = -10mA / -0.5mA I <sub>O</sub> /I <sub>L</sub> = -10mA / -0.5mA I <sub>O</sub> /I <sub>L</sub> = -5mA / -0.25mA I <sub>O</sub> /I <sub>L</sub> = -5mA / -0.25mA I <sub>O</sub> /I <sub>L</sub> = -10mA / -0.5mA
Input Current	DDA124EH DDA144EH DDA143EH DDA114YH DDA123JH DDA114EH	I <sub>L</sub>	—	—	-0.36 -0.18 -1.8 -0.88 -3.6 -0.88	mA	V <sub>I</sub> = -5V
Output Current		I <sub>O(OFF)</sub>	—	—	-0.5	μA	V <sub>CC</sub> = -50V, V <sub>I</sub> = -0V
DC Current Gain	DDA124EH DDA144EH DDA143EH DDA114YH DDA123JH DDA114EH	G <sub>L</sub>	56 68 20 68 80 30	—	—	—	V <sub>O</sub> = -5V, I <sub>O</sub> = -5mA V <sub>O</sub> = -5V, I <sub>O</sub> = -5mA V <sub>O</sub> = -5V, I <sub>O</sub> = -10mA V <sub>O</sub> = -5V, I <sub>O</sub> = -10mA V <sub>O</sub> = -5V, I <sub>O</sub> = -10mA V <sub>O</sub> = -5V, I <sub>O</sub> = -5mA
Gain-Bandwidth Product*		f <sub>T</sub>	—	250	—	MHz	V <sub>CE</sub> = -10V, I <sub>E</sub> = -5mA, f = 100MHz

\* Transistor - For Reference Only

**Typical Curves - DDA143EH**

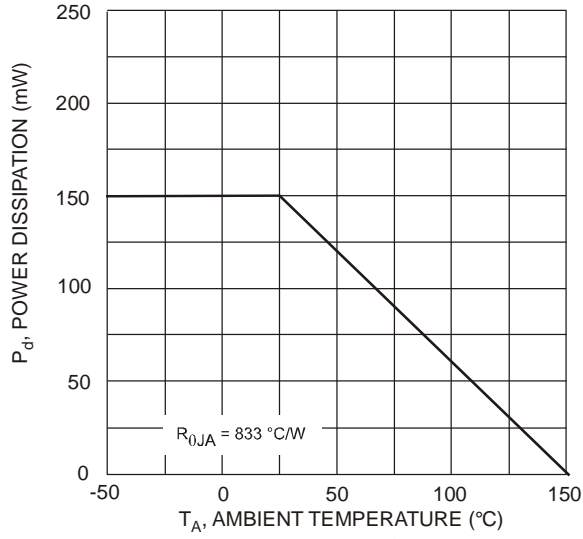


Fig. 1 Derating Curve

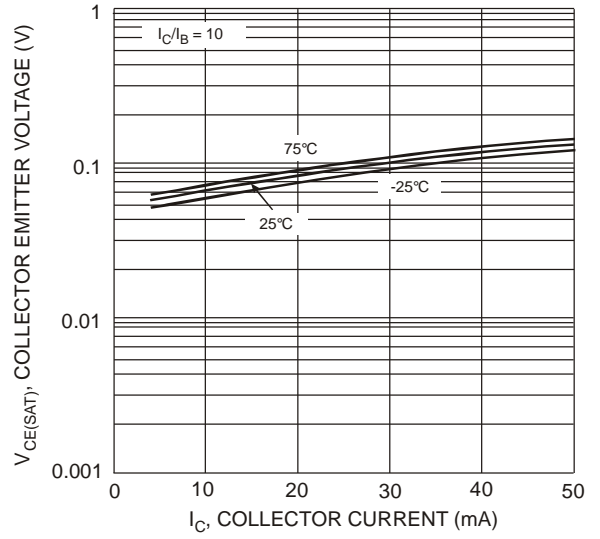


Fig. 2 V<sub>CE(SAT)</sub> vs. I<sub>C</sub>

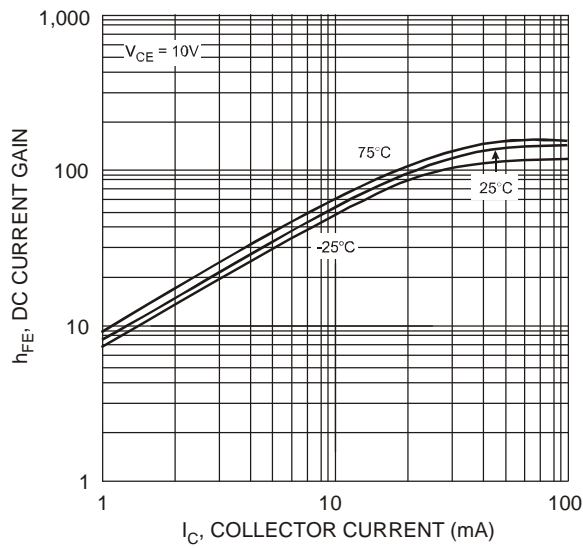


Fig. 3 DC Current Gain

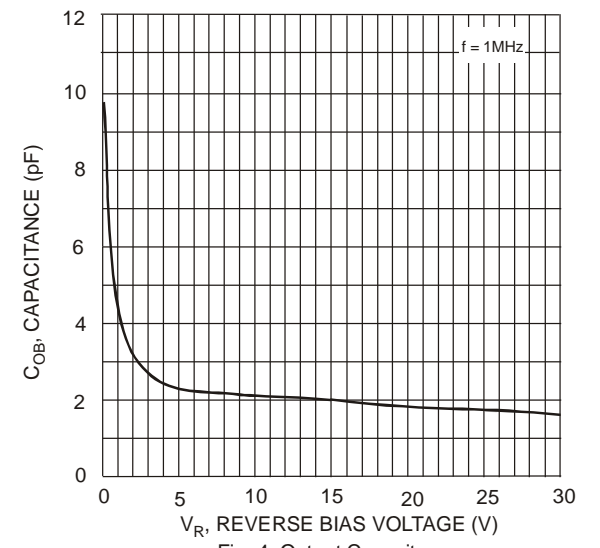


Fig. 4 Output Capacitance

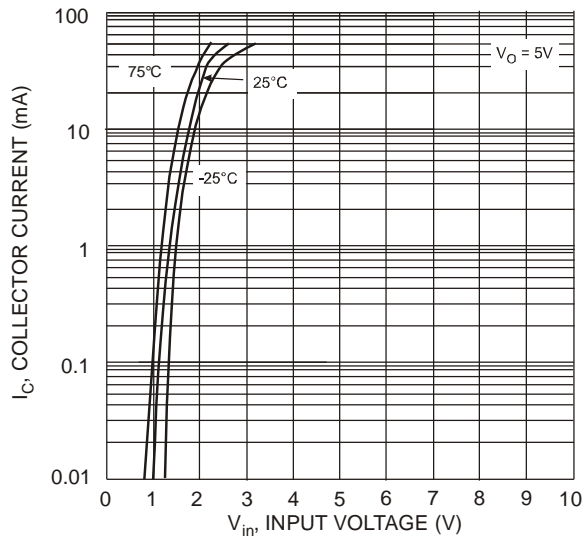


Fig. 5 Collector Current vs. Input Voltage

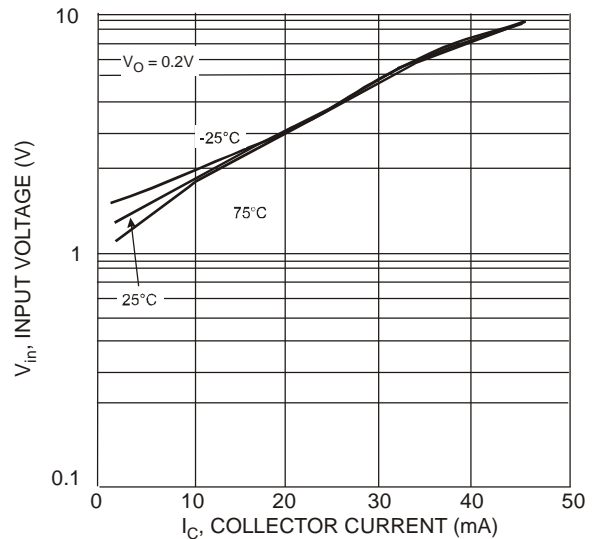
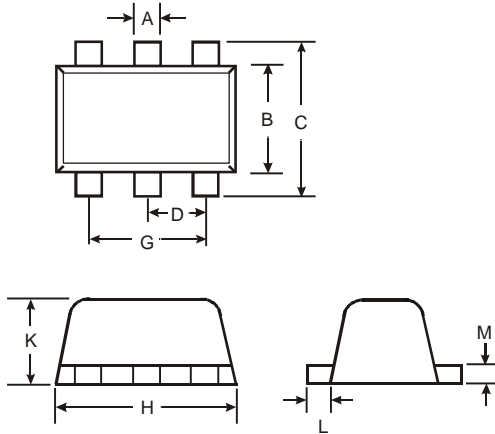


Fig. 6 Input Voltage vs. Collector Current

### Package Outline Dimensions

Please see <http://www.diodes.com/package-outlines.html> for the latest version.

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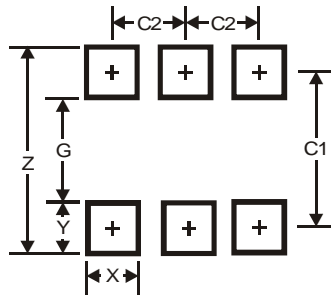


SOT563			
Dim	Min	Max	Typ
A	0.15	0.30	0.20
B	1.10	1.25	1.20
C	1.55	1.70	1.60
D	-	-	0.50
G	0.90	1.10	1.00
H	1.50	1.70	1.60
K	0.55	0.60	0.60
L	0.10	0.30	0.20
M	0.10	0.18	0.11
All Dimensions in mm			

### Suggested Pad Layout

Please see <http://www.diodes.com/package-outlines.html> for the latest version.

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Dimensions	Value (in mm)
Z	2.2
G	1.2
X	0.375
Y	0.5
C1	1.7
C2	0.5

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