

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

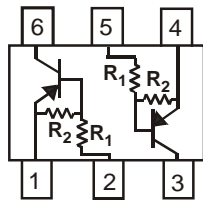
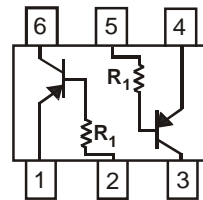
- Epitaxial Planar Die Construction
- Complementary NPN Types Available (DDC)
- Built-In Biasing Resistors
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **Qualified to AEC-Q101 Standards for High Reliability**

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

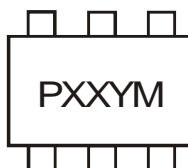
**Ordering Information** (Note 4)

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	V <sub>L(OFF)</sub>	DDA124EH	-0.5	-1.1	—	V	V <sub>CC</sub> = -5V, I <sub>O</sub> = -100μA
		DDA144EH	-0.5	-1.1			
DDA143EH		-0.5	-1.1				
DDA114YH		-0.3	—				
DDA123JH		-0.5	—				
DDA114EH		-0.5	-1.1				
Input Voltage	V <sub>L(ON)</sub>	DDA124EH	—	-1.9	-3.0	V	V <sub>O</sub> = -0.3V, I <sub>O</sub> = -5mA
		DDA144EH	—	-1.9	-3.0		V <sub>O</sub> = -0.3V, I <sub>O</sub> = -2mA
		DDA143EH	—	-1.9	-3.0		V <sub>O</sub> = -0.3V, I <sub>O</sub> = -20mA
		DDA114YH	—	—	-1.4		V <sub>O</sub> = -0.3V, I <sub>O</sub> = -1mA
		DDA123JH	—	—	-1.1		V <sub>O</sub> = -0.3V, I <sub>O</sub> = -5mA
		DDA114EH	—	-1.9	-3.0		V <sub>O</sub> = -0.3V, I <sub>O</sub> = -10mA
Output Voltage	V <sub>O(ON)</sub>	DDA124EH	—	-0.1	-0.3	V	I <sub>O</sub> /I <sub>L</sub> = -10mA / -0.5mA
		DDA144EH	—				I <sub>O</sub> /I <sub>L</sub> = -10mA / -0.5mA
		DDA143EH	—				I <sub>O</sub> /I <sub>L</sub> = -10mA / -0.5mA
		DDA114YH	—				I <sub>O</sub> /I <sub>L</sub> = -5mA / -0.25mA
		DDA123JH	—				I <sub>O</sub> /I <sub>L</sub> = -5mA / -0.25mA
		DDA114EH	—				I <sub>O</sub> /I <sub>L</sub> = -10mA / -0.5mA
Input Current	I <sub>L</sub>	DDA124EH	—	—	-0.36	mA	V <sub>I</sub> = -5V
		DDA144EH	—	—	-0.18		
		DDA143EH	—	—	-1.8		
		DDA114YH	—	—	-0.88		
		DDA123JH	—	—	-3.6		
		DDA114EH	—	—	-0.88		
Output Current	I <sub>O(OFF)</sub>	—	—	-0.5	μA	V <sub>CC</sub> = -50V, V <sub>I</sub> = -0V	
DC Current Gain	G <sub>L</sub>	DDA124EH	56	—	—	—	V <sub>O</sub> = -5V, I <sub>O</sub> = -5mA
		DDA144EH	68				V <sub>O</sub> = -5V, I <sub>O</sub> = -5mA
		DDA143EH	20				V <sub>O</sub> = -5V, I <sub>O</sub> = -10mA
		DDA114YH	68				V <sub>O</sub> = -5V, I <sub>O</sub> = -10mA
		DDA123JH	80				V <sub>O</sub> = -5V, I <sub>O</sub> = -10mA
		DDA114EH	30				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**

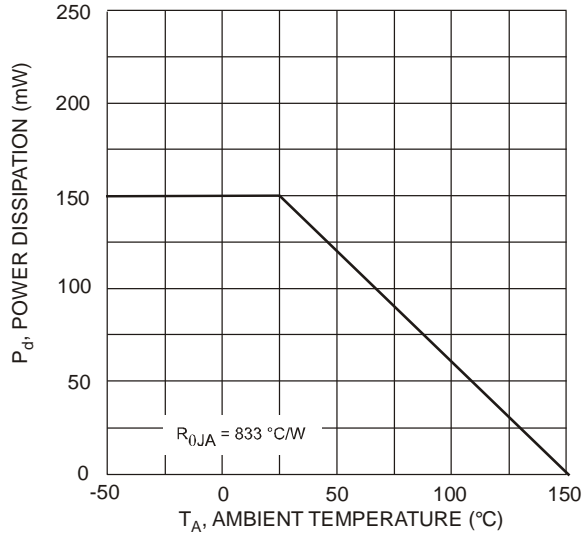


Fig. 1 Derating Curve

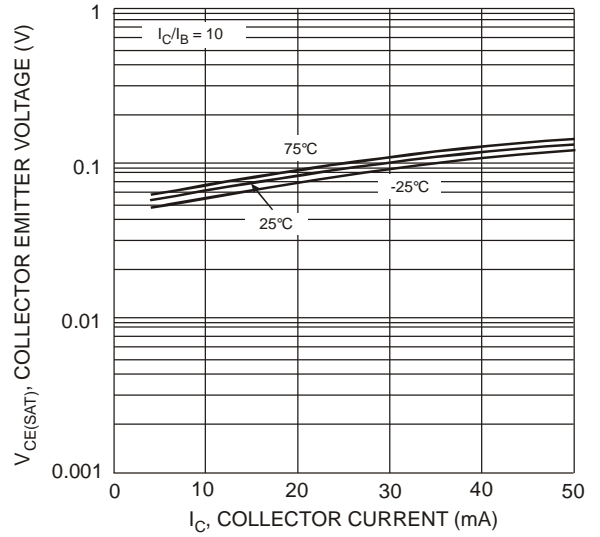


Fig. 2 V<sub>CE(SAT)</sub> vs. I<sub>C</sub>

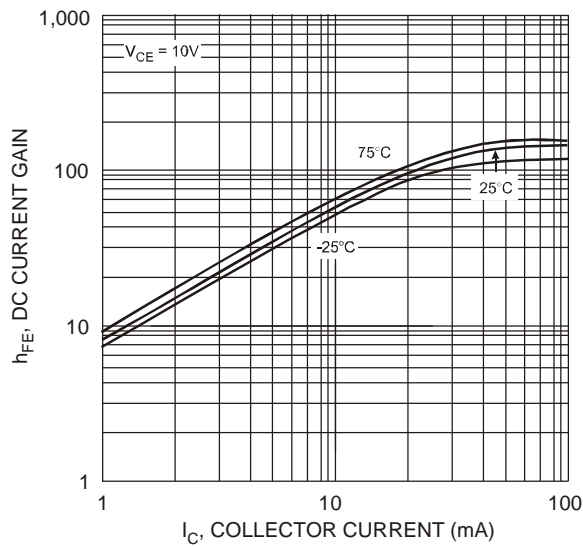


Fig. 3 DC Current Gain

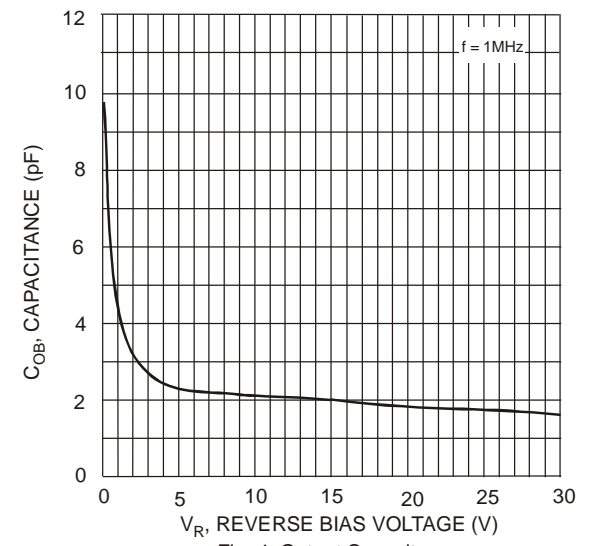


Fig. 4 Output Capacitance

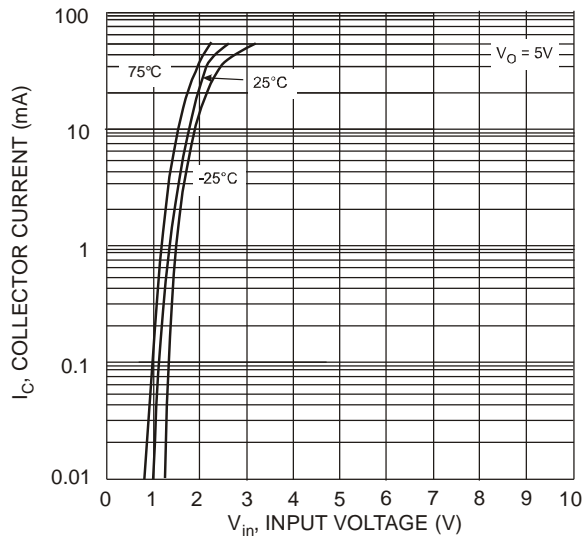


Fig. 5 Collector Current vs. Input Voltage

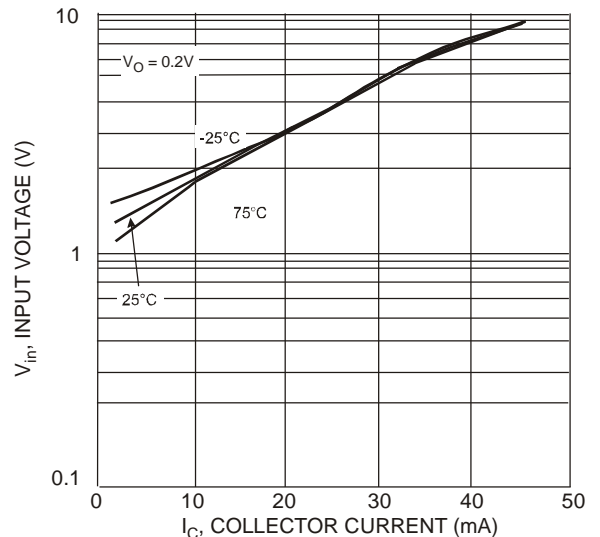
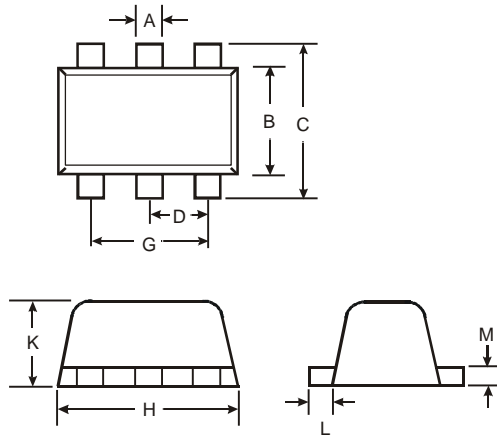


Fig. 6 Input Voltage vs. Collector Current

## Package Outline Dimensions

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

SOT563

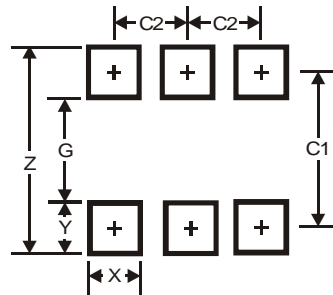


SOT563			
Dim	Min	Max	Typ
A	0.15	0.30	0.20
B	1.10	1.25	1.20
C	1.55	1.70	1.60
D	-	-	0.50
G	0.90	1.10	1.00
H	1.50	1.70	1.60
K	0.55	0.60	0.60
L	0.10	0.30	0.20
M	0.10	0.18	0.11
All Dimensions in mm			

## Suggested Pad Layout

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

SOT563



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

**IMPORTANT NOTICE**

DIODES INCORPORATED MAKES NO WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, WITH REGARDS TO THIS DOCUMENT, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE (AND THEIR EQUIVALENTS UNDER THE LAWS OF ANY JURISDICTION).

Diodes Incorporated and its subsidiaries reserve the right to make modifications, enhancements, improvements, corrections or other changes without further notice to this document and any product described herein. Diodes Incorporated does not assume any liability arising out of the application or use of this document or any product described herein; neither does Diodes Incorporated convey any license under its patent or trademark rights, nor the rights of others. Any Customer or user of this document or products described herein in such applications shall assume all risks of such use and will agree to hold Diodes Incorporated and all the companies whose products are represented on Diodes Incorporated website, harmless against all damages.

Diodes Incorporated does not warrant or accept any liability whatsoever in respect of any products purchased through unauthorized sales channel. Should Customers purchase or use Diodes Incorporated products for any unintended or unauthorized application, Customers shall indemnify and hold Diodes Incorporated and its representatives harmless against all claims, damages, expenses, and attorney fees arising out of, directly or indirectly, any claim of personal injury or death associated with such unintended or unauthorized application.

Products described herein may be covered by one or more United States, international or foreign patents pending. Product names and markings noted herein may also be covered by one or more United States, international or foreign trademarks.

This document is written in English but may be translated into multiple languages for reference. Only the English version of this document is the final and determinative format released by Diodes Incorporated.

**LIFE SUPPORT**

Diodes Incorporated products are specifically not authorized for use as critical components in life support devices or systems without the express written approval of the Chief Executive Officer of Diodes Incorporated. As used herein:

A. Life support devices or systems are devices or systems which:

1. are intended to implant into the body, or
2. support or sustain life and whose failure to perform when properly used in accordance with instructions for use provided in the labeling can be reasonably expected to result in significant injury to the user.

B. A critical component is any component in a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or to affect its safety or effectiveness.

Customers represent that they have all necessary expertise in the safety and regulatory ramifications of their life support devices or systems, and acknowledge and agree that they are solely responsible for all legal, regulatory and safety-related requirements concerning their products and any use of Diodes Incorporated products in such safety-critical, life support devices or systems, notwithstanding any devices- or systems-related information or support that may be provided by Diodes Incorporated. Further, Customers must fully indemnify Diodes Incorporated and its representatives against any damages arising out of the use of Diodes Incorporated products in such safety-critical, life support devices or systems.

Copyright © 2016, Diodes Incorporated

[www.diodes.com](http://www.diodes.com)