PNP PRE-BIASED SMALL SIGNAL DUAL SURFACE MOUNT TRANSISTOR

Features

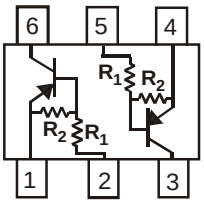
- Epitaxial Planar Die Construction
- Complementary NPN Types Available (DDC)
- Built-In Biasing Resistors
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **Qualified to AEC-Q101 Standards for High Reliability**

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	—

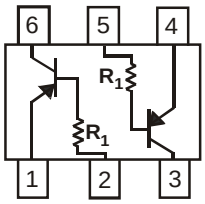
Mechanical Data

- 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_1, R_2 Device Schematic



R_1 Only Device Schematic

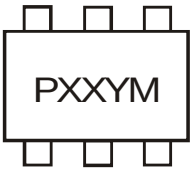
Ordering Information (Note 4)

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 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

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Maximum Ratings (@T_A = +25°C, unless otherwise specified.)

Characteristic		Symbol	Value	Unit
Supply Voltage		V_{CC}	-50	V
Input Voltage	DDA124EH DDA144EH DDA143EH DDA114YH DDA123JH DDA114EH DDA143TH DDA114TH	V_{IN}	+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	DDA124EH DDA144EH DDA143EH DDA114YH DDA123JH DDA114EH DDA143TH DDA114TH	I_O	-30 -30 -100 -70 -100 -50 -100 -100	mA
Output Current	All	I_C (Max)	-100	mA
Power Dissipation		P_D	150	mW
Thermal Resistance, Junction to Ambient Air	(Note 5)	$R_{\theta JA}$	833	°C/W
Operating and Storage Temperature Range		T_J, T_{STG}	-55 to +150	°C

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

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Electrical Characteristics (@T_A = +25°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 = -50µA
Collector-Emitter Breakdown Voltage	BV_{CEO}	-50	—	—	V	I_C = -1mA
Emitter-Base Breakdown Voltage	BV_{EBO}	-5	—	—	V	I_E = -50µA
Collector Cut-Off Current	I_{CBO}	—	—	-0.5	µA	V_{CB} = -50V
Emitter Cut-Off 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 DDA143TH I_C/I_B = -1mA / -0.1mA DDA114TH
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	DDA124EH DDA144EH DDA143EH DDA114YH DDA123JH DDA114EH	$V_{L(OFF)}$	-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
	DDA124EH DDA144EH DDA143EH DDA114YH DDA123JH DDA114EH	$V_{L(ON)}$	—	-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	DDA124EH DDA144EH DDA143EH DDA114YH DDA123JH DDA114EH	$V_{O(ON)}$	—	-0.1	-0.3	V	I_O/I_L = -10mA / -0.5mA I_O/I_L = -10mA / -0.5mA I_O/I_L = -10mA / -0.5mA I_O/I_L = -5mA / -0.25mA I_O/I_L = -5mA / -0.25mA I_O/I_L = -10mA / -0.5mA
Input Current	DDA124EH DDA144EH DDA143EH DDA114YH DDA123JH DDA114EH	I_L	—	—	-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	DDA124EH DDA144EH DDA143EH DDA114YH DDA123JH DDA114EH	G_L	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

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Typical Curves - DDA143EH

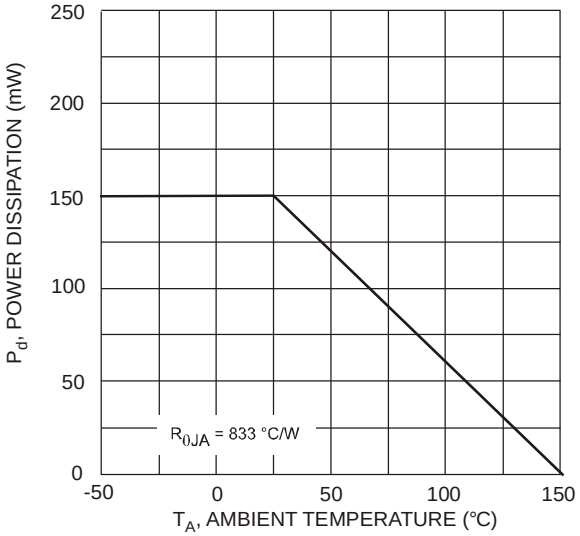

Fig. 1 Derating Curve

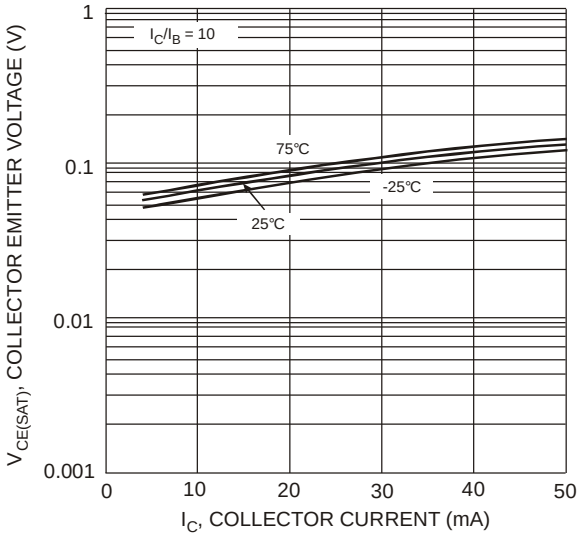

Fig. 2 $V_{CE(SAT)}$ vs. I_C

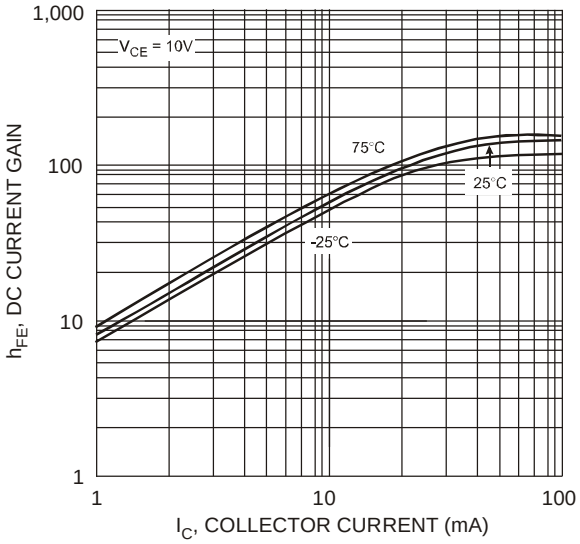

Fig. 3 DC Current Gain

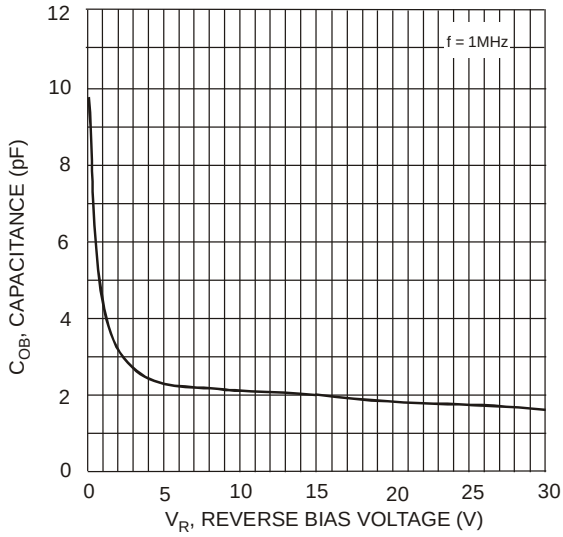

Fig. 4 Output Capacitance

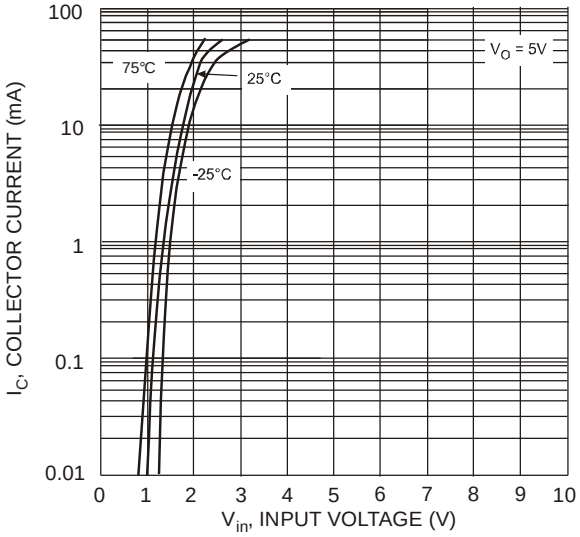

Fig. 5 Collector Current vs. Input Voltage

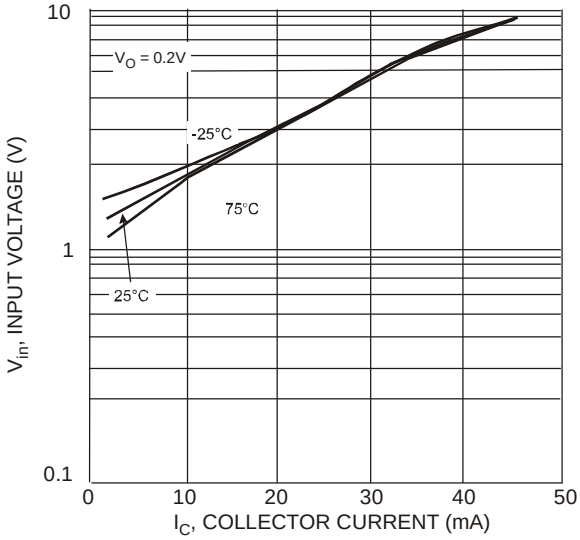

Fig. 6 Input Voltage vs. Collector Current

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Package Outline Dimensions

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

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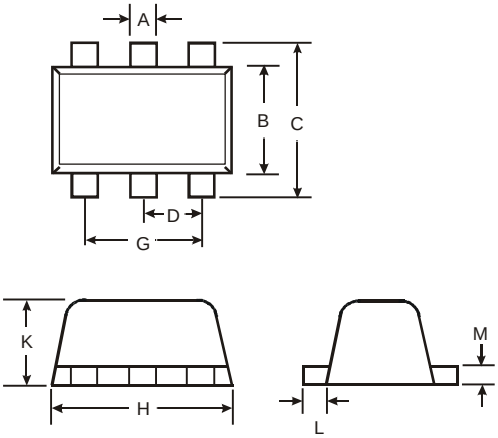

SOT563			
Dim	**Min**	**Max**	**Typ**
A	0.15	0.30	0.20
B	1.10	1.25	1.20
C	1.55	1.70	1.60
D	-	-	0.50
G	0.90	1.10	1.00
H	1.50	1.70	1.60
K	0.55	0.60	0.60
L	0.10	0.30	0.20
M	0.10	0.18	0.11
All Dimensions in mm			

Suggested Pad Layout

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

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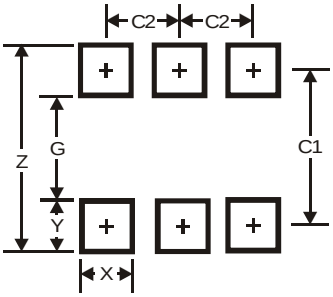

Dimensions	Value (in mm)
Z	2.2
G	1.2
X	0.375
Y	0.5
C1	1.7
C2	0.5

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