
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)**

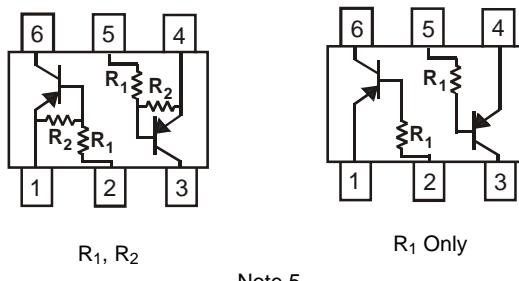
| P/N | R1 (NOM) | R2 (NOM) | MARKING |
|----------|----------|----------|---------|
| DDA122LH | 0.22KΩ | 10KΩ | P81 |
| DDA142JH | 0.47KΩ | 10KΩ | P82 |
| DDA122TH | 0.22KΩ | OPEN | P83 |
| DDA142TH | 0.47KΩ | OPEN | P84 |

Mechanical Data

- Case: SOT-563
- 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)

SOT-563

SCHEMATIC DIAGRAM: TOP VIEW



Ordering Information (Note 4)

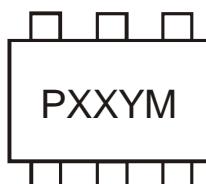
| Device | Packaging | Shipping |
|------------|-----------|-------------------|
| DDA122LH-7 | SOT-563 | 3,000/Tape & Reel |
| DDA142JH-7 | SOT-563 | 3,000/Tape & Reel |
| DDA122TH-7 | SOT-563 | 3,000/Tape & Reel |
| DDA142TH-7 | SOT-563 | 3,000/Tape & Reel |

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/datasheets/ap02007.pdf>.
5. Package is non-polarized. Parts may be on reel in orientation illustrated, 180° rotated, or mixed.

Marking Information

SOT-563



XXX = Product Type Marking Code
YM = Date Code Marking
Y = Year ex: T = 2006
M = Month ex: 9 = September

Date Code Key

| Date Code Key | | | | | | | | | | | | |
|---------------|------|------|------|------|------|------|------|------|------|------|------|--|
| Year | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | |
| Code | N | P | R | S | T | U | V | W | X | Y | Z | |

| Month | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|-------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Goals | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |

Maximum Ratings, R1, R2 Types (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)

| Characteristic | Symbol | Value | Unit |
|---|-----------------|----------------------|------|
| Supply Voltage | V_{CC} | -50 | V |
| Input Voltage DDA122LH DDA142JH | V_{IN} | +5 to -6 +5 to -6 | V |
| Input Voltage DDA122TH DDA142TH | V_{EBO} (MAX) | -5 | V |
| Output Current All | I_C | -100 | mA |
| Power Dissipation | P_d | 150 | mW |
| Thermal Resistance, Junction to Ambient Air | $R_{\theta JA}$ | 833 | °C/W |
| Operating and Storage Temperature Range | T_j, T_{STG} | -55 to +150 | °C |

 Electrical Characteristics, R1, R2 Types (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)

| Characteristic | Symbol | Min | Typ | Max | Unit | Test Condition |
|---|--------------|--------------|-----|--------------|---------------|--|
| Input Voltage DDA122LH DDA142JH | $V_{I(off)}$ | -0.3 -0.3 | — | — | V | $V_{CC} = -5V, I_O = -100\mu\text{A}$ |
| | $V_{I(on)}$ | — | — | -2.0 -2.0 | V | $V_O = -0.3V, I_O = -20\text{mA}$ $V_O = -0.3V, I_O = -20\text{mA}$ |
| Output Voltage | $V_{O(on)}$ | — | — | -0.3V | V | $I_O/I_I = -5\text{mA}/-0.25\text{mA}$ |
| Input Current DDA122LH DDA142JH | I_I | — | — | -28 -13 | mA | $V_I = -5V$ |
| Output Current | $I_O(off)$ | — | — | -0.5 | μA | $V_{CC} = -50V, V_I = 0V$ |
| DC Current Gain DDA122LH DDA142JH | G_I | 56 56 | — | — | — | $V_O = -5V, I_O = -10\text{mA}$ |
| Gain-Bandwidth Product* | f_T | — | 200 | — | MHz | $V_{CE} = -10V, I_E = -5\text{mA}, f = 100\text{MHz}$ |

* Transistor - For Reference Only

 Electrical Characteristics, R1 Only (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)

| Characteristic | 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} | -40 | — | — | V | $I_C = -1\text{mA}$ |
| Emitter-Base Breakdown Voltage DDA122TH DDA142TH | BV_{EBO} | -5 | — | — | V | $I_E = -50\mu\text{A}$ $I_E = -50\mu\text{A}$ |
| Collector Cut-Off Current | I_{CBO} | — | — | -0.5 | μA | $V_{CB} = -50V$ |
| Emitter Cut-Off Current DDA122TH DDA142TH | I_{EBO} | — | — | -0.5 -0.5 | μA | $V_{EB} = -4V$ |
| Collector-Emitter Saturation Voltage | $V_{CE(sat)}$ | — | — | -0.3 | V | $I_C = -5\text{mA}, I_B = -0.25\text{mA}$ |
| DC Current Transfer Ratio DDA122TH DDA142TH | h_{FE} | 100 100 | 250 250 | 600 600 | — | $I_C = -1\text{mA}, V_{CE} = -5V$ |
| Gain-Bandwidth Product* | f_T | — | 200 | — | MHz | $V_{CE} = -10V, I_E = 5\text{mA}, f = 100\text{MHz}$ |

* Transistor - For Reference Only

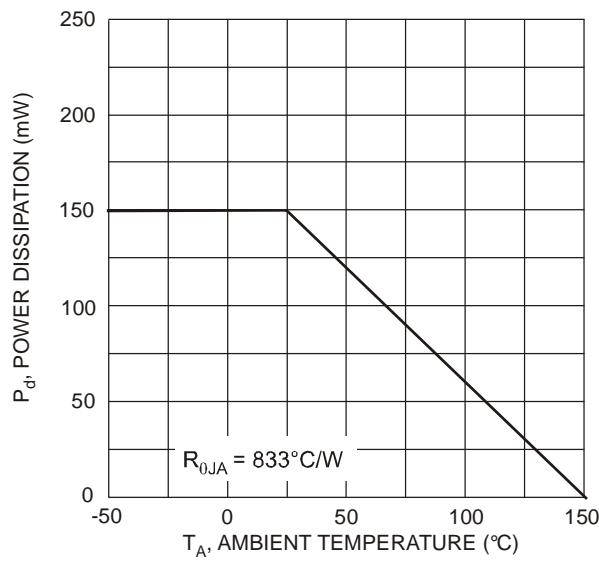
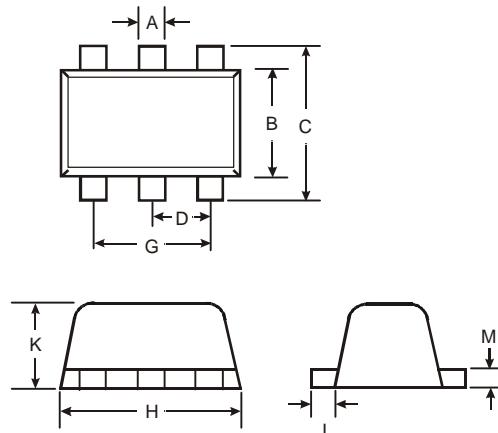


Fig. 1 Power Derating Curve

Package Outline Dimensions

Please see AP02002 at <http://www.diodes.com/datasheets/ap02002.pdf> for the latest version.

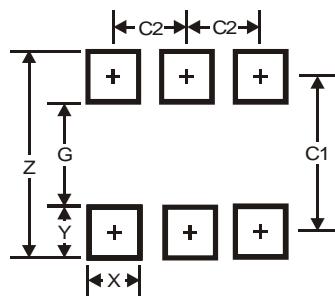


| SOT563 | | | |
|----------|------|------|------|
| Dim | Min | Max | Typ |
| A | 0.15 | 0.30 | 0.20 |
| B | 1.10 | 1.25 | 1.20 |
| C | 1.55 | 1.70 | 1.60 |
| D | - | - | 0.50 |
| G | 0.90 | 1.10 | 1.00 |
| H | 1.50 | 1.70 | 1.60 |
| K | 0.55 | 0.60 | 0.60 |
| L | 0.10 | 0.30 | 0.20 |
| M | 0.10 | 0.18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

All Dimensions in mm

Suggested Pad Layout

Please see AP02001 at <http://www.diodes.com/datasheets/ap02001.pdf> for the latest version.



| 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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