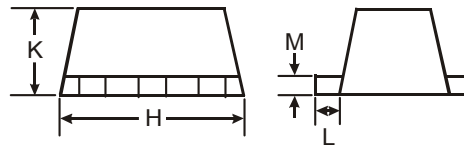
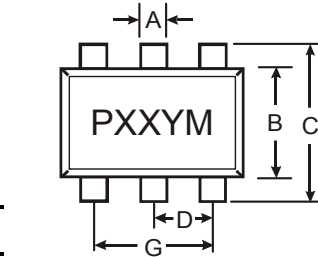


### Features

- 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

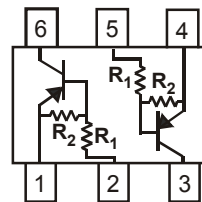
- Case: SOT-563
- Case Material: Molded Plastic. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020C
- Terminals: Finish - Matte Tin annealed over Alloy 42 leadframe. Solderable per MIL-STD-202, Method 208
- Terminal Connections: See Diagram
- Weight: 0.005 grams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



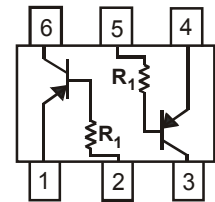
| SOT-563              |      |      |      |
|----------------------|------|------|------|
| Dim                  | Min  | Max  | Typ  |
| A                    | 0.15 | 0.30 | 0.25 |
| B                    | 1.10 | 1.25 | 1.20 |
| C                    | 1.55 | 1.70 | 1.60 |
| D                    | 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 |
| All Dimensions in mm |      |      |      |

SEE NOTE 1

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



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



R<sub>1</sub> Only

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>                   | +5 to -6    | V    |
| Input Voltage (1) to (2) and (4) to (5)     | V <sub>EBO</sub> (MAX)            | -5          | V    |
| Output Current                              | I <sub>C</sub>                    | -100        | mA   |
| Power Dissipation                           | P <sub>d</sub>                    | 150         | mW   |
| Thermal Resistance, Junction to Ambient Air | 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<sub>A</sub> = 25°C unless otherwise specified R1, R2 Types

| Characteristic          |                      | Symbol              | Min          | Typ | Max          | Unit | Test Condition                                                                                   |
|-------------------------|----------------------|---------------------|--------------|-----|--------------|------|--------------------------------------------------------------------------------------------------|
| Input Voltage           | DDA122LH<br>DDA142JH | V <sub>I(off)</sub> | -0.3<br>-0.3 | —   | —            | V    | V <sub>CC</sub> = -5V, I <sub>O</sub> = -100μA                                                   |
|                         | DDA122LH<br>DDA142JH | V <sub>I(on)</sub>  | —            | —   | -2.0<br>-2.0 | V    | V <sub>O</sub> = -0.3V, I <sub>O</sub> = -20mA<br>V <sub>O</sub> = -0.3V, I <sub>O</sub> = -20mA |
| Output Voltage          |                      | V <sub>O(on)</sub>  | —            | —   | -0.3V        | V    | I <sub>O</sub> /I <sub>I</sub> = -5mA/-0.25mA                                                    |
| Input Current           | DDA122LH<br>DDA142JH | I <sub>I</sub>      | —            | —   | -28<br>-13   | 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         | DDA122LH<br>DDA142JH | G <sub>I</sub>      | 56<br>56     | —   | —            | —    | V <sub>O</sub> = -5V, I <sub>O</sub> = -10mA                                                     |
| Gain-Bandwidth Product* |                      | f <sub>T</sub>      | —            | 200 | —            | MHz  | V <sub>CE</sub> = -10V, I <sub>E</sub> = -5mA, f = 100MHz                                        |

\* Transistor - For Reference Only

## Electrical Characteristics @T<sub>A</sub> = 25°C unless otherwise specified R1-Only

| Characteristic                       |                      | 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>    | -40        | —          | —            | V    | I <sub>C</sub> = -1mA                                    |
| Emitter-Base Breakdown Voltage       | DDA122TH<br>DDA142TH | BV <sub>EBO</sub>    | -5         | —          | —            | V    | I <sub>E</sub> = -50μA<br>I <sub>E</sub> = -50μA         |
| Collector Cutoff Current             |                      | I <sub>CBO</sub>     | —          | —          | -0.5         | μA   | V <sub>CB</sub> = -50V                                   |
| Emitter Cutoff Current               | DDA122TH<br>DDA142TH | I <sub>EBO</sub>     | —<br>—     | —          | -0.5<br>-0.5 | μA   | V <sub>EB</sub> = -4V                                    |
| Collector-Emitter Saturation Voltage |                      | V <sub>CE(sat)</sub> | —          | —          | -0.3         | V    | I <sub>C</sub> = -5mA, I <sub>B</sub> = -0.25mA          |
| DC Current Transfer Ratio            | DDA122TH<br>DDA142TH | h <sub>FE</sub>      | 100<br>100 | 250<br>250 | 600<br>600   | —    | I <sub>C</sub> = -1mA, V <sub>CE</sub> = -5V             |
| Gain-Bandwidth Product*              |                      | f <sub>T</sub>       | —          | 200        | —            | MHz  | V <sub>CE</sub> = -10V, I <sub>E</sub> = 5mA, f = 100MHz |

\* Transistor - For Reference Only

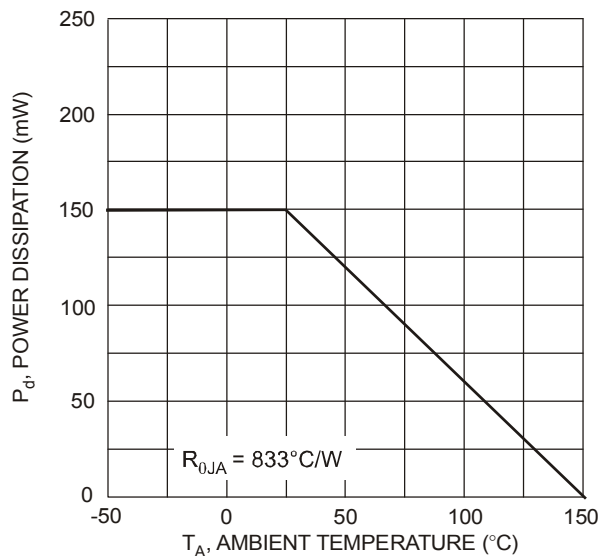


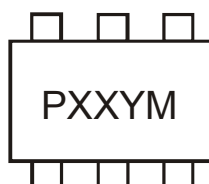
Fig. 1 Power Derating Curve

## Ordering Information (Note 6)

| Device     | Packaging | Shipping         |
|------------|-----------|------------------|
| DDA122LH-7 | SOT-563   | 3000/Tape & Reel |
| DDA142JH-7 | SOT-563   | 3000/Tape & Reel |
| DDA122TH-7 | SOT-563   | 3000/Tape & Reel |
| DDA142TH-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



XXX = 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 | 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 |
|-------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Code  | 1   | 2   | 3   | 4   | 5   | 6   | 7   | 8   | 9   | O   | N   | D   |

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