

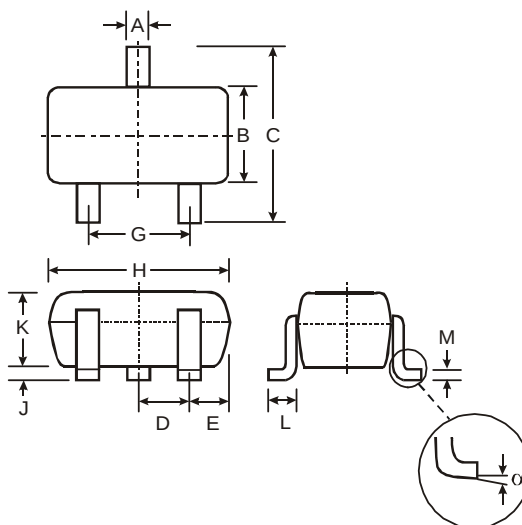
## Features

- Epitaxial Planar Die Construction
- Complementary PNP Types Available (DDTB)
- Built-In Biasing Resistors
- **Lead Free/RoHS Compliant (Note 2)**
- "Green" Device, Note 3 and 4

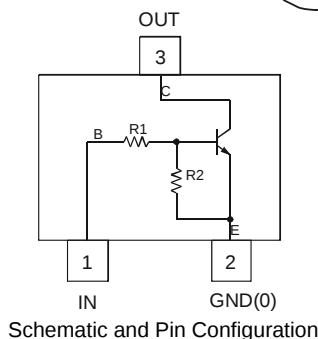
## Mechanical Data

- Case: SOT-323
- Case Material: Molded Plastic, "Green" Molding Compound, Note 4. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020C
- Terminals: Solderable per MIL-STD-202, Method 208
- Terminal Connections: See Diagram
- Lead Free Plating (Matte Tin Finish annealed over Alloy 42 leadframe).
- Marking Information: See Table Below & Page 3
- Ordering Information: See Page 3
- Weight: 0.006 grams (approximate)

| P/N       | R1 (NOM)       | R2 (NOM)     | MARKING |
|-----------|----------------|--------------|---------|
| DDTD122LU | 0.22K $\Omega$ | 10K $\Omega$ | N75     |
| DDTD142JU | 0.47K $\Omega$ | 10K $\Omega$ | N76     |
| DDTD122TU | 0.22K $\Omega$ | OPEN         | N77     |
| DDTD142TU | 0.47K $\Omega$ | OPEN         | N78     |



| SOT-323              |              |      |
|----------------------|--------------|------|
| Dim                  | Min          | Max  |
| A                    | 0.25         | 0.40 |
| B                    | 1.15         | 1.35 |
| C                    | 2.00         | 2.20 |
| D                    | 0.65 Nominal |      |
| E                    | 0.30         | 0.40 |
| G                    | 1.20         | 1.40 |
| H                    | 1.80         | 2.20 |
| J                    | 0.0          | 0.10 |
| K                    | 0.90         | 1.00 |
| L                    | 0.25         | 0.40 |
| M                    | 0.10         | 0.18 |
| $\alpha$             | 0°           | 8°   |
| All Dimensions in mm |              |      |



## Maximum Ratings @T<sub>A</sub> = 25°C unless otherwise specified

| Characteristic                              | Symbol                            | Value       | Unit |
|---------------------------------------------|-----------------------------------|-------------|------|
| Supply Voltage, (3) to (2)                  | V <sub>CC</sub>                   | 50          | V    |
| Input Voltage, (1) to (2)                   | V <sub>IN</sub>                   | -5 to +6    | V    |
| Input Voltage, (2) to (1)                   | V <sub>EBO</sub> (MAX)            | 5           | V    |
| Output Current                              | I <sub>C</sub>                    | 500         | mA   |
| Power Dissipation                           | P <sub>d</sub>                    | 200         | mW   |
| Thermal Resistance, Junction to Ambient Air | R <sub>θJA</sub>                  | 625         | °C/W |
| Operating and Storage Temperature Range     | T <sub>j</sub> , T <sub>STG</sub> | -55 to +150 | °C   |

- Notes:
1. Mounted on FR4 PC Board with recommended pad layout at <http://www.diodes.com/datasheets/ap02001.pdf>.
  2. No purposefully added lead.
  3. 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).
  4. Product manufactured with Date Code 0627 (week 27, 2006) and newer are built with Green Molding Compound. Product manufactured prior to Date Code 0627 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           | DDTD122LU<br>DDTD142JU | V <sub>I(off)</sub> | 0.3<br>0.3 | —   | —          | V    | V <sub>CC</sub> = 5V, I <sub>O</sub> = 100μA                                                 |
|                         | DDTD122LU<br>DDTD142JU | 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> = 50mA/2.5mA                                                  |
| Input Current           | DDTD122LU<br>DDTD142JU | 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         | DDTD122LU<br>DDTD142JU | G <sub>I</sub>      | 56<br>56   | —   | —          | —    | V <sub>O</sub> = 5V, I <sub>O</sub> = 50mA                                                   |
| 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

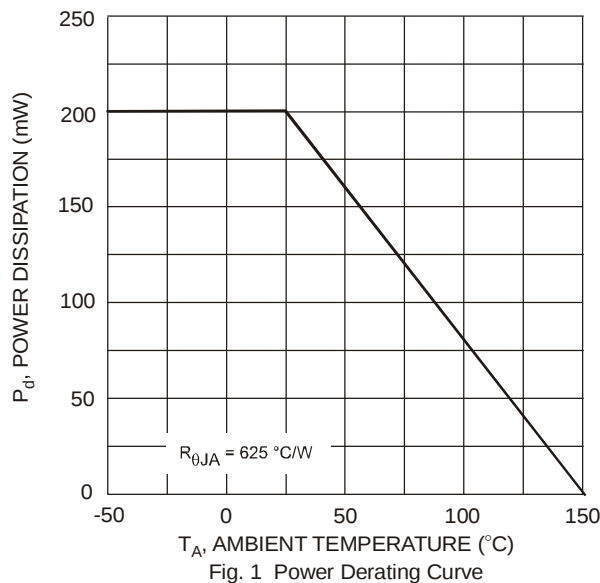
## Electrical Characteristics

@T<sub>A</sub> = 25°C unless otherwise specified

## R1-Only, R2-Only Types

| 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       | DDTD122TU<br>DDTD142TU | 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               | DDTD122TU<br>DDTD142TU | 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> = 50mA, I <sub>B</sub> = 2.5mA            |
| DC Current Transfer Ratio            | DDTD122TU<br>DDTD142TU | h <sub>FE</sub>      | 100<br>100 | 250<br>250 | 600<br>600 | —    | I <sub>C</sub> = 5mA, 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

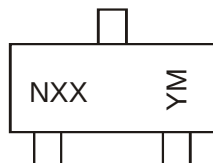


## Ordering Information (Note 4 & 5)

| Device        | Packaging | Shipping         |
|---------------|-----------|------------------|
| DDTD122LU-7-F | SOT-323   | 3000/Tape & Reel |
| DDTD142JU-7-F | SOT-323   | 3000/Tape & Reel |
| DDTD122TU-7-F | SOT-323   | 3000/Tape & Reel |
| DDTD142TU-7-F | SOT-323   | 3000/Tape & Reel |

Notes: 5. For packaging details, go to our website at <http://www.diodes.com/datasheets/ap02007.pdf>.

## Marking Information



NXX = Product Type Marking Code  
See Page 1 Table  
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   |

### IMPORTANT NOTICE

Diodes Incorporated and its subsidiaries reserve the right to make modifications, enhancements, improvements, corrections or other changes without further notice to any product herein. Diodes Incorporated does not assume any liability arising out of the application or use of any product described herein; neither does it convey any license under its patent rights, nor the rights of others. The user of products 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 our website, harmless against all damages.

### LIFE SUPPORT

Diodes Incorporated products are not authorized for use as critical components in life support devices or systems without the expressed written approval of the President of Diodes Incorporated.