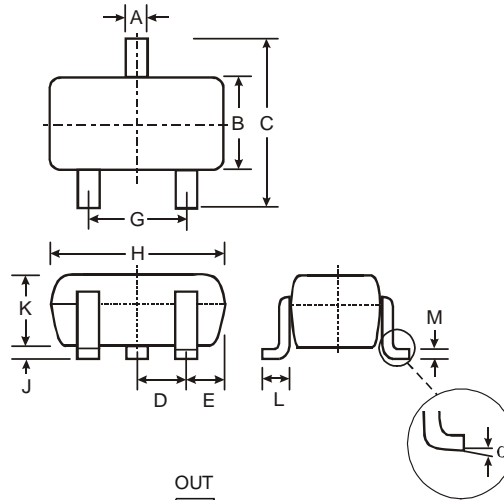


Features

- Epitaxial Planar Die Construction
- Complementary PNP Types Available (DDTB)
- Built-In Biasing Resistors, R1, R2
- **Lead Free/RoHS Compliant Version (Note 2)**
- **"Green" Device, Note 3 and 4**

Mechanical Data

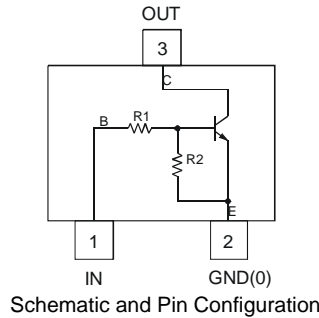
- Case: SOT-323
- Case Material: Molded Plastic, "Green" Molding Compound, Note 4. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020C
- Terminals: Solderable per MIL-STD-202, Method 208
- Terminal Connections: See Diagram
- Lead Free Plating (Matte Tin Finish annealed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



| 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 |
| α | 0° | 8° |

All Dimensions in mm

| P/N | R1 (NOM) | R2 (NOM) | MARKING |
|-----------|----------|----------|---------|
| DDTD113EU | 1K | 1K | N60 |
| DDTD123EU | 2.2K | 2.2K | N61 |
| DDTD143EU | 4.7K | 4.7K | N62 |
| DDTD114EU | 10K | 10K | N63 |
| DDTD122JU | 0.22K | 4.7K | N64 |
| DDTD113ZU | 1K | 10K | N65 |
| DDTD123YU | 2.2K | 10K | N66 |
| DDTD133HU | 3.3K | 10K | N67 |
| DDTD123TU | 2.2K | OPEN | N69 |
| DDTD143TU | 4.7K | OPEN | N70 |
| DDTD114TU | 10K | OPEN | N71 |
| DDTD114GU | 0 | 10K | N72 |



Maximum Ratings @T_A = 25°C unless otherwise specified

| Characteristic | Symbol | Value | Unit |
|--|-----------------------------------|---|------|
| Supply Voltage, (3) to (2) | V _{CC} | 50 | V |
| Input Voltage, (1) to (2) | V _{IN} | -10 to +10 -10 to +12 -10 to +30 -10 to +40 -5 to +5 -5 to +10 -5 to +12 -6 to +20 | V |
| Input Voltage, (2) to (1) | V _{EBO (MAX)} | 5 | V |
| Output Current | I _C | 500 | mA |
| Power Dissipation | P _d | 200 | mW |
| Thermal Resistance, Junction to Ambient Air (Note 1) | R _{θJA} | 625 | °C/W |
| Operating and Storage Temperature Range | T _j , T _{STG} | -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.
 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_A = 25°C unless otherwise specified

R1, R2 Types

| Characteristic | | Symbol | Min | Typ | Max | Unit | Test Condition |
|-------------------------|--|---------------------|--|-----|--|------|--|
| Input Voltage | DDTD113EU DDTD123EU DDTD143EU DDTD114EU DDTD122JU DDTD113ZU DDTD123YU DDTD133HU | V _{I(off)} | 0.5 0.5 0.5 0.5 0.5 0.3 0.3 0.3 | — | — | V | V _{CC} = 5V, I _O = 100μA |
| | DDTD113EU DDTD123EU DDTD143EU DDTD114EU DDTD122JU DDTD113ZU DDTD123YU DDTD133HU | V _{I(on)} | — | — | 3.0 3.0 3.0 3.0 3.0 2.0 2.0 2.0 | V | V _O = 0.3V, I _O = 20mA V _O = 0.3V, I _O = 20mA V _O = 0.3V, I _O = 20mA V _O = 0.3V, I _O = 10mA V _O = 0.3V, I _O = 30mA V _O = 0.3V, I _O = 20mA V _O = 0.3V, I _O = 20mA V _O = 0.3V, I _O = 20mA |
| Output Voltage | | V _{O(on)} | — | — | 0.3V | V | I _O /I _I = 50mA/2.5mA |
| Input Current | DDTD113EU DDTD123EU DDTD143EU DDTD114EU DDTD122JU DDTD113ZU DDTD123YU DDTD133HU | I _I | — | — | 7.2 3.8 1.8 0.88 28 7.2 3.6 2.4 | mA | V _I = 5V |
| Output Current | | I _{O(off)} | — | — | 0.5 | μA | V _{CC} = 50V, V _I = 0V |
| DC Current Gain | DDTD113EU DDTD123EU DDTD143EU DDTD114EU DDTD122JU DDTD113ZU DDTD123YU DDTD133HU | G _I | 33 39 47 56 47 56 56 56 | — | — | — | V _O = 5V, I _O = 50mA |
| Gain-Bandwidth Product* | | f _T | — | 200 | — | MHz | V _{CE} = 10V, I _E = 5mA, f = 100MHz |

* Transistor - For Reference Only

Electrical Characteristics @T_A = 25°C unless otherwise specified

R1-Only, R2-Only Types

| Characteristic | | Symbol | Min | Typ | Max | Unit | Test Condition |
|--------------------------------------|--|----------------------|-------------------------|------------------------|--------------------------|------|---|
| Collector-Base Breakdown Voltage | | BV _{CBO} | 50 | — | — | V | I _C = 50μA |
| Collector-Emitter Breakdown Voltage | | BV _{CEO} | 40 | — | — | V | I _C = 1mA |
| Emitter-Base Breakdown Voltage | DDTD123TU DDTD143TU DDTD114TU DDTD114GU | BV _{EBO} | 5 | — | — | V | I _E = 50μA I _E = 50μA I _E = 50μA I _E = 720μA |
| Collector Cutoff Current | | I _{CBO} | — | — | 0.5 | μA | V _{CB} = 50V |
| Emitter Cutoff Current | DDTD123TU DDTD143TU DDTD114TU DDTD114GU | I _{EBO} | — — — 300 | — | 0.5 0.5 0.5 580 | μA | V _{EB} = 4V |
| Collector-Emitter Saturation Voltage | | V _{CE(sat)} | — | — | 0.3 | V | I _C = 50mA, I _B = 2.5mA |
| DC Current Transfer Ratio | DDTD123TU DDTD143TU DDTD114TU DDTD114GU | h _{FE} | 100 100 100 56 | 250 250 250 — | 600 600 600 — | — | I _C = 5mA, V _{CE} = 5V |
| Gain-Bandwidth Product* | | f _T | — | 200 | — | MHz | V _{CE} = 10V, I _E = -5mA, f = 100MHz |

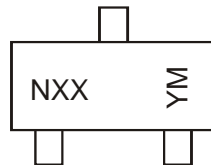
* Transistor - For Reference Only

Ordering Information (Note 4 & 5)

| Device | Packaging | Shipping |
|---------------|-----------|------------------|
| DDTD113EU-7-F | SOT-323 | 3000/Tape & Reel |
| DDTD123EU-7-F | SOT-323 | 3000/Tape & Reel |
| DDTD143EU-7-F | SOT-323 | 3000/Tape & Reel |
| DDTD114EU-7-F | SOT-323 | 3000/Tape & Reel |
| DDTD122JU-7-F | SOT-323 | 3000/Tape & Reel |
| DDTD113ZU-7-F | SOT-323 | 3000/Tape & Reel |
| DDTD123YU-7-F | SOT-323 | 3000/Tape & Reel |
| DDTD133HU-7-F | SOT-323 | 3000/Tape & Reel |
| DDTD123TU-7-F | SOT-323 | 3000/Tape & Reel |
| DDTD143TU-7-F | SOT-323 | 3000/Tape & Reel |
| DDTD114TU-7-F | SOT-323 | 3000/Tape & Reel |
| DDTD114GU-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
 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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