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Contact us

Tel: +86-755-8981 8866 Fax: +86-755-8427 6832

Email & Skype: info@chipsmall.com Web: www.chipsmall.com

Address: A1208, Overseas Decoration Building, #122 Zhenhua RD., Futian, Shenzhen, China

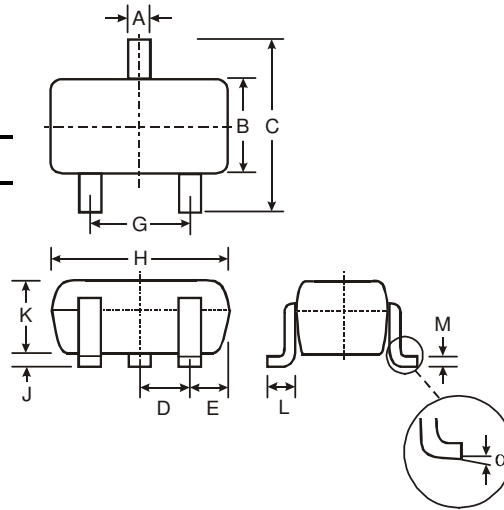


Features

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

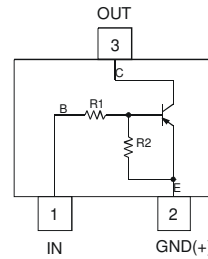
Mechanical Data

- 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
- Terminal Connections: See Diagram
- Terminals: Solderable per MIL-STD-202, Method 208
- Lead Free Plating (Matte Tin Finish annealed over Alloy 42 leadframe).
- Marking Code & Date Code 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) | Type Code |
|-----------|----------|----------|-----------|
| DDTB113EU | 1K | 1K | P60 |
| DDTB123EU | 2.2K | 2.2K | P61 |
| DDTB143EU | 4.7K | 4.7K | P62 |
| DDTB114EU | 10K | 10K | P63 |
| DDTB122JU | 0.22K | 4.7K | P64 |
| DDTB113ZU | 1K | 10K | P65 |
| DDTB123YU | 2.2K | 10K | P66 |
| DDTB133HU | 3.3K | 10K | P67 |
| DDTB123TU | 2.2K | OPEN | P69 |
| DDTB143TU | 4.7K | OPEN | P70 |
| DDTB114TU | 10K | OPEN | P71 |
| DDTB114GU | 0 | 10K | P72 |



Schematic and Pin Configuration

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 @ $T_A = 25^\circ\text{C}$ unless otherwise specified **R1, R2 Types**

| Characteristic | | Symbol | Min | Typ | Max | Unit | Test Condition |
|-------------------------|--|--------------|--|-----|--|---------|--|
| Input Voltage | DDTB113EU DDTB123EU DDTB143EU DDTB114EU DDTB122JU DDTB113ZU DDTB123YU DDTB133HU | $V_{I(off)}$ | -0.5 -0.5 -0.5 -0.5 -0.5 -0.3 -0.3 -0.3 | — | — | V | $V_{CC} = -5V, I_O = -100\mu A$ |
| | DDTB113EU DDTB123EU DDTB143EU DDTB114EU DDTB122JU DDTB113ZU DDTB123YU DDTB133HU | $V_{I(on)}$ | — | — | -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 | DDTB113EU DDTB123EU DDTB143EU DDTB114EU DDTB122JU DDTB113ZU DDTB123YU DDTB133HU | 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 | DDTB113EU DDTB123EU DDTB143EU DDTB114EU DDTB122JU DDTB113ZU DDTB123YU DDTB133HU | 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 @ $T_A = 25^\circ\text{C}$ unless otherwise specified **R1-Only, R2-Only Types**

| Characteristic | | Symbol | Min | Typ | Max | Unit | Test Condition |
|--------------------------------------|--|---------------|-------------------------|------------------------|------------------------------|---------|---|
| Collector-Base Breakdown Voltage | | BV_{CBO} | -50 | — | — | V | $I_C = -50\mu A$ |
| Collector-Emitter Breakdown Voltage | | BV_{CEO} | -40 | — | — | V | $I_C = -1mA$ |
| Emitter-Base Breakdown Voltage | DDTB123TU DDTB143TU DDTB114TU DDTB114GU | BV_{EBO} | -5 | — | — | V | $I_E = -50\mu A$ $I_E = -50\mu A$ $I_E = -50\mu A$ $I_E = -720\mu A$ |
| Collector Cutoff Current | | I_{CBO} | — | — | -0.5 | μA | $V_{CB} = -50V$ |
| Emitter Cutoff Current | DDTB123TU DDTB143TU DDTB114TU DDTB114GU | 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 | DDTB123TU DDTB143TU DDTB114TU DDTB114GU | 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 | $V_{CE} = -10V, I_E = 5mA, f = 100MHz$ |

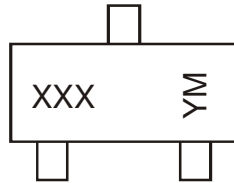
* Transistor - For Reference Only

Ordering Information (Note 4 & 5)

| Device | Packaging | Shipping |
|---------------|-----------|------------------|
| DDTB113EU-7-F | SOT-323 | 3000/Tape & Reel |
| DDTB123EU-7-F | SOT-323 | 3000/Tape & Reel |
| DDTB143EU-7-F | SOT-323 | 3000/Tape & Reel |
| DDTB114EU-7-F | SOT-323 | 3000/Tape & Reel |
| DDTB122JU-7-F | SOT-323 | 3000/Tape & Reel |
| DDTB113ZU-7-F | SOT-323 | 3000/Tape & Reel |
| DDTB123YU-7-F | SOT-323 | 3000/Tape & Reel |
| DDTB133HU-7-F | SOT-323 | 3000/Tape & Reel |
| DDTB123TU-7-F | SOT-323 | 3000/Tape & Reel |
| DDTB143TU-7-F | SOT-323 | 3000/Tape & Reel |
| DDTB114TU-7-F | SOT-323 | 3000/Tape & Reel |
| DDTB114GU-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



XXX = Product Type Marking Code, See Table on 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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