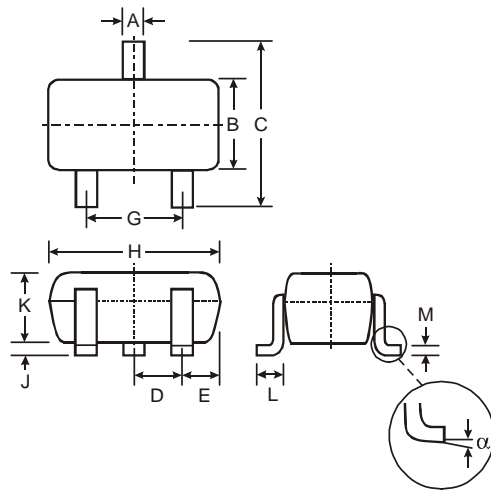


**Features**

- Epitaxial Planar Die Construction
- Complementary NPN Types Available (DDTC)
- Built-In Biasing Resistors, R1≠R2
- **Lead Free/RoHS Compliant (Note 1)**
- **"Green" Device (Note 2 & 3)**

**Mechanical Data**

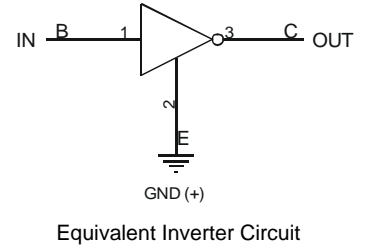
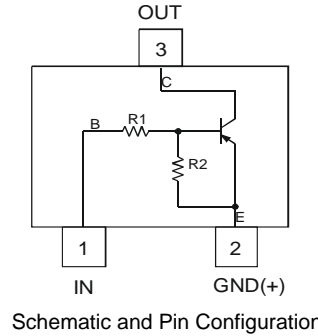
- Case: SOT-323
- Case Material: Molded Plastic, "Green" Molding Compound, Note 3. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020C
- Terminal Connections: See Diagram
- Terminals: Solderable per MIL-STD-202, Method 208
- Lead Free Plating (Matte Tin Finish annealed over Alloy 42 leadframe).
- Marking Information: See Page 4
- Type Code: See Table Below
- Ordering Information: See Page 4
- 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 |
|------------|----------|----------|-----------|
| DDTA113ZUA | 1KΩ      | 10KΩ     | P02       |
| DDTA123YUA | 2.2KΩ    | 10KΩ     | P05       |
| DDTA123JUA | 2.2KΩ    | 47KΩ     | P06       |
| DDTA143XUA | 4.7KΩ    | 10KΩ     | P09       |
| DDTA143FUA | 4.7KΩ    | 22KΩ     | P10       |
| DDTA143ZUA | 4.7KΩ    | 47KΩ     | P11       |
| DDTA114YUA | 10KΩ     | 47KΩ     | P14       |
| DDTA114WUA | 10KΩ     | 4.7KΩ    | P15       |
| DDTA124XUA | 22KΩ     | 47KΩ     | P18       |
| DDTA144VUA | 47KΩ     | 10KΩ     | P21       |
| DDTA144WUA | 47KΩ     | 22KΩ     | P22       |



**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 -10<br>+5 to -12<br>+5 to -12<br>+7 to -20<br>+6 to -30<br>+5 to -30<br>+6 to -40<br>+10 to -30<br>+10 to -40<br>+15 to -40<br>+10 to -40 | V    |
| Output Current             | I <sub>O</sub>  | -100<br>-100<br>-100<br>-100<br>-100<br>-100<br>-70<br>-100<br>-50<br>-30<br>-30  | mA   |

- Notes:
1. No purposefully added lead.
  2. 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).
  3. 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.

**Maximum Ratings (continued)** @T<sub>A</sub> = 25°C unless otherwise specified

| Characteristic                                       | Symbol                            | Value       | Unit |
|--|-----------------------------------|-------------|------|
| Output Current                                       | I <sub>C</sub> (Max)              | -100        | mA   |
| Power Dissipation                                    | P <sub>d</sub>                    | 200         | mW   |
| Thermal Resistance, Junction to Ambient Air (Note 4) | 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: 4. Mounted on FR4 PC Board with recommended pad layout as shown on Diodes Inc., suggested pad layout document AP02001, which can be found on our website at <http://www.diodes.com/datasheets/ap02001.pdf>

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

| Characteristic  | Symbol              | Min                        | Typ                             | Max   | Unit | Test Condition                               |  |      |     |   |
|-----------------|---------------------|----------------------------|---------------------------------|-------|------|--|--|------|-----|---|
| Input Voltage   | V <sub>I(off)</sub> | -0.3                       |                                 |       | V    | V <sub>CC</sub> = 5V, I <sub>O</sub> = 100μA |  |      |     |   |
|                 |                     | -0.3                       |                                 |       |      |  |  |      |     |   |
|                 |                     | -0.5                       |                                 |       |      |  |  |      |     |   |
|                 |                     | -0.3                       |                                 |       |      |  |  |      |     |   |
|                 |                     | -0.3                       |                                 |       |      |  |  |      |     |   |
|                 |                     | -0.5                       | —                               | —     |      |  |  |      |     |   |
|                 |                     | -0.3                       |                                 |       |      |  |  |      |     |   |
|                 |                     | -0.8                       |                                 |       |      |  |  |      |     |   |
|                 |                     | -0.4                       |                                 |       |      |  |  |      |     |   |
|                 |                     | -1.0                       |                                 |       |      |  |  |      |     |   |
|                 |                     | -0.8                       |                                 |       |      |  |  |      |     |   |
|                 |                     | DDTA113ZUA                 | V <sub>I(on)</sub>              |       |      |  |  | -3.0 | V   | V <sub>O</sub> = -0.3V, I <sub>O</sub> = -20mA              |
|                 |                     | DDTA123YUA                 |                                 |       |      |  |  | -3.0 |     |   |
|                 |                     | DDTA123JUA                 |                                 |       |      |  |  | -1.1 |     |   |
| DDTA143XUA      |                     |                            |                                 | -2.5  |      |  |  |      |     |   |
| DDTA143FUA      |                     |                            |                                 | -1.3  |      |  |  |      |     |   |
| DDTA143ZUA      |                     |                            |                                 | -1.3  |      |  |  |      |     |   |
| DDTA114YUA      |                     |                            |                                 | -1.4  |      |  |  |      |     |   |
| DDTA114WUA      |                     |                            |                                 | -3.0  |      |  |  |      |     |   |
| DDTA124XUA      |                     |                            |                                 | -2.5  |      |  |  |      |     |   |
| DDTA144VUA      |                     |                            |                                 | -5.0  |      |  |  |      |     |   |
| DDTA144WUA      |                     |                            |                                 | -4.0  |      |  |  |      |     |   |
| DDTA144WUA      |                     |                            |                                 | -4.0  |      |  |  |      |     |   |
| DDTA144WUA      |                     |                            |                                 | -4.0  |      |  |  |      |     |   |
| Output Voltage  | V <sub>O(on)</sub>  | —                          |                                 | -0.1  | -0.3 | V  | I <sub>O</sub> /I <sub>I</sub> = -5mA/-0.25mA DDTA123JUA<br>I <sub>O</sub> /I <sub>I</sub> = -5mA/-0.25mA DDTA143ZUA<br>I <sub>O</sub> /I <sub>I</sub> = -5mA/-0.25mA DDTA114YUA<br>I <sub>O</sub> /I <sub>I</sub> = -10mA/-0.5mA All Others |      |     |   |
| Input Current   | I <sub>I</sub>      |                            |                                 | -7.2  | mA   | V <sub>I</sub> = -5V                         |  |      |     |   |
|                 |                     |                            |                                 | -3.8  |      |  |  |      |     |   |
|                 |                     |                            |                                 | -3.6  |      |  |  |      |     |   |
|                 |                     |                            |                                 | -1.8  |      |  |  |      |     |   |
|                 |                     |                            |                                 | -1.8  |      |  |  |      |     |   |
|                 |                     |                            |                                 | -1.8  |      |  |  |      |     |   |
|                 |                     |                            |                                 | -0.88 |      |  |  |      |     |   |
|                 |                     |                            |                                 | -0.88 |      |  |  |      |     |   |
|                 |                     |                            |                                 | -0.36 |      |  |  |      |     |   |
|                 |                     |                            |                                 | -0.16 |      |  |  |      |     |   |
|                 |                     |                            |                                 | -0.16 |      |  |  |      |     |   |
|                 |                     |                            |                                 | -0.16 |      |  |  |      |     |   |
|                 |                     |                            |                                 | -0.16 |      |  |  |      |     |   |
|                 |                     | Output Current             | I <sub>O(off)</sub>             | —     |      |  | —  | -0.5 | μA  | V <sub>CC</sub> = -50V, V <sub>I</sub> = 0V                 |
| DC Current Gain | G <sub>I</sub>      | -33                        |                                 |       |      | V <sub>O</sub> = -5V, I <sub>O</sub> = -10mA |  |      |     |   |
|                 |                     | -33                        |                                 |       |      |  |  |      |     |   |
|                 |                     | -80                        |                                 |       |      |  |  |      |     |   |
|                 |                     | -30                        |                                 |       |      |  |  |      |     |   |
|                 |                     | -68                        |                                 |       |      |  |  |      |     |   |
|                 |                     | -80                        | —                               | —     |      |  |  |      |     |   |
|                 |                     | -68                        |                                 |       |      |  |  |      |     |   |
|                 |                     | -24                        |                                 |       |      |  |  |      |     |   |
|                 |                     | -68                        |                                 |       |      |  |  |      |     |   |
|                 |                     | -33                        |                                 |       |      |  |  |      |     |   |
|                 |                     | -56                        |                                 |       |      |  |  |      |     |   |
|                 |                     | Input Resistor Tolerance   | ΔR <sub>1</sub>                 | -30   |      |  | —  | +30  | %   | —   |
|                 |                     | Resistance Ratio Tolerance | ΔR <sub>2</sub> /R <sub>1</sub> | -20   |      |  | —  | +20  | %   | —   |
|                 |                     | Gain-Bandwidth Product*    | f <sub>T</sub>                  | —     |      |  | 250  | —    | MHz | V <sub>CE</sub> = -10V, I <sub>E</sub> = 5mA,<br>f = 100MHz |

\* Transistor - For Reference Only

## Typical Curves – DDTA123JUA

NEW PRODUCT

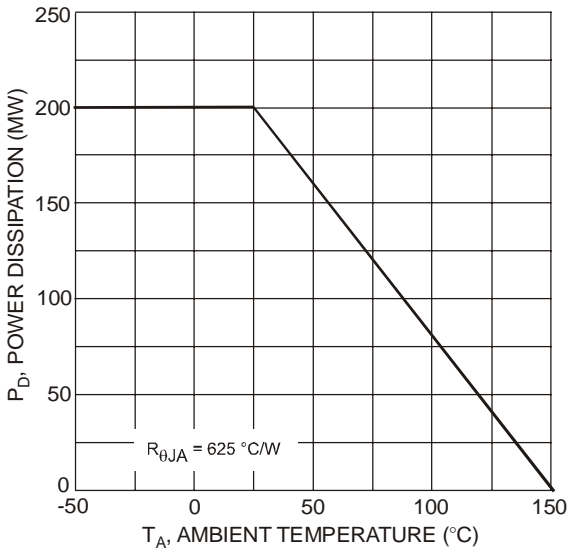


Fig. 1 Derating Curve

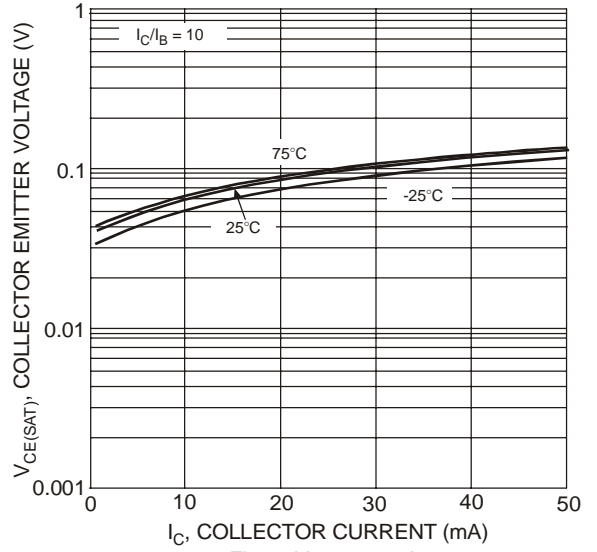


Fig. 2  $V_{CE(SAT)}$  vs.  $I_C$

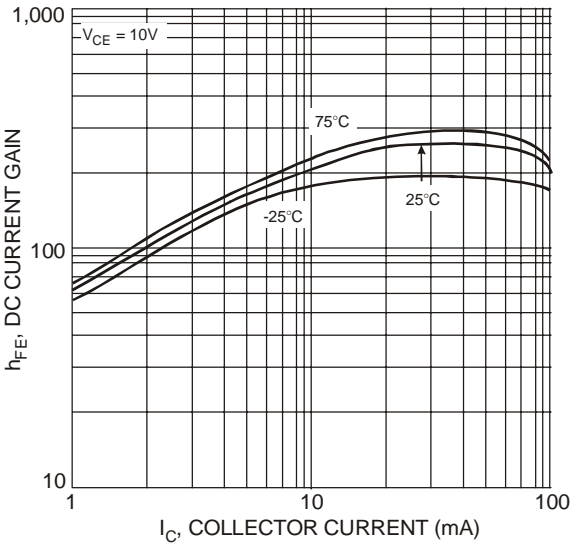


Fig. 3 DC Current Gain

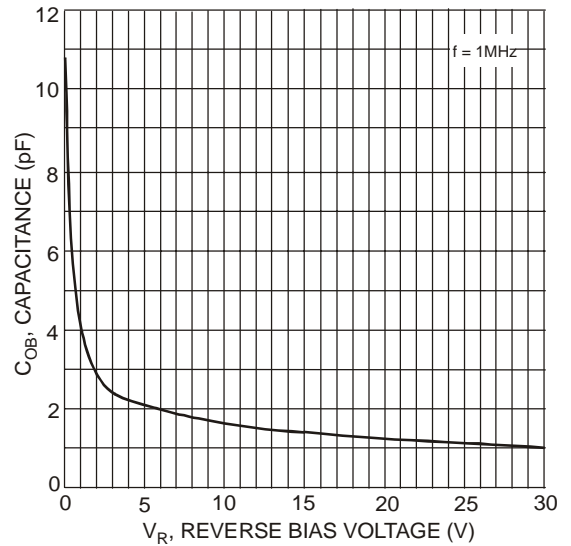


Fig. 4 Output Capacitance

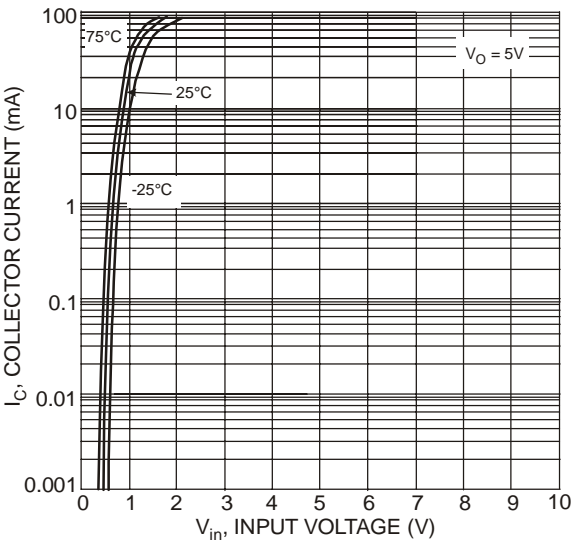


Fig. 5 Collector Current vs. Input Voltage

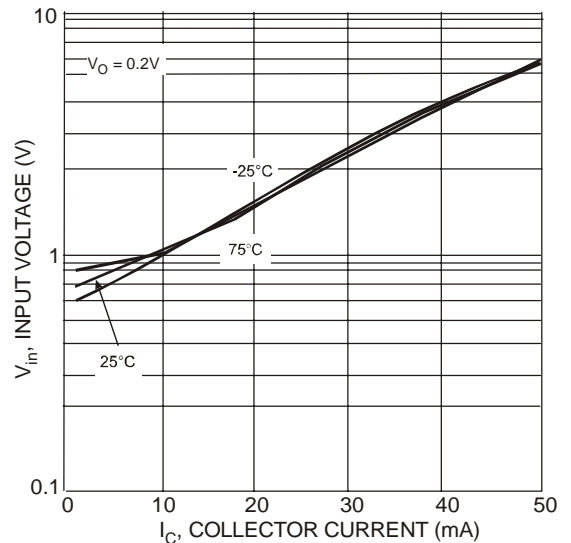


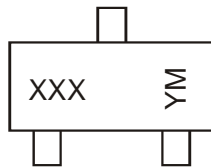
Fig. 6 Input Voltage vs. Collector Current

## Ordering Information (Note 3 & 5)

| Device         | Packaging | Shipping         |
|----------------|-----------|------------------|
| DDTA113ZUA-7-F | SOT-323   | 3000/Tape & Reel |
| DDTA123YUA-7-F | SOT-323   | 3000/Tape & Reel |
| DDTA123JUA-7-F | SOT-323   | 3000/Tape & Reel |
| DDTA143XUA-7-F | SOT-323   | 3000/Tape & Reel |
| DDTA143FUA-7-F | SOT-323   | 3000/Tape & Reel |
| DDTA143ZUA-7-F | SOT-323   | 3000/Tape & Reel |
| DDTA114YUA-7-F | SOT-323   | 3000/Tape & Reel |
| DDTA114WUA-7-F | SOT-323   | 3000/Tape & Reel |
| DDTA124XUA-7-F | SOT-323   | 3000/Tape & Reel |
| DDTA144VUA-7-F | SOT-323   | 3000/Tape & Reel |
| DDTA144WUA-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 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 |
|------|------|------|------|------|------|------|------|
| Code | 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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- Поставка сложных, дефицитных, либо снятых с производства позиций;
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- Экспресс доставка в любую точку России;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
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- Подбор аналогов;
- Консультации по применению компонента;
- Поставка образцов и прототипов;
- Техническая поддержка проекта;
- Защита от снятия компонента с производства.



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