

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

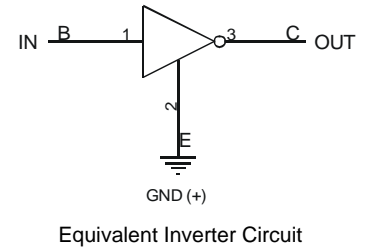
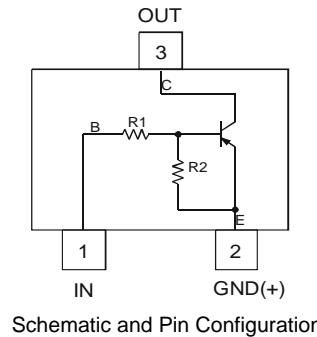
- Case: SOT-323
- Case Material: Molded Plastic, "Green" Molding Compound, Note 3. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020C
- Terminal Connections: See Diagram
- Terminals: Solderable per MIL-STD-202, Method 208
- Lead Free Plating (Matte Tin Finish annealed 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_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} | +5 to -10 +5 to -12 +5 to -12 +7 to -20 +6 to -30 +5 to -30 +6 to -40 +10 to -30 +10 to -40 +15 to -40 +10 to -40 | V |
| Output Current | I _O | -100 -100 -100 -100 -100 -100 -70 -100 -50 -30 -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.
 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_A = 25°C unless otherwise specified

| Characteristic | Symbol | Value | Unit |
|--|-----------------------------------|-------------|------|
| Output Current | I _C (Max) | -100 | mA |
| Power Dissipation | P _d | 200 | mW |
| Thermal Resistance, Junction to Ambient Air (Note 4) | R _{θJA} | 625 | °C/W |
| Operating and Storage Temperature Range | T _j , T _{STG} | -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_A = 25°C unless otherwise specified

| Characteristic | Symbol | Min | Typ | Max | Unit | Test Condition | | | |
|----------------------------|---------------------------------|------------|------|-------|------|---|--|--|--|
| Input Voltage | V _{I(off)} | -0.3 | | | V | V _{CC} = 5V, I _O = 100μA | | | |
| | | -0.3 | | | | | | | |
| | | -0.5 | | | | | | | |
| | | -0.3 | | | | | | | |
| | | -0.3 | | | | | | | |
| | | -0.5 | — | — | | | | | |
| | | -0.3 | | | | | | | |
| | | -0.8 | | | | | | | |
| | | -0.4 | | | | | | | |
| | | -1.0 | | | | | | | |
| | | -0.8 | | | | | | | |
| | | DDTA113ZUA | | | | | | | |
| | | DDTA123YUA | | | | | | | |
| | | DDTA123JUA | | | | | | | |
| DDTA143XUA | | | | | | | | | |
| DDTA143FUA | | | | | | | | | |
| DDTA143ZUA | | | | | | | | | |
| DDTA114YUA | | | | | | | | | |
| DDTA114WUA | | | | | | | | | |
| DDTA124XUA | | | | | | | | | |
| DDTA144VUA | | | | | | | | | |
| DDTA144WUA | | | | | | | | | |
| Input Voltage | V _{I(on)} | | | -3.0 | V | V _O = -0.3V, I _O = -20mA V _O = -0.3V, I _O = -20mA V _O = -0.3V, I _O = -5mA V _O = -0.3V, I _O = -20mA V _O = -0.3V, I _O = -3mA V _O = -0.3V, I _O = -5mA V _O = -0.3V, I _O = -1mA V _O = -0.3V, I _O = -2mA V _O = -0.3V, I _O = -2mA V _O = -0.3V, I _O = -2mA V _O = -0.3V, I _O = -2mA V _O = -0.3V, I _O = -2mA | | | |
| | | | | -3.0 | | | | | |
| | | | | -1.1 | | | | | |
| | | | | -2.5 | | | | | |
| | | | | -1.3 | | | | | |
| | | | | -1.3 | | | | | |
| | | | | -1.4 | | | | | |
| | | | | -3.0 | | | | | |
| | | | | -2.5 | | | | | |
| | | | | -5.0 | | | | | |
| | | | | -4.0 | | | | | |
| | | DDTA113ZUA | | | | | | | |
| | | DDTA123YUA | | | | | | | |
| | | DDTA123JUA | | | | | | | |
| DDTA143XUA | | | | | | | | | |
| DDTA143FUA | | | | | | | | | |
| DDTA143ZUA | | | | | | | | | |
| DDTA114YUA | | | | | | | | | |
| DDTA114WUA | | | | | | | | | |
| DDTA124XUA | | | | | | | | | |
| DDTA144VUA | | | | | | | | | |
| DDTA144WUA | | | | | | | | | |
| Output Voltage | V _{O(on)} | — | -0.1 | -0.3 | V | I _O /I _I = -5mA/-0.25mA DDTA123JUA I _O /I _I = -5mA/-0.25mA DDTA143ZUA I _O /I _I = -5mA/-0.25mA DDTA114YUA I _O /I _I = -10mA/-0.5mA All Others | | | |
| Input Current | I _I | | | -7.2 | mA | V _I = -5V | | | |
| | | | | -3.8 | | | | | |
| | | | | -3.6 | | | | | |
| | | | | -1.8 | | | | | |
| | | | | -1.8 | | | | | |
| | | | | -1.8 | | | | | |
| | | | | -0.88 | | | | | |
| | | | | -0.88 | | | | | |
| | | | | -0.36 | | | | | |
| | | | | -0.16 | | | | | |
| | | | | -0.16 | | | | | |
| | | DDTA113ZUA | | | | | | | |
| | | DDTA123YUA | | | | | | | |
| | | DDTA123JUA | | | | | | | |
| DDTA143XUA | | | | | | | | | |
| DDTA143FUA | | | | | | | | | |
| DDTA143ZUA | | | | | | | | | |
| DDTA114YUA | | | | | | | | | |
| DDTA114WUA | | | | | | | | | |
| DDTA124XUA | | | | | | | | | |
| DDTA144VUA | | | | | | | | | |
| DDTA144WUA | | | | | | | | | |
| Output Current | I _{O(off)} | — | — | -0.5 | μA | V _{CC} = -50V, V _I = 0V | | | |
| DC Current Gain | G _I | -33 | | | — | V _O = -5V, I _O = -10mA | | | |
| | | -33 | | | | | | | |
| | | -80 | | | | | | | |
| | | -30 | | | | | | | |
| | | -68 | | | | | | | |
| | | -80 | | | | | | | |
| | | -68 | | | | | | | |
| | | -24 | | | | | | | |
| | | -68 | | | | | | | |
| | | -33 | | | | | | | |
| | | -56 | | | | | | | |
| | | DDTA113ZUA | | | | | | | |
| | | DDTA123YUA | | | | | | | |
| | | DDTA123JUA | | | | | | | |
| DDTA143XUA | | | | | | | | | |
| DDTA143FUA | | | | | | | | | |
| DDTA143ZUA | | | | | | | | | |
| DDTA114YUA | | | | | | | | | |
| DDTA114WUA | | | | | | | | | |
| DDTA124XUA | | | | | | | | | |
| DDTA144VUA | | | | | | | | | |
| DDTA144WUA | | | | | | | | | |
| Input Resistor Tolerance | ΔR ₁ | -30 | — | +30 | % | — | | | |
| Resistance Ratio Tolerance | ΔR ₂ /R ₁ | -20 | — | +20 | % | — | | | |
| Gain-Bandwidth Product* | f _T | — | 250 | — | MHz | V _{CE} = -10V, I _E = 5mA, f = 100MHz | | | |

* Transistor - For Reference Only

Typical Curves – DDTA123JUA

NEW PRODUCT



Fig. 1 Derating Curve

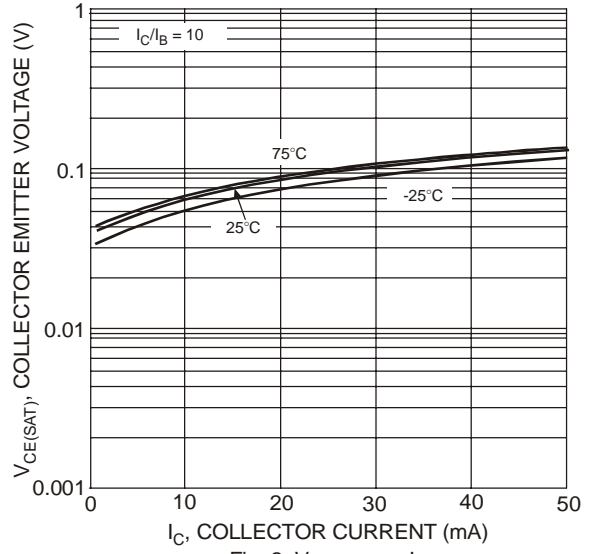


Fig. 2 $V_{CE(SAT)}$ vs. I_C

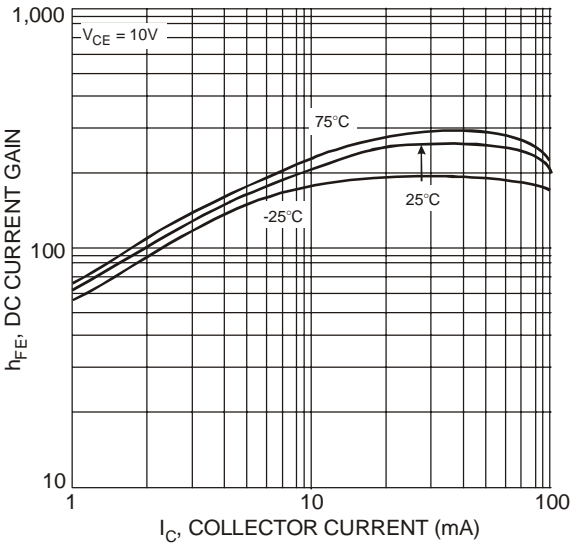


Fig. 3 DC Current Gain

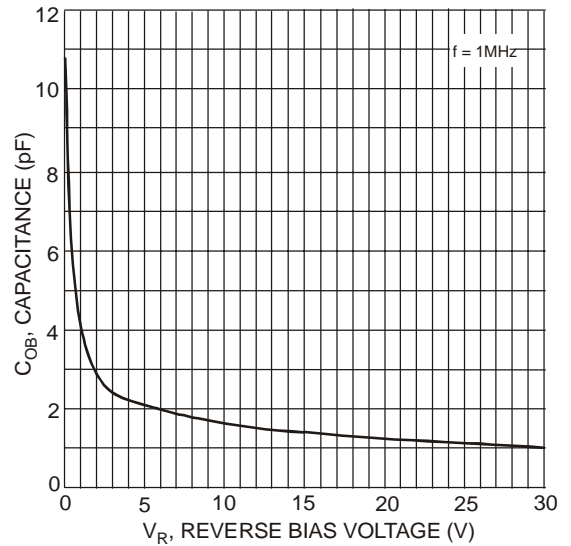


Fig. 4 Output Capacitance

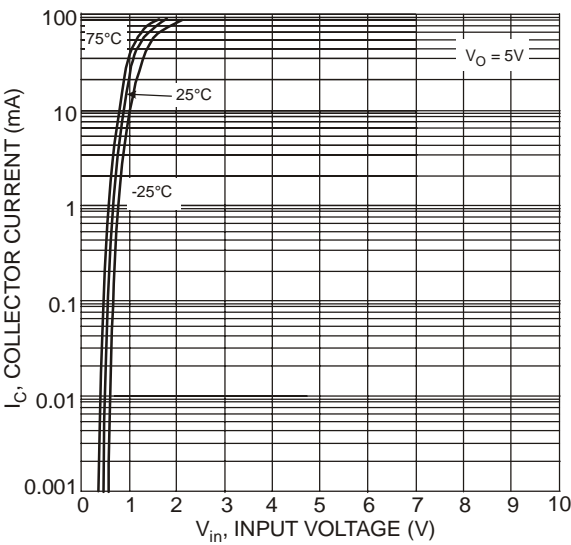


Fig. 5 Collector Current vs. Input Voltage

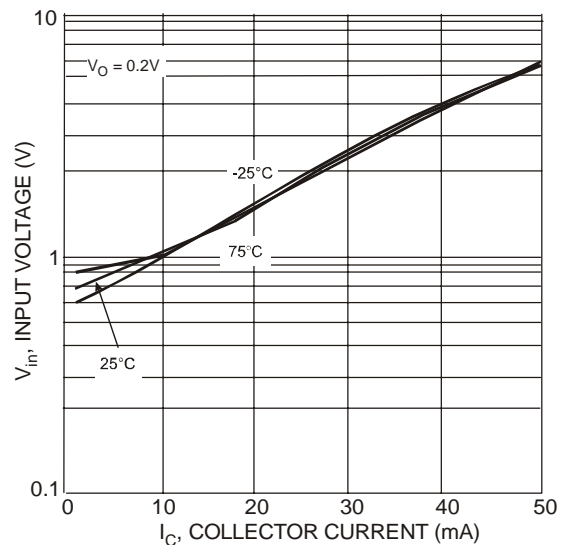


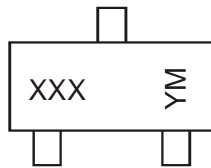
Fig. 6 Input Voltage vs. Collector Current

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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