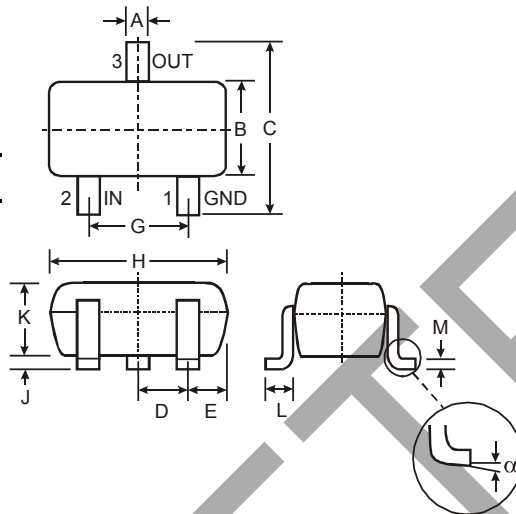


Features

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

Mechanical Data

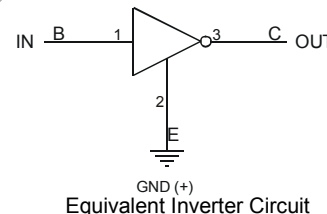
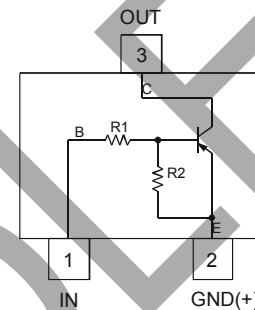
- Case: SOT-323
- Case Material: Molded Plastic, "Green" Molding
- Compound, Note 4. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020C
- Terminals: Solderable per MIL-STD-202, Method 208
- Terminal Connections: See Diagram
- Lead Free Plating (Matte Tin Finish annealed over Alloy 42 leadframe)
- Marking Information: See Table Below and 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 |
|-----------|----------------|--------------|-----------|
| DDTA122LU | 0.22K Ω | 10K Ω | P81 |
| DDTA142JU | 0.47K Ω | 10K Ω | P82 |
| DDTA122TU | 0.22K Ω | OPEN | P83 |
| DDTA142TU | 0.47K Ω | OPEN | P84 |



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} | +5 to -6 | V |
| Input Voltage, (2) to (1) | V _{EBO (MAX)} | -5 | V |
| Output Current | I _C | -100 | mA |
| Power Dissipation (Note 1) | 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.

OBSOLETE - PART DISCONTINUED

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

| Characteristic | Symbol | Min | Typ | Max | Unit | Test Condition | |
|-------------------------|------------------------|--------------|--------------|-----|--------------|----------------|--|
| Input Voltage | DDTA122LU DDTA142JU | $V_{I(off)}$ | -0.3 -0.3 | — | — | V | $V_{CC} = -5V, I_O = -100\mu A$ |
| | DDTA122LU DDTA142JU | $V_{I(on)}$ | — | — | -2.0 -2.0 | V | $V_O = -0.3V, I_O = -20mA$ $V_O = -0.3V, I_O = -20mA$ |
| Output Voltage | | $V_{O(on)}$ | — | — | -0.3V | V | $I_O/I_I = -5mA/-0.25mA$ |
| Input Current | DDTA122LU DDTA142JU | I_I | — | — | -28 -13 | mA | $V_I = -5V$ |
| Output Current | | $I_{O(off)}$ | — | — | -0.5 | μA | $V_{CC} = -50V, V_I = 0V$ |
| DC Current Gain | DDTA122LU DDTA142JU | G_I | 56 56 | — | — | — | $V_O = -5V, I_O = -10mA$ |
| 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 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 | DDTA122TU DDTA142TU | BV_{EBO} | -5 | — | — | V | $I_E = -50\mu A$ $I_E = -50\mu A$ |
| Collector Cutoff Current | | I_{CBO} | — | — | -0.5 | μA | $V_{CB} = -50V$ |
| Emitter Cutoff Current | DDTA122TU DDTA142TU | I_{EBO} | — | — | -0.5 -0.5 | μA | $V_{EB} = -4V$ |
| Collector-Emitter Saturation Voltage | | $V_{CE(sat)}$ | — | — | -0.3 | V | $I_C = -5mA, I_B = -0.25mA$ |
| DC Current Transfer Ratio | DDTA122TU DDTA142TU | h_{FE} | 100 100 | 250 250 | 600 600 | — | $I_C = -1mA, V_{CE} = -5V$ |
| Gain-Bandwidth Product* | | f_T | — | 200 | — | MHz | $V_{CE} = -10V, I_E = 5mA, f = 100MHz$ |

* Transistor - For Reference Only

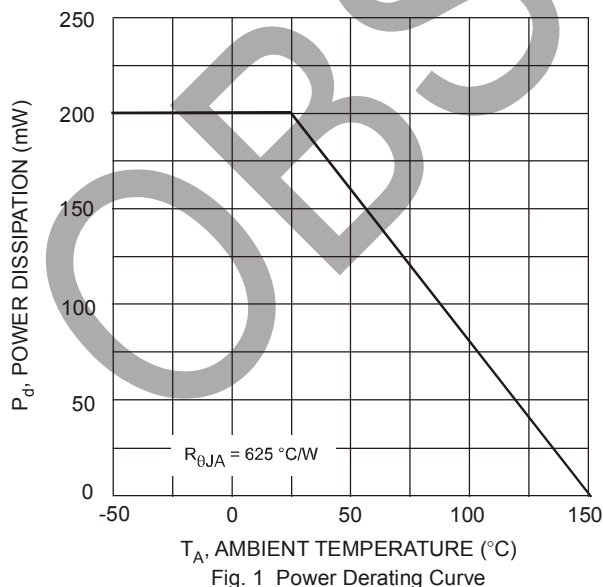


Fig. 1 Power Derating Curve

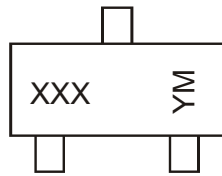
OBSOLETE - PART DISCONTINUED

Ordering Information (Note 4 & 5)

| Device | Packaging | Shipping |
|---------------|-----------|------------------|
| DDTA122LU-7-F | SOT-323 | 3000/Tape & Reel |
| DDTA142JU-7-F | SOT-323 | 3000/Tape & Reel |
| DDTA122TU-7-F | SOT-323 | 3000/Tape & Reel |
| DDTA142TU-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: I = 2021
 M = Month ex: 9 = September

Date Code Key

| Year | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 |
|------|------|------|------|------|------|------|------|
| Code | I | J | K | L | M | N | O |

| 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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