

DDTA (R1 = R2 SERIES) E

PNP PRE-BIASED SMALL SIGNAL SURFACE MOUNT TRANSISTOR

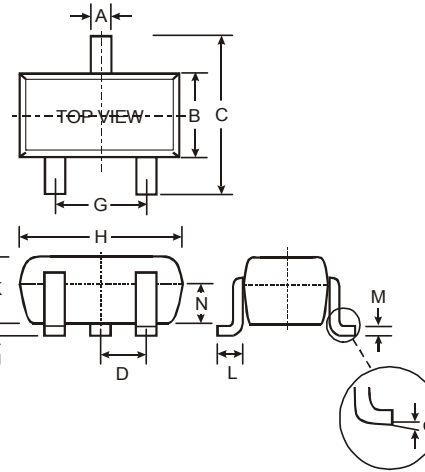
NEW PRODUCT

Features

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

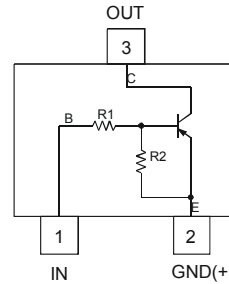
Mechanical Data

- Case: SOT-523
- Case Material: Molded Plastic. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020C
- Terminals: Finish - Solderable per MIL-STD-202, Method 208
- Lead Free Plating (Matte Tin Finish annealed over Alloy 42 leadframe).
- Terminal Connections: See Diagram
- Marking & Date Code Information: See Table Below & Page 4
- Ordering Information: See Page 4
- Weight: 0.002 grams (approximate)

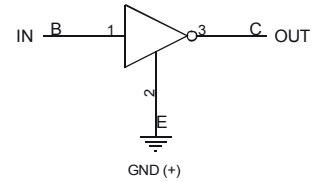


| SOT-523 | | | |
|----------------------|------|------|------|
| Dim | Min | Max | Typ |
| A | 0.15 | 0.30 | 0.22 |
| B | 0.75 | 0.85 | 0.80 |
| C | 1.45 | 1.75 | 1.60 |
| D | — | — | 0.50 |
| G | 0.90 | 1.10 | 1.00 |
| H | 1.50 | 1.70 | 1.60 |
| J | 0.00 | 0.10 | 0.05 |
| K | 0.60 | 0.80 | 0.75 |
| L | 0.10 | 0.30 | 0.22 |
| M | 0.10 | 0.20 | 0.12 |
| N | 0.45 | 0.65 | 0.50 |
| α | 0° | 8° | — |
| All Dimensions in mm | | | |

| P/N | R1, R2 (NOM) | Marking |
|-----------|---------------|---------|
| DDTA123EE | 2.2K Ω | P04 |
| DDTA143EE | 4.7K Ω | P08 |
| DDTA114EE | 10K Ω | P13 |
| DDTA124EE | 22K Ω | P17 |
| DDTA144EE | 47K Ω | P20 |
| DDTA115EE | 100K Ω | P24 |



Schematic and Pin Configuration



Equivalent Inverter Circuit

Maximum Ratings @_{T_A} = 25°C unless otherwise specified

| Characteristic | Symbol | Value | Unit |
|--|-----------------------------------|--|------|
| Supply Voltage, (2) to (3) | V _{CC} | -50 | V |
| Input Voltage, (1) to (2) | V _{IN} | +10 to -12 +10 to -30 +10 to -40 +10 to -40 +10 to -40 +10 to -40 | V |
| Output Current | I _O | -100 -100 -50 -30 -30 -20 | mA |
| Power Dissipation | P _d | 150 | mW |
| Thermal Resistance, Junction to Ambient Air (Note 1) | R _{θJA} | 833 | °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 UO (week 40, 2007) and newer are built with Green Molding Compound. Product manufactured prior to Date Code UO are built with Non-Green Molding Compound and may contain Halogens or Sb2O3 Fire Retardants.

Electrical Characteristics @T_A = 25°C unless otherwise specified

| Characteristic | | Symbol | Min | Typ | Max | Unit | Test Condition |
|--|--|--------------------------------|--|------|--|------|---|
| Input Voltage | | V _{I(off)} | -0.5 | -1.1 | — | V | V _{CC} = 5V, I _O = 100μA |
| | | V _{I(on)} | — | -1.9 | -3 | | V _O = 0.3V, I _O = 20mA, DDTA123EE V _O = 0.3V, I _O = 20mA, DDTA143EE V _O = 0.3V, I _O = 10mA, DDTA114EE V _O = 0.3V, I _O = 5mA, DDTA124EE V _O = 0.3V, I _O = 2mA, DDTA144EE V _O = 0.3V, I _O = 1mA, DDTA115EE |
| Output Voltage | | V _{O(on)} | — | -0.1 | -0.3 | V | I _O /I _I = 10mA/0.5mA, DDTA123EE I _O /I _I = 10mA/0.5mA, DDTA143EE I _O /I _I = 10mA/0.5mA, DDTA114EE I _O /I _I = 10mA/0.5mA, DDTA124EE I _O /I _I = 10mA/0.5mA, DDTA144EE I _O /I _I = 5mA/0.25mA, DDTA115EE |
| Input Current | DDTA123EE DDTA143EE DDTA114EE DDTA124EE DDTA144EE DDTA115EE | I _I | — | — | -3.8 -1.8 -0.88 -0.36 -0.18 -0.15 | mA | V _I = -5V |
| Output Current | | I _{O(off)} | — | — | 0.5 | μA | V _{CC} = -50V, V _I = 0V |
| DC Current Gain | DDTA123EE DDTA143EE DDTA114EE DDTA124EE DDTA144EE DDTA115EE | G _I | -20 -20 -30 -56 -68 -82 | — | — | — | V _O = -5V, I _O = -20mA V _O = -5V, I _O = -10mA V _O = -5V, I _O = -5mA V _O = -5V, I _O = -5mA V _O = -5V, I _O = -5mA V _O = -5V, I _O = -5mA |
| Input Resistor (R ₁) Tolerance | | ΔR ₁ | -30 | — | +30 | % | — |
| Resistance Ratio | | R ₂ /R ₁ | 0.8 | 1 | 1.2 | — | — |
| Gain-Bandwidth Product* | | f _T | — | 250 | — | MHz | V _{CE} = -10V, I _E = 5mA, f = 100MHz |

* Transistor – For Reference Only

TYPICAL CURVES – DDTA143E

NEW PRODUCT

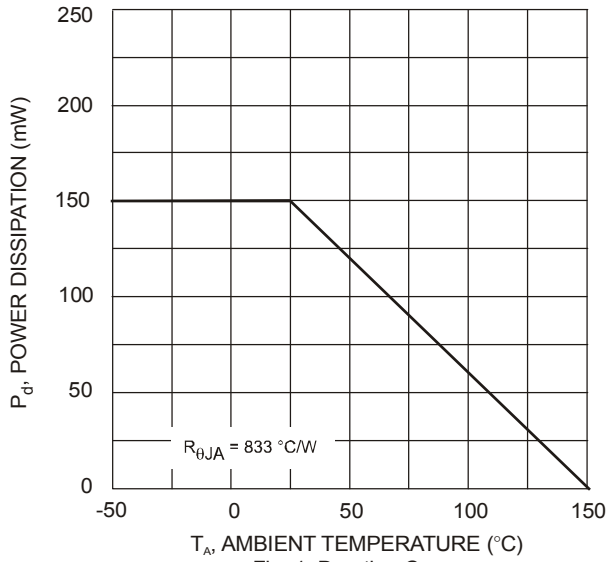


Fig. 1 Derating Curve

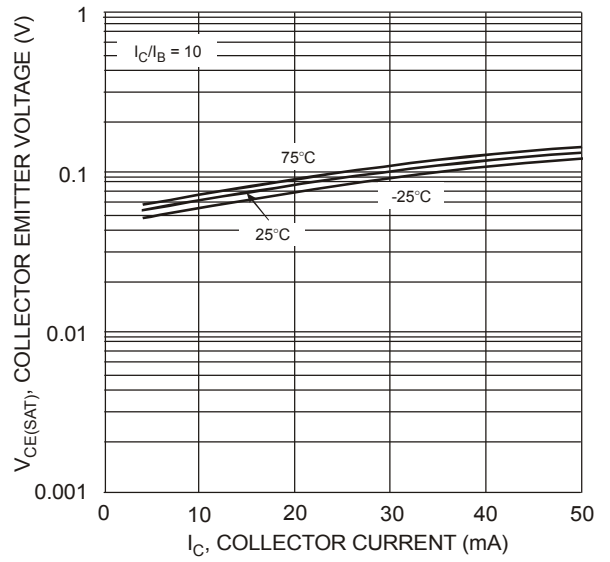


Fig. 2 $V_{CE(SAT)}$ vs. I_C

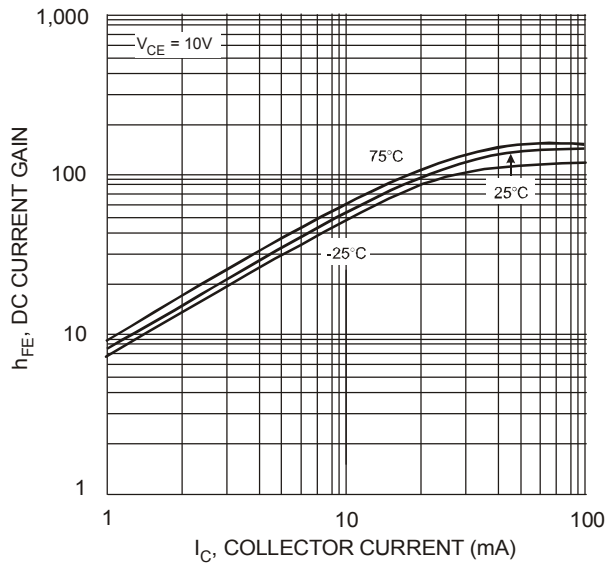


Fig. 3 DC Current Gain

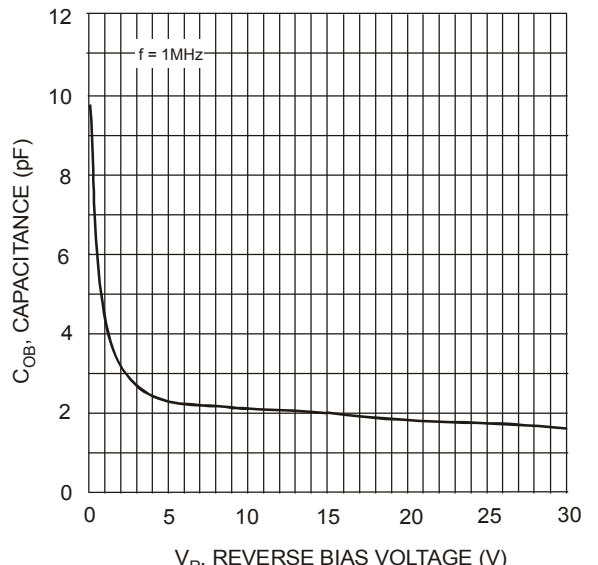


Fig. 4 Output Capacitance

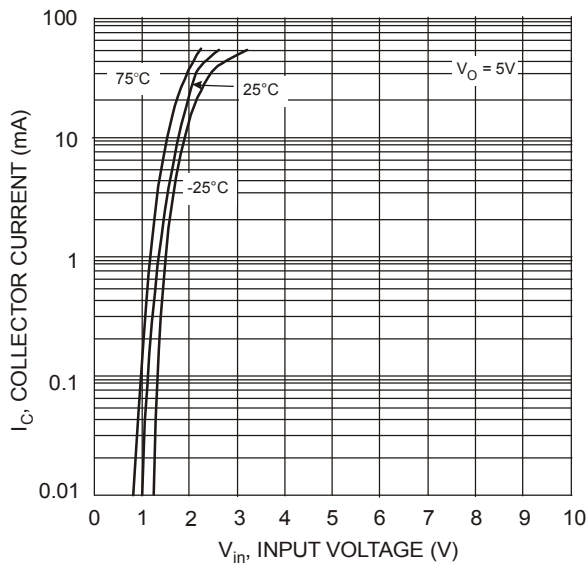


Fig. 5 Collector Current vs. Input Voltage

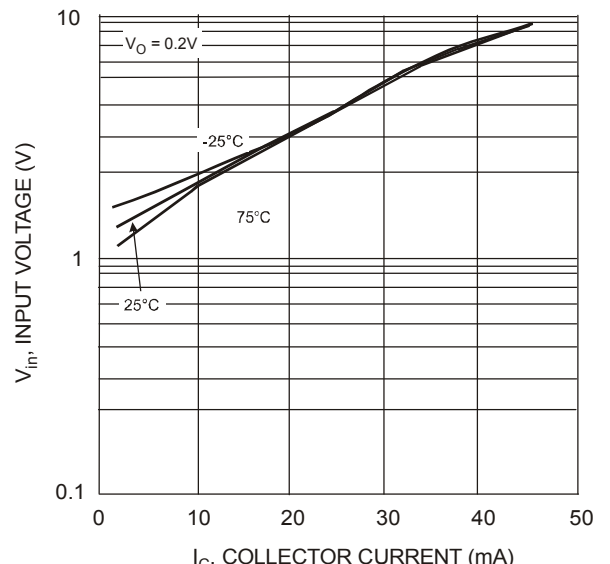


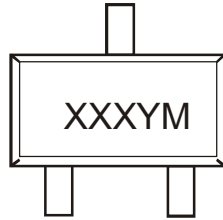
Fig. 6 Input Voltage vs. Collector Current

Ordering Information (Note 5)

| Device | Packaging | Shipping |
|---------------|-----------|------------------|
| DDTA123EE-7-F | SOT-523 | 3000/Tape & Reel |
| DDTA143EE-7-F | SOT-523 | 3000/Tape & Reel |
| DDTA114EE-7-F | SOT-523 | 3000/Tape & Reel |
| DDTA124EE-7-F | SOT-523 | 3000/Tape & Reel |
| DDTA144EE-7-F | SOT-523 | 3000/Tape & Reel |
| DDTA115EE-7-F | SOT-523 | 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 Page 1, e.g. P04 = DDTA123EE)
 YM = Date Code Marking
 Y = Year ex: T = 2006
 M = Month ex: 9 = September

Date Code Key

| Year | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 |
|------|------|------|------|------|------|------|------|------|
| Code | 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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- Подбор аналогов;
- Консультации по применению компонента;
- Поставка образцов и прототипов;
- Техническая поддержка проекта;
- Защита от снятия компонента с производства.



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