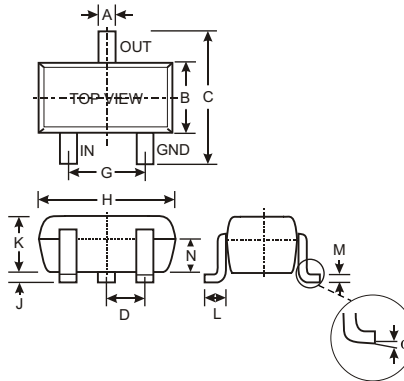


Features

- Epitaxial Planar Die Construction
- Complementary PNP Types Available (DDTA)
- Built-In Biasing Resistors, R1 = R2

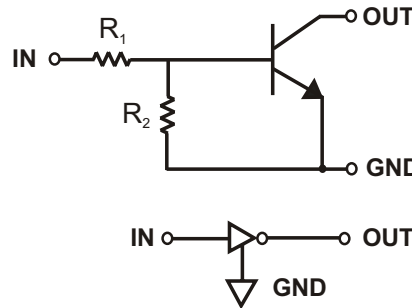
Mechanical Data

- Case: SOT-523, Molded Plastic
- Case material - UL Flammability Rating 94V-0
- Moisture sensitivity: Level 1 per J-STD-020A
- Terminals: Solderable per MIL-STD-202, Method 208
- Terminal Connections: See Diagram
- Marking: Date Code and Marking Code (See Diagrams & Page 2)
- Weight: 0.002 grams (approx.)
- Ordering Information (See Page 2)



| 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 |
|-----------|---------------|---------|
| DDTC123EE | 2.2K Ω | N04 |
| DDTC143EE | 4.7K Ω | N08 |
| DDTC114EE | 10K Ω | N13 |
| DDTC124EE | 22K Ω | N17 |
| DDTC144EE | 47K Ω | N20 |
| DDTC115EE | 100K Ω | N24 |



SCHMATIC DIAGRAM

Maximum Ratings @ T_A = 25°C unless otherwise specified

| Characteristic | Symbol | Value | Unit |
|--|-----------------------------------|--|------|
| Supply Voltage, (3) to (1) | V _{CC} | 50 | V |
| Input Voltage, (2) to (1) | 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 30 100 20 | mA |
| Power Dissipation | P _d | 150 | mW |
| Thermal Resistance, Junction to Ambient Air (Note 1) | R _{θJA} | 833 | °C/W |
| Operating and Storage and Temperature Range | T _J , T _{STG} | -55 to +150 | °C |

Note: 1. Mounted on FR4 PC Board with recommended pad layout at <http://www.diodes.com/datasheets/ap02001.pdf>.

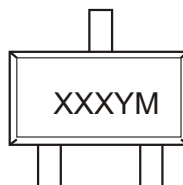
Electrical Characteristics @ $T_A = 25^\circ\text{C}$ unless otherwise specified

| Characteristic | | Symbol | Min | Typ | Max | Unit | Test Condition |
|------------------------------------|--|--------------|----------------------------------|-----|--|---------|---|
| Input Voltage | | $V_{I(off)}$ | 0.5 | 1.1 | — | V | $V_{CC} = 5V, I_O = 100\mu A$ |
| | | $V_{I(on)}$ | — | 1.9 | 3 | | $V_O = 0.3V, I_O = 20mA, DDTC123EE$ $V_O = 0.3V, I_O = 20mA, DDTC143EE$ $V_O = 0.3V, I_O = 10mA, DDTC114EE$ $V_O = 0.3V, I_O = 5mA, DDTC124EE$ $V_O = 0.3V, I_O = 2mA, DDTC144EE$ $V_O = 0.3V, I_O = 1mA, DDTC115EE$ |
| Output Voltage | | $V_{O(on)}$ | — | 0.1 | 0.3 | V | $I_O/I_I = 10mA/0.5mA, DDTC123EE$ $I_O/I_I = 10mA/0.5mA, DDTC143EE$ $I_O/I_I = 10mA/0.5mA, DDTC114EE$ $I_O/I_I = 10mA/0.5mA, DDTC124EE$ $I_O/I_I = 10mA/0.5mA, DDTC144EE$ $I_O/I_I = 5mA/0.25mA, DDTC115EE$ |
| Input Current | DDTC123EE DDTC143EE DDTC114EE DDTC124EE DDTC144EE DDTC115EE | 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 | DDTC123EE DDTC143EE DDTC114EE DDTC124EE DDTC144EE DDTC115EE | 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 | | DR_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

Ordering Information (Note 2)

| Device | Packaging | Shipping |
|-------------|-----------|------------------|
| DDTC123EE-7 | SOT-523 | 3000/Tape & Reel |
| DDTC143EE-7 | SOT-523 | 3000/Tape & Reel |
| DDTC114EE-7 | SOT-523 | 3000/Tape & Reel |
| DDTC124EE-7 | SOT-523 | 3000/Tape & Reel |
| DDTC144EE-7 | SOT-523 | 3000/Tape & Reel |
| DDTC115EE-7 | SOT-523 | 3000/Tape & Reel |

Notes: 2. 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. N04 = DDTC123EE)
 YM = Date Code Marking
 Y = Year ex: N = 2002
 M = Month ex: 9 = September

Date Code Key

| Year | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 |
|------|------|------|------|------|------|------|------|------|
| Code | N | P | R | S | T | U | V | W |

| Month | Jan | Feb | March | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|-------|-----|-----|-------|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Code | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | O | N | D |

TYPICAL CURVES - DDTC143EE

NEW PRODUCT

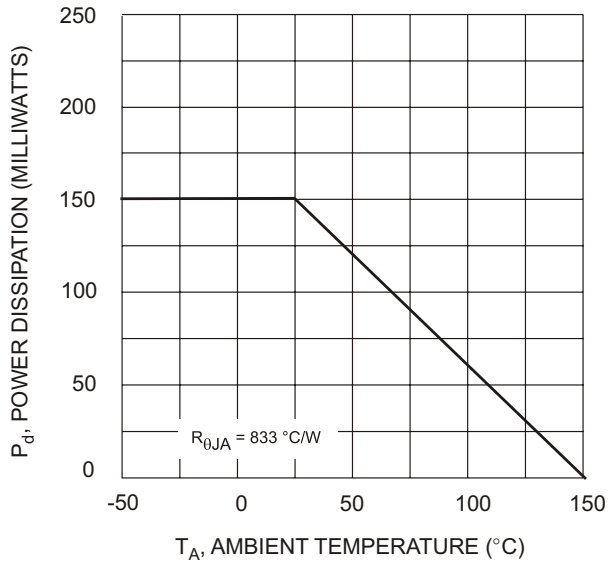


Fig. 1 Derating Curve

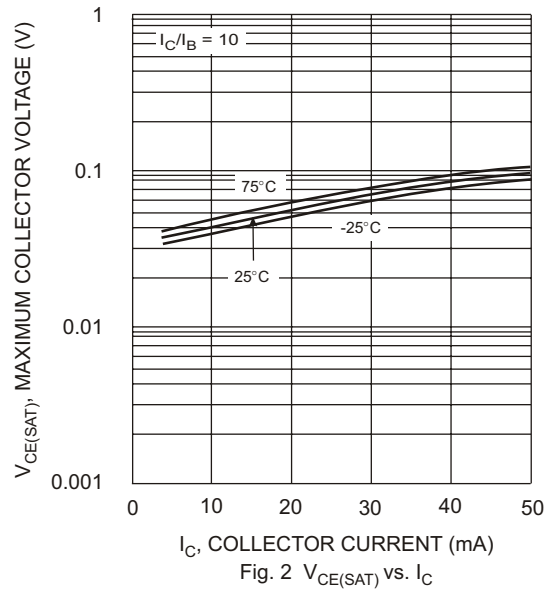


Fig. 2 $V_{CE(SAT)}$ vs. I_C

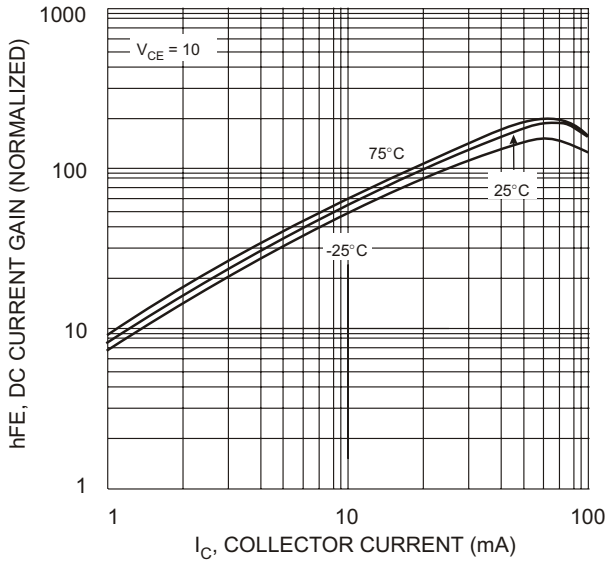


Fig. 3 DC CURRENT GAIN

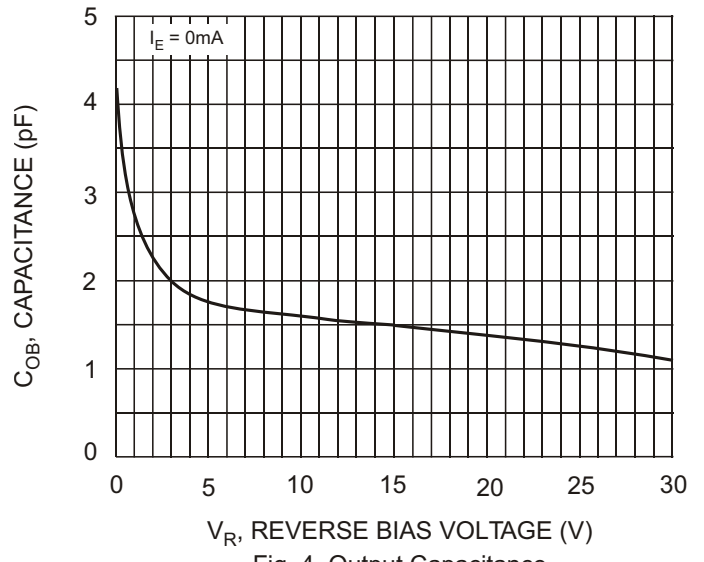


Fig. 4 Output Capacitance

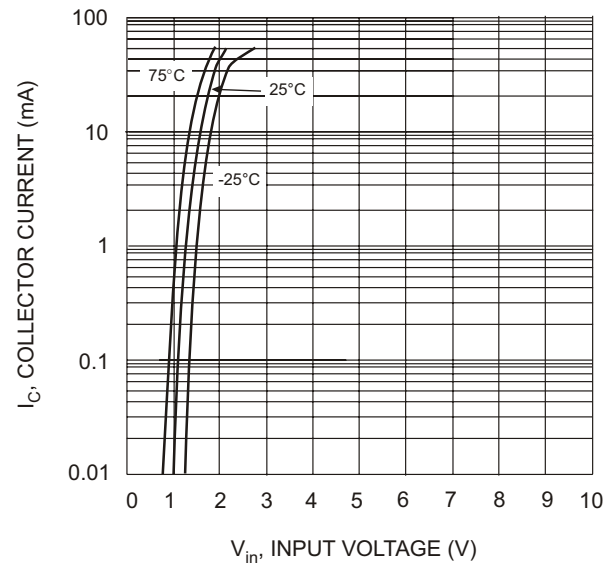


Fig. 5 Collector Current Vs. Input Voltage

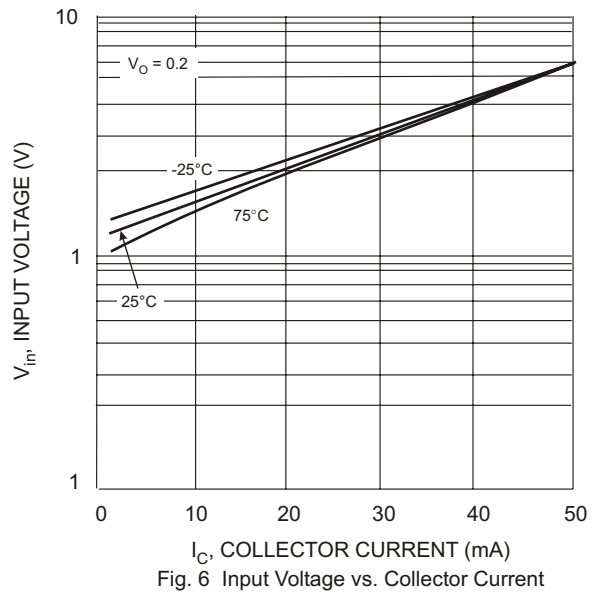


Fig. 6 Input Voltage vs. Collector Current