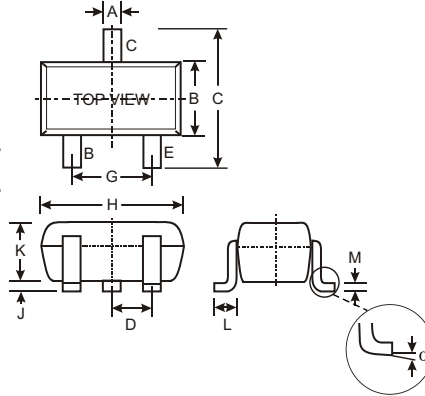


Features

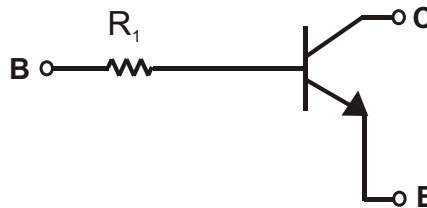
- Epitaxial Planar Die Construction
- Complementary PNP Types Available (DDTA)
- Built-In Biasing Resistor, R1 only

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 | | | |



SCHMATIC DIAGRAM

| P/N | R1 (NOM) | MARKING |
|-----------|---------------|---------|
| DDTC113TE | 1K Ω | N01 |
| DDTC123TE | 2.2K Ω | N03 |
| DDTC143TE | 4.7K Ω | N07 |
| DDTC114TE | 10K Ω | N12 |
| DDTC124TE | 22K Ω | N16 |
| DDTC144TE | 47K Ω | N19 |
| DDTC115TE | 100K Ω | N23 |
| DDTC125TE | 200K Ω | N25 |

Maximum Ratings @ T_A = 25°C unless otherwise specified

| Characteristic | Symbol | Value | Unit |
|--|-----------------------------------|-------------|------|
| Collector-Base Voltage | V _{CBO} | 50 | V |
| Collector-Emitter Voltage | V _{CEO} | 50 | V |
| Emitter-Base Voltage | V _{EBO} | 5 | V |
| Collector Current | I _C (Max) | 100 | 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>.

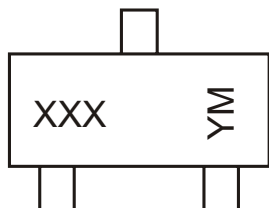
Electrical Characteristics @ $T_A = 25^\circ\text{C}$ unless otherwise specified

| Characteristic | Symbol | Min | Typ | Max | Unit | Test Condition |
|--------------------------------------|---------------|-----|-----|-----|---------------|---|
| Collector-Base Breakdown Voltage | BV_{CBO} | 50 | — | — | V | $I_C = 50\mu\text{A}$ |
| Collector-Emitter Breakdown Voltage | BV_{CEO} | 50 | — | — | V | $I_C = 1\text{mA}$ |
| Emitter-Base Breakdown Voltage | BV_{EBO} | 5 | — | — | V | $I_E = 50\mu\text{A}$ |
| Collector Cutoff Current | I_{CBO} | — | — | 0.5 | μA | $V_{CB} = 50\text{V}$ |
| Emitter Cutoff Current | I_{EBO} | — | — | 0.5 | μA | $V_{EB} = 4\text{V}$ |
| Collector-Emitter Saturation Voltage | $V_{CE(sat)}$ | — | — | 0.3 | V | $I_C/I_B = 10\text{mA}/1\text{mA}$ DDTC113TE $I_C/I_B = 5\text{mA}/0.5\text{mA}$ DDTC123TE $I_C/I_B = 2.5\text{mA}/.25\text{mA}$ DDTC143TE $I_C/I_B = 1\text{mA}/.1\text{mA}$ DDTC114TE $I_C/I_B = 5\text{mA}/0.5\text{mA}$ DDTC124TE $I_C/I_B = 2.5\text{mA}/.25\text{mA}$ DDTC144TE $I_C/I_B = 1\text{mA}/0.1\text{mA}$ DDTC115TE $I_C/I_B = .5\text{mA}/.05\text{mA}$ DDTC125TE |
| DC Current Transfer Ratio | h_{FE} | 100 | 250 | 600 | — | $I_C = 1\text{mA}$, $V_{CE} = 5\text{V}$ |
| Input Resistor (R_1) Tolerance | DR_1 | -30 | — | +30 | % | — |
| Gain-Bandwidth Product* | f_T | — | 250 | — | MHz | $V_{CE} = 10\text{V}$, $I_E = -5\text{mA}$, $f = 100\text{MHz}$ |

* Transistor - For Reference Only

Ordering Information

| Device | Packaging | Shipping |
|-------------|-----------|------------------|
| DDTC113TE-7 | SOT-523 | 3000/Tape & Reel |
| DDTC123TE-7 | SOT-523 | 3000/Tape & Reel |
| DDTC143TE-7 | SOT-523 | 3000/Tape & Reel |
| DDTC114TE-7 | SOT-523 | 3000/Tape & Reel |
| DDTC124TE-7 | SOT-523 | 3000/Tape & Reel |
| DDTC144TE-7 | SOT-523 | 3000/Tape & Reel |
| DDTC115TE-7 | SOT-523 | 3000/Tape & Reel |
| DDTC125TE-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 Sheet 1 Diagrams
 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 - DDTc114TE

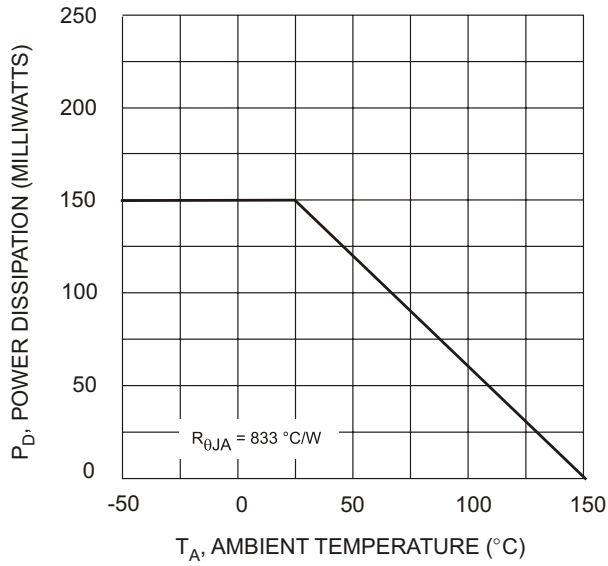


Fig. 1 Derating Curve

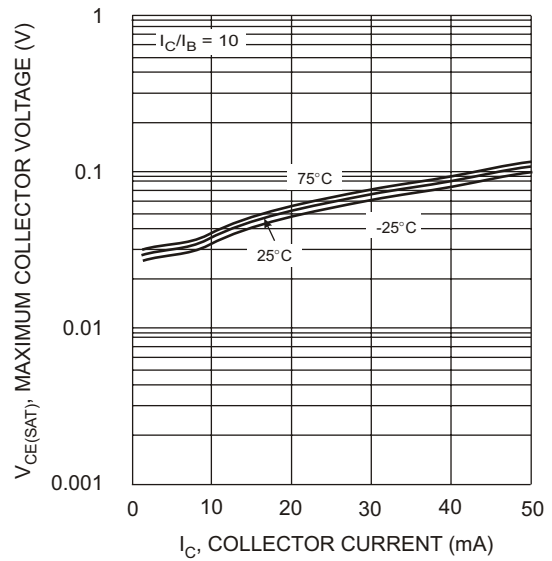


Fig. 2 $V_{CE(SAT)}$ vs. I_C

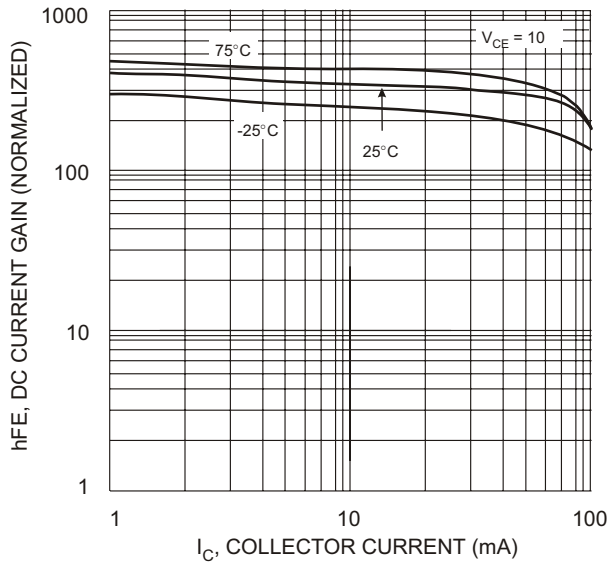


Fig. 3 DC Current Gain

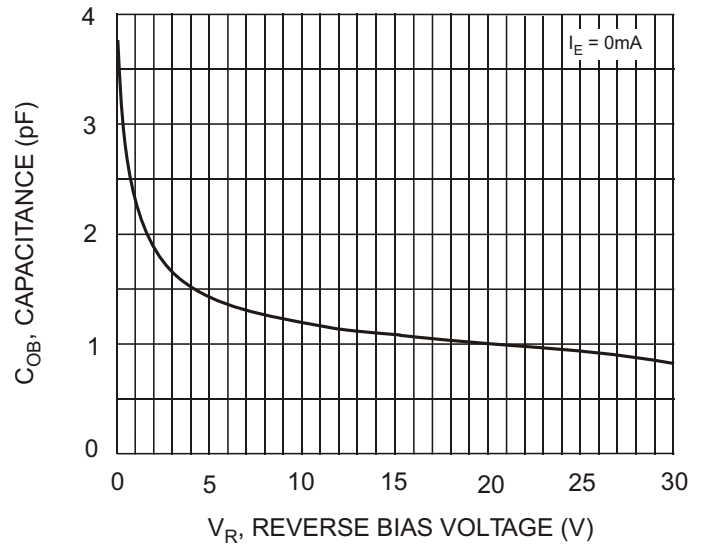


Fig. 4 Output Capacitance

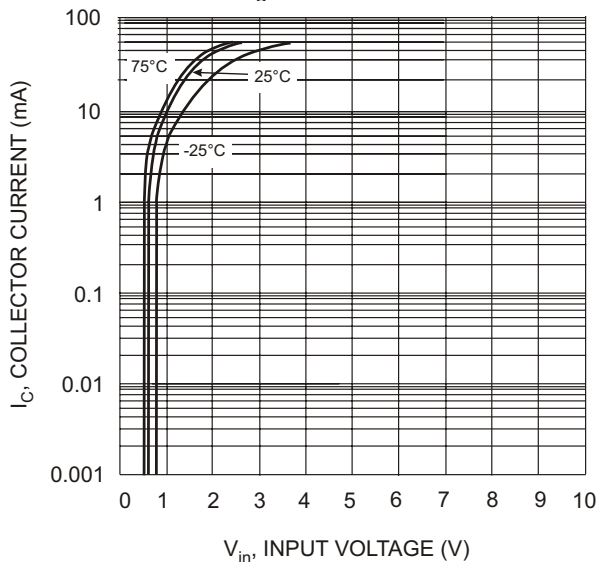


Fig. 5 Collector Current Vs. Input Voltage

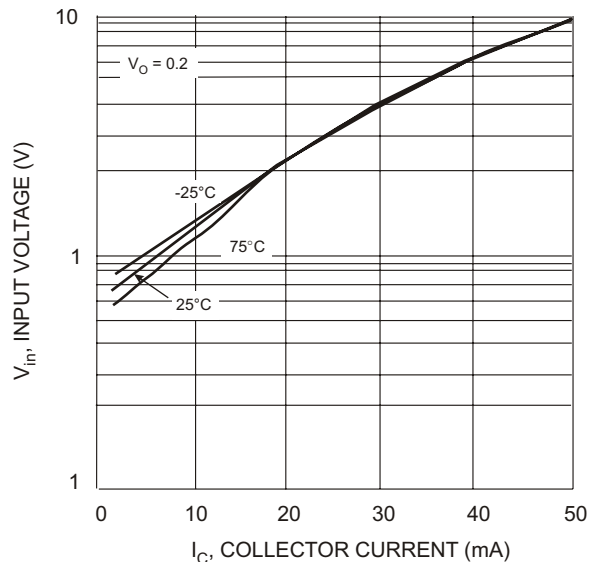


Fig. 6 Input Voltage vs. Collector Current