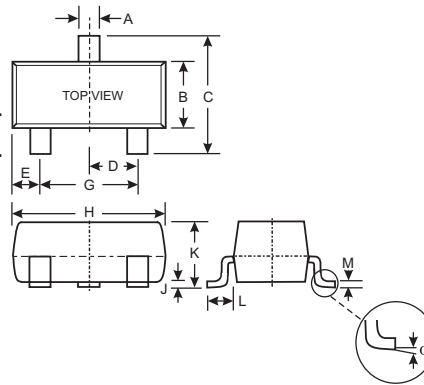


Features

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

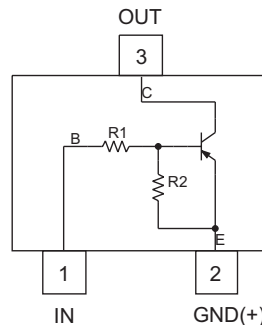
Mechanical Data

- Case: SOT-23
- Case Material: Molded Plastic. 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: Date Code and Type Code (See Table Below & Page 2)
- Ordering Information (See Page 2)
- Weight: 0.008 grams (approximate)

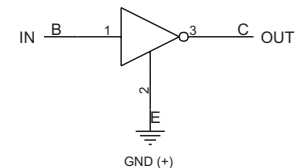


| SOT-23 | | |
|----------------------|-------|-------|
| Dim | Min | Max |
| A | 0.37 | 0.51 |
| B | 1.20 | 1.40 |
| C | 2.30 | 2.50 |
| D | 0.89 | 1.03 |
| E | 0.45 | 0.60 |
| G | 1.78 | 2.05 |
| H | 2.80 | 3.00 |
| J | 0.013 | 0.10 |
| K | 0.903 | 1.10 |
| L | 0.45 | 0.61 |
| M | 0.085 | 0.180 |
| α | 0° | 8° |
| All Dimensions in mm | | |

| P/N | R1, R2 (NOM) | Type Code |
|------------|---------------|-----------|
| DDTA123ECA | 2.2K Ω | P04 |
| DDTA143ECA | 4.7K Ω | P08 |
| DDTA114ECA | 10K Ω | P13 |
| DDTA124ECA | 22K Ω | P17 |
| DDTA144ECA | 47K Ω | P20 |
| DDTA115ECA | 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, (3) to (2) | 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 |
| Output Current | I _C (Max) | -100 | mA |
| Power Dissipation | P _d | 200 | mW |
| Thermal Resistance, Junction to Ambient Air (Note 1) | R _{θJA} | 625 | °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>.
2. No purposefully added lead.

Electrical Characteristics @ T_A = 25°C unless otherwise specified

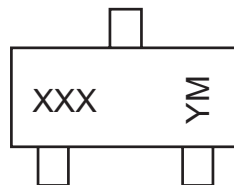
| Characteristic | | Symbol | Min | Typ | Max | Unit | Test Condition |
|--|--|--------------------------------|--|------|--|------|---|
| Input Voltage | | V _{I(off)} | -0.5 | -1.1 | — | V | V _{CC} = 5V, I _O = 100μA |
| | | V _{I(on)} | — | -1.9 | -3 | | V _O = 0.3V, I _O = 20mA, DDTA123ECA V _O = 0.3V, I _O = 20mA, DDTA143ECA V _O = 0.3V, I _O = 10mA, DDTA114ECA V _O = 0.3V, I _O = 5mA, DDTA124ECA V _O = 0.3V, I _O = 2mA, DDTA144ECA V _O = 0.3V, I _O = 1mA, DDTA115ECA |
| Output Voltage | | V _{O(on)} | — | -0.1 | -0.3 | V | I _O /I _I = 10mA/0.5mA, DDTA123ECA I _O /I _I = 10mA/0.5mA, DDTA143ECA I _O /I _I = 10mA/0.5mA, DDTA114ECA I _O /I _I = 10mA/0.5mA, DDTA124ECA I _O /I _I = 10mA/0.5mA, DDTA144ECA I _O /I _I = 5mA/0.25mA, DDTA115ECA |
| Input Current | DDTA123ECA DDTA143ECA DDTA114ECA DDTA124ECA DDTA144ECA DDTA115ECA | 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 | DDTA123ECA DDTA143ECA DDTA114ECA DDTA124ECA DDTA144ECA DDTA115ECA | 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

Ordering Information (Note 3)

| Device | Packaging | Shipping |
|----------------|-----------|------------------|
| DDTA123ECA-7-F | SOT-23 | 3000/Tape & Reel |
| DDTA143ECA-7-F | SOT-23 | 3000/Tape & Reel |
| DDTA114ECA-7-F | SOT-23 | 3000/Tape & Reel |
| DDTA124ECA-7-F | SOT-23 | 3000/Tape & Reel |
| DDTA144ECA-7-F | SOT-23 | 3000/Tape & Reel |
| DDTA115ECA-7-F | SOT-23 | 3000/Tape & Reel |

Notes: 3. 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 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 |
|------|------|------|------|------|------|------|------|------|
| Code | N | P | R | S | T | U | V | W |

| 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 |

TYPICAL CURVES - DDTA143ECA

NEW PRODUCT

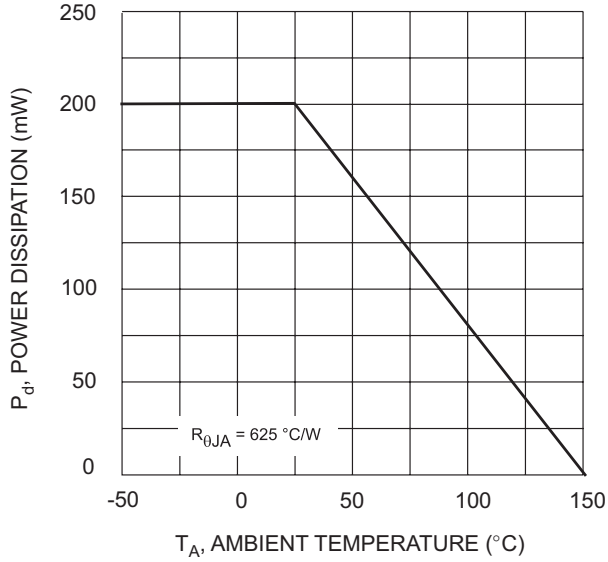


Fig. 1 Derating Curve

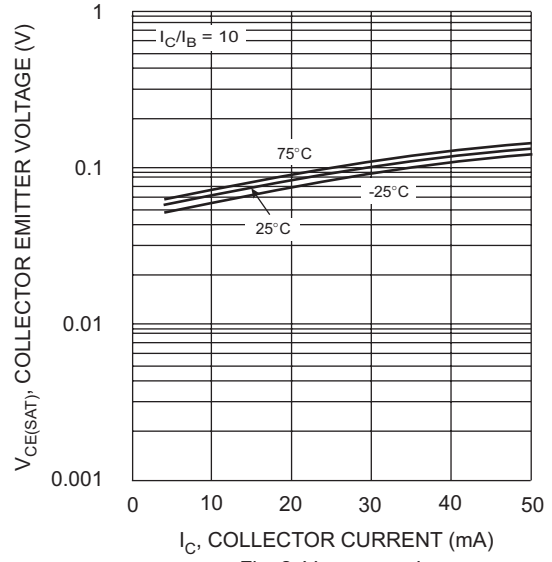


Fig. 2 $V_{CE(SAT)}$ vs. I_C

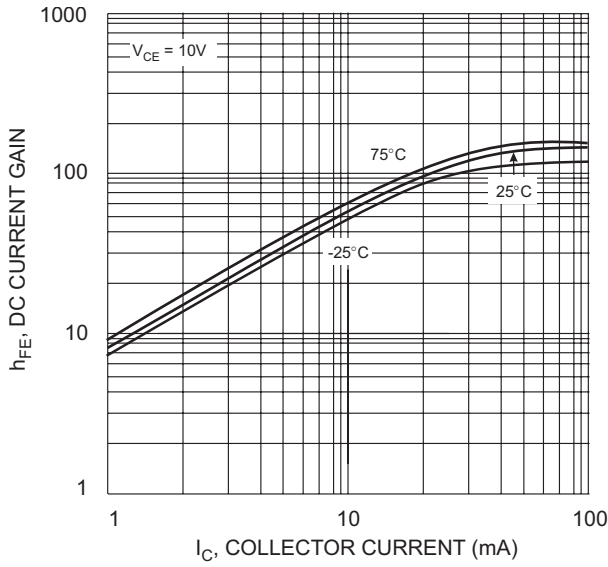


Fig. 3 DC CURRENT GAIN

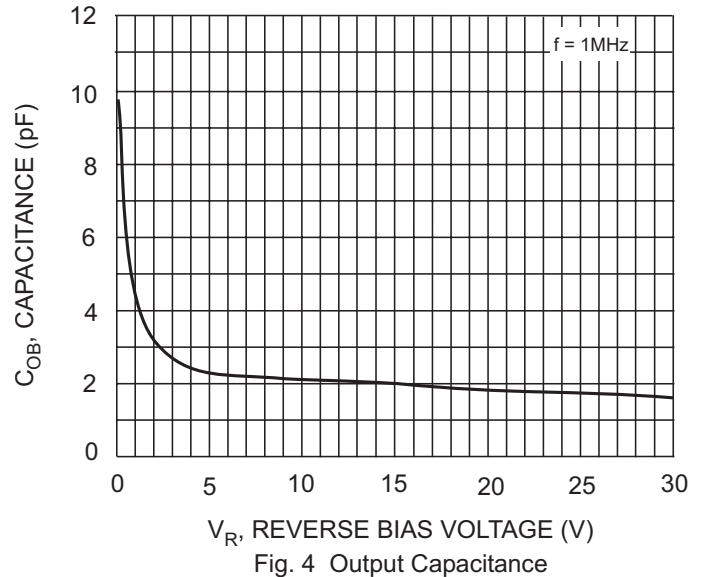


Fig. 4 Output Capacitance

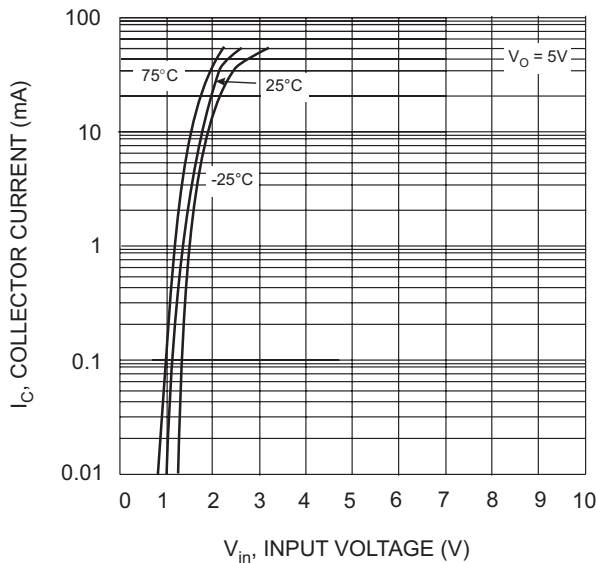


Fig. 5 Collector Current Vs. Input Voltage

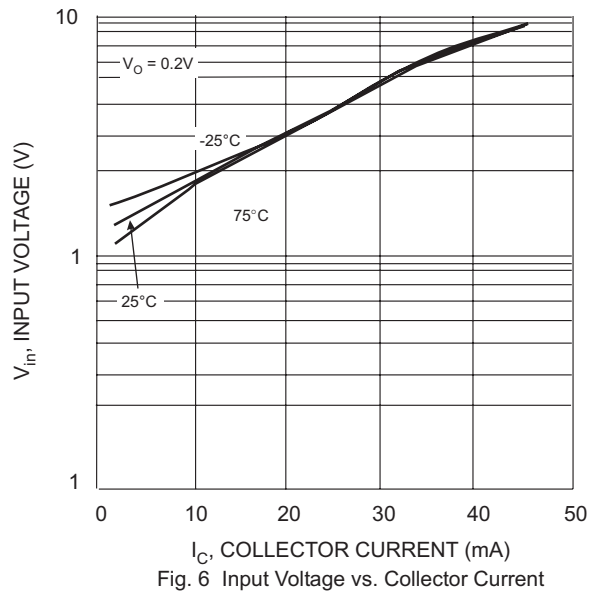


Fig. 6 Input Voltage vs. Collector Current

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