

Product Summary

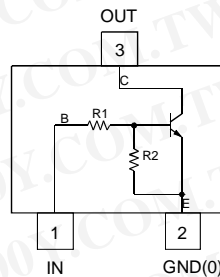
| Part Number | R1, R2 (NOM) |
|-------------|---------------|
| DDTC123EUA | 2.2K Ω |
| DDTC143EUA | 4.7K Ω |
| DDTC114EUA | 10K Ω |
| DDTC124EUA | 22K Ω |
| DDTC144EUA | 47K Ω |
| DDTC115EUA | 100K Ω |

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 勝特力电子(上海) 86-21-34970699
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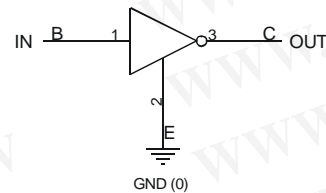
SOT323



Top View



Device Schematic



Equivalent Inverter Circuit

Features and Benefits

- Epitaxial Planar Die Construction
- Complementary PNP Types Available (DDTA)
- Built-In Biasing Resistors, R1 = R2
- "Lead Free", RoHS Compliant (Note 1)
- Halogen and Antimony Free "Green" Device (Note 2)
- Qualified to AEC-Q101 Standards for High Reliability

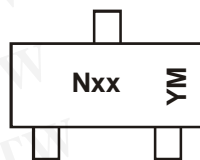
Mechanical Data

- Case: SOT323
- Case Material: Molded Plastic, "Green" Molding Compound. Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Matte Tin Finish
- Weight: 0.008 grams (approximate)

Ordering Information (Notes 3 & 4)

| Product | Grade | Marking | Reel size (inches) | Tape width (mm) | Quantity per reel |
|------------------|------------|---------|--------------------|-----------------|-------------------|
| DDTC123EUA-7-F | Commercial | N04 | 7 | 8 | 3,000 |
| DDTC143EUA-7-F | Commercial | N08 | 7 | 8 | 3,000 |
| DDTC114EUA-7-F | Commercial | N13 | 7 | 8 | 3,000 |
| DDTC124EUA-7-F | Commercial | N17 | 7 | 8 | 3,000 |
| DDTC124EUAQ-7-F | Automotive | N17 | 7 | 8 | 3,000 |
| DDTC124EUAQ-13-F | Automotive | N17 | 13 | 8 | 10,000 |
| DDTC144EUA-7-F | Commercial | N20 | 7 | 8 | 3,000 |
| DDTC144EUAQ-7-F | Automotive | N20 | 7 | 8 | 3,000 |
| DDTC144EUAQ-13-F | Automotive | N20 | 13 | 8 | 10,000 |
| DDTC115EUA-7-F | Commercial | N24 | 7 | 8 | 3,000 |

- Notes:
1. No purposefully added lead.
 2. Diodes Inc's "Green" policy can be found on our website at <http://www.diodes.com>.
 3. For packaging details, go to our website at <http://www.diodes.com>.
 4. Products with Q-suffix are automotive grade. Automotive products are electrical and thermal the same as the commercial, except where specified.

Marking Information


Nxx = Product Type Marking Code (See Table Above)
 YM = Date Code Marking
 Y = Year (ex: X = 2010)
 M = Month (ex: 9 = September)

Date Code Key

| Year | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 |
|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| Code | N | P | R | S | T | U | V | W | X | Y | Z | A | B | C | D | E |

| 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 |

Maximum Ratings @T_A = 25°C unless otherwise specified

| Characteristic | Symbol | Value | Unit |
|-----------------------------------|---------------------|----------------------------------------------------------------------------------|------|
| Supply Voltage <Pine: (3) to (2)> | V _{CC} | 50 | V |
| Input Voltage <Pin: (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 30 100 20 | mA |
| Output Current | I _{C(MAX)} | 100 | mA |

Thermal Characteristics

| Characteristic | Symbol | Value | Unit |
|------------------------------------------------------|-----------------------------------|-------------|------|
| Power Dissipation (Notes 5 & 6) | P _D | 200 | mW |
| Thermal Resistance, Junction to Ambient Air (Note 5) | R _{θJA} | 625 | °C/W |
| Operating and Storage Temperature Range | T _J , T _{STG} | -55 to +150 | °C |

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 | V _O = 0.3V, I _O = 20mA, DDTC123EUA V _O = 0.3V, I _O = 20mA, DDTC143EUA V _O = 0.3V, I _O = 10mA, DDTC114EUA V _O = 0.3V, I _O = 5mA, DDTC124EUA V _O = 0.3V, I _O = 2mA, DDTC144EUA V _O = 0.3V, I _O = 1mA, DDTC115EUA |
| Output Voltage | V _{O(ON)} | — | 0.1 | 0.3 | V | I _O /I _I = 10mA/0.5mA, DDTC123EUA I _O /I _I = 10mA/0.5mA, DDTC143EUA I _O /I _I = 10mA/0.5mA, DDTC114EUA I _O /I _I = 10mA/0.5mA, DDTC124EUA I _O /I _I = 10mA/0.5mA, DDTC144EUA I _O /I _I = 5mA/0.25mA, DDTC115EUA |
| Input Current | 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 | G _I | 20 20 30 56 68 80 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

Notes: 5. Mounted on FR4 PC Board with recommended pad layout as shown on Diodes Inc., suggested pad layout document AP02001, which can be found on our website at <http://www.diodes.com>.
 6. 150mW per element must not be exceeded.

Typical Curves – DDTC143EUA @ $T_A = 25^\circ\text{C}$ unless otherwise specified

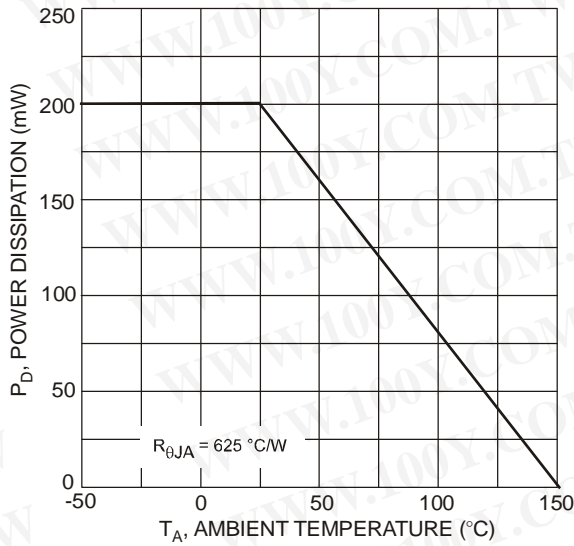


Fig. 1 Power Dissipation vs. Ambient Temperature

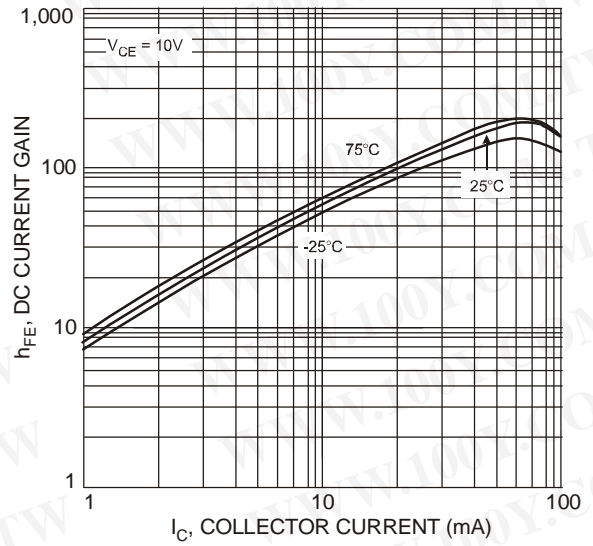


Fig. 2 Typical DC Current Gain vs. Collector Current

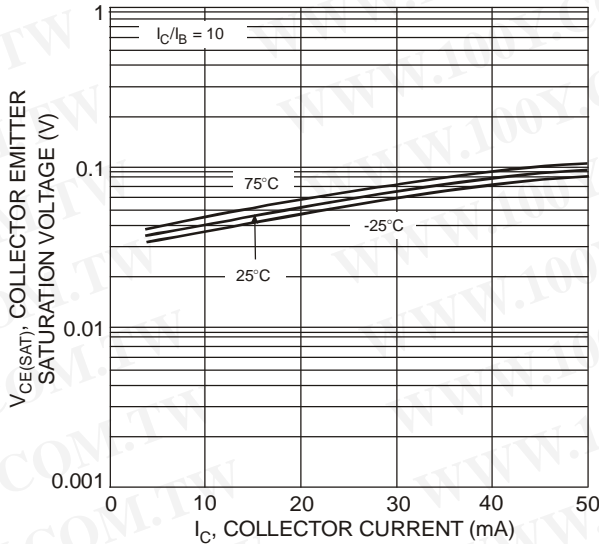


Fig. 3 Collector Emitter Saturation Voltage vs. Collector Current

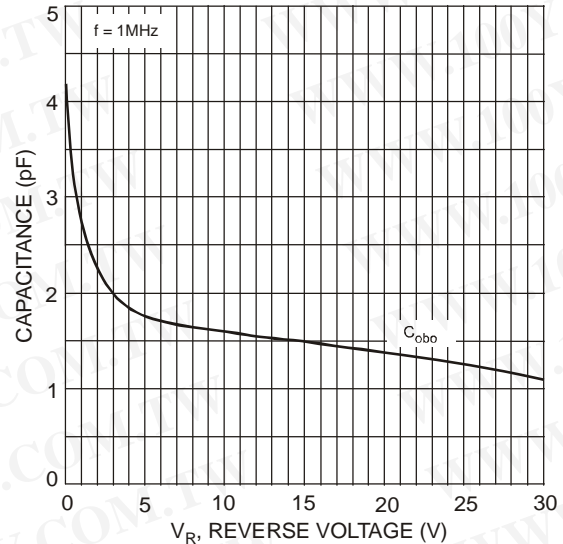


Fig. 4 Typical Capacitance Characteristics

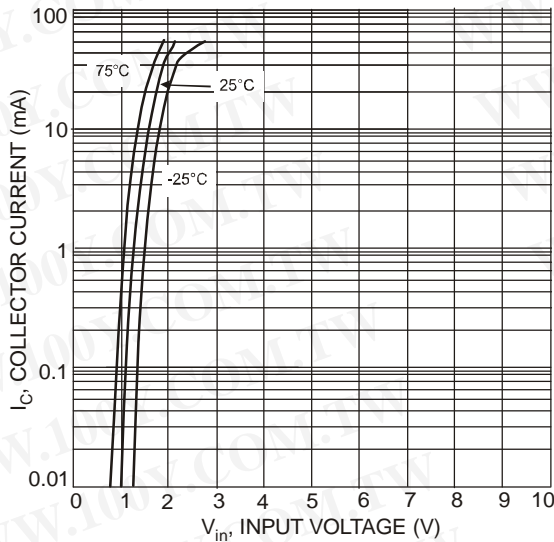


Fig. 5 Collector Current vs. Input Voltage

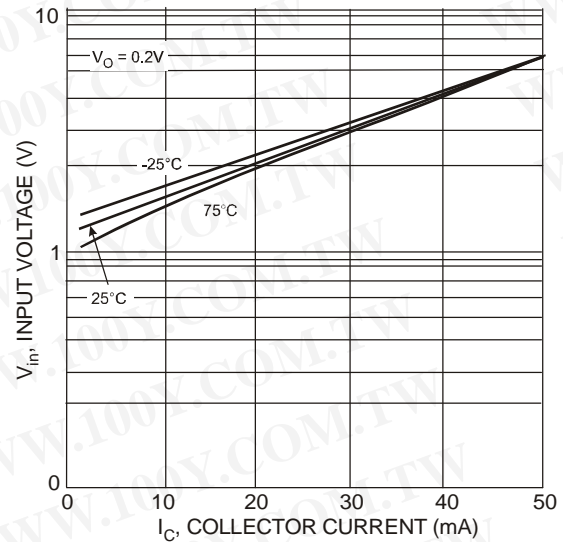
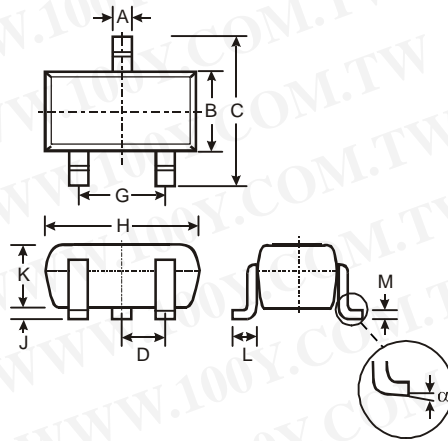


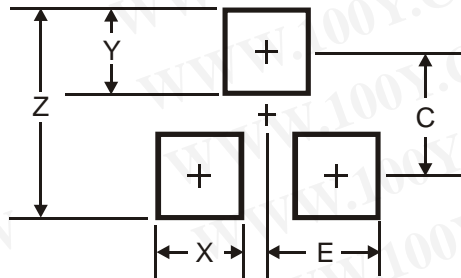
Fig. 6 Input Voltage vs. Collector Current

Package Outline Dimensions



| SOT323 | | | |
|----------------------|------|------|------|
| Dim | Min | Max | Typ |
| A | 0.25 | 0.40 | 0.30 |
| B | 1.15 | 1.35 | 1.30 |
| C | 2.00 | 2.20 | 2.10 |
| D | - | - | 0.65 |
| G | 1.20 | 1.40 | 1.30 |
| H | 1.80 | 2.20 | 2.15 |
| J | 0.0 | 0.10 | 0.05 |
| K | 0.90 | 1.00 | 1.00 |
| L | 0.25 | 0.40 | 0.30 |
| M | 0.10 | 0.18 | 0.11 |
| α | 0° | 8° | - |
| All Dimensions in mm | | | |

Suggested Pad Layout



| Dimensions | Value (in mm) |
|------------|---------------|
| Z | 2.8 |
| X | 0.7 |
| Y | 0.9 |
| C | 1.9 |
| E | 1.0 |

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