

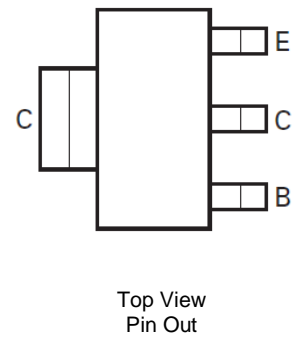
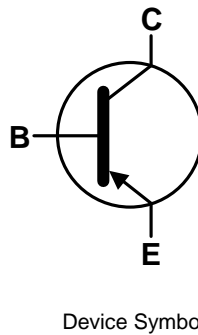
12V PNP MEDIUM POWER HIGH GAIN TRANSISTOR IN SOT223

Features and Benefits

- $BV_{CEO} > -12V$
- Maximum Continuous Current $I_C = -5A$
- Peak Pulse Current $I_C = -20A$
- High Gain Holds Up $h_{FE} > 200 @ I_C = -2A$
- Very Low Equivalent On-Resistance; $R_{CE(sat)} = 85m\Omega$ at $-2A$
- **Lead-Free Finish; RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **Qualified to AEC-Q101 Standards for High Reliability**

Mechanical Data

- Case: SOT223
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish – Matte Tin Plated Leads, Solderable per MIL-STD-202, Method 208 (e3)
- Weight: 0.112 grams (Approximate)

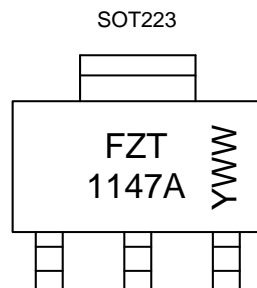


Ordering Information (Note 4)

| Part Number | Compliance | Marking | Reel size (inches) | Tape width (mm) | Quantity per reel |
|-------------|------------|----------|--------------------|-----------------|-------------------|
| FZT1147ATA | AEC-Q101 | FZT1147A | 7 | 12 | 1,000 |

- Notes:
1. EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant. All applicable RoHS exemptions applied.
 2. See http://www.diodes.com/quality/lead_free.html for more information about Diodes Incorporated's definitions of Halogen and Antimony free, "Green" and Lead-Free.
 3. Halogen and Antimony free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds
 4. For packaging details, go to our website at <http://www.diodes.com/products/packages.html>.

Marking Information



FZT 1147A = Product Type Marking Code
 YWW = Date Code Marking
 Y or \bar{Y} = Last Digit of Year (ex: 6 = 2016)
 WW or \bar{WW} = Week Code (01 to 53)

Absolute Maximum Ratings (@T_A = +25°C, unless otherwise specified.)

| Characteristic | Symbol | Value | Unit |
|------------------------------|------------------|-------|------|
| Collector-Base Voltage | V _{CBO} | -15 | V |
| Collector-Emitter Voltage | V _{CEO} | -12 | V |
| Emitter-Base Voltage | V _{EBO} | -7 | V |
| Continuous Collector Current | I _C | -5 | A |
| Base Current | I _B | -500 | mA |
| Peak Pulse Current | I _{CM} | -20 | A |

Thermal Characteristics (@T_A = +25°C, unless otherwise specified.)

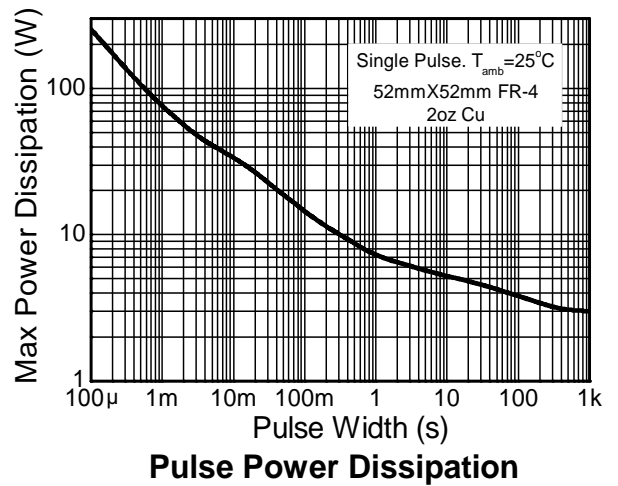
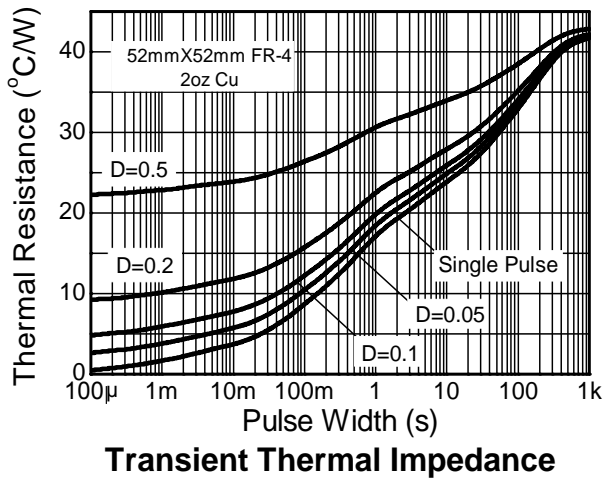
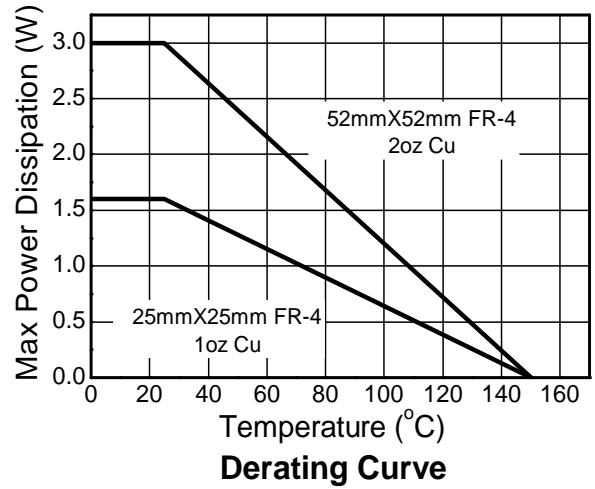
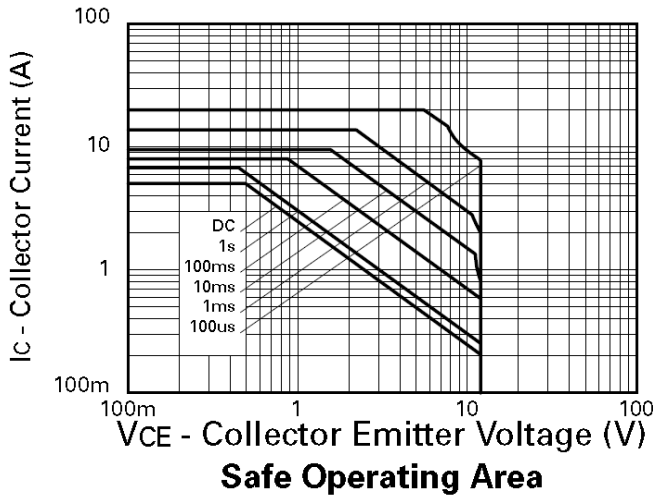
| Characteristic | Symbol | Value | Unit |
|---|-----------------------------------|-------------|------|
| Power Dissipation | P _D | (Note 5) | 3.0 |
| | | (Note 6) | 2.0 |
| | | (Note 7) | 1.6 |
| | | (Note 8) | 1.2 |
| Thermal Resistance, Junction to Ambient | R _{θJA} | (Note 5) | 41.7 |
| | | (Note 6) | 62.5 |
| | | (Note 7) | 78.1 |
| | | (Note 8) | 104 |
| Thermal Resistance Junction to Lead | R _{θJL} | 10.9 | |
| Operating and Storage Temperature Range | T _J , T _{STG} | -55 to +150 | °C |

ESD Ratings (Note 10)

| Characteristic | Symbol | Value | Unit | JEDEC Class |
|--|---------|-------|------|-------------|
| Electrostatic Discharge - Human Body Model | ESD HBM | 4,000 | V | 3A |
| Electrostatic Discharge - Machine Model | ESD MM | 400 | V | C |

- Notes:
5. For a device mounted with the collector lead on 52mm x 52mm 2oz copper that is on a single-sided 1.6mm FR-4 PCB; device is measured under still air conditions whilst operating in a steady-state.
 6. Same as note (5), except the device is mounted on 25mm x 25mm 2oz copper.
 7. Same as note (5), except the device is mounted on 25mm x 25mm 1oz copper.
 8. Same as note (5), except the device is mounted on minimum recommended pad layout.
 9. Thermal resistance from junction to solder-point (at the end of the collector lead).
 10. Refer to JEDEC specification JESD22-A114 and JESD22-A115.

Thermal Characteristics and Derating Information

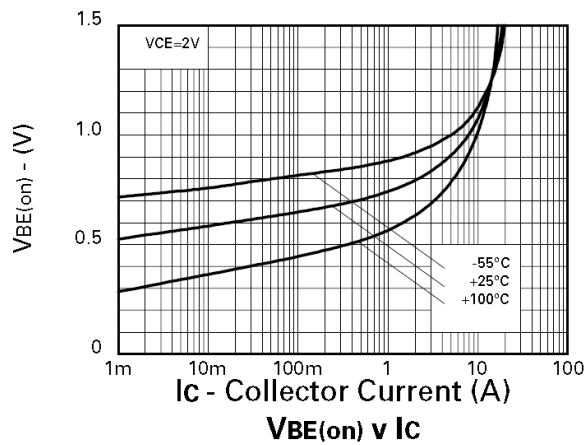
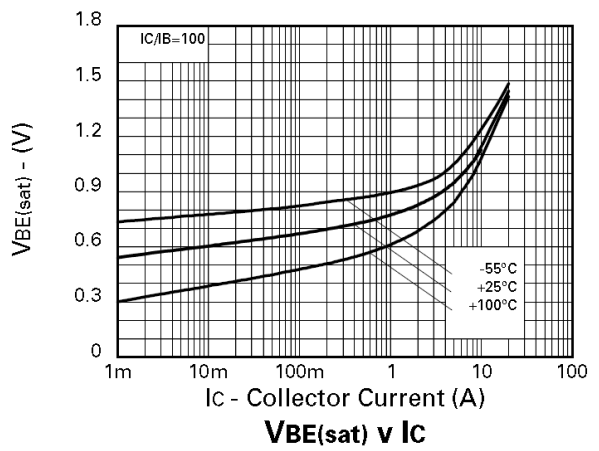
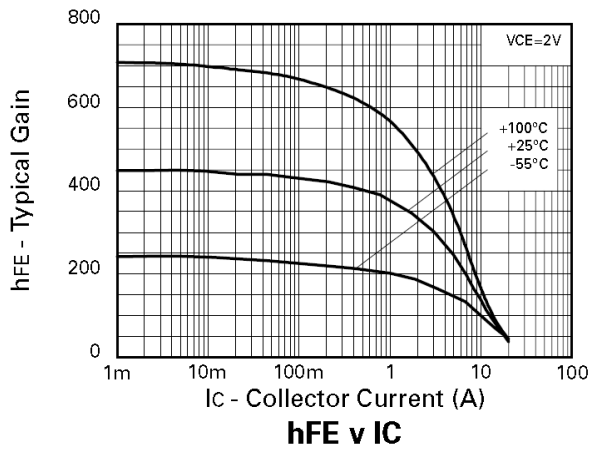
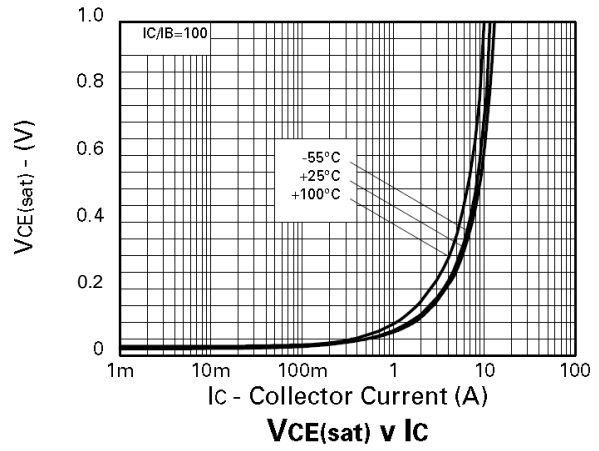
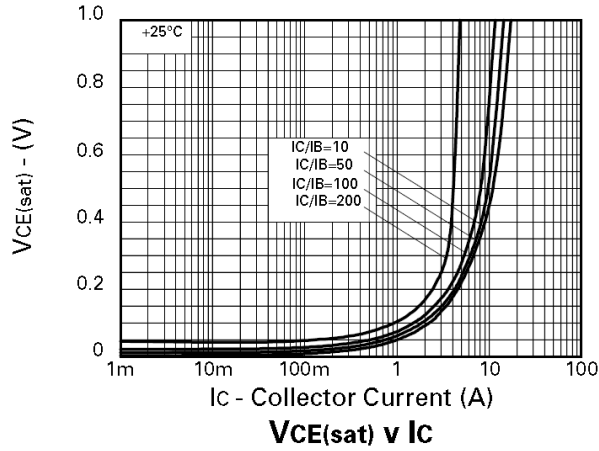


Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)

| Characteristic | Symbol | Min | Typ. | Max | Unit | Test Condition |
|--|----------------------|-----|------|--------|------|---|
| Collector-Base Breakdown Voltage | BV _{CB0} | -15 | -35 | - | V | I _C = -100μA |
| Collector-Emitter Breakdown Voltage | BV _{CES} | -12 | -25 | - | V | I _C = -100μA |
| Collector-Emitter Breakdown Voltage (Note 11) | BV _{CEO} | -12 | -25 | - | V | I _C = -10mA |
| Collector-Emitter Breakdown Voltage | BV _{CEV} | -12 | -25 | - | V | I _C = -100μA, V _{EB} = -1V |
| Emitter-Base Breakdown Voltage | BV _{EBO} | -7 | -8.5 | - | V | I _E = -100μA |
| Collector Cut Off Current | I _{CBO} | - | -0.3 | -100 | nA | V _{CB} = -12V |
| Collector Cut Off Current | I _{CES} | - | -0.3 | -100 | nA | V _{CES} = -10V |
| Emitter Cut Off Current | I _{EBO} | - | -0.3 | -100 | nA | V _{EB} = -6V |
| DC Current Transfer Static Ratio (Note 11) | h _{FE} | 270 | 450 | - | - | I _C = -10mA, V _{CE} = -2V |
| | | 250 | 400 | 850 | | I _C = -0.5A, V _{CE} = -2V |
| | | 200 | 340 | - | | I _C = -2A, V _{CE} = -2V |
| | | 150 | 245 | - | | I _C = -5A, V _{CE} = -2V |
| | | 90 | 145 | - | | I _C = -10A, V _{CE} = -2V |
| | | - | 50 | - | | I _C = -20A, V _{CE} = -2V |
| Collector-Emitter Saturation Voltage (Note 11) | V _{CE(sat)} | - | -25 | -50 | mV | I _C = -0.1A, I _B = -1mA |
| | | - | -70 | -110 | | I _C = -0.5A, I _B = -2.5mA |
| | | - | -90 | -130 | | I _C = -1A, I _B = -6mA |
| | | - | -115 | -170 | | I _C = -2A, I _B = -20mA |
| | | - | -250 | -400 | | I _C = -5A, I _B = -50mA |
| Base-Emitter Saturation Voltage (Note 11) | V _{BE(sat)} | - | -950 | -1,050 | mV | I _C = -5A, I _B = -50mA |
| Base-Emitter Turn-on Voltage (Note 11) | V _{BE(on)} | - | -905 | -1,000 | mV | I _C = -5A, V _{CE} = -2V |
| Transitional Frequency | f _T | - | 115 | - | MHz | I _C = -50mA, V _{CE} = -10V, f = 50MHz |
| Output Capacitance | C _{obo} | - | 80 | - | pF | V _{CB} = -10V, f = 1MHz |
| Switching Time | t _{ON} | - | 150 | - | ns | V _{CC} = -10V, I _C = -4A, |
| | t _{OFF} | - | 220 | - | ns | -I _{B1} = I _{B2} = 40mA |

Note: 11. Measured under pulsed conditions. Pulse width = 300μs. Duty cycle ≤ 2%.

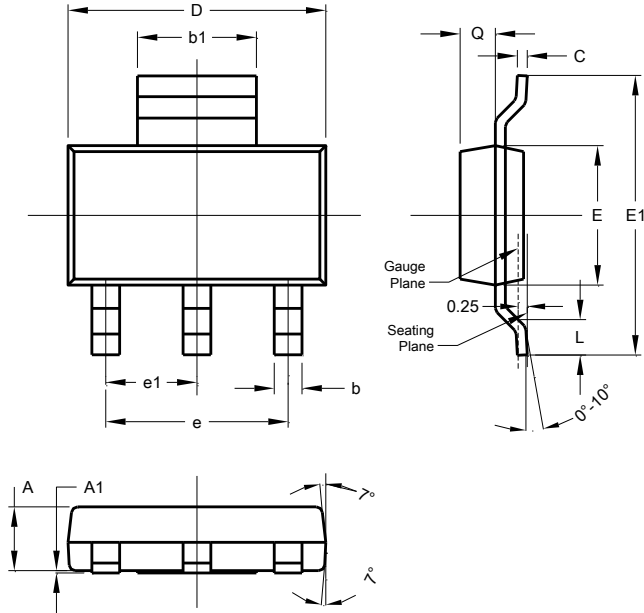
Typical Electrical Characteristics (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)



Package Outline Dimensions

Please see <http://www.diodes.com/package-outlines.html> for the latest version.

SOT223

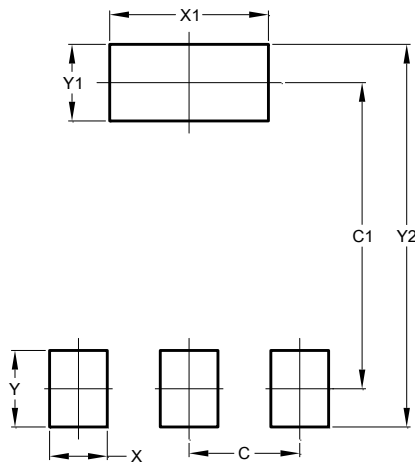


| SOT223 | | | |
|----------------------|-------|------|------|
| Dim | Min | Max | Typ |
| A | 1.55 | 1.65 | 1.60 |
| A1 | 0.010 | 0.15 | 0.05 |
| b | 0.60 | 0.80 | 0.70 |
| b1 | 2.90 | 3.10 | 3.00 |
| C | 0.20 | 0.30 | 0.25 |
| D | 6.45 | 6.55 | 6.50 |
| E | 3.45 | 3.55 | 3.50 |
| E1 | 6.90 | 7.10 | 7.00 |
| e | - | - | 4.60 |
| e1 | - | - | 2.30 |
| L | 0.85 | 1.05 | 0.95 |
| Q | 0.84 | 0.94 | 0.89 |
| All Dimensions in mm | | | |

Suggested Pad Layout

Please see <http://www.diodes.com/package-outlines.html> for the latest version.

SOT223



| Dimensions | Value (in mm) |
|------------|---------------|
| C | 2.30 |
| C1 | 6.40 |
| X | 1.20 |
| X1 | 3.30 |
| Y | 1.60 |
| Y1 | 1.60 |
| Y2 | 8.00 |

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