

Features

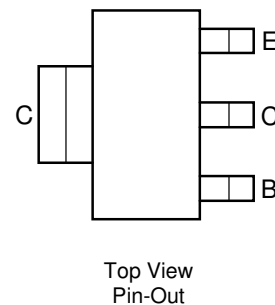
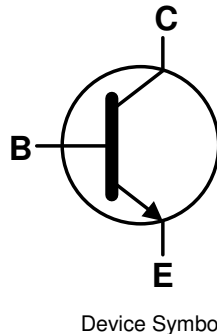
- $BV_{CEO} > 60V$
- $I_C = 3.0A$ High Continuous Current
- Extremely Low Equivalent On-Resistance; $R_{CE(SAT)} 62m\Omega$ at 2A
- Complementary PNP Type: DPLS350E
- **Lead-Free Finish; RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **Qualified to AEC-Q101 Standards for High Reliability**

Mechanical Data

- Case: SOT223
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish – Matte Tin Plated Leads. Solderable per MIL-STD-202, Method 208 @3
- Weight: 0.112 grams (Approximate)

Applications

- Ideal for Medium Power Switching or Amplification Applications

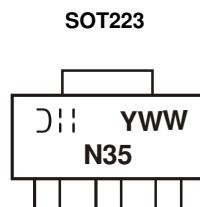


Ordering Information (Note 4)

| Product | Compliance | Marking | Reel Size (inches) | Tape Width (mm) | Quantity per Reel |
|-------------|------------|---------|--------------------|-----------------|-------------------|
| DNLS350E-13 | AEC-Q101 | N35 | 13 | 12 | 2,500 |

- 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



N35 = Product Type Marking Code
 YWW = Date Code Marking
 Y = Last Digit of Year (ex: 15 = 2015)
 WW = Week Code (01 – 52)

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

| Characteristic | Symbol | Value | Unit |
|------------------------------|------------------|-------|------|
| Collector-Base Voltage | V _{CBO} | 60 | V |
| Collector-Emitter Voltage | V _{CEO} | 50 | V |
| Emitter-Base Voltage | V _{EBO} | 6 | V |
| Continuous Collector Current | I _C | 3 | A |
| Peak Pulse Collector Current | I _{CM} | 5 | A |
| Peak Pulse Base Current | I _{BM} | 1 | A |

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

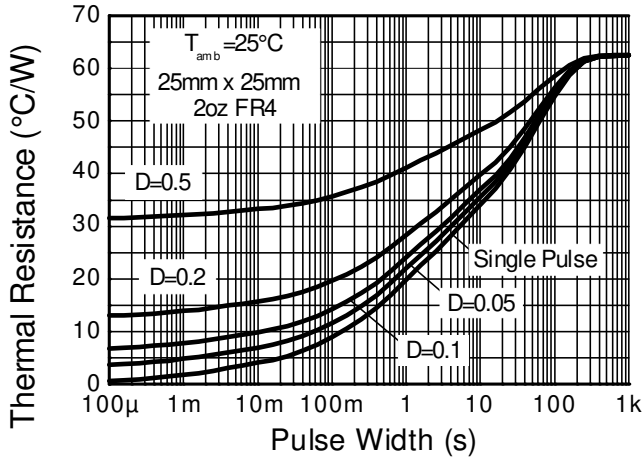
| Characteristic | Symbol | Value | Unit |
|-----------------------------------------|-----------------------------------|-------------|------|
| Power Dissipation | P _D | (Note 5) | 3 |
| | | (Note 6) | 2 |
| | | (Note 7) | 1 |
| Thermal Resistance, Junction to Ambient | R _{θJA} | (Note 5) | 41.7 |
| | | (Note 6) | 62.5 |
| | | (Note 7) | 125 |
| Thermal Resistance, Junction to Leads | R _{θJL} | 15 | °C/W |
| Operating and Storage Temperature Range | T _J , T _{STG} | -55 to +150 | °C |

ESD Ratings (Note 9)

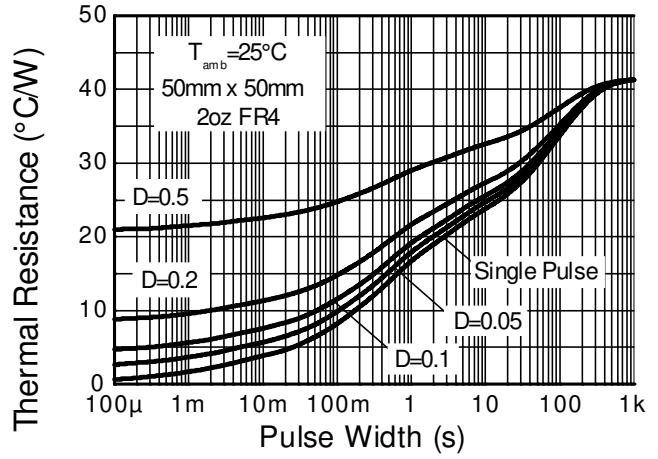
| Characteristic | Symbol | Value | Unit | JEDEC Class |
|--------------------------------------------|---------|-------|------|-------------|
| Electrostatic Discharge – Human Body Model | ESD HBM | 4,000 | V | 3A |
| Electrostatic Discharge – Machine Model | ESD MM | 400 | V | C |

- Notes:
5. For a device mounted with the collector lead on 50mm x 50mm 2oz copper that is on a single-sided 1.6mm FR4 PCB; device is measured under still air conditions whilst operating in a steady-state.
 6. Same as Note (5), except mounted on 25mm x 25mm 2oz copper.
 7. Same as Note (5), except mounted on minimum recommended pad (MRP) layout.
 8. Thermal resistance from junction to solder-point (at the end of the collector lead).
 9. Refer to JEDEC specification JESD22-A114 and JESD22-A115.

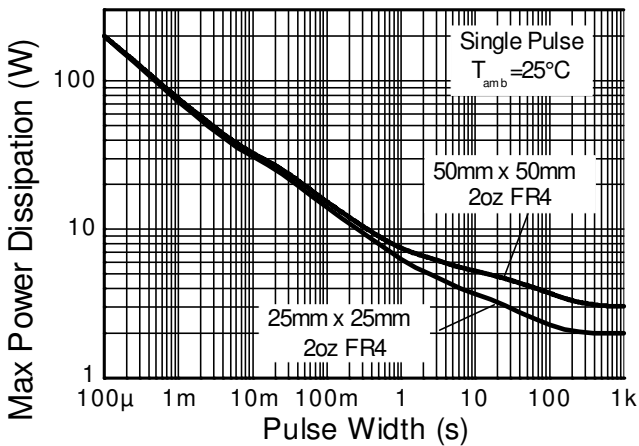
Thermal Characteristics and Derating Information



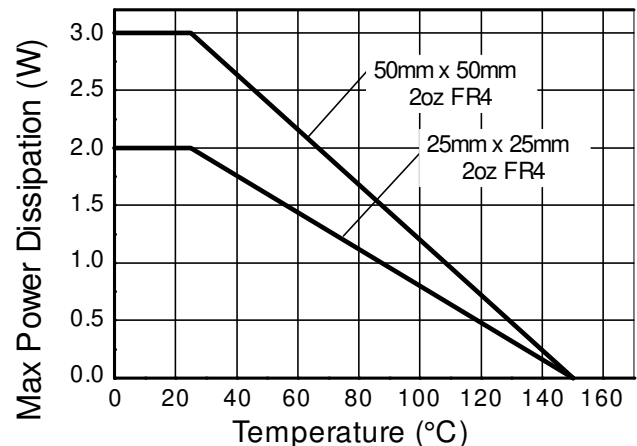
Transient Thermal Impedance



Transient Thermal Impedance



Pulse Power Dissipation



Derating Curve

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

| Characteristic | Symbol | Min | Typ | Max | Unit | Test Conditions |
|-----------------------------------------------|----------------------|-----|-----|-----|------|--------------------------------------------------------------------|
| OFF CHARACTERISTICS | | | | | | |
| Collector-Base Breakdown Voltage | BV _{CBO} | 50 | — | — | V | I _C = 100μA |
| Collector-Emitter Breakdown Voltage (Note 10) | BV _{CEO} | 50 | — | — | V | I _C = 10mA |
| Emitter-Base Breakdown Voltage | BV _{EBO} | 6 | — | — | V | I _E = 100μA |
| Collector-Base Cutoff Current | I _{CBO} | — | — | 100 | nA | V _{CB} = 50V, I _E = 0 |
| | | — | — | 50 | μA | V _{CB} = 50V, I _E = 0, T _A = +150°C |
| Emitter-Base Cutoff Current | I _{EBO} | — | — | 100 | nA | V _{EB} = 5V, I _C = 0 |
| ON CHARACTERISTICS (Note 10) | | | | | | |
| DC Current Gain | h _{FE} | 200 | — | — | — | V _{CE} = 2V, I _C = 0.5A |
| | | 200 | — | — | | V _{CE} = 2V, I _C = 1A |
| | | 100 | — | — | | V _{CE} = 2V, I _C = 2A |
| Collector-Emitter Saturation Voltage | V _{CE(SAT)} | — | — | 90 | mV | I _C = 0.5A, I _B = 50mA |
| | | — | — | 170 | | I _C = 1A, I _B = 50mA |
| | | — | — | 290 | | I _C = 2A, I _B = 200mA |
| Equivalent On-Resistance | R _{C(E)SAT} | — | 62 | 145 | mΩ | I _C = 2A, I _B = 200mA |
| Base-Emitter Saturation Voltage | V _{BE(SAT)} | — | — | 1.2 | V | I _C = 2A, I _B = 200mA |
| Base-Emitter Turn-On Voltage | V _{BE(ON)} | — | — | 1.1 | V | V _{CE} = 2V, I _C = 1A |
| SMALL SIGNAL CHARACTERISTICS | | | | | | |
| Transition Frequency | f _T | 100 | — | — | MHz | V _{CE} = 5V, I _C = 100mA, f = 100MHz |
| Output Capacitance | C _{obo} | — | — | 30 | pF | V _{CB} = 10V, f = 1MHz |

Note: 10. Measured under pulsed conditions. Pulse width ≤ 300μs. Duty cycle ≤ 2%.

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

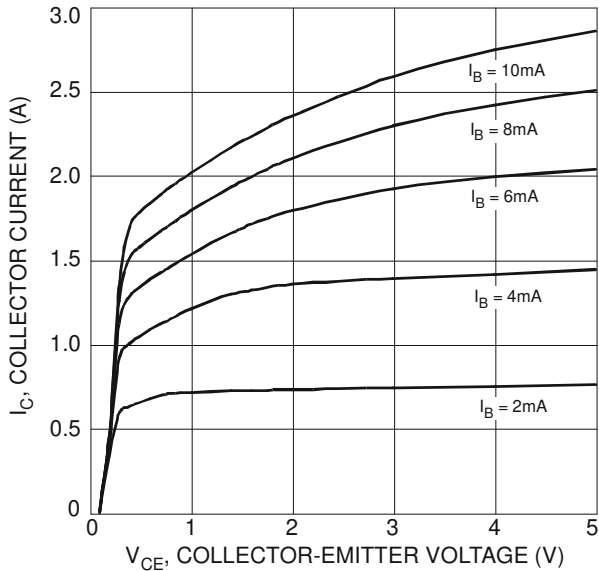


Fig. 2 Typical Collector Current vs. Collector-Emitter Voltage

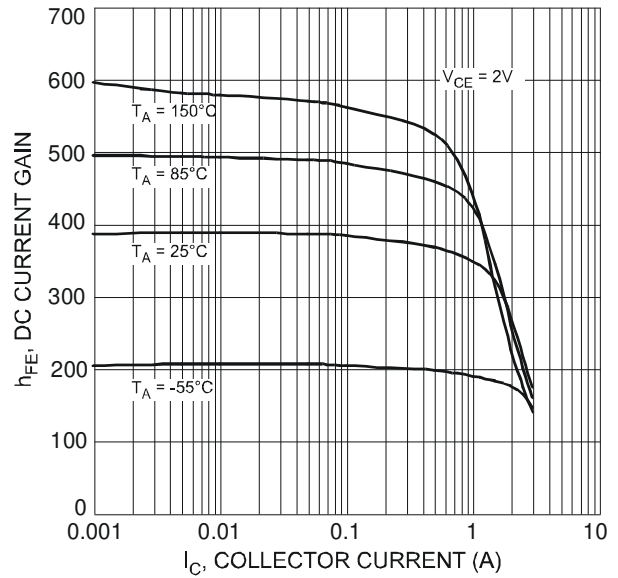


Fig. 3 Typical DC Current Gain vs. Collector Current

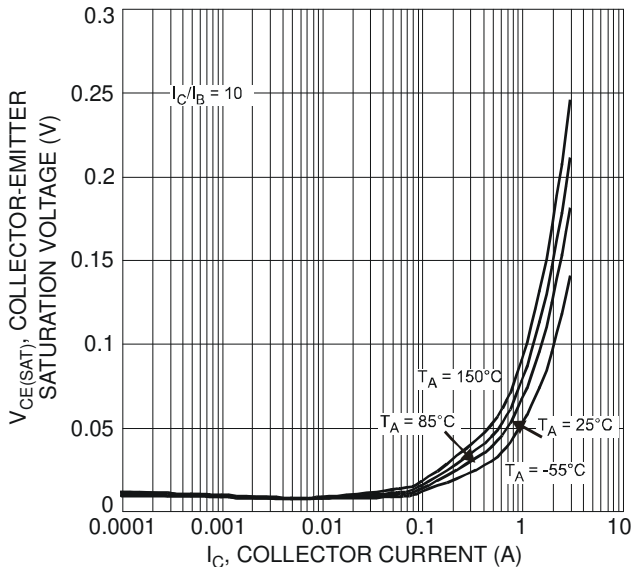


Fig. 4 Typical Collector-Emitter Saturation Voltage vs. Collector Current

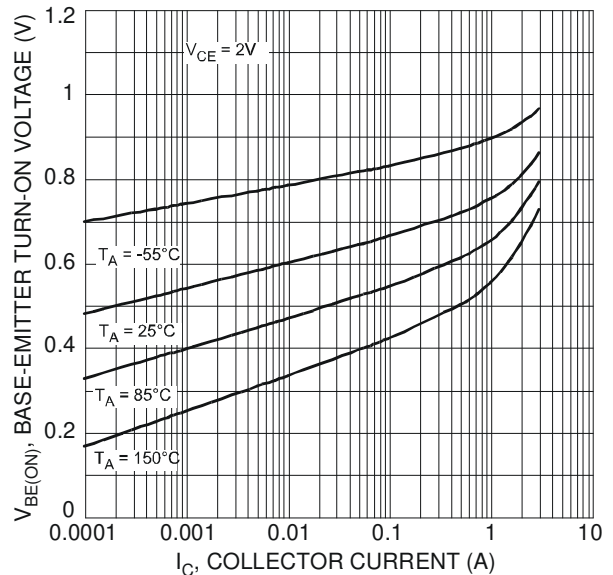


Fig. 5 Typical Base-Emitter Turn-On Voltage vs. Collector Current

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

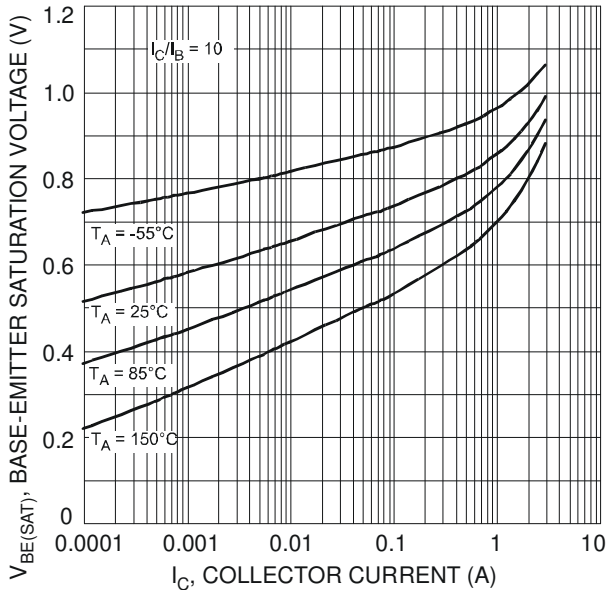


Fig. 6 Typical Base-Emitter Saturation Voltage vs. Collector Current

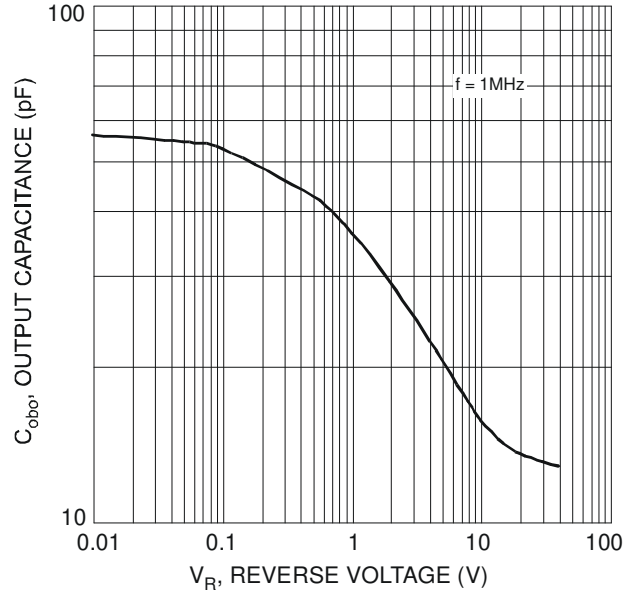


Fig. 7 Typical Output Capacitance Characteristics

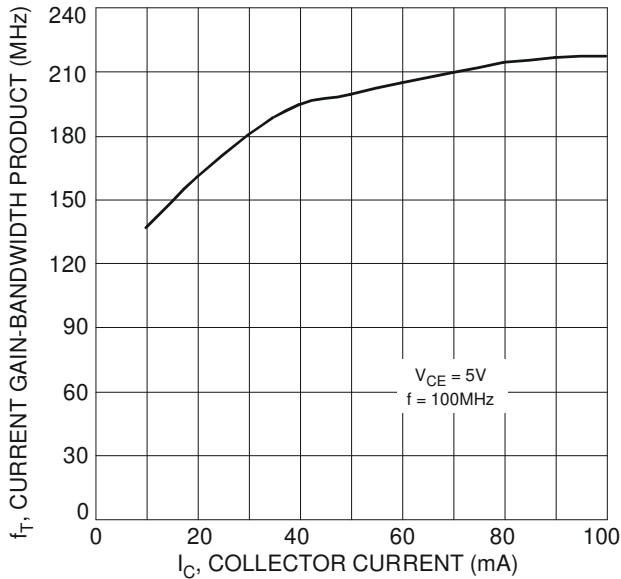
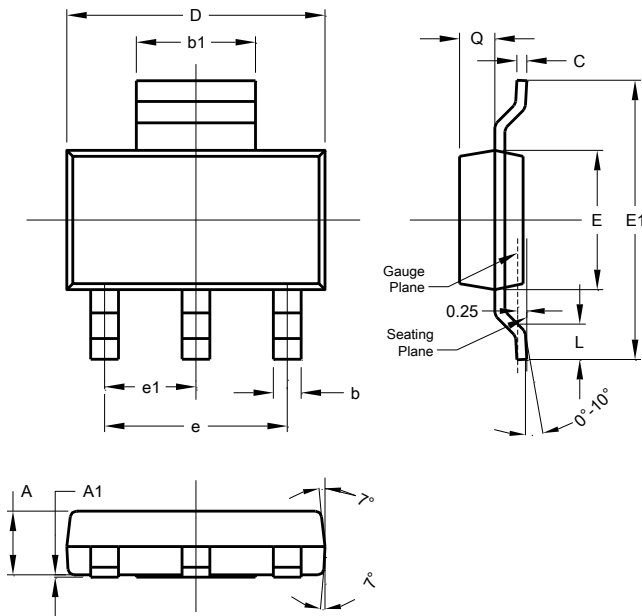


Fig. 8 Typical Gain-Bandwidth Product vs. Collector Current

Package Outline Dimensions

Please see AP02002 at <http://www.diodes.com/datasheets/ap02002.pdf> for the latest version.

SOT223



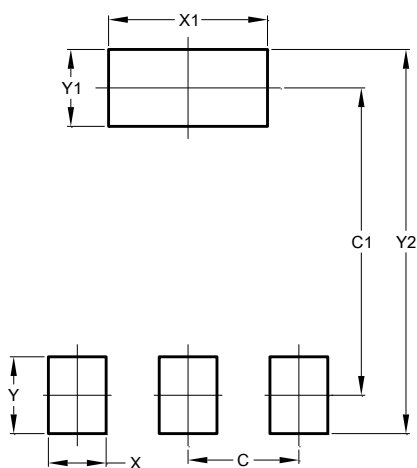
| SOT223 | | | |
|--------|-------|------|------|
| Dim | Min | Max | Typ |
| A | 1.55 | 1.65 | 1.60 |
| A1 | 0.010 | 0.15 | 0.05 |
| b | 0.60 | 0.80 | 0.70 |
| b1 | 2.90 | 3.10 | 3.00 |
| C | 0.20 | 0.30 | 0.25 |
| D | 6.45 | 6.55 | 6.50 |
| E | 3.45 | 3.55 | 3.50 |
| E1 | 6.90 | 7.10 | 7.00 |
| e | - | - | 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 AP02001 at <http://www.diodes.com/datasheets/ap02001.pdf> 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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