


Features

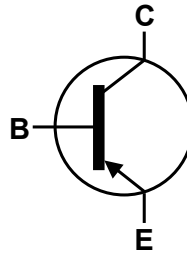
- Epitaxial Planar Die Construction
- Ideally Suited for Automated Assembly Processes
- Ideal for Medium Power Switching or Amplification Applications
- Complementary NPN Type Available (2DC4672)
- **Totally Lead-Free & Fully RoHS compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **Qualified to AEC-Q101 Standards for High Reliability**
- **PPAP Capable (Note 4)**

Mechanical Data

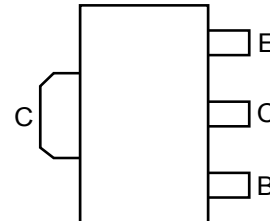
- Case: SOT89
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish — Matte Tin. Solderable per MIL-STD-202, Method 208 
- Weight: 0.052 grams (approximate)



Top View



Device symbol



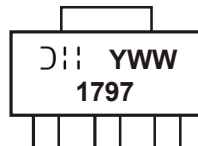
Top View
Pin-Out

Ordering Information (Notes 4 & 5)

| Part Number | Compliance | Marking | Reel size (inches) | Tape width (mm) | Quantity per reel |
|-------------|------------|---------|--------------------|-----------------|-------------------|
| 2DA1797-13 | AEC-Q101 | 1797 | 13 | 12 | 2,500 |
| 2DA1797Q-13 | Automotive | 1797 | 13 | 12 | 2,500 |

- Notes:
1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant.
 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. Automotive products are AEC-Q101 qualified and are PPAP capable. Automotive, AEC-Q101 and standard products are electrically and thermally the same, except where specified. For more information, please refer to http://www.diodes.com/quality/product_compliance_definitions/.
 5. For packaging details, go to our website at <http://www.diodes.com/products/packages.html>.

Marking Information



1797 = Product Type Marking Code
 YWW = Date Code Marking
 Y = Last digit of year (ex: 8 = 2008)
 WW = Week code (01 – 53)

Absolute 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} | -6 | V |
| Peak Pulse Current | I _{CM} | -6 | A |
| Continuous Collector Current | I _C | -3 | A |

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

| Characteristic | Symbol | Value | Unit |
|--|-----------------------------------|-------------|------|
| Power Dissipation (Note 6) | P _D | 0.9 | W |
| Thermal Resistance, Junction to Ambient Air (Note 6) | R _{θJA} | 139 | °C/W |
| Power Dissipation (Note 7) | P _D | 2 | W |
| Thermal Resistance, Junction to Ambient Air (Note 7) | R _{θJA} | 62.5 | °C/W |
| Thermal Resistance, Junction to Lead (Note 8) | R _{θJL} | 5.3 | °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:
6. Device mounted on FR-4 PCB with minimum recommended pad layout.
 7. Device mounted on FR-4 PCB with 1 inch² copper pad layout.
 8. Thermal resistance from junction to solder-point (on the exposed collector pad).
 9. Refer to JEDEC specification JESD22-A114 and JESD22-A115.

Thermal Characteristics and Derating Information (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)

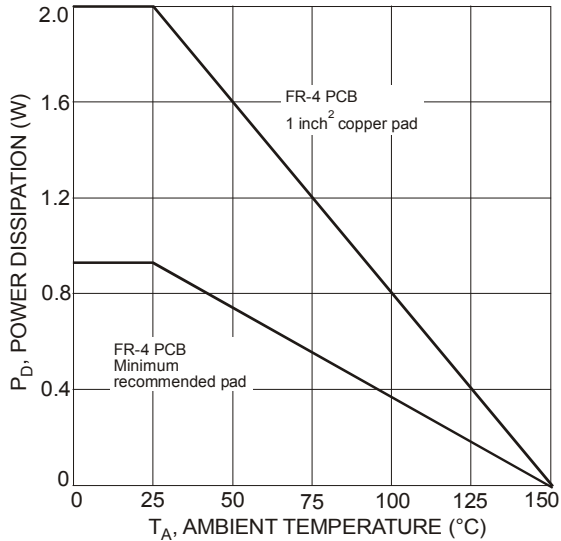


Fig. 1 Power Dissipation vs. Ambient Temperature

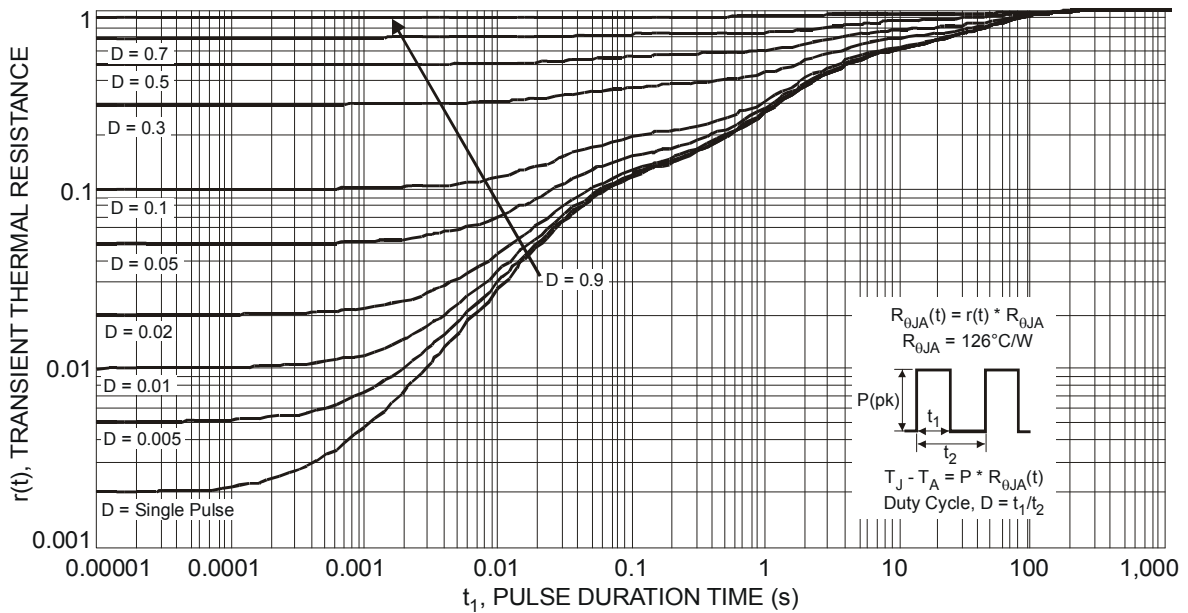
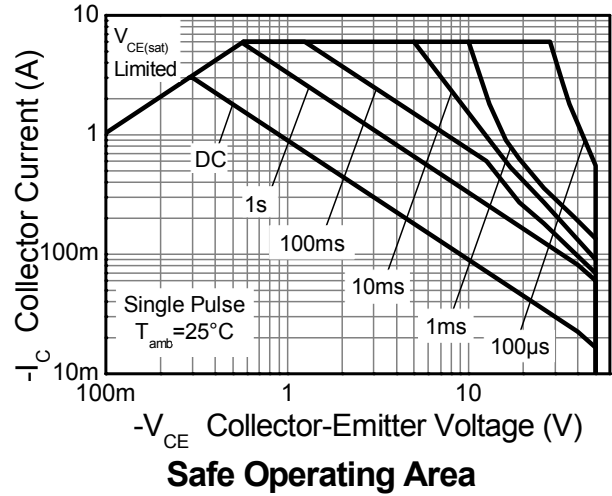


Fig. 10 Transient Thermal Response

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

| Characteristic | Symbol | Min | Typ | Max | Unit | Conditions |
|---|---------------|-----|------|------|---------------|---|
| OFF CHARACTERISTICS | | | | | | |
| Collector-Base Breakdown Voltage | BV_{CBO} | -50 | — | — | V | $I_C = -50\mu\text{A}, I_E = 0$ |
| Collector-Emitter Breakdown Voltage (Note 10) | BV_{CEO} | -50 | — | — | V | $I_C = -1\text{mA}, I_B = 0$ |
| Emitter-Base Breakdown Voltage | BV_{EBO} | -6 | — | — | V | $I_E = -50\mu\text{A}, I_C = 0$ |
| Collector Cut-Off Current | I_{CBO} | — | — | -0.1 | μA | $V_{CB} = -50\text{V}, I_E = 0$ |
| Emitter Cut-Off Current | I_{EBO} | — | — | -0.1 | μA | $V_{EB} = -5\text{V}, I_C = 0$ |
| ON CHARACTERISTICS (Note 10) | | | | | | |
| Collector-Emitter Saturation Voltage | $V_{CE(sat)}$ | — | -100 | -350 | mV | $I_C = -1\text{A}, I_B = -50\text{mA}$ |
| DC Current Gain | h_{FE} | 82 | — | 270 | — | $V_{CE} = -2\text{V}, I_C = -500\text{mA}$ |
| SMALL SIGNAL CHARACTERISTICS | | | | | | |
| Output Capacitance | C_{obo} | — | 27 | — | pF | $V_{CB} = -10\text{V}, I_E = 0, f = 1\text{MHz}$ |
| Current Gain-Bandwidth Product | f_T | — | 160 | — | MHz | $V_{CE} = -2\text{V}, I_C = -100\text{mA}, f = 100\text{MHz}$ |

Notes: 10. Measured under pulsed conditions. Pulse width = 300 μs . Duty cycle $\leq 2\%$.

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

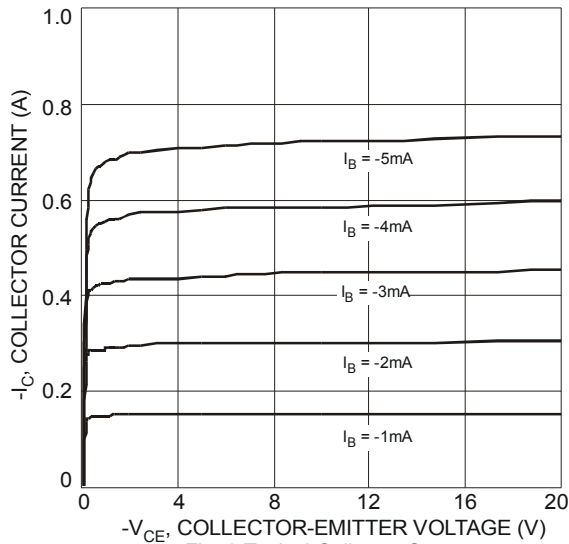


Fig. 3 Typical Collector Current vs. Collector-Emitter Voltage

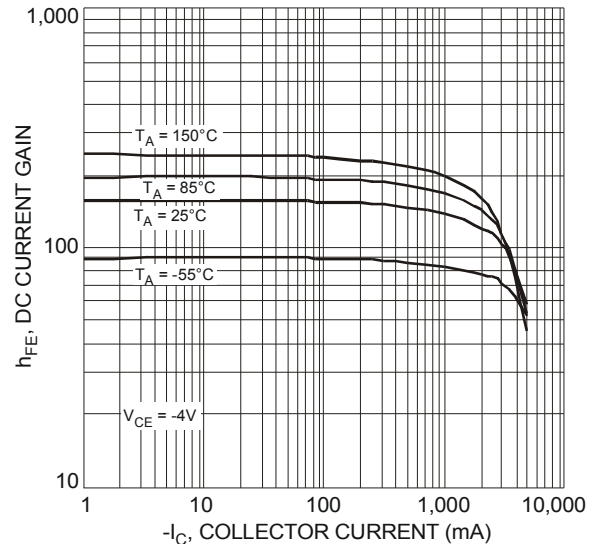


Fig. 4 Typical DC Current Gain vs. Collector Current

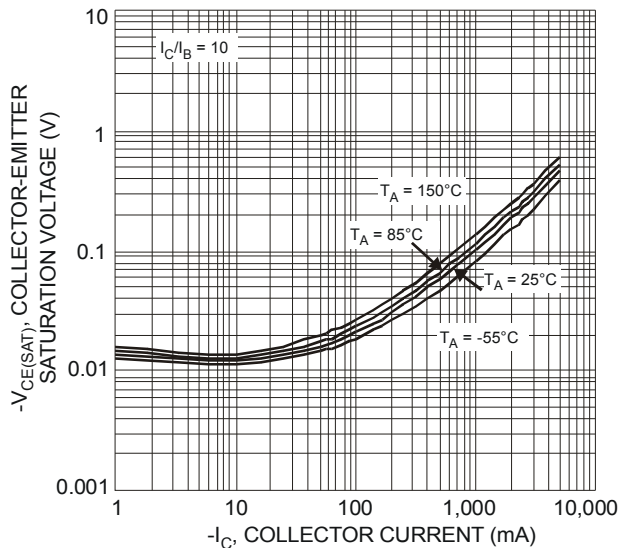


Fig. 5 Typical Collector-Emitter Saturation Voltage vs. Collector Current

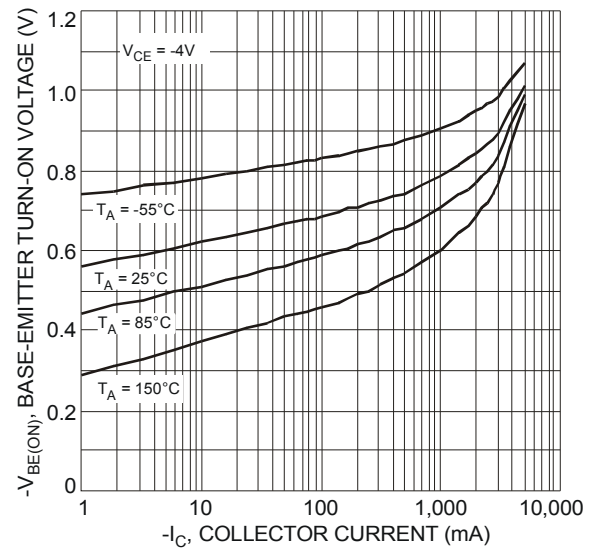


Fig. 6 Typical Base-Emitter Turn-On Voltage vs. Collector Current

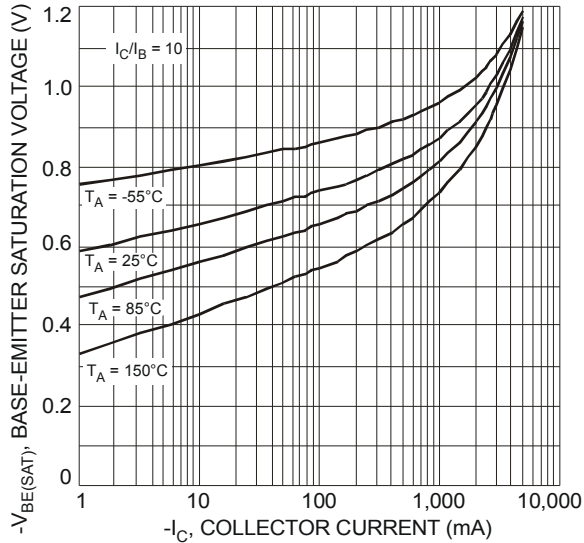


Fig. 7 Typical Base-Emitter Saturation Voltage vs. Collector Current

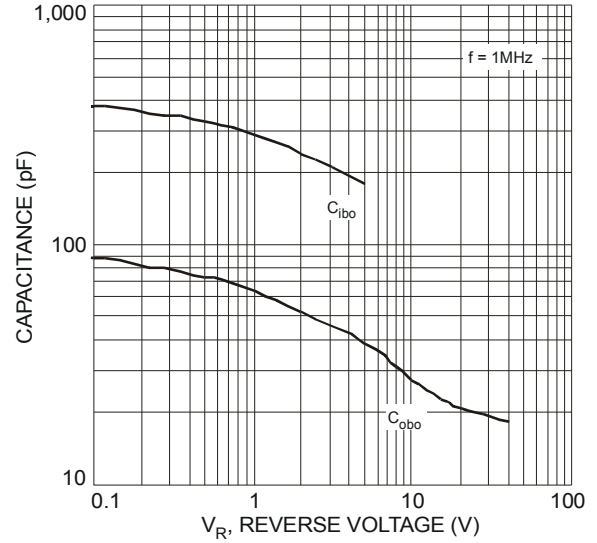


Fig. 8 Typical Capacitance Characteristics

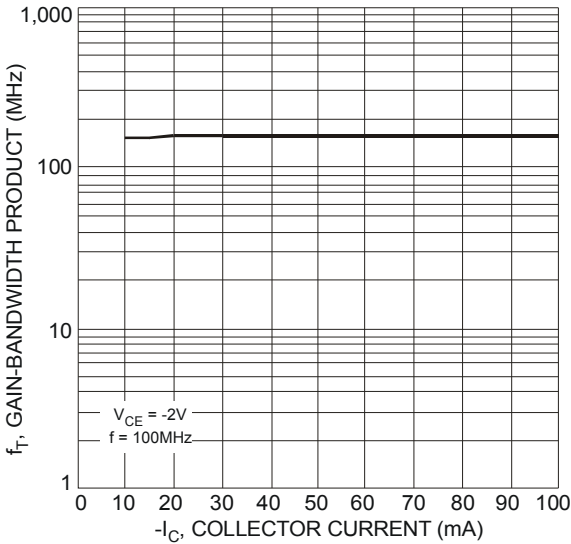
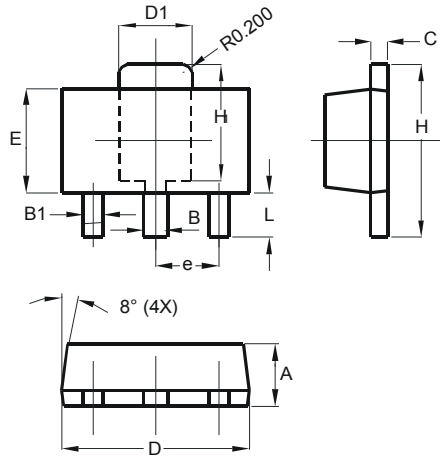


Fig. 9 Typical Gain-Bandwidth Product vs. Collector Current

Package Outline Dimensions

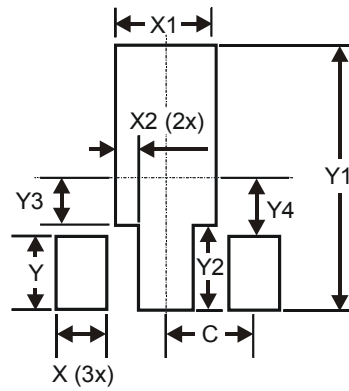
Please see AP02002 at <http://www.diodes.com/datasheets/ap02002.pdf> for latest version.



| SOT89 | | |
|----------------------|----------|------|
| Dim | Min | Max |
| A | 1.40 | 1.60 |
| B | 0.44 | 0.62 |
| B1 | 0.35 | 0.54 |
| C | 0.35 | 0.44 |
| D | 4.40 | 4.60 |
| D1 | 1.62 | 1.83 |
| E | 2.29 | 2.60 |
| e | 1.50 Typ | |
| H | 3.94 | 4.25 |
| H1 | 2.63 | 2.93 |
| L | 0.89 | 1.20 |
| All Dimensions in mm | | |

Suggested Pad Layout

Please see AP02001 at <http://www.diodes.com/datasheets/ap02001.pdf> for the latest version.



| Dimensions | Value (in mm) |
|------------|---------------|
| X | 0.900 |
| X1 | 1.733 |
| X2 | 0.416 |
| Y | 1.300 |
| Y1 | 4.600 |
| Y2 | 1.475 |
| Y3 | 0.950 |
| Y4 | 1.125 |
| C | 1.500 |

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