


**Features**

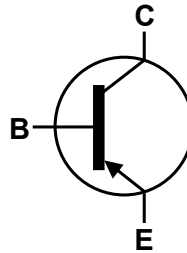
- Epitaxial Planar Die Construction
- Ideally Suited for Automated Assembly Processes
- Ideal for Medium Power Switching or Amplification Applications
- Complementary NPN Type Available (2DC4672)
- **Totally Lead-Free & Fully RoHS compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device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

**Mechanical Data**

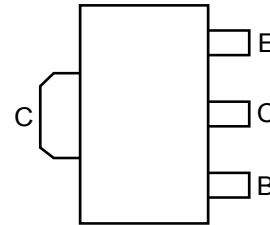
- Case: SOT89
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish — Matte Tin. Solderable per MIL-STD-202, Method 208 
- Weight: 0.052 grams (approximate)



Top View



Device symbol



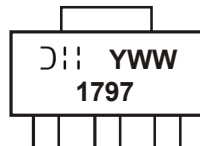
Top View  
Pin-Out

**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](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/](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<sub>A</sub> = +25°C, unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V <sub>CBO</sub>	-50	V
Collector-Emitter Voltage	V <sub>CEO</sub>	-50	V
Emitter-Base Voltage	V <sub>EBO</sub>	-6	V
Peak Pulse Current	I <sub>CM</sub>	-6	A
Continuous Collector Current	I <sub>C</sub>	-3	A

### Thermal Characteristics (@T<sub>A</sub> = +25°C, unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Power Dissipation (Note 6)	P <sub>D</sub>	0.9	W
Thermal Resistance, Junction to Ambient Air (Note 6)	R <sub>θJA</sub>	139	°C/W
Power Dissipation (Note 7)	P <sub>D</sub>	2	W
Thermal Resistance, Junction to Ambient Air (Note 7)	R <sub>θJA</sub>	62.5	°C/W
Thermal Resistance, Junction to Lead (Note 8)	R <sub>θJL</sub>	5.3	°C/W
Operating and Storage Temperature Range	T <sub>J</sub> , T <sub>STG</sub>	-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 inch<sup>2</sup> 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.)

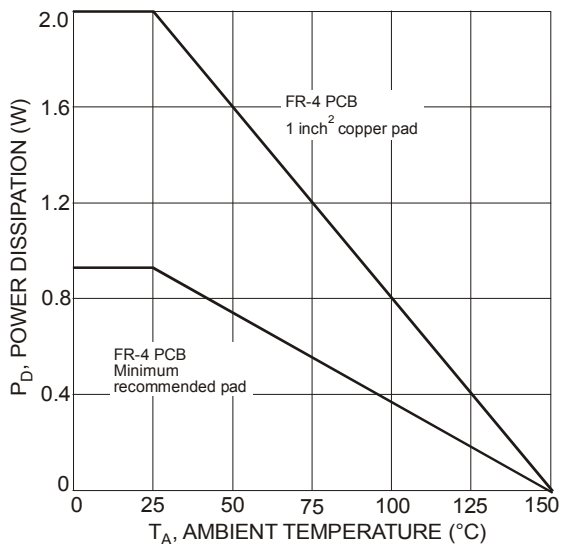
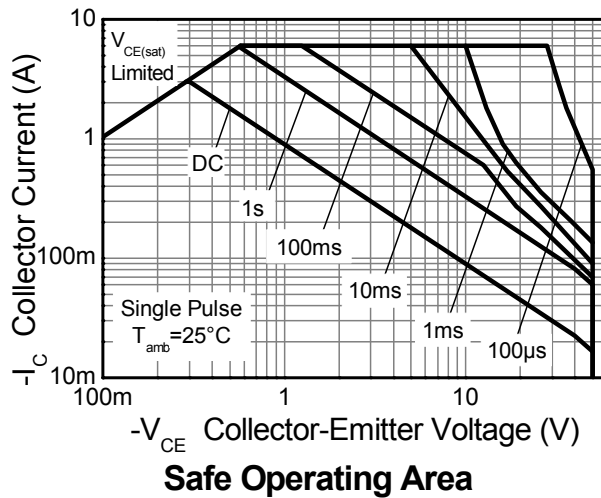


Fig. 1 Power Dissipation vs. Ambient Temperature



Safe Operating Area

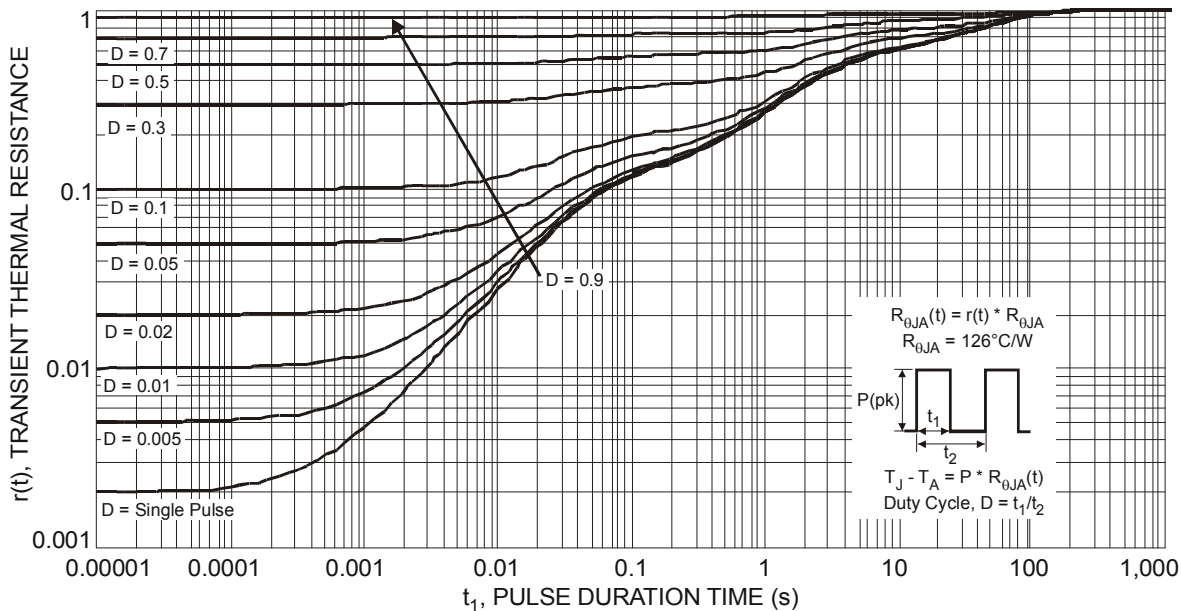


Fig. 10 Transient Thermal Response

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

Characteristic	Symbol	Min	Typ	Max	Unit	Conditions
<b>OFF CHARACTERISTICS</b>						
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	$\mu\text{A}$	$V_{CB} = -50\text{V}, I_E = 0$
Emitter Cut-Off Current	$I_{EBO}$	—	—	-0.1	$\mu\text{A}$	$V_{EB} = -5\text{V}, I_C = 0$
<b>ON CHARACTERISTICS (Note 10)</b>						
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	—	$V_{CE} = -2\text{V}, I_C = -500\text{mA}$
<b>SMALL SIGNAL CHARACTERISTICS</b>						
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 $\mu\text{s}$ . Duty cycle  $\leq 2\%$ .

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

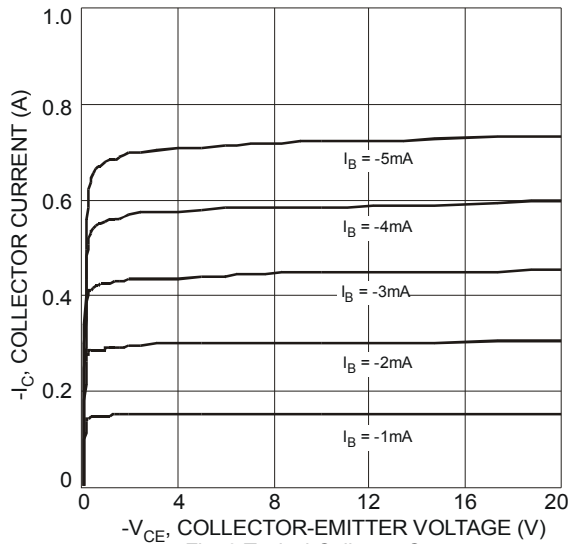


Fig. 3 Typical Collector Current vs. Collector-Emitter Voltage

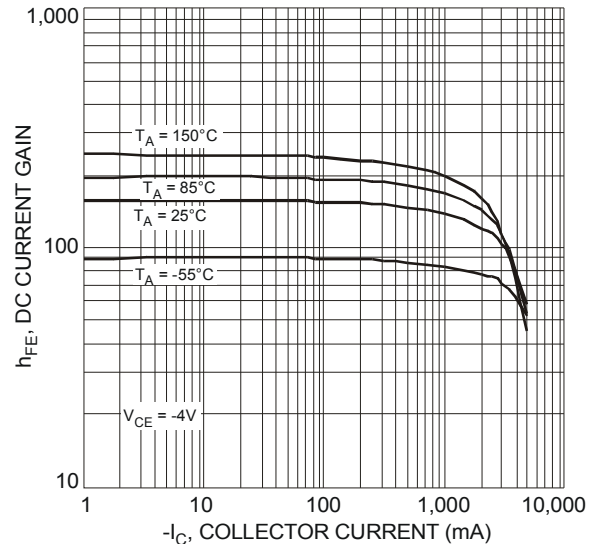


Fig. 4 Typical DC Current Gain vs. Collector Current

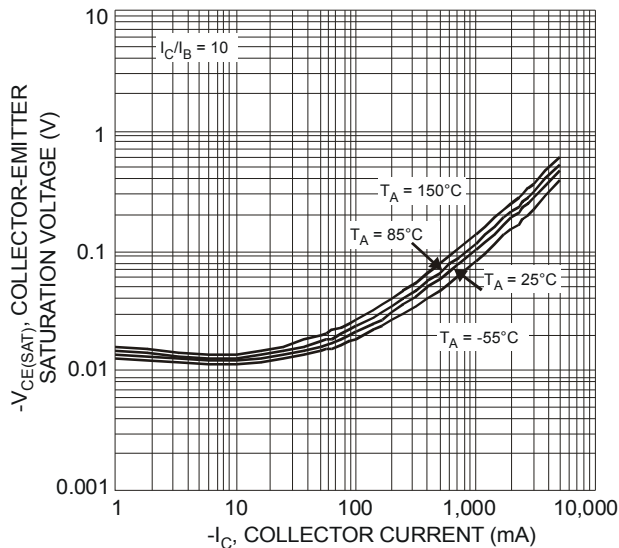


Fig. 5 Typical Collector-Emitter Saturation Voltage vs. Collector Current

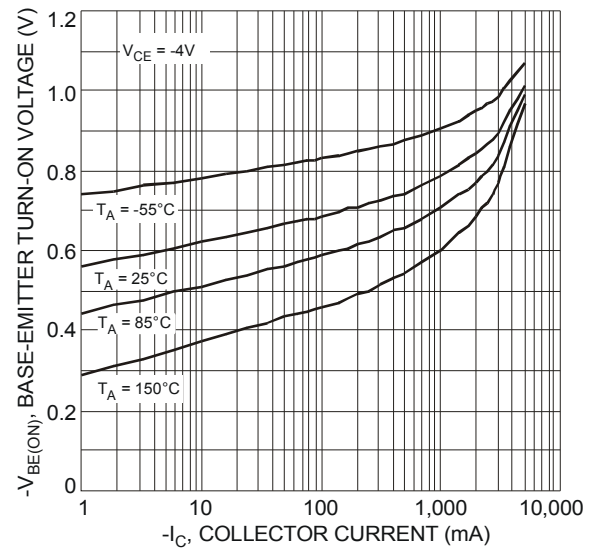


Fig. 6 Typical Base-Emitter Turn-On Voltage vs. Collector Current

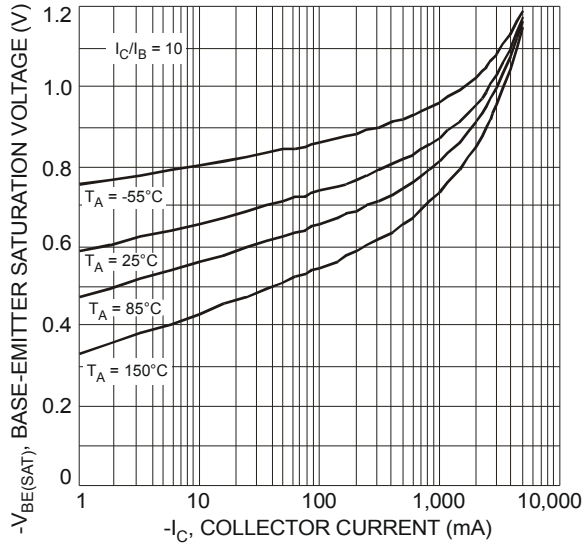


Fig. 7 Typical Base-Emitter Saturation Voltage vs. Collector Current

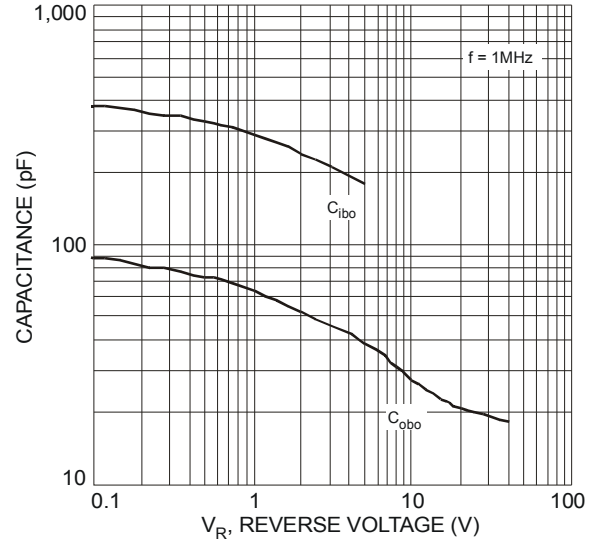


Fig. 8 Typical Capacitance Characteristics

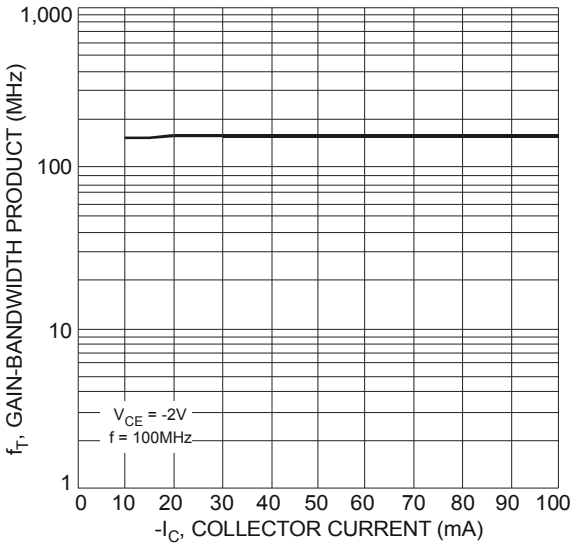
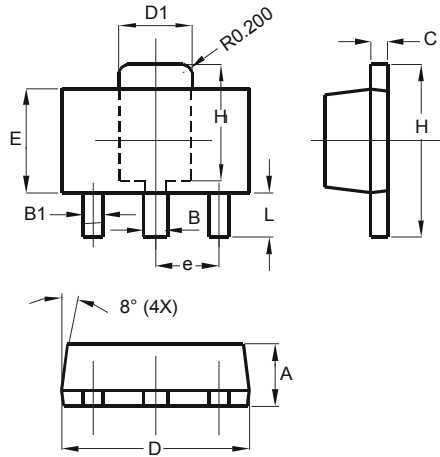


Fig. 9 Typical Gain-Bandwidth Product vs. Collector Current

## Package Outline Dimensions

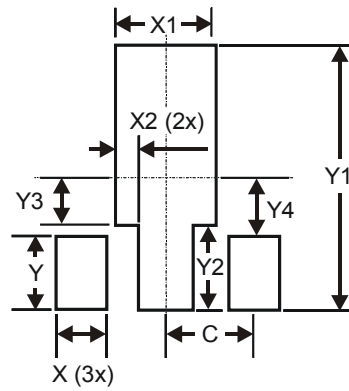
Please see AP02002 at <http://www.diodes.com/datasheets/ap02002.pdf> for latest version.



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
<b>All Dimensions in mm</b>		

## 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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