

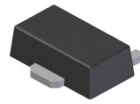


### Features

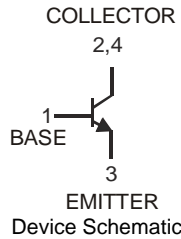
- Epitaxial Planar Die Construction
- Ideally Suited for Automated Assembly Processes
- Ideal for Medium Power Switching or Amplification Applications
- **Lead Free By Design/RoHS Compliant (Note 1)**
- **"Green" Device (Note 2)**
- **Qualified to AEC-Q101 Standards for High Reliability**

### Mechanical Data

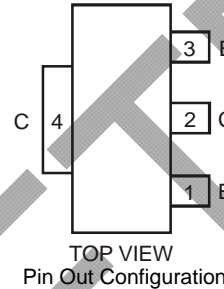
- Case: SOT89-3L
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish — Matte Tin annealed over Copper leadframe (Lead Free Plating). Solderable per MIL-STD-202, Method 208
- Marking Information: See Page 3
- Ordering Information: See Page 3
- Weight: 0.055 grams (approximate)



Top View



EMITTER  
Device Schematic



TOP VIEW  
Pin Out Configuration

### Maximum Ratings @ T<sub>A</sub> = 25°C unless otherwise specified

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V <sub>CB0</sub>	40	V
Collector-Emitter Voltage	V <sub>CEO</sub>	20	V
Emitter-Base Voltage	V <sub>EBO</sub>	6	V
Peak Pulse Current	I <sub>CM</sub>	5	A
Continuous Collector Current	I <sub>C</sub>	3	A

### Thermal Characteristics

Characteristic	Symbol	Value	Unit
Power Dissipation (Note 3) @ T <sub>A</sub> = 25°C	P <sub>D</sub>	1	W
Thermal Resistance, Junction to Ambient Air (Note 3) @ T <sub>A</sub> = 25°C	R <sub>θJA</sub>	125	°C/W
Operating and Storage Temperature Range	T <sub>J</sub> , T <sub>STG</sub>	-55 to +150	°C

### Electrical Characteristics @ T<sub>A</sub> = 25°C unless otherwise specified

Characteristic	Symbol	Min	Typ	Max	Unit	Conditions
<b>OFF CHARACTERISTICS (Note 4)</b>						
Collector-Base Breakdown Voltage	V <sub>(BR)CBO</sub>	40	—	—	V	I <sub>C</sub> = 50μA, I <sub>E</sub> = 0
Collector-Emitter Breakdown Voltage	V <sub>(BR)CEO</sub>	20	—	—	V	I <sub>C</sub> = 1mA, I <sub>B</sub> = 0
Emitter-Base Breakdown Voltage	V <sub>(BR)EBO</sub>	6	—	—	V	I <sub>E</sub> = 50μA, I <sub>C</sub> = 0
Collector Cut-Off Current	I <sub>CBO</sub>	—	—	0.1	μA	V <sub>CB</sub> = 30V, I <sub>E</sub> = 0
Emitter Cut-Off Current	I <sub>EBO</sub>	—	—	0.1	μA	V <sub>EB</sub> = 5V, I <sub>C</sub> = 0
<b>ON CHARACTERISTICS (Note 4)</b>						
Collector-Emitter Saturation Voltage	V <sub>CE(SAT)</sub>	—	0.2	0.5	V	I <sub>C</sub> = 2A, I <sub>B</sub> = 0.1A
DC Current Gain	h <sub>FE</sub>	180	—	390	—	I <sub>C</sub> = 100mA, V <sub>CE</sub> = 2V
<b>SMALL SIGNAL CHARACTERISTICS</b>						
Transition Frequency	f <sub>T</sub>	—	160	—	MHz	V <sub>CE</sub> = 2V, I <sub>E</sub> = -0.1A f = 100MHz
Output Capacitance	C <sub>ob</sub>	—	28	—	pF	V <sub>CB</sub> = 10V, I <sub>E</sub> = 0, f = 1MHz

- Notes:
1. No purposefully added lead.
  2. Diodes Inc.'s "Green" policy can be found on our website at [http://www.diodes.com/products/lead\\_free/index.php](http://www.diodes.com/products/lead_free/index.php).
  3. Device mounted on FR-4 PCB; pad layout as shown on page 4 or in Diodes Inc. suggested pad layout document AP02001, which can be found on our website at <http://www.diodes.com/datasheets/ap02001.pdf>.
  4. Measured under pulsed conditions. Pulse width = 300μs. Duty cycle ≤2%.

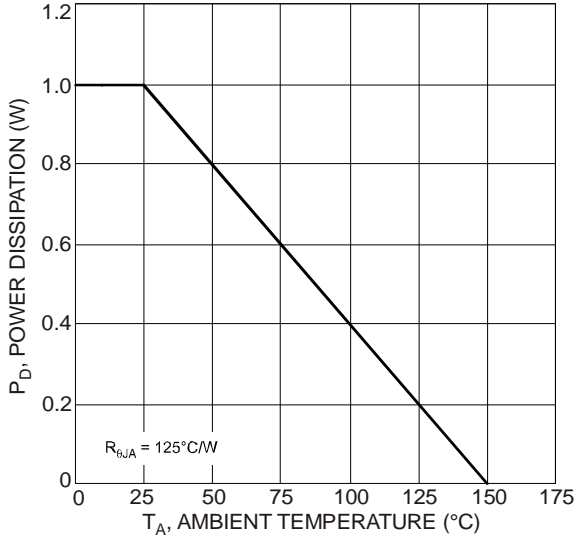


Fig. 1 Power Dissipation vs. Ambient Temperature (Note 3)

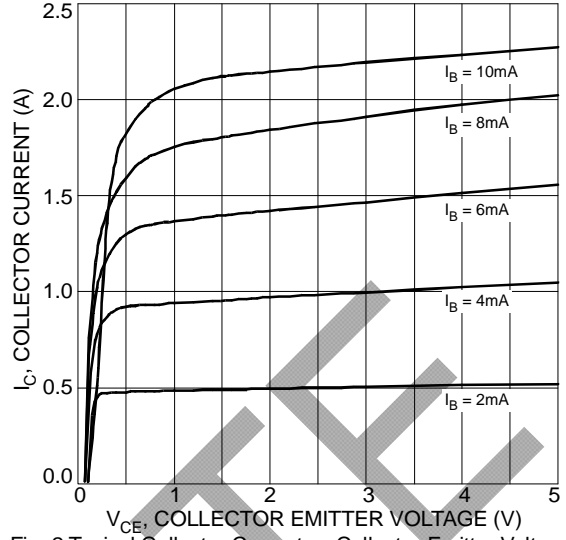


Fig. 2 Typical Collector Current vs. Collector-Emitter Voltage

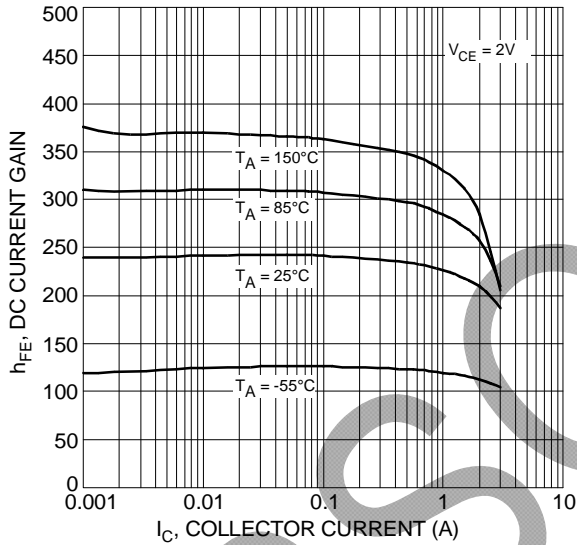


Fig. 3 Typical DC Current Gain vs. Collector Current

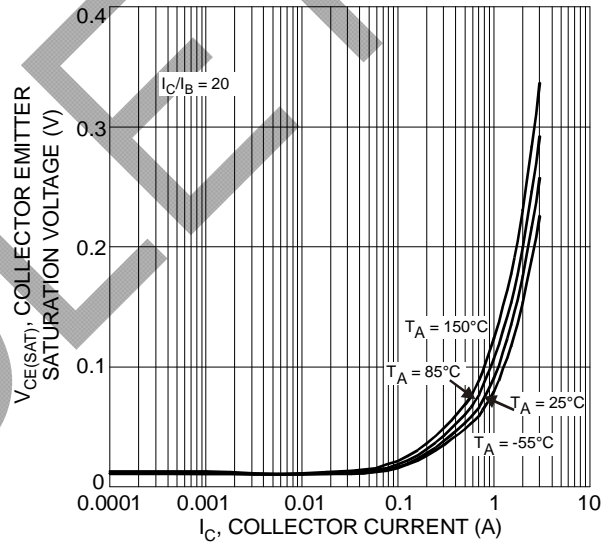


Fig. 4 Typical Collector-Emitter Saturation Voltage vs. Collector Current

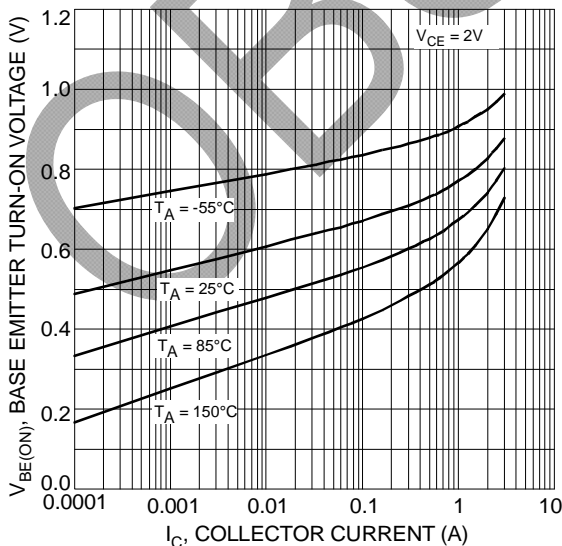


Fig. 5 Typical Base-Emitter Turn-On Voltage vs. Collector Current

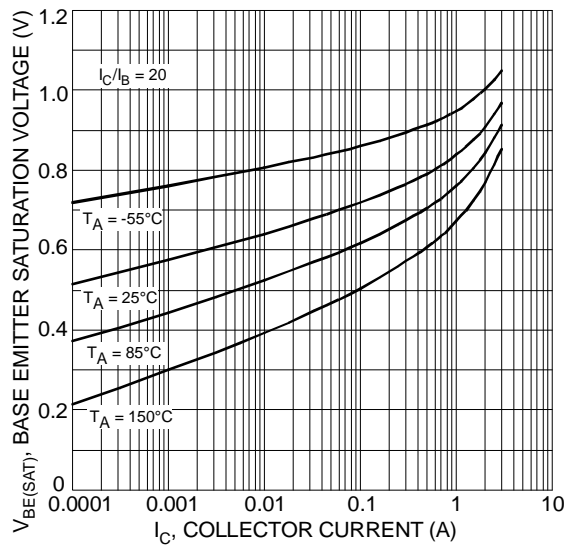


Fig. 6 Typical Base-Emitter Saturation Voltage vs. Collector Current

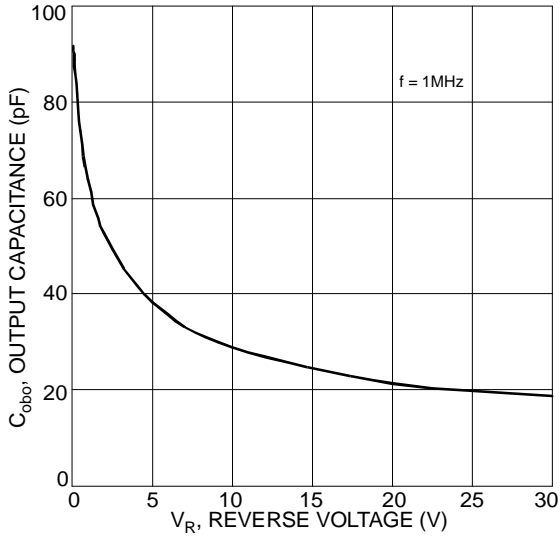


Fig. 7 Typical Output Capacitance Characteristics

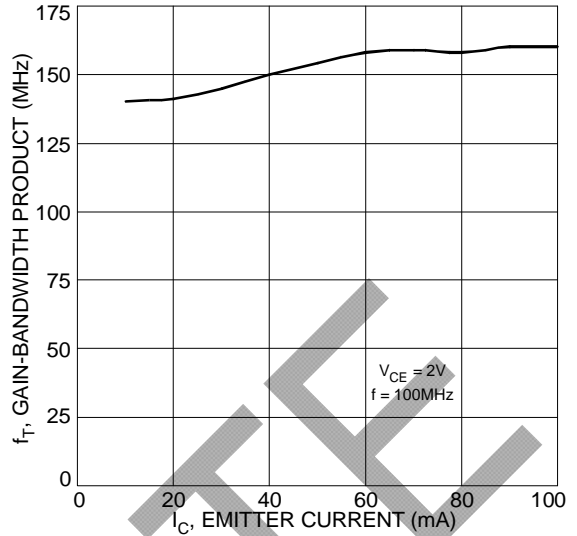


Fig. 8 Typical Gain-Bandwidth Product vs. Emitter Current

**Ordering Information** (Note 5)

Part Number	Case	Packaging
2DD2150R-13	SOT89-3L	2500/Tape & Reel

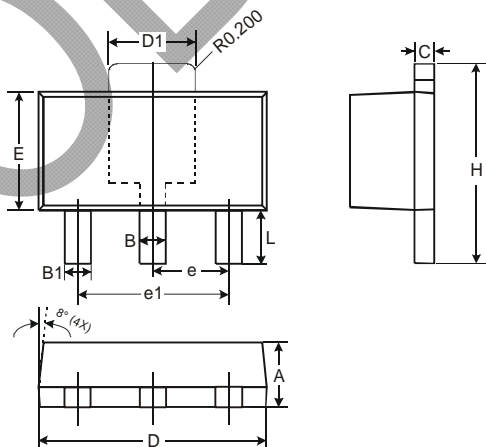
Notes: 5. For packaging details, go to our website at <http://www.diodes.com/datasheets/ap02007.pdf>.

**Marking Information**



N33R = Product Type Marking Code  
 Diodes logo = Manufacturer's Marking Code  
 YWW = Date Code Marking  
 Y = Last digit of year (ex: 7 = 2007)  
 WW = Week code 01 - 53

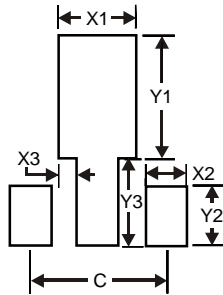
**Package Outline Dimensions**



SOT89-3L		
Dim	Min	Max
A	1.40	1.60
B	0.44	0.62
B1	0.35	0.54
C	0.35	0.43
D	4.40	4.60
D1	1.52	1.83
E	2.29	2.60
e	1.50 Typ	
e1	3.00 Typ	
H	3.94	4.25
L	0.89	1.20
All Dimensions in mm		

OBSOLETE - PART DISCONTINUED

## Suggested Pad Layout



Dimensions	Value (in mm)
X1	1.7
X2	0.9
X3	0.4
Y1	2.7
Y2	1.3
Y3	1.9
C	3.0

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