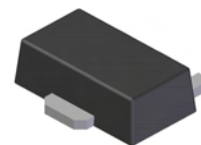


### Features

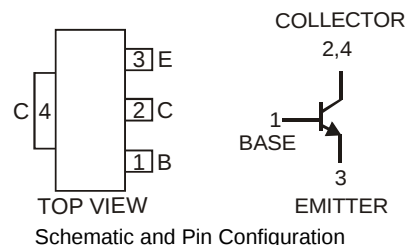
- Epitaxial Planar Die Construction
- Complementary PNP Type Available (DCX53)
- Ideally Suited for Automated Assembly Processes
- Ideal for Medium Power Switching or Amplification Applications
- **Lead Free By Design/RoHS Compliant (Note 1)**
- "Green" Device (Note 2)



SOT89-3L

### 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-020C
- Terminals: Finish — Matte Tin annealed over Copper leadframe  
(Lead Free Plating). Solderable per MIL-STD-202, Method 208
- Marking & Type Code Information: See Page 3
- Ordering Information: See Page 3
- Weight: 0.072 grams (approximate)



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

| Characteristic            | Symbol           | Value | Unit |
|---------------------------|------------------|-------|------|
| Collector-Base Voltage    | V <sub>CBO</sub> | 100   | V    |
| Collector-Emitter Voltage | V <sub>CEO</sub> | 80    | V    |
| Emitter-Base Voltage      | V <sub>EBO</sub> | 5     | V    |
| Collector Current         | I <sub>C</sub>   | 1     | A    |
| Peak Pulse Current        | I <sub>CM</sub>  | 1.5   | A    |

### Thermal Characteristics

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

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

| Characteristic                       | Symbol               | Min             | Typ      | Max       | Unit | Test Conditions                                                                                                |                                                                                                  |
|--------------------------------------|----------------------|-----------------|----------|-----------|------|----------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|
| OFF CHARACTERISTICS (Note 4)         |                      |                 |          |           |      |                                                                                                                |                                                                                                  |
| Collector-Base Breakdown Voltage     | V <sub>(BR)CBO</sub> | 100             | —        | —         | V    | I <sub>C</sub> = 100μA, I <sub>E</sub> = 0                                                                     |                                                                                                  |
| Collector-Emitter Breakdown Voltage  | V <sub>(BR)CEO</sub> | 80              | —        | —         | V    | I <sub>C</sub> = 10mA, I <sub>B</sub> = 0                                                                      |                                                                                                  |
| Emitter-Base Breakdown Voltage       | V <sub>(BR)EBO</sub> | 5.0             | —        | —         | V    | I <sub>E</sub> = 10μA, I <sub>C</sub> = 0                                                                      |                                                                                                  |
| Collector-Base Cutoff Current        | I <sub>CBO</sub>     | —               | —        | 0.1<br>20 | μA   | V <sub>CB</sub> = 30V, I <sub>E</sub> = 0<br>V <sub>CB</sub> = 30V, I <sub>E</sub> = 0, T <sub>A</sub> = 150°C |                                                                                                  |
| Emitter-Base Cutoff Current          | I <sub>EBO</sub>     | —               | —        | 100       | nA   | V <sub>EB</sub> = 5.0V, I <sub>C</sub> = 0                                                                     |                                                                                                  |
| ON CHARACTERISTICS (Note 4)          |                      |                 |          |           |      |                                                                                                                |                                                                                                  |
| DC Current Gain                      | DCX56, DCX56-16      | h <sub>FE</sub> | 63<br>40 | —         | —    | —                                                                                                              | I <sub>C</sub> = 5.0mA, V <sub>CE</sub> = 2.0V<br>I <sub>C</sub> = 500mA, V <sub>CE</sub> = 2.0V |
|                                      | DCX56                |                 | 63       | —         | 250  | —                                                                                                              | I <sub>C</sub> = 150mA, V <sub>CE</sub> = 2.0V                                                   |
|                                      | DCX56-16             |                 | 100      | —         | 250  | —                                                                                                              | I <sub>C</sub> = 150mA, V <sub>CE</sub> = 2.0V                                                   |
|                                      |                      |                 |          |           |      |                                                                                                                |                                                                                                  |
| Collector-Emitter Saturation Voltage | V <sub>CE(SAT)</sub> | —               | —        | 0.5       | V    | I <sub>C</sub> = 500mA, I <sub>B</sub> = 50mA                                                                  |                                                                                                  |
| Base-Emitter Turn-On Voltage         | V <sub>BE(ON)</sub>  | —               | —        | 1.0       | V    | I <sub>C</sub> = 500mA, V <sub>CE</sub> = 2.0V                                                                 |                                                                                                  |
| SMALL SIGNAL CHARACTERISTICS         |                      |                 |          |           |      |                                                                                                                |                                                                                                  |
| Current Gain-Bandwidth Product       | f <sub>T</sub>       | —               | 200      | —         | MHz  | I <sub>C</sub> = 50mA, V <sub>CE</sub> = 5V,<br>f = 100MHz                                                     |                                                                                                  |
| Output Capacitance                   | C <sub>obo</sub>     | —               | —        | 15        | 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%.

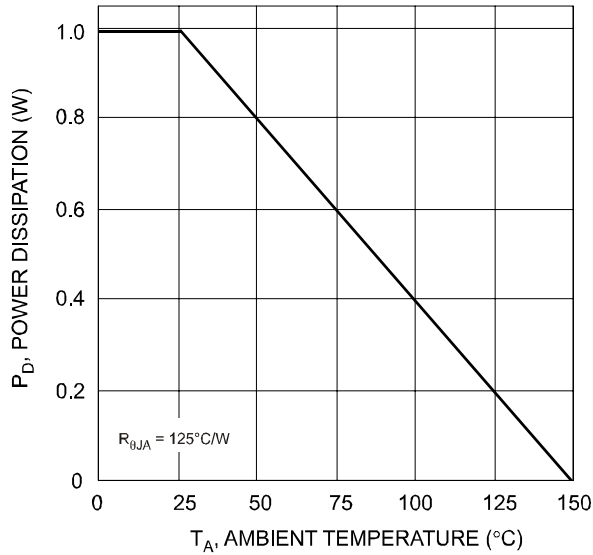


Fig. 1 Power Dissipation vs. Ambient Temperature

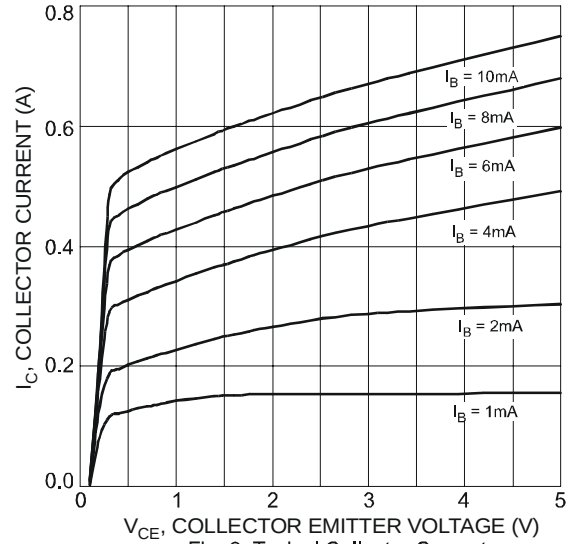


Fig. 2 Typical Collector Current vs. Collector Emitter Voltage

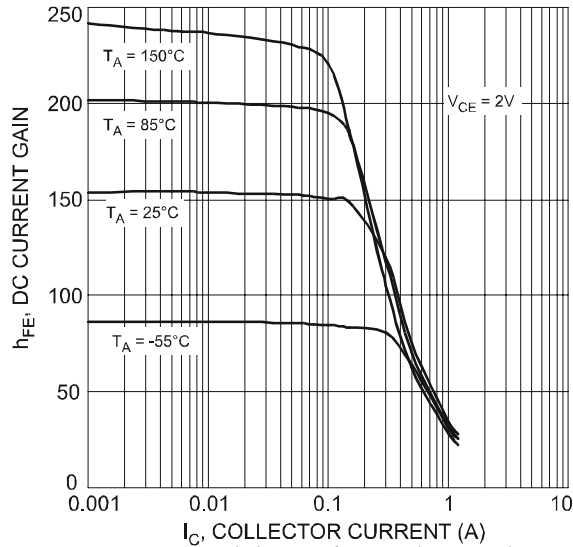


Fig. 3 Typical DC Current Gain vs. Collector Current

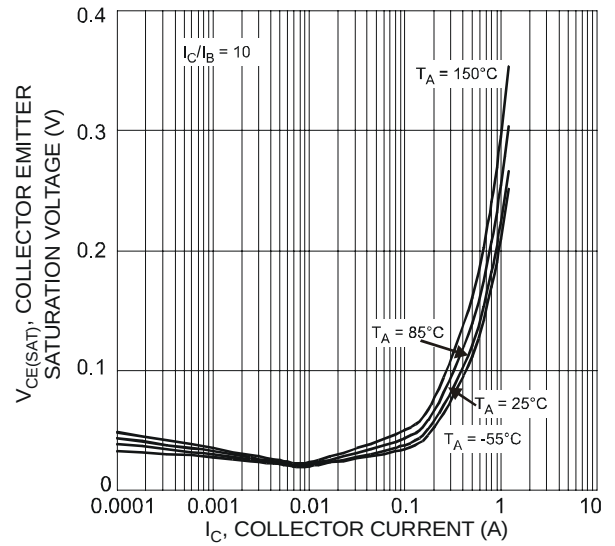


Fig. 4 Typical Collector Emitter Saturation Voltage vs. Collector Current

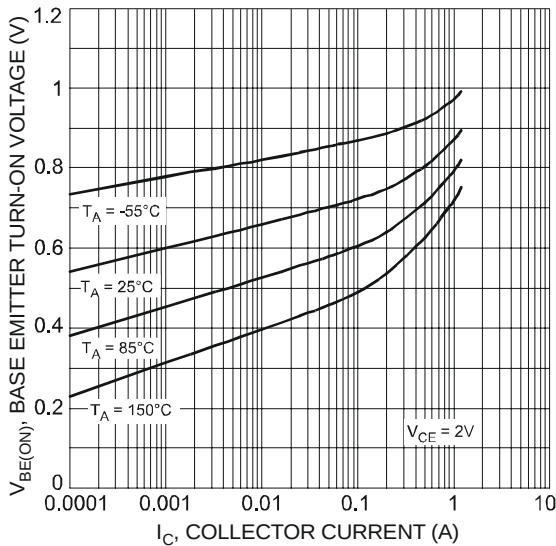


Fig. 5 Typical Base Emitter Turn-On Voltage vs. Collector Current

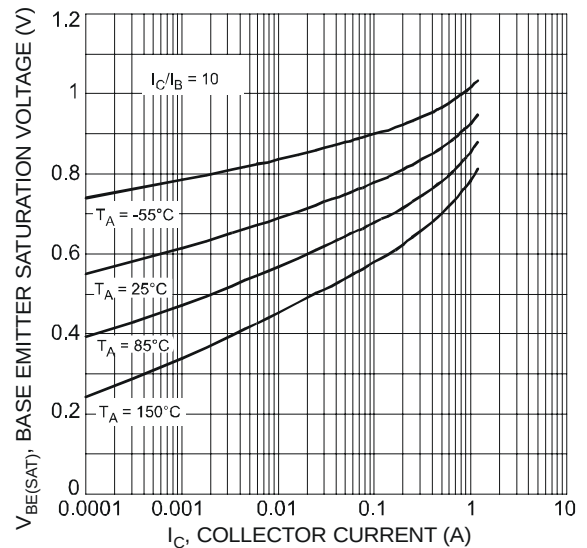


Fig. 6 Typical Base Emitter Saturation Voltage vs. Collector Current

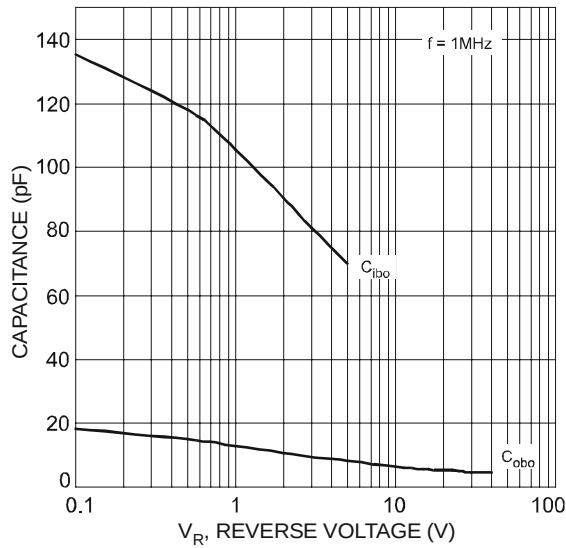


Fig. 7 Typical Capacitance Characteristics

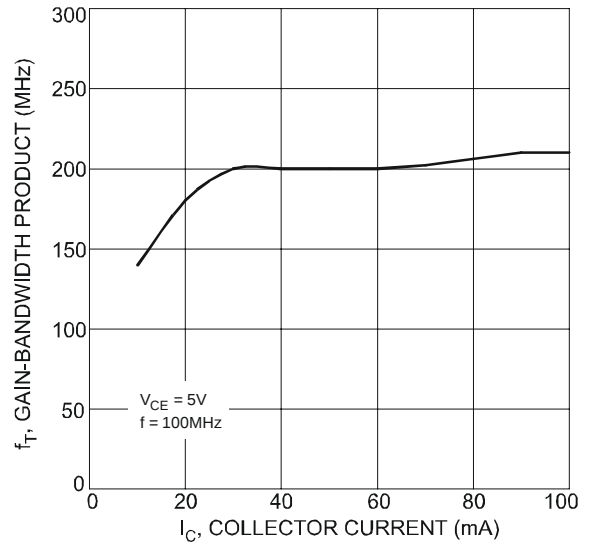


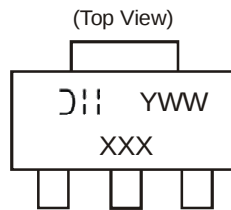
Fig. 8 Typical Gain-Bandwidth Product vs. Collector Current

## Ordering Information (Note 5)

| Device      | Packaging | Shipping         |
|-------------|-----------|------------------|
| DCX56-13    | SOT89-3L  | 2500/Tape & Reel |
| DCX56-16-13 | SOT89-3L  | 2500/Tape & Reel |

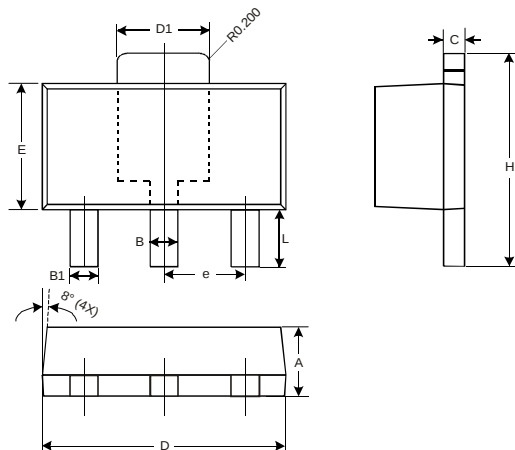
Notes: 5. For packaging details, go to our website at <http://www.diodes.com/ap02007.pdf>.

## Marking Information



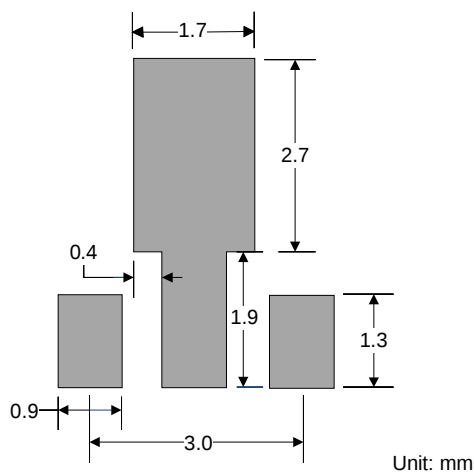
XXX = Product Type Marking Code ex. N18 = DCX56  
N18-16 = DCX56-16  
YWW = Date Code Marking  
Y = Last digit of year ex: 7 = 2007  
WW = Week code 01 - 52

## Package Outline Dimensions



| SOT89-3L             |      |      |      |
|----------------------|------|------|------|
| Dim                  | Min  | Max  | Typ  |
| A                    | 1.40 | 1.60 | 1.50 |
| B                    | 0.45 | 0.55 | 0.50 |
| B1                   | 0.37 | 0.47 | 0.42 |
| C                    | 0.35 | 0.43 | 0.38 |
| D                    | 4.40 | 4.60 | 4.50 |
| D1                   | 1.50 | 1.70 | 1.60 |
| E                    | 2.40 | 2.60 | 2.50 |
| e                    | —    | —    | 1.50 |
| H                    | 3.95 | 4.25 | 4.10 |
| L                    | 0.90 | 1.20 | 1.05 |
| All Dimensions in mm |      |      |      |

## Suggested Pad Layout



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- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
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- Подбор аналогов;
- Консультации по применению компонента;
- Поставка образцов и прототипов;
- Техническая поддержка проекта;
- Защита от снятия компонента с производства.



#### Как с нами связаться

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