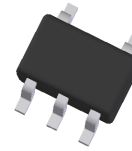


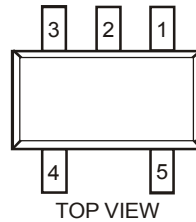
**Features**

- Epitaxial Planar Die Construction
- Surface Mount Package Suited for Automated Assembly
- Simplifies Circuit Design and Reduces Board Space
- **Lead Free/RoHS Compliant (Note 1)**
- **"Green" Device (Note 2)**

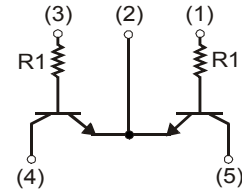


**Mechanical Data**

- Case: SOT-353
- Case Material: Molded Plastic. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020C
- Terminal Connections: See Diagram
- Terminals: Finish – Matte Tin Annealed Over Alloy 42 Leadframe. Solderable per MIL-STD-202, Method 208
- Marking Information: See Page 2
- Ordering Information: See Page 2
- Weight: 0.006 grams (approximate)



SOT-353



Schematic and Pin Configuration

**Maximum Ratings** @ $T_A = 25^\circ\text{C}$  unless otherwise specified

| Characteristic            | Symbol    | Value | Unit |
|---------------------------|-----------|-------|------|
| Collector-Base Voltage    | $V_{CBO}$ | 50    | V    |
| Collector-Emitter Voltage | $V_{CEO}$ | 50    | V    |
| Emitter-Base Voltage      | $V_{EBO}$ | 5     | V    |
| Collector Current         | $I_C$     | 100   | mA   |

**Thermal Characteristics**

| Characteristic  | Symbol          | Value       | Unit               |
|---|-----------------|-------------|--------------------|
| Power Dissipation @ $T_A = 25^\circ\text{C}$ (Note 3)                           | $P_D$           | 150         | mW                 |
| Thermal Resistance, Junction to Ambient Air @ $T_A = 25^\circ\text{C}$ (Note 3) | $R_{\theta JA}$ | 833         | $^\circ\text{C/W}$ |
| Operating and Storage Temperature Range   | $T_j, T_{STG}$  | -55 to +150 | $^\circ\text{C}$   |

**Electrical Characteristics** @ $T_A = 25^\circ\text{C}$  unless otherwise specified

| Characteristic                       | Symbol        | Min | Typ | Max | Unit          | Test Condition  |
|--------------------------------------|---------------|-----|-----|-----|---------------|---|
| Collector-Base Breakdown Voltage     | $V_{(BR)CBO}$ | 50  | —   | —   | V             | $I_C = 50\mu\text{A}, I_E = 0$                              |
| Collector-Emitter Breakdown Voltage  | $V_{(BR)CEO}$ | 50  | —   | —   | V             | $I_C = 1\text{mA}, I_B = 0$                                 |
| Emitter-Base Breakdown Voltage       | $V_{(BR)EBO}$ | 5.0 | —   | —   | V             | $I_E = 50\mu\text{A}, I_C = 0$                              |
| Collector Cut-Off Current            | $I_{CBO}$     | —   | —   | 0.5 | $\mu\text{A}$ | $V_{CB} = 50\text{V}, I_E = 0$                              |
| Emitter Cut-Off Current              | $I_{EBO}$     | —   | —   | 0.5 | $\mu\text{A}$ | $V_{EB} = 4\text{V}, I_C = 0$                               |
| Collector-Emitter Saturation Voltage | $V_{CE(SAT)}$ | —   | —   | 0.3 | V             | $I_C = 10\text{mA}, I_B = 1\text{mA}$                       |
| DC Current Gain                      | $h_{FE}$      | 100 | 330 | 600 | —             | $V_{CE} = 5\text{V}, I_C = 1\text{mA}$                      |
| Gain-Bandwidth Product (Note 4)      | $f_T$         | —   | 250 | —   | MHz           | $V_{CE} = 10\text{V}, I_E = -5\text{mA}, f = 100\text{MHz}$ |
| Input Resistance                     | $R_1$         | 7   | 10  | 13  | k $\Omega$    | —   |

- 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 Diodes Inc. suggested pad layout document AP02001, which can be found on our website at <http://www.diodes.com/datasheets/ap02001.pdf>.
  4. Characteristics of transistor. For reference only.

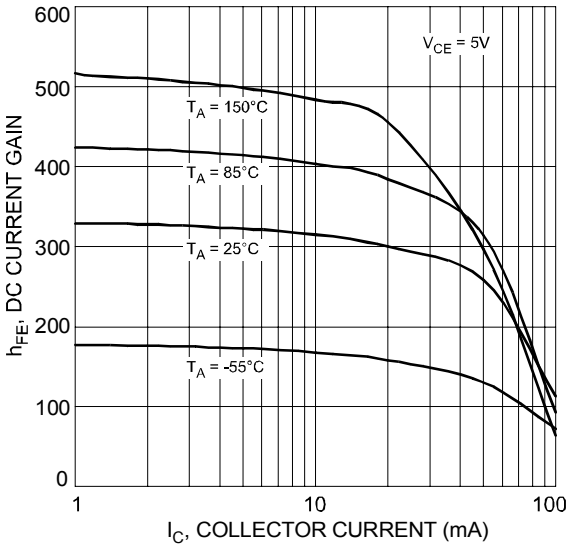


Fig. 1 Typical DC Current Gain vs. Collector Current

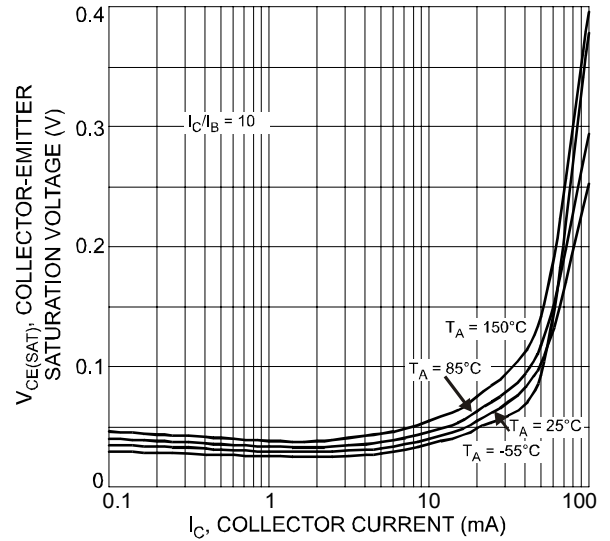


Fig. 2 Typical Collector-Emitter Saturation Voltage vs. Collector Current

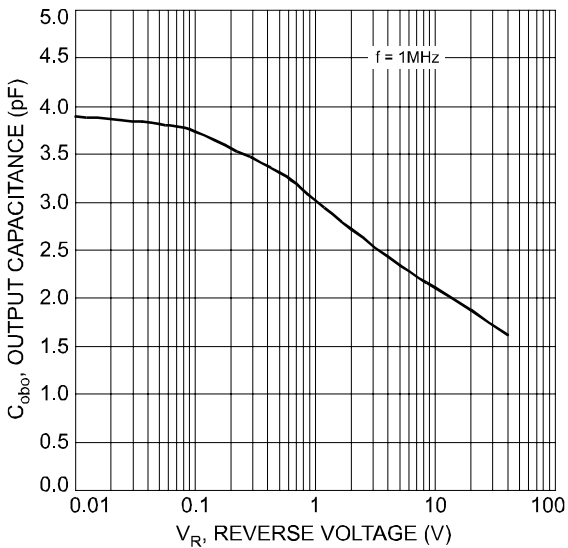


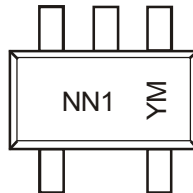
Fig. 3 Typical Output Capacitance Characteristics

## Ordering Information (Note 5)

| Device  | Packaging | Shipping         |
|---------|-----------|------------------|
| UMG4N-7 | SOT-353   | 3000/Tape & Reel |

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

## Marking Information



NN1 = Product Type Marking Code  
 YM = Date Code Marking  
 Y = Year ex: U = 2007  
 M = Month ex: 9 = September

### Date Code Key

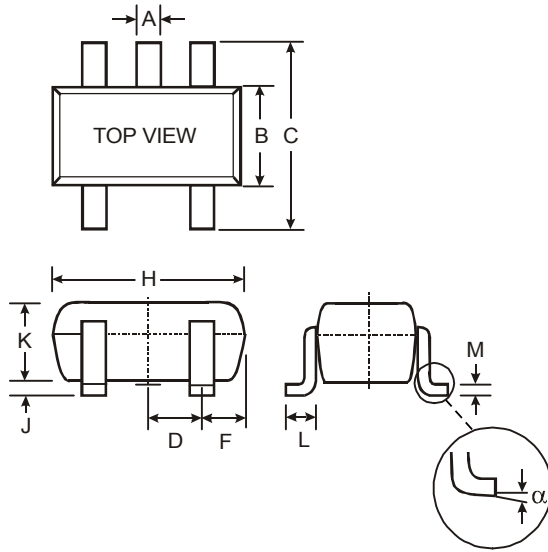
| Year | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 |
|------|------|------|------|------|------|------|
| Code | U    | V    | W    | X    | Y    | Z    |

| Month | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|-------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Code  | 1   | 2   | 3   | 4   | 5   | 6   | 7   | 8   | 9   | O   | N   | D   |

**Package Outline Dimensions**

NEW PRODUCT



| SOT-353              |              |      |
|----------------------|--------------|------|
| Dim                  | Min          | Max  |
| A                    | 0.10         | 0.30 |
| B                    | 1.15         | 1.35 |
| C                    | 2.00         | 2.20 |
| D                    | 0.65 Nominal |      |
| F                    | 0.30         | 0.40 |
| H                    | 1.80         | 2.20 |
| J                    | —            | 0.10 |
| K                    | 0.90         | 1.00 |
| L                    | 0.25         | 0.40 |
| M                    | 0.10         | 0.25 |
| $\alpha$             | 0°           | 8°   |
| All Dimensions in mm |              |      |

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