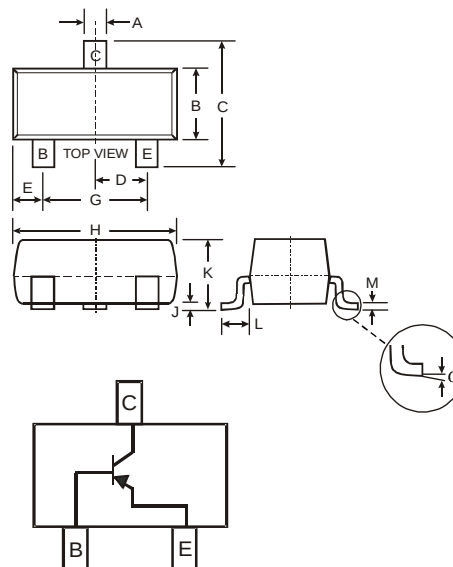


## Features

- Epitaxial Planar Die Construction
- Complementary NPN Type Available (DN350T05)
- Ideal for Medium Power Amplification and Switching
- **Lead, Halogen and Antimony Free, RoHS Compliant "Green" Device (Notes 2, 3 and 4)**
- **Qualified to AEC-Q101 Standards for High Reliability**

## Mechanical Data

- Case: SOT-23
- Case Material: Molded Plastic. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020D
- Terminal Connections: See Diagram
- Terminals: Finish — Matte Tin Finish annealed over Alloy 42 leadframe. Solderable per MIL-STD-202, Method 208
- Marking Information: K3U - See Page 2
- Ordering & Date Code Information: See Page 2
- Weight: 0.008 grams (approximate)



| SOT-23               |       |       |
|----------------------|-------|-------|
| Dim                  | Min   | Max   |
| A                    | 0.37  | 0.51  |
| B                    | 1.20  | 1.40  |
| C                    | 2.30  | 2.50  |
| D                    | 0.89  | 1.03  |
| E                    | 0.45  | 0.60  |
| G                    | 1.78  | 2.05  |
| H                    | 2.80  | 3.00  |
| J                    | 0.013 | 0.10  |
| K                    | 0.903 | 1.10  |
| L                    | 0.45  | 0.61  |
| M                    | 0.085 | 0.180 |
| $\alpha$             | 0°    | 8°    |
| All Dimensions in mm |       |       |

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

| Characteristic                                   | Symbol                            | DP350T05    | Unit |
|--------------------------------------------------|-----------------------------------|-------------|------|
| Collector-Base Voltage                           | V <sub>CB0</sub>                  | -350        | V    |
| Collector-Emitter Voltage                        | V <sub>CEO</sub>                  | -350        | V    |
| Emitter-Base Voltage                             | V <sub>EBO</sub>                  | -5.0        | V    |
| Continuous Collector Current (Note 1)            | I <sub>C</sub>                    | -500        | mA   |
| Power Dissipation (Note 1)                       | P <sub>D</sub>                    | 300         | mW   |
| Thermal Resistance, Junction to Ambient (Note 1) | R <sub>θJA</sub>                  | 417         | °C/W |
| Operating and Storage Temperature Range          | T <sub>J</sub> , T <sub>STG</sub> | -55 to +150 | °C   |

- Notes:
1. Device mounted on FR-4 PCB, 1 inch x 0.85 inch x 0.062 inch; 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>.
  2. No purposefully added lead. Halogen and Antimony Free.
  3. Diode's 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).
  4. Product is manufactured with Green Molding Compound and does not contain Halogens or Sb<sub>2</sub>O<sub>3</sub> Fire Retardants.

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

| Characteristic                       | Symbol               | Min  | Max   | Unit | Test Condition                                         |
|--------------------------------------|----------------------|------|-------|------|--------------------------------------------------------|
| <b>OFF CHARACTERISTICS (Note 5)</b>  |                      |      |       |      |                                                        |
| Collector-Base Breakdown Voltage     | V <sub>(BR)CBO</sub> | -350 | —     | V    | I <sub>C</sub> = -100μA, I <sub>E</sub> = 0            |
| Collector-Emitter Breakdown Voltage  | V <sub>(BR)CEO</sub> | -350 | —     | V    | I <sub>C</sub> = -1.0mA, 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 Cutoff Current             | I <sub>CBO</sub>     | —    | -50   | nA   | V <sub>CB</sub> = -200V, I <sub>E</sub> = 0            |
| Collector Cutoff Current             | I <sub>EBO</sub>     | —    | -50   | nA   | V <sub>CE</sub> = -3.0V, I <sub>C</sub> = 0            |
| <b>ON CHARACTERISTICS (Note 5)</b>   |                      |      |       |      |                                                        |
| DC Current Gain                      | h <sub>FE</sub>      | 20   | —     | —    | I <sub>C</sub> = -1.0mA, V <sub>CE</sub> = -10V        |
|                                      |                      | 30   | —     |      | I <sub>C</sub> = -10mA, V <sub>CE</sub> = -10V         |
|                                      |                      | 30   | 200   |      | I <sub>C</sub> = -30mA, V <sub>CE</sub> = -10V         |
|                                      |                      | 20   | 200   |      | I <sub>C</sub> = -50mA, V <sub>CE</sub> = -10V         |
|                                      |                      | 15   | —     |      | I <sub>C</sub> = -100mA, V <sub>CE</sub> = -10V        |
| Collector-Emitter Saturation Voltage | V <sub>CE(SAT)</sub> | —    | -0.30 | V    | I <sub>C</sub> = -10mA, I <sub>B</sub> = -1.0mA        |
|                                      |                      | —    | -0.35 |      | I <sub>C</sub> = -20mA, I <sub>B</sub> = -2.0mA        |
|                                      |                      | —    | -0.50 |      | I <sub>C</sub> = -30mA, I <sub>B</sub> = -3.0mA        |
|                                      |                      | —    | -1.0  |      | I <sub>C</sub> = -50mA, I <sub>B</sub> = -5.0mA        |
|                                      |                      | —    | —     |      | I <sub>C</sub> = -100mA, I <sub>B</sub> = -10.0mA      |
| Base-Emitter Saturation Voltage      | V <sub>BE(SAT)</sub> | —    | -0.75 | V    | I <sub>C</sub> = -10mA, I <sub>B</sub> = -1.0mA        |
|                                      |                      | —    | -0.85 |      | I <sub>C</sub> = -20mA, I <sub>B</sub> = -2.0mA        |
|                                      |                      | —    | -0.90 |      | I <sub>C</sub> = -30mA, I <sub>B</sub> = -3.0mA        |
| Base-Emitter On Voltage              | V <sub>BE(ON)</sub>  | —    | -2.0  | V    | I <sub>C</sub> = -100mA, V <sub>CE</sub> = -10V        |
| <b>SMALL SIGNAL CHARACTERISTICS</b>  |                      |      |       |      |                                                        |
| Output Capacitance                   | C <sub>obo</sub>     | —    | 7.0   | pF   | V <sub>CB</sub> = -20V, f = 1.0MHz, I <sub>E</sub> = 0 |
| Transition Frequency                 | f <sub>T</sub>       | 50   | —     | MHz  | V <sub>CE</sub> = -10V, I <sub>C</sub> = -20mA         |

Notes: 5. Short duration pulse test used to minimize self-heating effect.

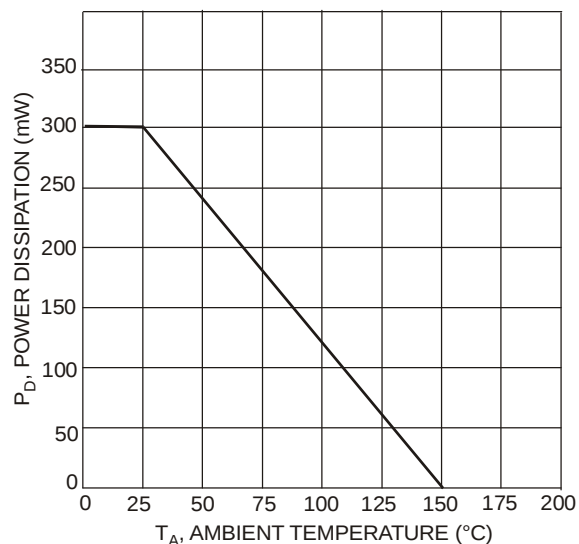


Fig. 1, Max Power Dissipation vs. Ambient Temperature

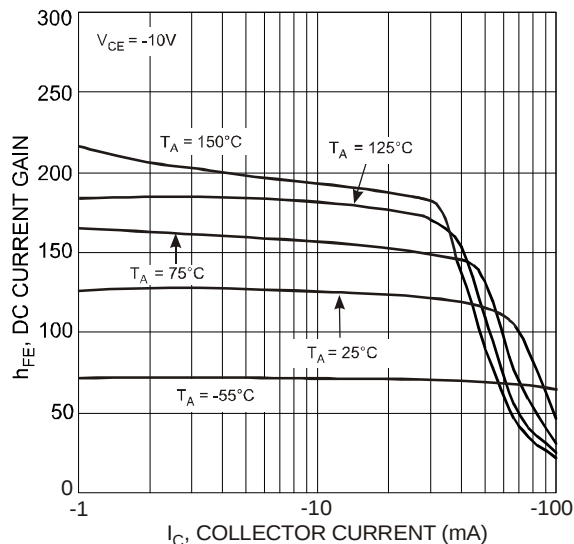
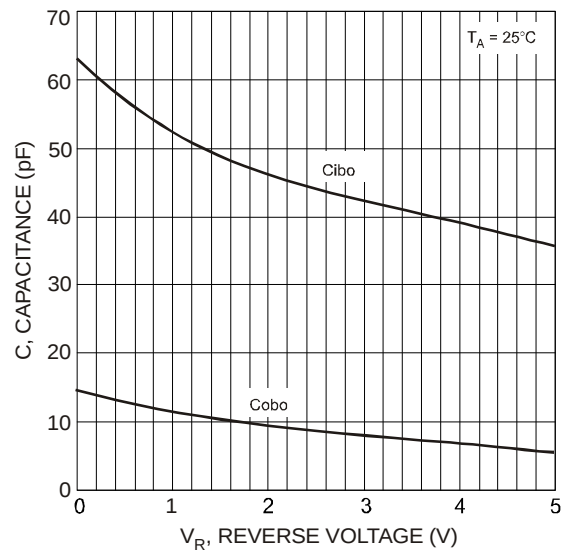
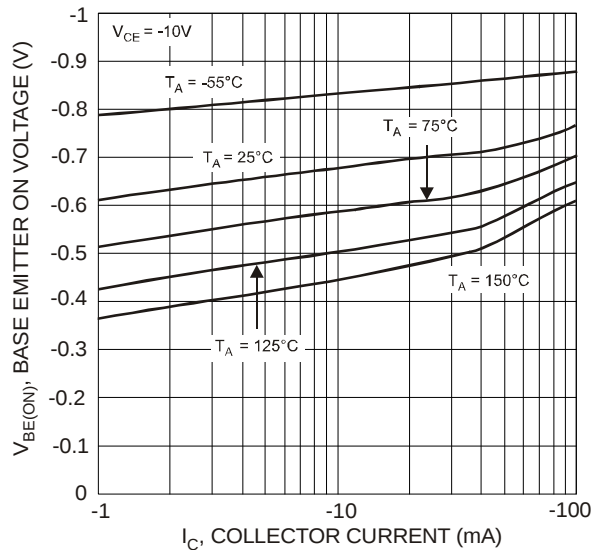
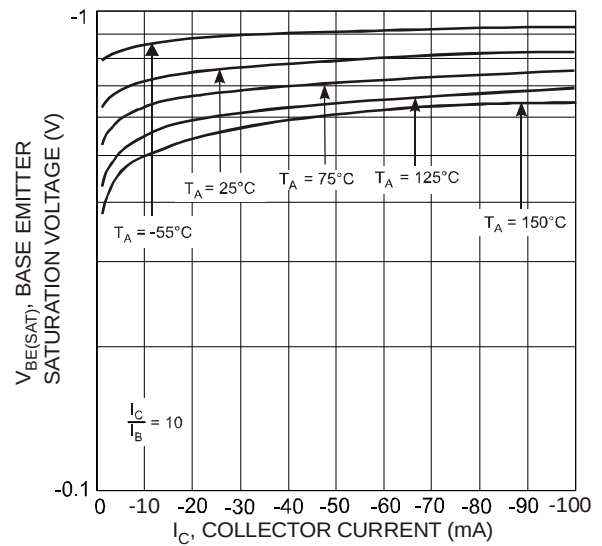
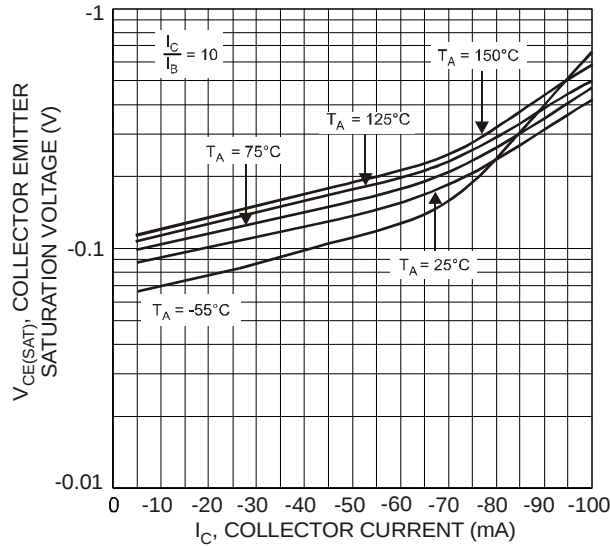


Fig. 2, DC Current Gain vs. Collector Current

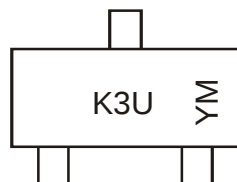


## Ordering Information (Note 6)

| Device     | Packaging | Shipping         |
|------------|-----------|------------------|
| DP350T05-7 | SOT-23    | 3000/Tape & Reel |

Notes: 6. For packaging details, go to our website at <http://www.diodes.com/datasheets/ap02007.pdf>.

## Marking Information



K3U = Product Type Marking Code  
YM = Date Code Marking  
Y = Year ex: S = 2005  
M = Month ex: 9 = September

### Date Code Key

Date Code Key

| Year | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 |
|------|------|------|------|------|------|------|------|------|
| Code | S    | T    | 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   |

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