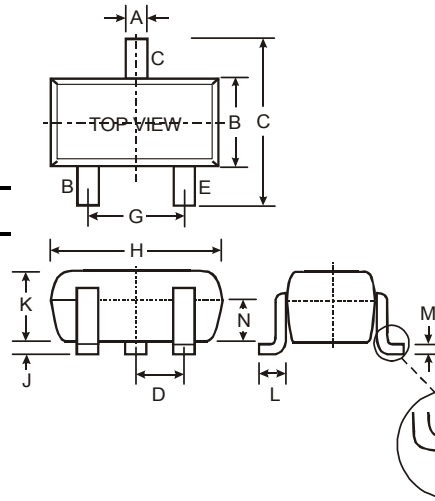


### Features

- Epitaxial Planar Die Construction
- Complementary NPN Types Available (DDTC)
- Built-In Biasing Resistor, R1 only
- Lead Free/RoHS Compliant (Note 2)
- "Green" Device (Note 3 and 4)

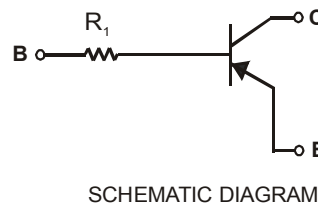
### Mechanical Data

- Case: SOT-523
- Case Material: Molded Plastic. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020C
- Terminals: Solderable per MIL-STD-202, Method 208
- Lead Free Plating (Matte Tin Finish annealed over Alloy 42 leadframe).
- Terminal Connections: See Diagram
- Marking & Date Code Information: See Diagrams & Page 4
- Ordering Information: See Page 4
- Weight: 0.002 grams (approximate)



| SOT-523              |      |      |      |
|----------------------|------|------|------|
| Dim                  | Min  | Max  | Typ  |
| A                    | 0.15 | 0.30 | 0.22 |
| B                    | 0.75 | 0.85 | 0.80 |
| C                    | 1.45 | 1.75 | 1.60 |
| D                    | —    | —    | 0.50 |
| G                    | 0.90 | 1.10 | 1.00 |
| H                    | 1.50 | 1.70 | 1.60 |
| J                    | 0.00 | 0.10 | 0.05 |
| K                    | 0.60 | 0.80 | 0.75 |
| L                    | 0.10 | 0.30 | 0.22 |
| M                    | 0.10 | 0.20 | 0.12 |
| N                    | 0.45 | 0.65 | 0.50 |
| $\alpha$             | 0°   | 8°   | —    |
| All Dimensions in mm |      |      |      |

| P/N       | R1 (NOM)      | MARKING |
|-----------|---------------|---------|
| DDTA113TE | 1K $\Omega$   | P01     |
| DDTA123TE | 2.2K $\Omega$ | P03     |
| DDTA143TE | 4.7K $\Omega$ | P07     |
| DDTA114TE | 10K $\Omega$  | P12     |
| DDTA124TE | 22K $\Omega$  | P16     |
| DDTA144TE | 47K $\Omega$  | P19     |
| DDTA115TE | 100K $\Omega$ | P23     |
| DDTA125TE | 200K $\Omega$ | P25     |



### Maximum Ratings @<sub>T</sub>A = 25°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                                    | $I_C$ (Max)     | -100        | mA   |
| Power Dissipation                                    | $P_d$           | 150         | mW   |
| Thermal Resistance, Junction to Ambient Air (Note 1) | $R_{\theta JA}$ | 833         | °C/W |
| Operating and Storage Temperature Range              | $T_j, T_{STG}$  | -55 to +150 | °C   |

- Notes:
1. Mounted on FR4 PC Board with recommended 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.
  3. 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).
  4. Product manufactured with Date Code UO (week 40, 2007) and newer are built with Green Molding Compound. Product manufactured prior to Date Code UO are built with Non-Green Molding Compound and may contain Halogens or Sb2O3 Fire Retardants.

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

| Characteristic                       | Symbol               | Min | Typ | Max  | Unit | Test Condition  |
|--------------------------------------|----------------------|-----|-----|------|------|---|
| Collector-Base Breakdown Voltage     | BV <sub>CBO</sub>    | -50 | —   | —    | V    | I <sub>C</sub> = -50μA  |
| Collector-Emitter Breakdown Voltage  | BV <sub>CEO</sub>    | -50 | —   | —    | V    | I <sub>C</sub> = -1mA   |
| Emitter-Base Breakdown Voltage       | BV <sub>EBO</sub>    | -5  | —   | —    | V    | I <sub>E</sub> = -50μA  |
| Collector Cutoff Current             | I <sub>CBO</sub>     | —   | —   | -0.5 | μA   | V <sub>CB</sub> = -50V  |
| Emitter Cutoff Current               | I <sub>EBO</sub>     | —   | —   | -0.5 | μA   | V <sub>EB</sub> = -4V   |
| Collector-Emitter Saturation Voltage | V <sub>CE(sat)</sub> | —   | —   | -0.3 | V    | I <sub>C</sub> /I <sub>B</sub> = -10mA/-1mA DDTA113TE<br>I <sub>C</sub> /I <sub>B</sub> = -5mA/-0.5mA DDTA123TE<br>I <sub>C</sub> /I <sub>B</sub> = -2.5mA/-0.25mA DDTA143TE<br>I <sub>C</sub> /I <sub>B</sub> = -1mA/-0.1mA DDTA114TE<br>I <sub>C</sub> /I <sub>B</sub> = -5mA/-0.5mA DDTA124TE<br>I <sub>C</sub> /I <sub>B</sub> = -2.5mA/-0.25mA DDTA144TE<br>I <sub>C</sub> /I <sub>B</sub> = -1mA/-0.1mA DDTA115TE<br>I <sub>C</sub> /I <sub>B</sub> = -5mA/-0.5mA DDTA125TE |
| DC Current Transfer Ratio            | h <sub>FE</sub>      | 100 | 250 | 600  | —    | I <sub>C</sub> = -1mA, V <sub>CE</sub> = -5V  |
| Gain-Bandwidth Product*              | f <sub>T</sub>       | —   | 250 | —    | MHz  | V <sub>CE</sub> = -10V, I <sub>E</sub> = 5mA,<br>f = 100MHz   |

\* Transistor - For Reference Only

## Typical Curves – DDTA114TE

NEW PRODUCT



Fig. 1 Derating Curve

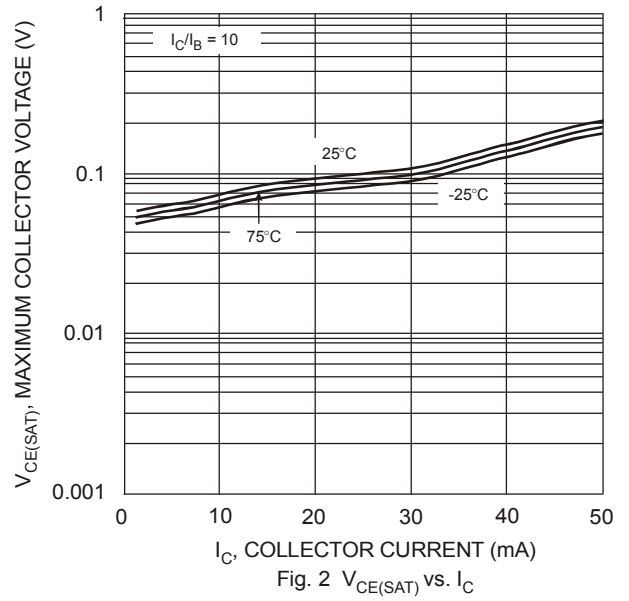


Fig. 2  $V_{CE(SAT)}$  vs.  $I_C$

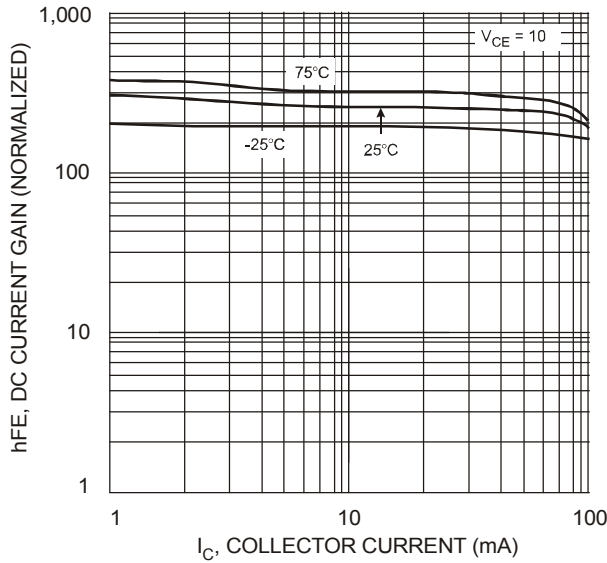


Fig. 3 DC Current Gain

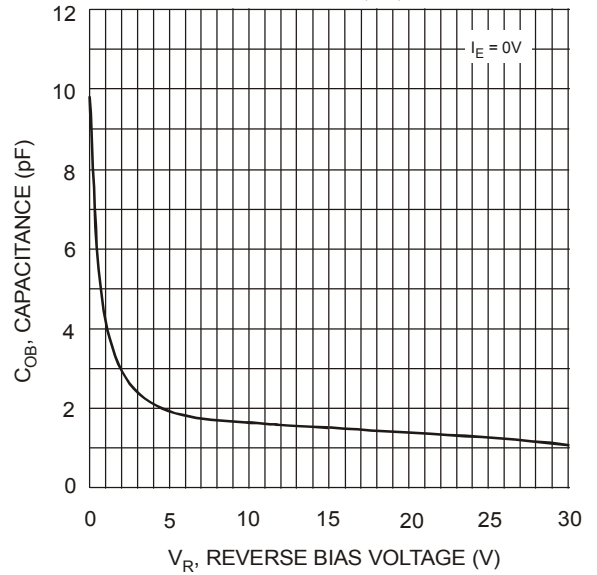


Fig. 4 Output Capacitance

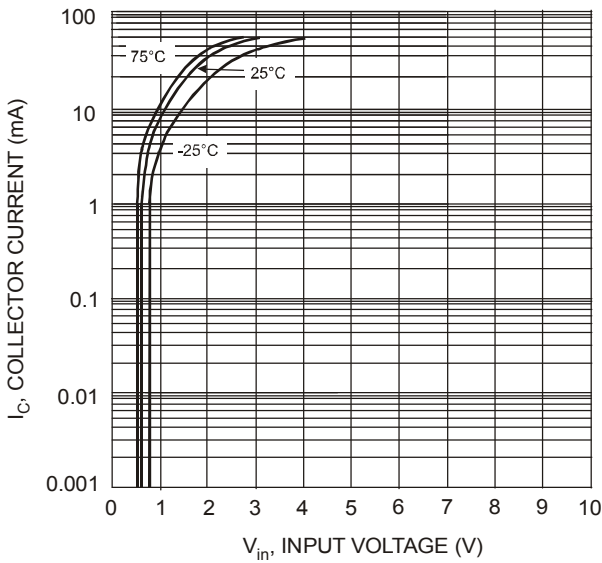


Fig. 5 Collector Current vs. Input Voltage

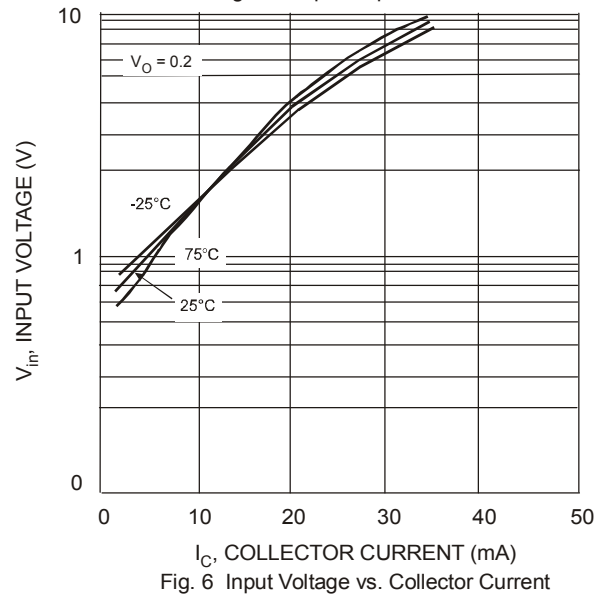


Fig. 6 Input Voltage vs. Collector Current

## Ordering Information (Note 5)

| Device        | Packaging | Shipping         |
|---------------|-----------|------------------|
| DDTA113TE-7-F | SOT-523   | 3000/Tape & Reel |
| DDTA123TE-7-F | SOT-523   | 3000/Tape & Reel |
| DDTA143TE-7-F | SOT-523   | 3000/Tape & Reel |
| DDTA114TE-7-F | SOT-523   | 3000/Tape & Reel |
| DDTA124TE-7-F | SOT-523   | 3000/Tape & Reel |
| DDTA144TE-7-F | SOT-523   | 3000/Tape & Reel |
| DDTA115TE-7-F | SOT-523   | 3000/Tape & Reel |
| DDTA125TE-7-F | SOT-523   | 3000/Tape & Reel |

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

## Marking Information



XXX = Product Type Marking Code (See Page 1, e.g. P01 = DDTA113TE)

YM = Date Code Marking

Y = Year ex: T = 2006

M = Month ex: 9 = September

### Date Code Key

| Year | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 |
|------|------|------|------|------|------|------|------|
| Code | 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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- Поставка более 17-ти миллионов наименований электронных компонентов;
- 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;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- Лицензия ФСБ на осуществление работ с использованием сведений, составляющих государственную тайну;
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- Подбор аналогов;
- Консультации по применению компонента;
- Поставка образцов и прототипов;
- Техническая поддержка проекта;
- Защита от снятия компонента с производства.



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