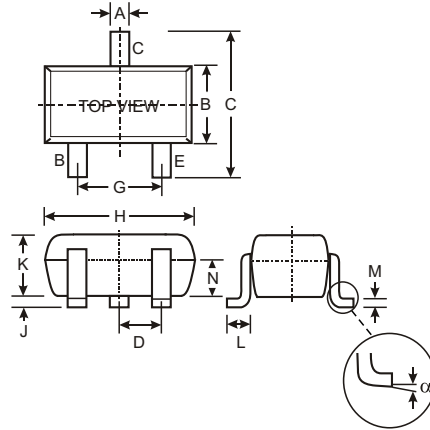


### Features

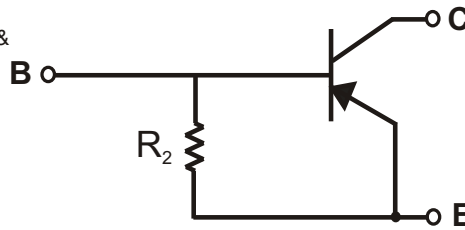
- Epitaxial Planar Die Construction
- Complementary NPN Types Available (DDTC)
- Built-In Biasing Resistor, R2 only
- Lead Free/RoHS Compliant (Note 2)

### 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 and Marking Code (See Diagrams & Page 2)
- Weight: 0.002 grams (approx.)
- Ordering Information (See Page 2)



| 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 |
|                      | 0    | 8    |      |
| All Dimensions in mm |      |      |      |



SCHMATIC DIAGRAM

| P/N       | R2 (NOM) | MARKING |
|-----------|----------|---------|
| DDTA114GE | 10K      | P26     |
| DDTA124GE | 22K      | P27     |
| DDTA144GE | 47K      | P28     |
| DDTA115GE | 100K     | P29     |

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

| Characteristic                                       | Symbol                            | Value       | Unit |
|--|-----------------------------------|-------------|------|
| Collector-Base Voltage                               | V <sub>CB0</sub>                  | -50         | V    |
| Collector-Emitter Voltage                            | V <sub>CE0</sub>                  | -50         | V    |
| Emitter-Base Voltage                                 | V <sub>EBO</sub>                  | -5          | V    |
| Collector Current                                    | I <sub>C</sub> (Max)              | -100        | mA   |
| Power Dissipation                                    | P <sub>d</sub>                    | 150         | mW   |
| Thermal Resistance, Junction to Ambient Air (Note 1) | R <sub>JA</sub>                   | 833         | C/W  |
| Operating and Storage and Temperature Range          | T <sub>J</sub> , T <sub>STG</sub> | -55 to +150 | C    |

- Note:
- Mounted on FR4 PC Board with recommended pad layout at <http://www.diodes.com/datasheets/ap02001.pdf>.
  - No purposefully added lead.

**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> = -50 A  |
| 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> = -720 A, DDTA114GE<br>I <sub>E</sub> = -330 A, DDTA124GE<br>I <sub>E</sub> = -160 A, DDTA144GE<br>I <sub>E</sub> = -72 A, DDTA115GE |
| Collector Cutoff Current                     |           | I <sub>CBO</sub>     |      |     | -0.5 | A    | V <sub>CB</sub> = -50V  |
| Emitter Cutoff Current                       | DDTA114GE | I <sub>EBO</sub>     | -300 |     | -580 | A    | V <sub>EB</sub> = -4V   |
|  | DDTA124GE |                      | -140 |     | -260 |      |   |
|  | DDTA144GE |                      | -65  |     | -130 |      |   |
|  | DDTA115GE |                      | -30  |     | -58  |      |   |
| Collector-Emitter Saturation Voltage         |           | V <sub>CE(sat)</sub> |      |     | -0.3 | V    | I <sub>C</sub> = -10mA, I <sub>B</sub> = -0.5mA   |
| DC Current Transfer Ratio                    | DDTA114GE | h <sub>FE</sub>      | 30   |     |      |      | I <sub>C</sub> = -5mA, V <sub>CE</sub> = -5V  |
|  | DDTA124GE |                      | 56   |     |      |      |   |
|  | DDTA144GE |                      | 68   |     |      |      |   |
|  | DDTA115GE |                      | 82   |     |      |      |   |
| Bleeder Resistor (R <sub>2</sub> ) Tolerance |           | R <sub>2</sub>       | -30  |     | +30  | %    |   |
| Gain-Bandwidth Product*                      |           | f <sub>T</sub>       |      | 250 |      | MHz  | V <sub>CE</sub> = -10V, I <sub>E</sub> = 5mA,<br>f = 100MHz   |

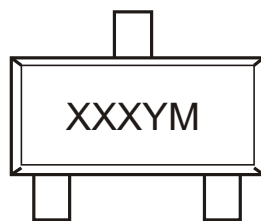
\* Transistor - For Reference Only

**Ordering Information** (Note 3)

| Device        | Packaging | Shipping         |
|---------------|-----------|------------------|
| DDTA114GE-7-F | SOT-523   | 3000/Tape & Reel |
| DDTA124GE-7-F | SOT-523   | 3000/Tape & Reel |
| DDTA144GE-7-F | SOT-523   | 3000/Tape & Reel |
| DDTA115GE-7-F | SOT-523   | 3000/Tape & Reel |

Notes: 3. 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. P26 = DDTA114GE)  
 YM = Date Code Marking  
 Y = Year ex: N = 2002  
 M = Month ex: 9 = September

Date Code Key

| Year | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 |
|------|------|------|------|------|------|------|------|------|
| Code | N    | P    | R    | S    | T    | U    | V    | W    |

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

**TYPICAL CURVES - DDTA114GE**

**NEW PRODUCT**

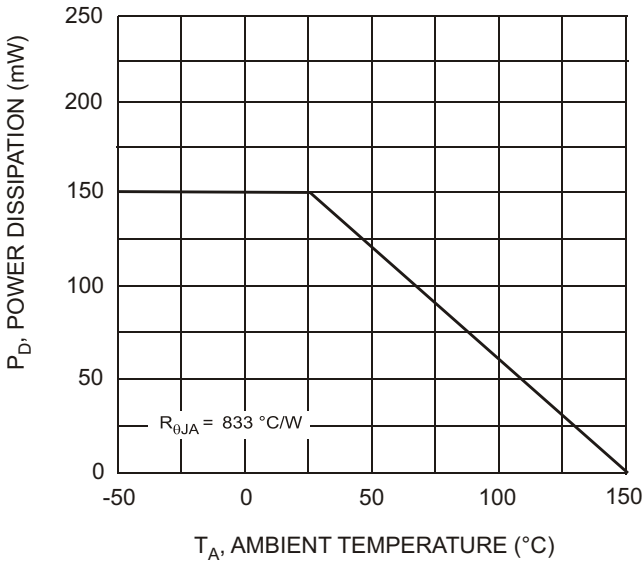


Fig. 1, Derating Curve

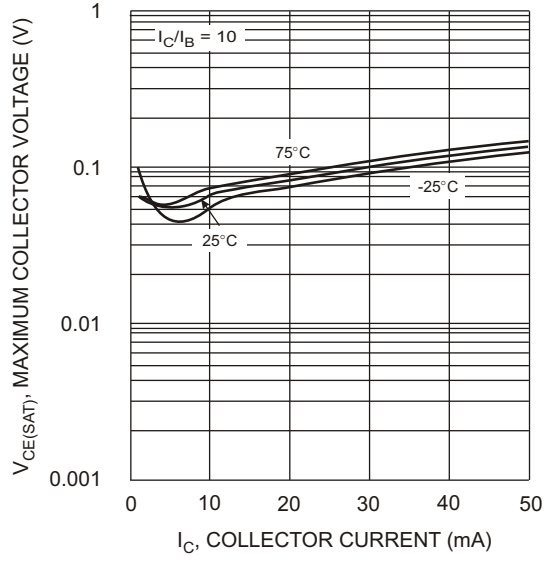


Fig. 2  $V_{CE(SAT)}$  vs.  $I_C$

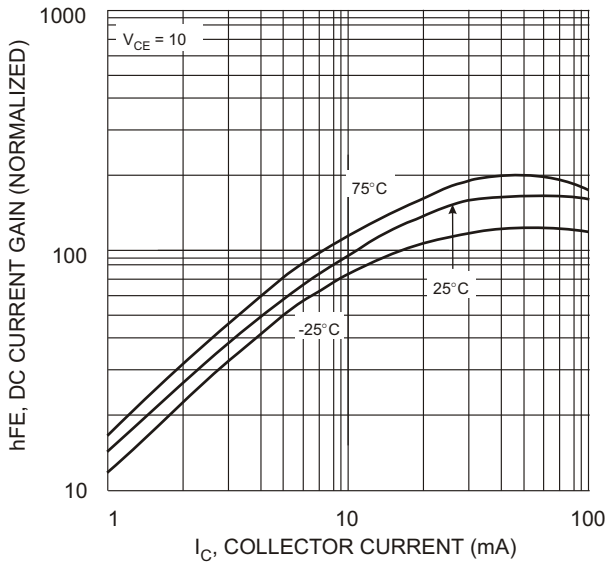


Fig. 3 DC Current Gain

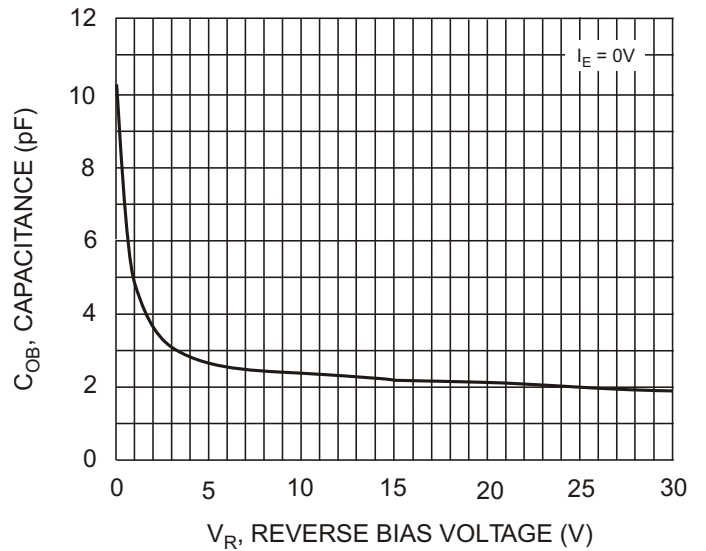


Fig. 4 Output Capacitance

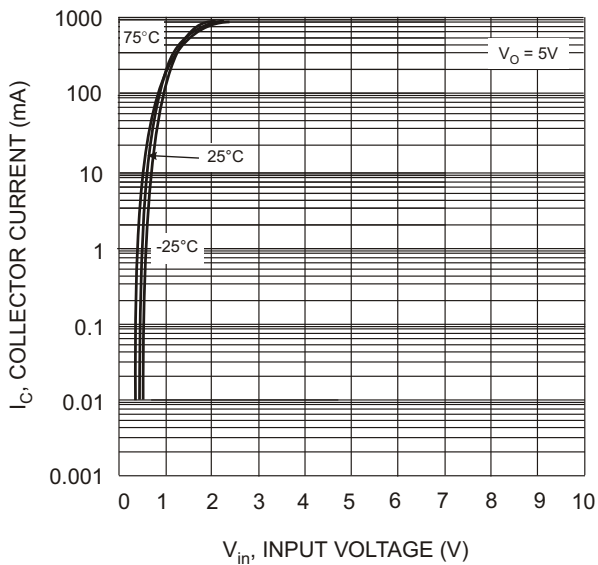


Fig. 5 Collector Current Vs. Input Voltage

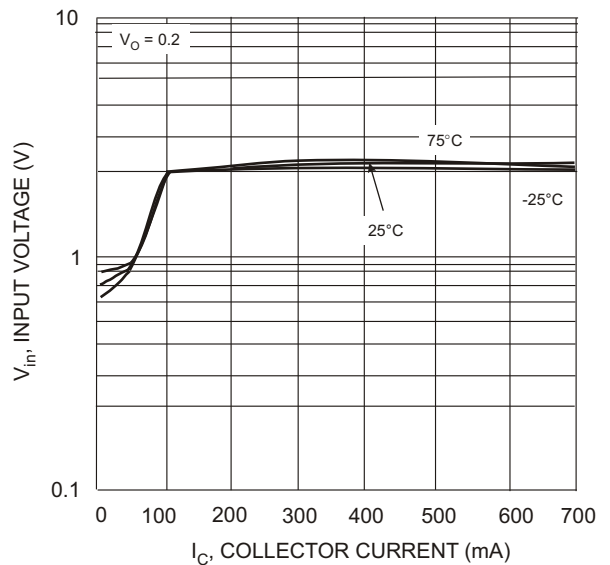


Fig. 6 Input Voltage vs. Collector Current



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