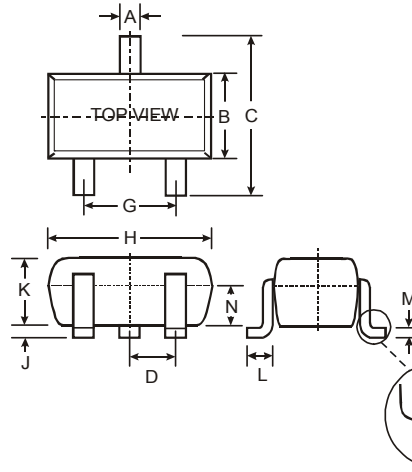


**Features**

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

**Mechanical Data**

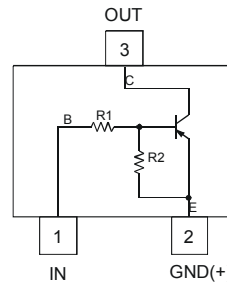
- Case: SOT-523
- Case Material: Molded Plastic. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020C
- Terminals: Finish – Matte Tin Solderable per MIL-STD 202, Method 208
- Lead Free Plating (Matte Tin Finish annealed over Alloy 42 leadframe)
- Terminal Connections: See Diagram
- Marking Information: See Table Below & Page 3
- Ordering Information: See Page 3
- 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)       | R2 (NOM)     | Type Code |
|-----------|----------------|--------------|-----------|
| DDTA122LE | 0.22K $\Omega$ | 10K $\Omega$ | P81       |
| DDTA142JE | 0.47K $\Omega$ | 10K $\Omega$ | P82       |
| DDTA122TE | 0.22K $\Omega$ | OPEN         | P83       |
| DDTA142TE | 0.47K $\Omega$ | OPEN         | P84       |



Schematic and Pin Diagram

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

| Characteristic                              | Symbol                            | Value       | Unit |
|---|-----------------------------------|-------------|------|
| Supply Voltage, (2) to (3)                  | V <sub>CC</sub>                   | -50         | V    |
| Input Voltage, (1) to (2)                   | V <sub>IN</sub>                   | +5 to -6    | V    |
| Input Voltage, (2) to (1)                   | V <sub>EBO (MAX)</sub>            | -5          | V    |
| Output Current                              | I <sub>C</sub>                    | -100        | mA   |
| Power Dissipation                           | P <sub>d</sub>                    | 150         | mW   |
| Thermal Resistance, Junction to Ambient Air | R <sub>θJA</sub>                  | 625         | °C/W |
| Operating and Storage Temperature Range     | T <sub>j</sub> , T <sub>STG</sub> | -55 to +150 | °C   |

- Notes:
1. Mounted on FR4 PC Board with recommended pad layout 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 **R1, R2 Types**

| Characteristic          |                        | Symbol              | Min          | Typ | Max          | Unit | Test Condition   |
|-------------------------|------------------------|---------------------|--------------|-----|--------------|------|--|
| Input Voltage           | DDTA122LE<br>DDTA142JE | V <sub>I(off)</sub> | -0.3<br>-0.3 | —   | —            | V    | V <sub>CC</sub> = -5V, I <sub>O</sub> = -100μA   |
|                         | DDTA122LE<br>DDTA142JE | V <sub>I(on)</sub>  | —            | —   | -2.0<br>-2.0 | V    | V <sub>O</sub> = -0.3V, I <sub>O</sub> = -20mA<br>V <sub>O</sub> = -0.3V, I <sub>O</sub> = -20mA |
| Output Voltage          |                        | V <sub>O(on)</sub>  | —            | —   | -0.3V        | V    | I <sub>O</sub> /I <sub>I</sub> = -5mA/-0.25mA  |
| Input Current           | DDTA122LE<br>DDTA142JE | I <sub>I</sub>      | —            | —   | -28<br>-13   | mA   | V <sub>I</sub> = -5V   |
| Output Current          |                        | I <sub>O(off)</sub> | —            | —   | -0.5         | μA   | V <sub>CC</sub> = -50V, V <sub>I</sub> = 0V  |
| DC Current Gain         | DDTA122LE<br>DDTA142JE | G <sub>I</sub>      | 56<br>56     | —   | —            | —    | V <sub>O</sub> = -5V, I <sub>O</sub> = -10mA   |
| Gain-Bandwidth Product* |                        | f <sub>T</sub>      | —            | 200 | —            | MHZ  | V <sub>CE</sub> = -10V, I <sub>E</sub> = -5mA, f = 100MHZ  |

\* Transistor - For Reference Only

## Electrical Characteristics @T<sub>A</sub> = 25°C unless otherwise specified **R1-Only Types**

| Characteristic                       |                        | Symbol               | Min        | Typ        | Max          | Unit | Test Condition   |
|--------------------------------------|------------------------|----------------------|------------|------------|--------------|------|--|
| Collector-Base Breakdown Voltage     |                        | BV <sub>CB0</sub>    | -50        | —          | —            | V    | I <sub>C</sub> = -50μA                                   |
| Collector-Emitter Breakdown Voltage  |                        | BV <sub>CEO</sub>    | -40        | —          | —            | V    | I <sub>C</sub> = -1mA                                    |
| Emitter-Base Breakdown Voltage       | DDTA122TE<br>DDTA142TE | BV <sub>EBO</sub>    | -5         | —          | —            | V    | I <sub>E</sub> = -50μA<br>I <sub>E</sub> = -50μA         |
| Collector Cutoff Current             |                        | I <sub>CB0</sub>     | —          | —          | -0.5         | μA   | V <sub>CB</sub> = -50V                                   |
| Emitter Cutoff Current               | DDTA122TE<br>DDTA142TE | I <sub>EBO</sub>     | —          | —          | -0.5<br>-0.5 | μA   | V <sub>EB</sub> = -4V                                    |
| Collector-Emitter Saturation Voltage |                        | V <sub>CE(sat)</sub> | —          | —          | -0.3         | V    | I <sub>C</sub> = -5mA, I <sub>B</sub> = -0.25mA          |
| DC Current Transfer Ratio            | DDTA122TE<br>DDTA142TE | h <sub>FE</sub>      | 100<br>100 | 250<br>250 | 600<br>600   | —    | I <sub>C</sub> = -1mA, V <sub>CE</sub> = -5V             |
| Gain-Bandwidth Product*              |                        | f <sub>T</sub>       | —          | 200        | —            | MHZ  | V <sub>CE</sub> = -10V, I <sub>E</sub> = 5mA, f = 100MHZ |

\* Transistor - For Reference Only

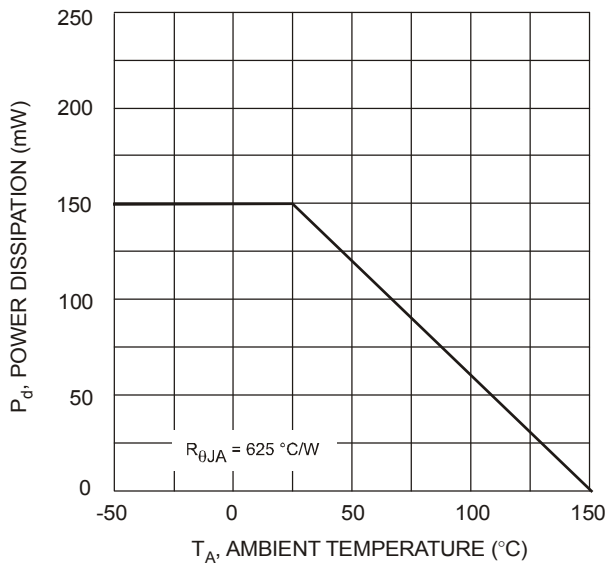


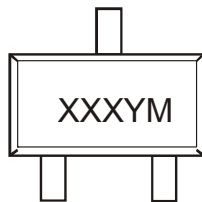
Fig. 1 Power Derating Curve

## Ordering Information (Note 5)

| Device        | Packaging | Shipping         |
|---------------|-----------|------------------|
| DDTA122LE-7-F | SOT-523   | 3000/Tape & Reel |
| DDTA142JE-7-F | SOT-523   | 3000/Tape & Reel |
| DDTA122TE-7-F | SOT-523   | 3000/Tape & Reel |
| DDTA142TE-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)  
 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   |

### IMPORTANT NOTICE

Diodes Incorporated and its subsidiaries reserve the right to make modifications, enhancements, improvements, corrections or other changes without further notice to any product herein. Diodes Incorporated does not assume any liability arising out of the application or use of any product described herein; neither does it convey any license under its patent rights, nor the rights of others. The user of products in such applications shall assume all risks of such use and will agree to hold Diodes Incorporated and all the companies whose products are represented on our website, harmless against all damages.

### LIFE SUPPORT

Diodes Incorporated products are not authorized for use as critical components in life support devices or systems without the expressed written approval of the President of Diodes Incorporated.

## Данный компонент на территории Российской Федерации

### Вы можете приобрести в компании MosChip.

Для оперативного оформления запроса Вам необходимо перейти по данной ссылке:

<http://moschip.ru/get-element>

Вы можете разместить у нас заказ для любого Вашего проекта, будь то серийное производство или разработка единичного прибора.

В нашем ассортименте представлены ведущие мировые производители активных и пассивных электронных компонентов.

Нашей специализацией является поставка электронной компонентной базы двойного назначения, продукции таких производителей как XILINX, Intel (ex.ALTERA), Vicor, Microchip, Texas Instruments, Analog Devices, Mini-Circuits, Amphenol, Glenair.

Сотрудничество с глобальными дистрибьюторами электронных компонентов, предоставляет возможность заказывать и получать с международных складов практически любой перечень компонентов в оптимальные для Вас сроки.

На всех этапах разработки и производства наши партнеры могут получить квалифицированную поддержку опытных инженеров.

Система менеджмента качества компании отвечает требованиям в соответствии с ГОСТ Р ИСО 9001, ГОСТ РВ 0015-002 и ЭС РД 009

### Офис по работе с юридическими лицами:

105318, г.Москва, ул.Щербаковская д.3, офис 1107, 1118, ДЦ «Щербаковский»

Телефон: +7 495 668-12-70 (многоканальный)

Факс: +7 495 668-12-70 (доб.304)

E-mail: [info@moschip.ru](mailto:info@moschip.ru)

Skype отдела продаж:

moschip.ru

moschip.ru\_4

moschip.ru\_6

moschip.ru\_9