

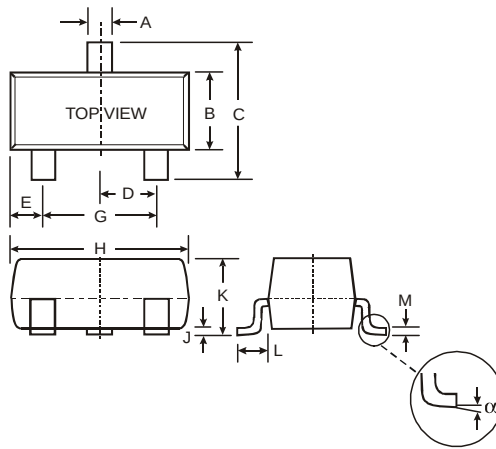
## Features

- Epitaxial Planar Die Construction
- Complementary PNP Types Available (DDTB)
- Built-In Biasing Resistors
- **Lead, Halogen and Antimony Free, RoHS Compliant "Green" Device (Notes 2 and 3)**

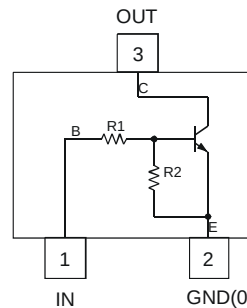
## Mechanical Data

- 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: Solderable per MIL-STD-202, Method 208
- Lead Free Plating (Matte Tin Finish annealed over Alloy 42 leadframe).
- Marking Information: See Table Below & Page 3
- Ordering Information: See Page 3
- Weight: 0.008 grams (approximate)

| P/N       | R1 (NOM)       | R2 (NOM)     | Type Code |
|-----------|----------------|--------------|-----------|
| DDTD122LC | 0.22K $\Omega$ | 10K $\Omega$ | N75       |
| DDTD142JC | 0.47K $\Omega$ | 10K $\Omega$ | N76       |
| DDTD122TC | 0.22K $\Omega$ | OPEN         | N77       |
| DDTD142TC | 0.47K $\Omega$ | OPEN         | N78       |



| 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 |       |       |



Schematic and Pin Configuration

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

| Characteristic                              | Symbol                            | Value       | Unit |
|---------------------------------------------|-----------------------------------|-------------|------|
| Supply Voltage, (3) to (2)                  | 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</sub> (MAX)            | 5           | V    |
| Output Current                              | I <sub>C</sub>                    | 500         | mA   |
| Power Dissipation                           | P <sub>D</sub>                    | 200         | 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. Halogen and Antimony Free.
  3. Product manufactured with Data Code V9 (week 33, 2008) and newer are built with Green Molding Compound. Product manufactured prior to Date Code V9 are built with Non-Green Molding Compound and may contain Halogens or Sb<sub>2</sub>O<sub>3</sub> 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           | DDTD122LC<br>DDTD142JC | V <sub>I(off)</sub> | 0.3<br>0.3 | —   | —          | V    | V <sub>CC</sub> = 5V, I <sub>O</sub> = 100μA                                                 |
|                         | DDTD122LC<br>DDTD142JC | 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> = 50mA/2.5mA                                                  |
| Input Current           | DDTD122LC<br>DDTD142JC | 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         | DDTD122LC<br>DDTD142JC | G <sub>I</sub>      | 56<br>56   | —   | —          | —    | V <sub>O</sub> = 5V, I <sub>O</sub> = 50mA                                                   |
| 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

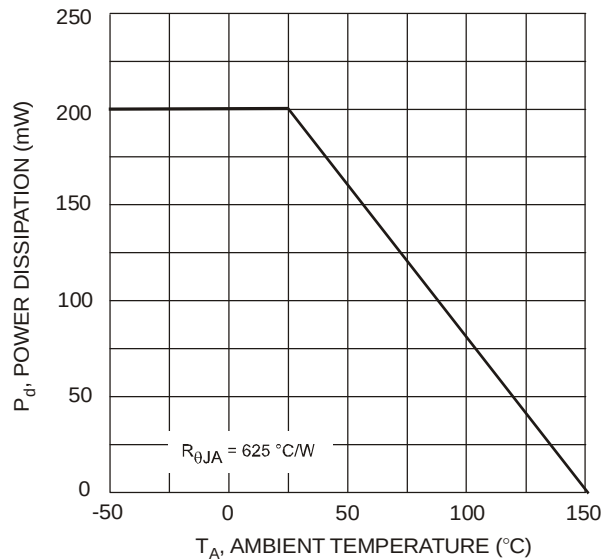
## Electrical Characteristics

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

## R1-Only, R2-Only Types

| 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>    | 40         | —          | —          | V    | I <sub>C</sub> = 1mA                                     |
| Emitter-Base Breakdown Voltage       | DDTD122TC<br>DDTD142TC | BV <sub>EBO</sub>    | 5          | —          | —          | V    | I <sub>E</sub> = 50μA<br>I <sub>E</sub> = 50μA           |
| Collector Cutoff Current             |                        | I <sub>CBO</sub>     | —          | —          | 0.5        | μA   | V <sub>CB</sub> = 50V                                    |
| Emitter Cutoff Current               | DDTD122TC<br>DDTD142TC | I <sub>EBO</sub>     | —<br>—     | —          | 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> = 50mA, I <sub>B</sub> = 2.5mA            |
| DC Current Transfer Ratio            | DDTD122TC<br>DDTD142TC | h <sub>FE</sub>      | 100<br>100 | 250<br>250 | 600<br>600 | —    | I <sub>C</sub> = 5mA, 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

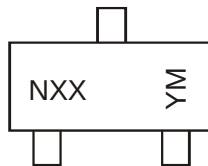


## Ordering Information (Note 4)

| Device        | Packaging | Shipping         |
|---------------|-----------|------------------|
| DDTD122LC-7-F | SOT-23    | 3000/Tape & Reel |
| DDTD142JC-7-F | SOT-23    | 3000/Tape & Reel |
| DDTD122TC-7-F | SOT-23    | 3000/Tape & Reel |
| DDTD142TC-7-F | SOT-23    | 3000/Tape & Reel |

Notes: 4. For packaging details, go to our website at <http://www.diodes.com/datasheets/ap02007.pdf>.

## Marking Information



NXX = Product Type Marking Code, See Table on Page 1  
 YM = Date Code Marking  
 Y = Year ex: T = 2006  
 M = Month ex: 9 = September

### Date Code Key

| Year | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Code | N    | P    | R    | 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   |

### 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.

Компания «Life Electronics» занимается поставками электронных компонентов импортного и отечественного производства от производителей и со складов крупных дистрибьюторов Европы, Америки и Азии.

С конца 2013 года компания активно расширяет линейку поставок компонентов по направлению коаксиальный кабель, кварцевые генераторы и конденсаторы (керамические, пленочные, электролитические), за счёт заключения дистрибьюторских договоров

Мы предлагаем:

- Конкурентоспособные цены и скидки постоянным клиентам.
- Специальные условия для постоянных клиентов.
- Подбор аналогов.
- Поставку компонентов в любых объемах, удовлетворяющих вашим потребностям.
- Приемлемые сроки поставки, возможна ускоренная поставка.
- Доставку товара в любую точку России и стран СНГ.
- Комплексную поставку.
- Работу по проектам и поставку образцов.
- Формирование склада под заказчика.
- Сертификаты соответствия на поставляемую продукцию (по желанию клиента).
- Тестирование поставляемой продукции.
- Поставку компонентов, требующих военную и космическую приемку.
- Входной контроль качества.
- Наличие сертификата ISO.

В составе нашей компании организован Конструкторский отдел, призванный помогать разработчикам, и инженерам.

Конструкторский отдел помогает осуществить:

- Регистрацию проекта у производителя компонентов.
- Техническую поддержку проекта.
- Защиту от снятия компонента с производства.
- Оценку стоимости проекта по компонентам.
- Изготовление тестовой платы монтаж и пусконаладочные работы.



Тел: +7 (812) 336 43 04 (многоканальный)

Email: [org@lifeelectronics.ru](mailto:org@lifeelectronics.ru)

[www.lifeelectronics.ru](http://www.lifeelectronics.ru)