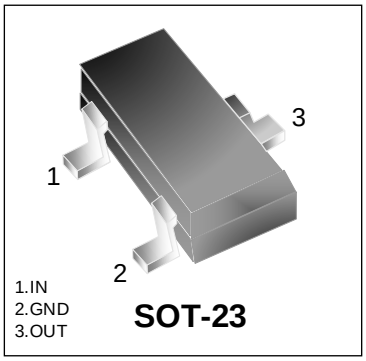
# WTDTA114E

**PNP Digital Transistors**

## Features

- Built-in bias resistors enable the configuration of an inverter circuit without connecting external input resistors(see equivalent circuit)
- The bias resistors consist of thin-film resistors with complete isolation to allow positive biasing of the input. They also have the advantage of almost completely eliminating parasitic effects
- Only the on/off conditions need to be set for operation, making device design easy



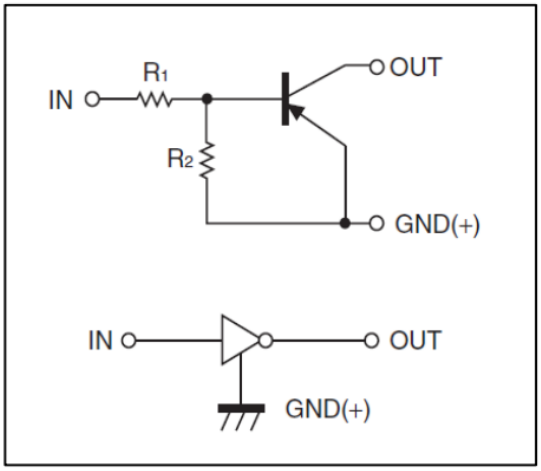

## Mechanical Characteristics

- SOT-23 package
- Marking: Marking Code
- Packaging: Tape and Reel
- RoHS Compliant & HF
- Device meets MSL3 requirement

## Applications

- Digital application
- Controlling IC inputs
- Switching loads

## Equivalent Circuit



## Absolute Maximum Rating(Ta=25°C unless otherwise noted)

| Parameter | Symbol | Value | Unit |
|---|---|---|---|
| Supply Voltage | $V_{CC}$ | -50 | V |
| Input Voltage | $V_{IN}$ | -40 to +10 | V |
| Output Current | $I_O$ | -100 | mA |
| Power Dissipation | $P_D$ | 200 | mW |
| Operating and Storage Temperature Range | $T_J$ ,$T_{STG}$ | -55 to +150 | °C |

## Electrical Characteristics ($T_{amb}$=25°C unless otherwise specified)

| Parameter | Symbol | Test Conditions | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|
| Input Voltage | $V_{I(off)}$ | $V_{CC}$ = -5V, $I_O$ = -100μA | - | - | -0.5 | V |
| | $V_{I(on)}$ | $V_O$ = -0.3V, $I_O$ = -10mA | -3 | - | - | V |
| Output Voltage | $V_{O(on)}$ | $I_O$ = -10mA, $I_I$ = -0.5mA | - | - | -0.3 | V |
| Input Current | $I_I$ | $V_I$ = -5V | - | - | -0.88 | mA |
| Output Current | $I_{O(off)}$ | $V_{CC}$ = -50V, $V_I$ = 0 | - | - | -0.5 | μA |
| DC Current Gain | $G_I$ | $V_O$ = -5V, $I_O$ = -5mA | 30 | - | - | |
| Input Resistance | $R_1$ | | 7 | 10 | 13 | kΩ |
| Resistance Ratio | $R_2/R_1$ | | 0.8 | 1 | 1.2 | |
| Transition Frequency | $f_T$ | $V_{CE}$ = -10V,$I_C$ = -5mA,f = 100MHz | - | 250 | - | MHz |

## Typical Characteristics

Figure 1. ON Characteristics

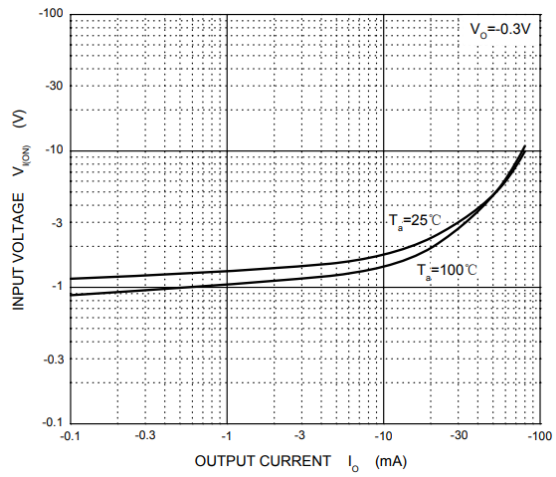



Figure 2. OFF Characteristics

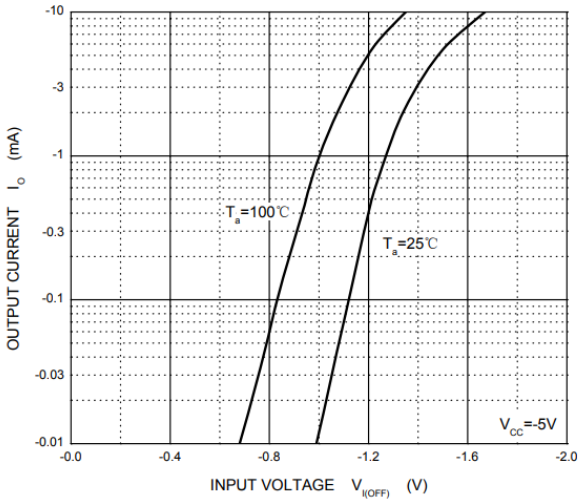



Figure 3. $G_I$ - $I_O$

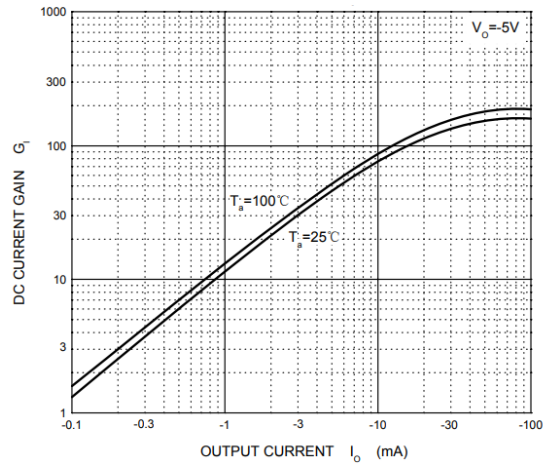
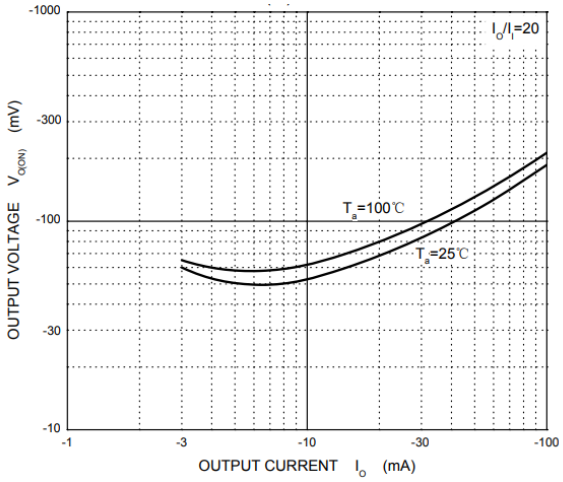
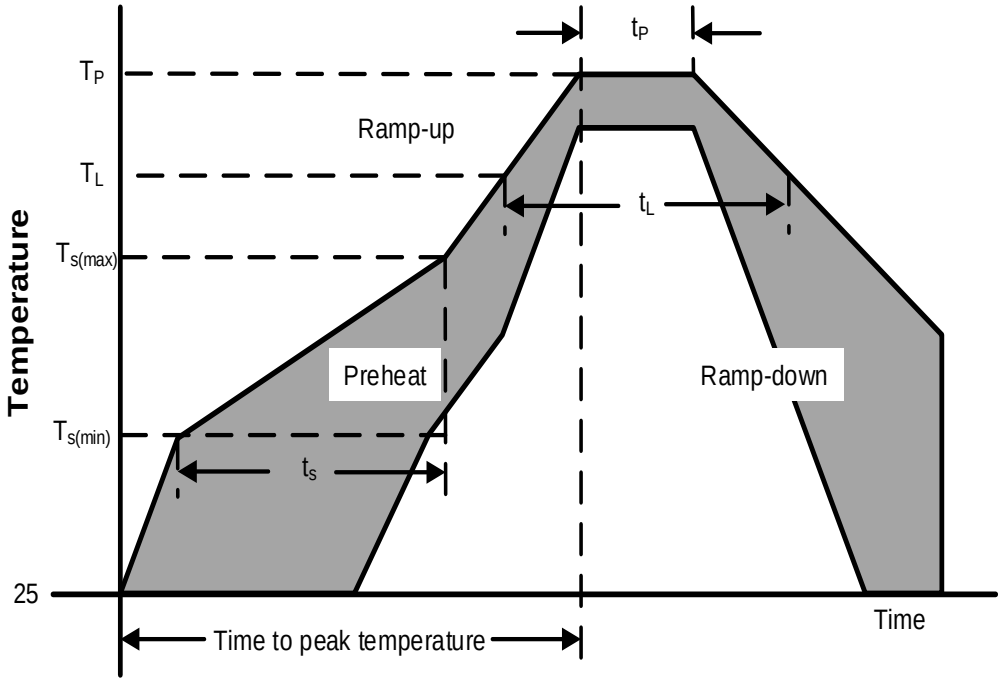



Figure 4. $V_O$ - $I_O$



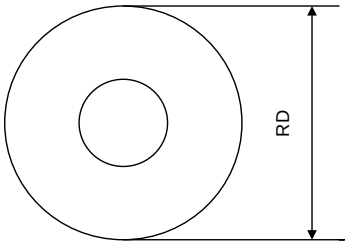
## Soldering Parameters

| Reflow Condition | | Pb – Free assembly |
|---|---|---|
| Pre Heat | Temperature Min ($T_{s(min)}$) | 150°C |
| | Temperature Max ($T_{s(max)}$) | 200°C |
| | Time (min to max) (ts ) | 60 – 190 secs |
| Average ramp up rate (Liquidus Temp) ($T_L$) to peak | | 5°C/second max |
| $T_{S(max)}$ to $T_L$——Ramp-up Rate | | 5°C/second max |
| Reflow | Temperature ($T_L$) (Liquidus) | 217°C |
| | Temperature ($t_L$) | 60 – 150 seconds |
| Peak Temperature ($T_P$) | | 260+0/-5 °C |
| Time within actual peak Temperature ($t_p$ ) | | 20 – 40 seconds |
| Ramp-down Rate | | 5°C/second max |
| Time 25°C to peak Temperature ($T_P$) | | 8 minutes Max. |
| Do not exceed | | 280°C |

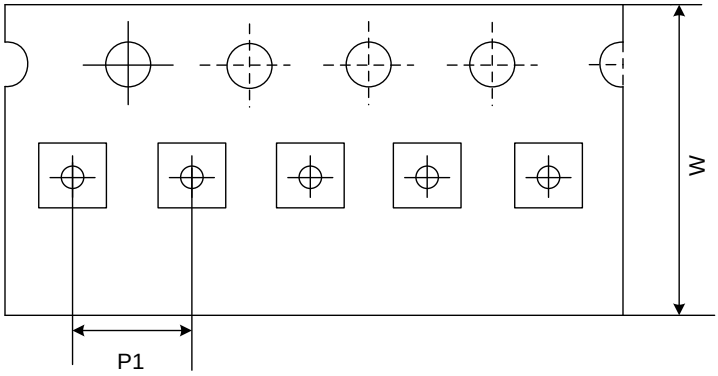


## Tape And Reel Information

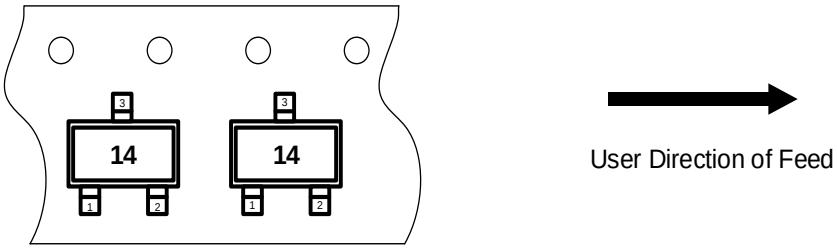
**Reel Dimensions**




**Tape Dimensions**



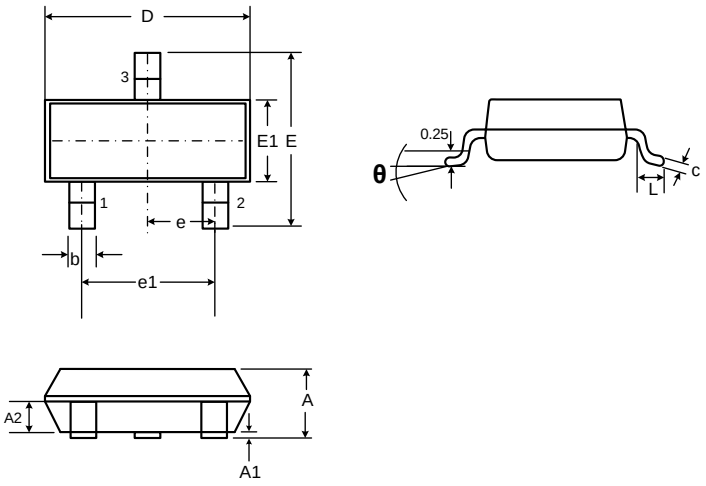

**Quadrant Assignments For PIN1 Orientation In Tape**

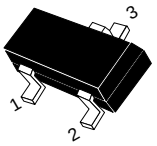



| | | |
|---|---|---|
| RD | Reel Dimensions | 7 inch |
| W | Overall width of the carrier tape | 8 mm |
| P1 | Pitch between successive cavity centers | 4mm |

## Outline Drawing – SOT-23

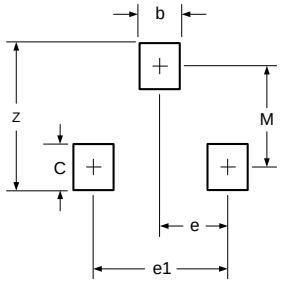
### PACKAGE OUTLINE




SOT-23

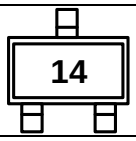
| DIMENSIONS | | | | |
|---|---|---|---|---|
| SYMBOL | MILLIMETERS | | INCHES | |
| | MIN | MAX | MIN | MAX |
| A | 0.90 | 1.15 | 0.035 | 0.045 |
| A1 | 0.00 | 0.10 | 0.000 | 0.004 |
| A2 | 0.60 | 0.70 | 0.024 | 0.028 |
| b | 0.30 | 0.50 | 0.012 | 0.020 |
| c | 0.08 | 0.15 | 0.003 | 0.006 |
| D | 2.80 | 3.00 | 0.110 | 0.118 |
| E | 2.25 | 2.55 | 0.089 | 0.100 |
| E1 | 1.20 | 1.40 | 0.047 | 0.055 |
| e | 0.95 BSC | | 0.037 BSC | |
| e1 | 1.80 | 2.00 | 0.071 | 0.079 |
| L | 0.30 | 0.50 | 0.012 | 0.020 |
| θ | 0 | 8° | 0 | 8° |




| DIMENSIONS | | |
|---|---|---|
| DIM | INCHES | MILLIMETERS |
| M | 0.0795 | 2.02 |
| C | 0.0315 | 0.80 |
| Z | 0.111 | 2.82 |
| e | 0.037 BSC | 0.95 BSC |
| e1 | 0.075 BSC | 1.9 BSC |
| b | 0.0315 | 0.80 |

**Notes:**
Controlling Dimension: Millimeter.

## Marking Codes

| Part Number | WTDTA114E |
|---|---|
| Marking Code |  |



## Package Information

Qty：3k/Reel

## CONTACT INFORMATION

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WAYON website: **http://www.way-on.com**

For additional information, please contact your local Sales Representative.

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*The device characteristics and parameters in this data sheet can and do vary in different applications and actual device performance may vary over time.*
*Users should verify actual device performance in their specific applications.*