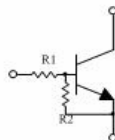


## Small Signal Diode

### Features

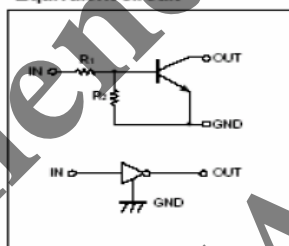
- ✧ Built-in bias resistors enable the configuration of an inverter circuit without connecting external input resistor (see equivalent circuit).
- ✧ The bias resistors consist of thin-film resistors with complete isolation to allow negative biasing of the input. They also have the advantage of almost completely eliminating parasitic effects.
- ✧ Only the on/off conditions need to be set for operation, marking device design easy.
- ✧ Green compound (Halogen free) with suffix "G" on packing code and prefix "G" on date code.



### Ordering Information

| Package | Part No.   | Packing      | Marking |
|---------|------------|--------------|---------|
| SOT-723 | DTC144 EM  | 8K / 7" Reel | 26      |
| SOT-523 | DTC144 EE  | 3K / 7" Reel | 26      |
| SOT-323 | DTC144 EUA | 3K / 7" Reel | 26      |
| SOT-23  | DTC144 ECA | 3K / 7" Reel | 26      |
| TO-92S  | DTC144 ESA | 3K / 7" Reel |         |

#### ●Equivalent circuit



### Maximum Ratings and Electrical Characteristics

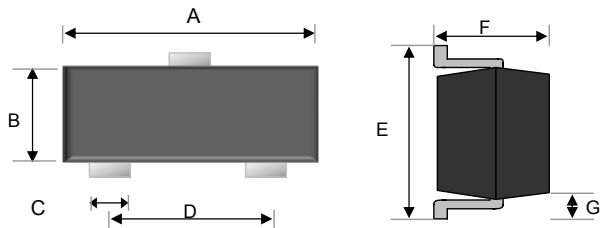
Rating at 25°C ambient temperature unless otherwise specified.

| Type Number                            | Symbol                            | Value |     |              |     | Units |
|----------------------------------------|-----------------------------------|-------|-----|--------------|-----|-------|
|                                        |                                   | EM    | EE  | EUA          | ECA |       |
| Power Dissipation                      | PD                                | 100   | 150 | 200          | 300 | mW    |
| Supply Voltage                         | V <sub>CC</sub>                   |       |     | 50           |     | V     |
| Input Voltage                          | V <sub>IN</sub>                   |       |     | -10 ~ -40    |     | V     |
| Output Current                         | I <sub>O</sub>                    |       |     | 30           |     | mA    |
|                                        | I <sub>C(MAX)</sub>               |       |     | 100          |     |       |
| Junction and Storage Temperature Range | T <sub>J</sub> , T <sub>STG</sub> |       |     | -55 to + 150 |     | °C    |

Notes: 1. Valid provided that electrodes are kept at ambient temperature

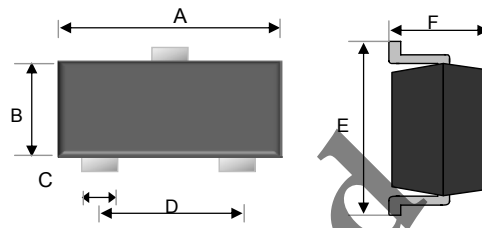
| Parameter            | Symbol                         | Min  | Typ | Max  | Condition                                          | Unit |
|----------------------|--------------------------------|------|-----|------|----------------------------------------------------|------|
| Input Voltage        | V <sub>I(on)</sub>             |      |     | 3    | V <sub>O</sub> =0.3V, I <sub>O</sub> =2 mA         | V    |
|                      | V <sub>I(off)</sub>            | 0.5  |     |      | V <sub>CC</sub> =5V, I <sub>O</sub> =100μA         |      |
| Output Voltage       | V <sub>O(on)</sub>             |      |     | 0.3  | I <sub>O</sub> /I <sub>I</sub> =10mA/0.5mA         | V    |
| Input Current        | I <sub>I</sub>                 |      |     | 0.18 | V <sub>I</sub> =5V                                 | mA   |
| Output Current       | I <sub>O (off)</sub>           |      |     | 0.5  | V <sub>CC</sub> =50V, V <sub>I</sub> =0            | μA   |
| DC Current Gain      | G <sub>I</sub>                 | 68   |     |      | V <sub>O</sub> =5V, I <sub>O</sub> =5mA            |      |
| Input Resistance     | R <sub>1</sub>                 | 32.9 | 47  | 61.1 |                                                    | KΩ   |
| Resistance Ratio     | R <sub>2</sub> /R <sub>1</sub> | 0.8  | 1   | 1.2  |                                                    |      |
| Transition Frequency | f <sub>T</sub>                 |      | 250 |      | V <sub>O</sub> =10V, I <sub>O</sub> =5mA, f=100MHz | MHz  |

**SOT-23**



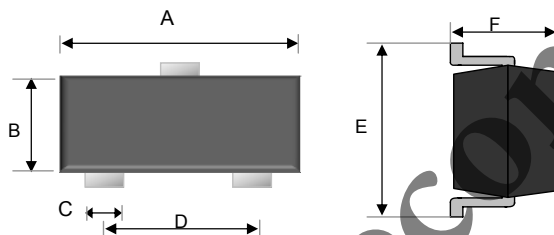
| Dimensions | Unit (mm) |      | Unit (inch) |      |
|------------|-----------|------|-------------|------|
|            | Min       | Max  | Min         | Max  |
| A          | 2.80      | 3.00 | 0.11        | 0.12 |
| B          | 1.20      | 1.40 | 0.05        | 0.06 |
| C          | 0.30      | 0.50 | 0.01        | 0.02 |
| D          | 1.80      | 2.00 | 0.07        | 0.08 |
| E          | 2.25      | 2.55 | 0.09        | 0.10 |
| F          | 0.90      | 1.20 | 0.04        | 0.04 |
| G          | 0.550 REF |      | 0.022 REF   |      |

**SOT-323**



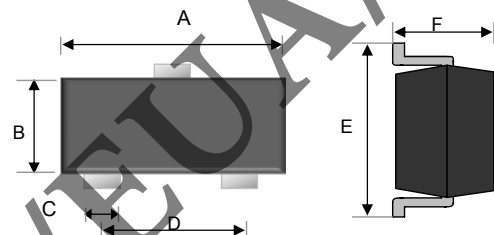
| Dimensions | Unit (mm) |      | Unit (inch) |      |
|------------|-----------|------|-------------|------|
|            | Min       | Max  | Min         | Max  |
| A          | 1.90      | 2.10 | 0.07        | 0.08 |
| B          | 1.15      | 1.35 | 0.05        | 0.05 |
| C          | 0.25      | 0.35 | 0.01        | 0.01 |
| D          | 1.20      | 1.40 | 0.05        | 0.06 |
| E          | 2.00      | 2.20 | 0.08        | 0.09 |
| F          | 0.80      | 1.00 | 0.03        | 0.04 |

**SOT-523**



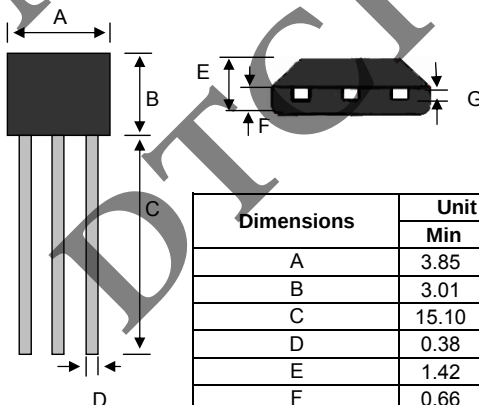
| Dimensions | Unit (mm) |      | Unit (inch) |      |
|------------|-----------|------|-------------|------|
|            | Min       | Max  | Min         | Max  |
| A          | 1.50      | 1.70 | 0.06        | 0.07 |
| B          | 0.70      | 0.80 | 0.03        | 0.03 |
| C          | 0.25      | 0.35 | 0.01        | 0.01 |
| D          | 0.90      | 1.10 | 0.04        | 0.04 |
| E          | 1.50      | 1.70 | 0.06        | 0.07 |
| F          | 0.70      | 0.90 | 0.03        | 0.04 |

**SOT-723**



| Dimensions | Unit (mm) |      | Unit (inch) |      |
|------------|-----------|------|-------------|------|
|            | Min       | Max  | Min         | Max  |
| A          | 1.15      | 1.25 | 0.05        | 0.05 |
| B          | 0.75      | 0.85 | 0.03        | 0.03 |
| C          | 0.17      | 0.27 | 0.01        | 0.01 |
| D          | 0.8 TYP   |      | 0.31 TYP    |      |
| E          | 1.15      | 1.25 | 0.05        | 0.05 |
| F          |           | 0.50 |             | 0.02 |

**TO-92S**



| Dimensions | Unit (mm) |       | Unit (inch) |      |
|------------|-----------|-------|-------------|------|
|            | Min       | Max   | Min         | Max  |
| A          | 3.85      | 4.15  | 0.15        | 0.16 |
| B          | 3.01      | 3.31  | 0.12        | 0.13 |
| C          | 15.10     | 15.50 | 0.59        | 0.61 |
| D          | 0.38      | 0.55  | 0.01        | 0.02 |
| E          | 1.42      | 1.62  | 0.06        | 0.06 |
| F          | 0.66      | 0.86  | 0.03        | 0.03 |
| G          | 0.36      | 0.51  | 0.01        | 0.02 |

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