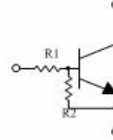


**Small Signal Diode**

**Features**

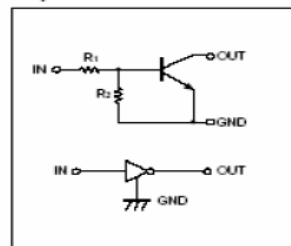
- ◇ Built-in bias resistors enable the configuration of an inverter circuit without connecting external input resistor (see equivalent circuit).
- ◇ The bias resistors consist of thin-film resistors with complete isolation to allow negative biasing of the input. They also have the advantage of almost 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 | DTA143 TM  | 8K / 7" Reel | 96      |
| SOT-523 | DTA143 TE  | 3K / 7" Reel | 96      |
| SOT-323 | DTA143 TUA | 3K / 7" Reel | 96      |
| SOT-23  | DTA143 TCA | 3K / 7" Reel | 96      |
| TO-92S  | DTA143 TSA | 3K / 7" Reel |         |

● Equivalent circuit



**Maximum Ratings and Electrical Characteristics**

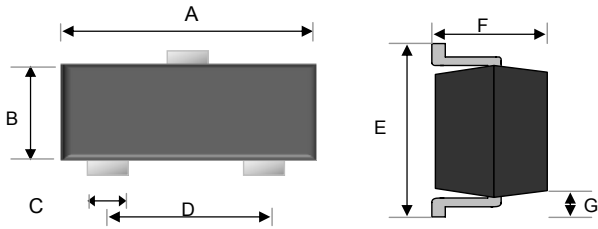
Rating at 25°C ambient temperature unless otherwise specified.

| Type Number                            | Symbol         | Value        |     |         |     | Units |
|--|----------------|--------------|-----|---------|-----|-------|
|  |                | TM           | TE  | TUA TCA | TSA |       |
| Power Dissipation                      | PD             | 100          | 150 | 200     | 300 | mW    |
| Collector-Emitter Voltage              | $V_{CBO}$      | -50          |     |         |     | V     |
| Emitter-Base Voltage                   | $V_{CEO}$      | -50          |     |         |     | V     |
| Collector Current                      | $I_C$          | -100         |     |         |     | mA    |
| Junction and Storage Temperature Range | $T_J, T_{STG}$ | -55 to + 150 |     |         |     | °C    |

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

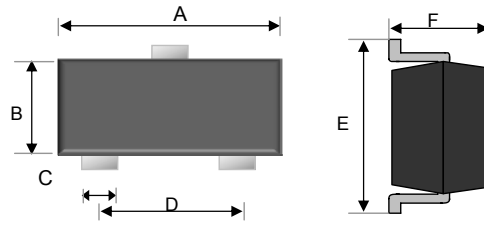
| Parameter                           | Symbol        | Min  | Typ | Max  | Condition                              | Unit       |
|-------------------------------------|---------------|------|-----|------|--|------------|
| Collector-base breakdown voltage    | $V_{(BR)CBO}$ | -50  |     |      | $I_C = -50\mu A, I_E = 0$              | V          |
| Collector-emitter breakdown voltage | $V_{(BR)CEO}$ | -50  |     |      | $I_C = -1mA, I_B = 0$                  | V          |
| Emitter-base breakdown voltage      | $V_{(BR)EBO}$ | -5   |     |      | $I_E = -50\mu A, I_C = 0$              | V          |
| Collector cut-off current           | $I_{CBO}$     |      |     | -0.5 | $V_{CB} = -50V, I_E = 0$               | $\mu A$    |
| Emitter cut-off current             | $I_{EBO}$     |      |     | -0.5 | $V_{EB} = -4V, I_C = 0$                | $\mu A$    |
| DC Current Gain                     | $V_{CE(sat)}$ |      |     | -0.3 | $I_C = -5mA, I_B = -0.5mA$             | V          |
| Input Resistance                    | $h_{FE}$      | 100  | 300 | 600  | $V_{CE} = -5V, I_C = -1mA$             |            |
| Resistance Ratio                    | $R_1$         | 32.9 | 47  | 61.1 |  | K $\Omega$ |
| Transition Frequency                | $f_T$         |      | 250 |      | $V_{CE} = -10V, I_E = 5mA, f = 100MHz$ | MHz        |

SOT-23



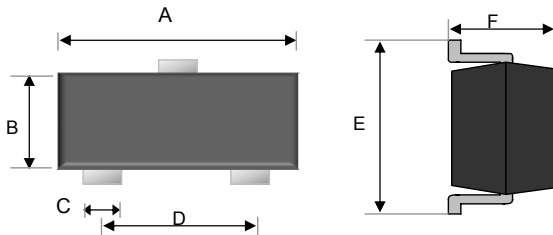
| Dimensions | Unit (mm) |      | Unit (inch) |      |
|------------|-----------|------|-------------|------|
|            | Min       | Max  | Min         | Max  |
| A          | 2.80      | 3.00 | 0.11        | 0.12 |
| B          | 1.20      | 1.40 | 0.05        | 0.06 |
| C          | 0.30      | 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



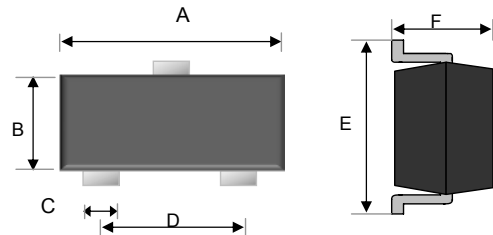
| Dimensions | Unit (mm) |      | Unit (inch) |      |
|------------|-----------|------|-------------|------|
|            | Min       | Max  | Min         | Max  |
| A          | 1.90      | 2.10 | 0.07        | 0.08 |
| B          | 1.15      | 1.35 | 0.05        | 0.05 |
| C          | 0.25      | 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



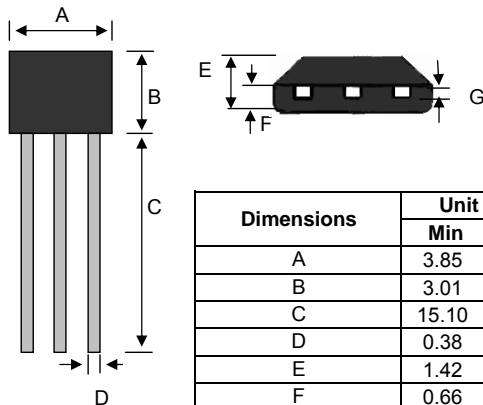
| Dimensions | Unit (mm) |      | Unit (inch) |      |
|------------|-----------|------|-------------|------|
|            | Min       | Max  | Min         | Max  |
| A          | 1.50      | 1.70 | 0.06        | 0.07 |
| B          | 0.70      | 0.80 | 0.03        | 0.03 |
| C          | 0.25      | 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   |      | 0.31TYP     |      |
| 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 |