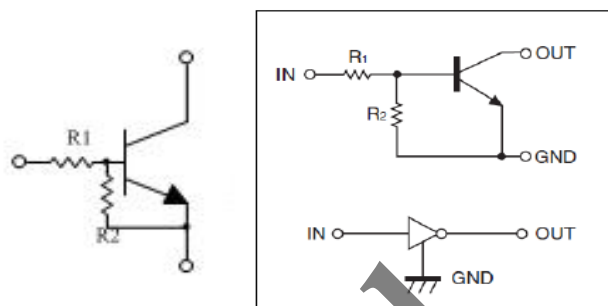


## Features

- ◇ 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 almost have the advantage of 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.

## Equivalent Circuit



## Ordering Information (example)

| Part No.  | Package | Packing      | Packing code | Packing code (Green) | Manufacture code | Marking |
|-----------|---------|--------------|--------------|----------------------|------------------|---------|
| DTC113 ZM | SOT-723 | 8K / 7" Reel | RM           | RMG                  | M0               | E21     |

Note : Detail please see "Ordering Information(detail, example)" below.

## Maximum Ratings and Electrical Characteristics

Rating at 25°C ambient temperature unless otherwise specified.

### Maximum Ratings

| Parameter                              | Symbol                            | Value        |     |           |     | Units |
|----------------------------------------|-----------------------------------|--------------|-----|-----------|-----|-------|
|                                        |                                   | ZM           | ZE  | ZUA / ZCA | ZSA |       |
| Power Dissipation                      | PD                                | 100          | 150 | 200       | 300 | mW    |
| Supply Voltage                         | V <sub>CC</sub>                   | 50           |     |           |     | V     |
| Input Voltage                          | V <sub>IN</sub>                   | -5 ~ +10     |     |           |     | V     |
| Output Current                         | I <sub>O</sub>                    | 50           |     |           |     | 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

### Electrical Characteristics

| Parameter            | Symbol       | Min | Typ | Max | Condition                    | Unit       |
|----------------------|--------------|-----|-----|-----|------------------------------|------------|
| Input Voltage        | $V_{I(on)}$  |     |     | 3   | $V_O=0.3V, I_O=20mA$         | V          |
|                      | $V_{I(off)}$ | 0.3 |     |     | $V_{CC}=5V, I_O=100\mu A$    |            |
| Output Voltage       | $V_{O(on)}$  |     |     | 0.3 | $I_O/I_I=10mA/0.5mA$         | V          |
| Input Current        | $I_I$        |     |     | 7.2 | $V_I=5V$                     | mA         |
| Output Current       | $I_O (off)$  |     |     | 0.5 | $V_{CC}=50V, V_I=0$          | $\mu A$    |
| DC Current Gain      | $G_I$        | 33  |     |     | $V_O=5V, I_O=5mA$            |            |
| Input Resistance     | $R_1$        | 0.7 | 1   | 1.3 |                              | K $\Omega$ |
| Resistance Ratio     | $R_2/R_1$    | 8   | 10  | 12  |                              |            |
| Transition Frequency | $f_T$        |     | 250 |     | $V_O=10V, I_O=5mA, f=100MHz$ | MHz        |

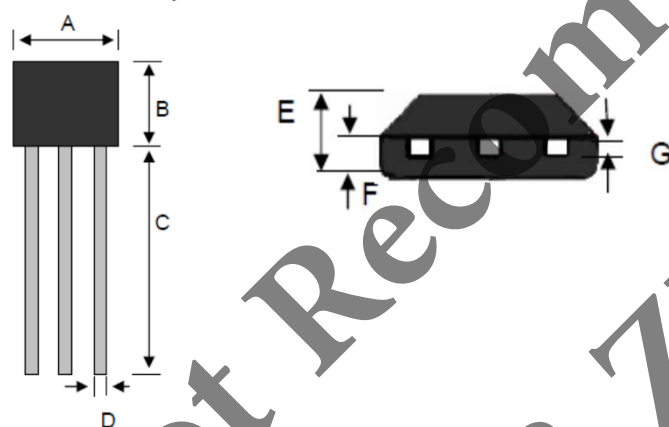
**Ordering information (Detail, example)**

| Part No.   | Package | Packing        | Packing code | Packing code (Green) | Manufacture code (Note) | Marking |
|------------|---------|----------------|--------------|----------------------|-------------------------|---------|
| DTC113 ZM  | SOT-723 | 8K / 7" Reel   | RM           | RMG                  |                         | E21     |
| DTC113 ZE  | SOT-523 | 3K / 7" Reel   | RN           | RNG                  |                         | E21     |
| DTC113 ZUA | SOT-323 | 3K / 7" Reel   | RV           | RVG                  |                         | E21     |
| DTC113 ZCA | SOT-23  | 3K / 7" Reel   | RU           | RUG                  |                         | E21     |
| DTC113 ZSA | TO-92S  | 3K / Box(Ammo) | A3           | A3G                  |                         |         |
| DTC113 ZM  | SOT-723 | 8K / 7" Reel   | RM           | RMG                  | M0                      | E21     |
| DTC113 ZE  | SOT-523 | 3K / 7" Reel   | RN           | RNG                  | M0                      | E21     |
| DTC113 ZUA | SOT-323 | 3K / 7" Reel   | RV           | RVG                  | M0                      | E21     |
| DTC113 ZCA | SOT-23  | 3K / 7" Reel   | RU           | RUG                  | M0                      | E21     |
| DTC113 ZSA | TO-92S  | 3K / Box(Ammo) | A3           | A3G                  | M0                      |         |

Note : Manufacture special control, if empty means no special control requirement.

**Dimensions**

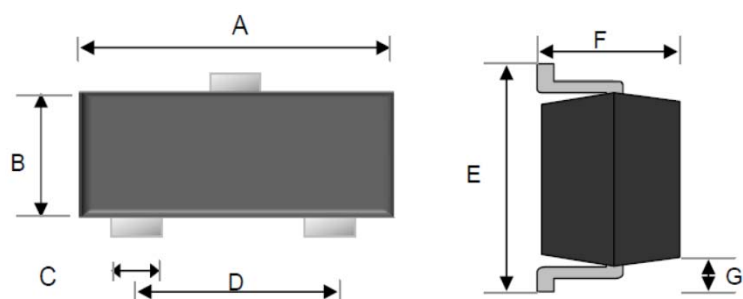
**TO-92S**



| DIM. | 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 |

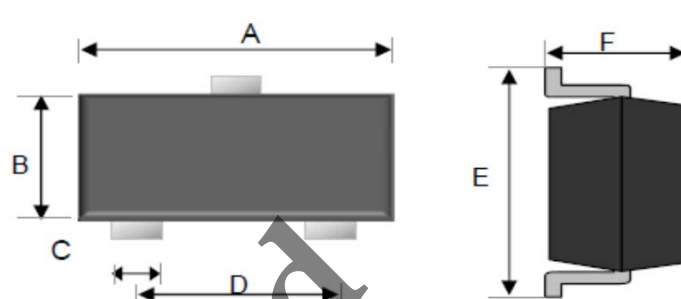
## Dimensions

### SOT-23



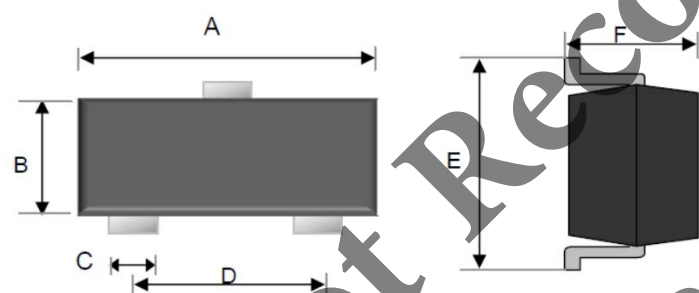
| DIM. | Unit(mm)  |      | Unit(inch) |      |
|------|-----------|------|------------|------|
|      | Min       | Max  | Min        | Max  |
| A    | 2.80      | 3.00 | 0.11       | 0.12 |
| B    | 1.20      | 1.40 | 0.05       | 0.06 |
| C    | 0.30      | 0.50 | 0.01       | 0.02 |
| D    | 1.80      | 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



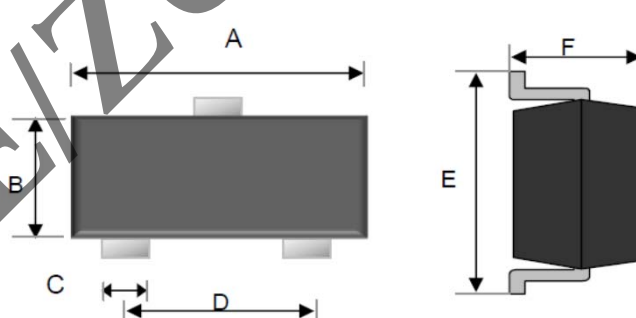
| DIM. | Unit(mm) |      | Unit(inch) |      |
|------|----------|------|------------|------|
|      | Min      | Max  | Min        | Max  |
| A    | 1.90     | 2.10 | 0.07       | 0.08 |
| B    | 1.15     | 1.35 | 0.05       | 0.05 |
| C    | 0.25     | 0.35 | 0.01       | 0.01 |
| D    | 1.20     | 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



| DIM. | 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



| DIM. | 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 |

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