



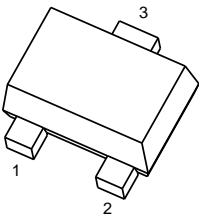
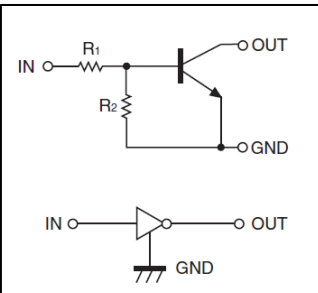
**Digital Transistors (Built-in Resistors)**

**DTC115EM** DIGITAL TRANSISTOR (NPN)

**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 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, making device design easy

**PIN CONNENCTIONS, MARKING and EQUIVALENT CIRCUIT**

|  |  |   |
|--|--|---|
| <p><b>DTC115EM</b></p>  <p><b>MARKING:29</b></p> | <p><b>SOT-723</b></p> <p>1. IN<br/>2. GND<br/>3. OUT</p> | <p><b>Equivalent Circuit</b></p>  |
|--|--|---|

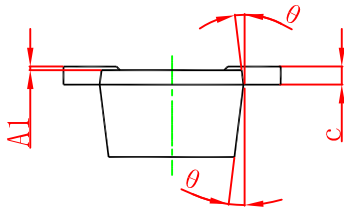
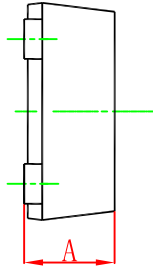
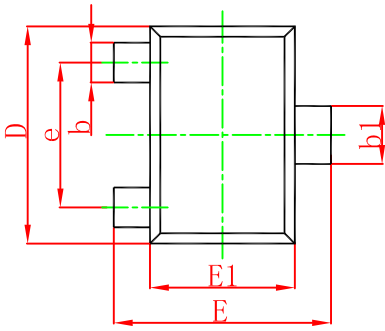
**MAXIMUM RATINGS(Ta=25°C unless otherwise noted)**

| Symbol         | Parameter  | Limit    | Unit |
|----------------|--|----------|------|
| $V_{CC}$       | Supply Voltage                                   | 50       | V    |
| $V_{IN}$       | Input Voltage                                    | -10~+40  | V    |
| $I_o$          | Output Current                                   | 100      | mA   |
| $P_D$          | Power Dissipation                                | 100      | mW   |
| $T_J, T_{stg}$ | Operation Junction and Storage Temperature Range | -55~+150 | °C   |

**ELECTRICAL CHARACTERISTICS (Ta=25°C unless otherwise specified)**

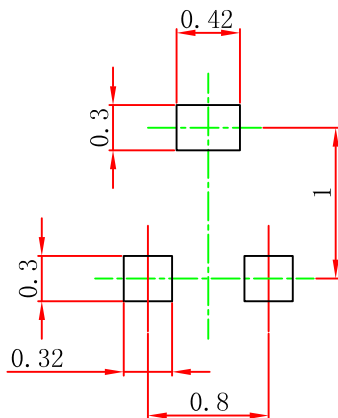
| Parameter            | Symbol       | Conditions                   | Min | Typ | Max  | Unit       |
|----------------------|--------------|------------------------------|-----|-----|------|------------|
| Input voltage        | $V_{I(off)}$ | $V_{CC}=5V, I_o=100\mu A$    | 0.5 |     |      | V          |
|                      | $V_{I(on)}$  | $V_o=0.3V, I_o=1mA$          |     |     | 3    | V          |
| Output voltage       | $V_{O(on)}$  | $I_o/I_i=5mA/0.25mA$         |     | 0.1 | 0.3  | V          |
| Input current        | $I_i$        | $V_i=5V$                     |     |     | 0.15 | mA         |
| Output current       | $I_{O(off)}$ | $V_{CC}=50V, V_i=0V$         |     |     | 0.5  | $\mu A$    |
| DC current gain      | $G_I$        | $V_o=5V, I_o=5mA$            | 82  |     |      |            |
| Input resistance     | $R_1$        |                              | 70  | 100 | 130  | k $\Omega$ |
| Resistance ratio     | $R_2/R_1$    |                              | 0.8 | 1   | 1.2  |            |
| Transition frequency | $f_T$        | $V_o=10V, I_o=5mA, f=100MHz$ |     | 250 |      | MHz        |

## SOT-723 Package Outline Dimensions



| Symbol   | Dimensions In Millimeters |       | Dimensions In Inches |       |
|----------|---------------------------|-------|----------------------|-------|
|          | Min.                      | Max.  | Min.                 | Max.  |
| A        | 0.430                     | 0.500 | 0.017                | 0.020 |
| A1       | 0.000                     | 0.050 | 0.000                | 0.002 |
| b        | 0.170                     | 0.270 | 0.007                | 0.011 |
| b1       | 0.270                     | 0.370 | 0.011                | 0.015 |
| c        | 0.080                     | 0.150 | 0.003                | 0.006 |
| D        | 1.150                     | 1.250 | 0.045                | 0.049 |
| E        | 1.150                     | 1.250 | 0.045                | 0.049 |
| E1       | 0.750                     | 0.850 | 0.030                | 0.033 |
| e        | 0.800TYP.                 |       | 0.031TYP.            |       |
| $\theta$ | 7° REF.                   |       | 7° REF.              |       |

## SOT-723 Suggested Pad Layout



**Note:**

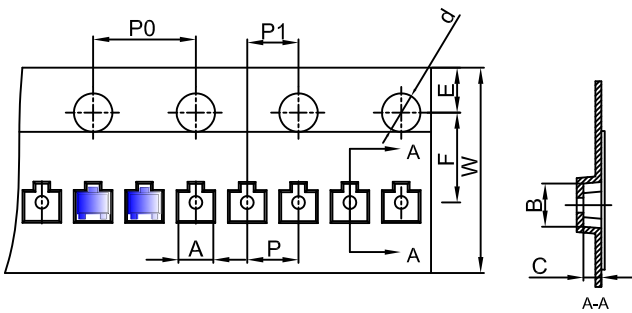
1. Controlling dimension: in millimeters.
2. General tolerance:  $\pm 0.05\text{mm}$ .
3. The pad layout is for reference purposes only.

**NOTICE**

JSCJ reserves the right to make modifications, enhancements, improvements, corrections or other changes without further notice to any product herein. JSCJ does not assume any liability arising out of the application or use of any product described herein.

# SOT-723 Tape and Reel

## SOT-723 Embossed Carrier Tape

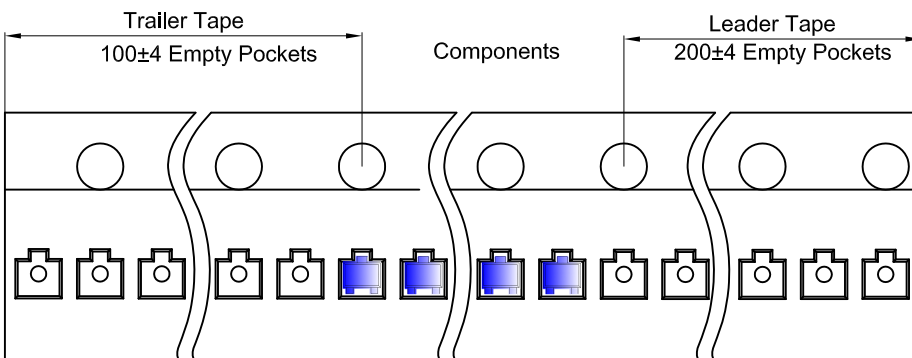


### Packaging Description:

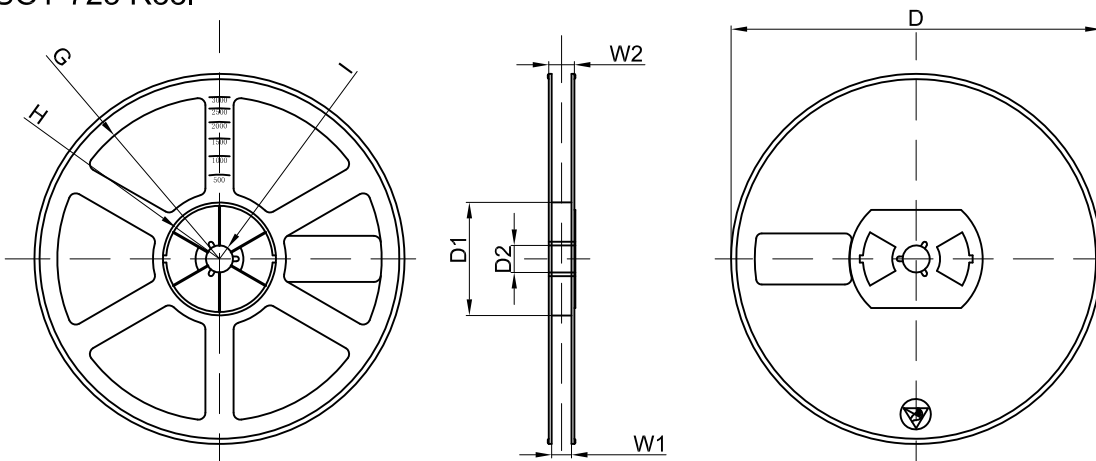
SOT-723 parts are shipped in tape. The carrier tape is made from a dissipative (carbon filled) polycarbonate resin. The cover tape is a multilayer film (Heat Activated Adhesive in nature) primarily composed of polyester film, adhesive layer, sealant, and anti-static sprayed agent. These reeled parts in standard option are shipped with 8,000 units per 7" or 17.8cm diameter reel. The reels are clear in color and is made of polystyrene plastic (anti-static coated).

| Dimensions are in millimeter |      |      |      |       |      |      |      |      |      |      |
|------------------------------|------|------|------|-------|------|------|------|------|------|------|
| Pkg type                     | A    | B    | C    | d     | E    | F    | P0   | P    | P1   | W    |
| SOT-723                      | 1.33 | 1.45 | 0.61 | Ø1.50 | 1.75 | 3.50 | 4.00 | 2.00 | 2.00 | 8.00 |

## SOT-723 Tape Leader and Trailer



## SOT-723 Reel



| Dimensions are in millimeter |         |       |       |        |        |       |      |       |
|------------------------------|---------|-------|-------|--------|--------|-------|------|-------|
| Reel Option                  | D       | D1    | D2    | G      | H      | I     | W1   | W2    |
| 7" Dia                       | Ø178.00 | 54.40 | 13.00 | R78.00 | R25.60 | R6.50 | 9.50 | 12.30 |

| REEL     | Reel Size | Box         | Box Size(mm) | Carton      | Carton Size(mm) | G.W.(kg) |
|----------|-----------|-------------|--------------|-------------|-----------------|----------|
| 8000 pcs | 7 inch    | 120,000 pcs | 203×203×195  | 480,000 pcs | 438×438×220     |          |