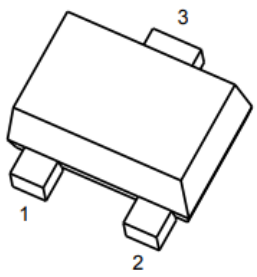
# Digital Transistors (Built-in Resistors)




1. IN
2. GND
3. OUT

SOT-723

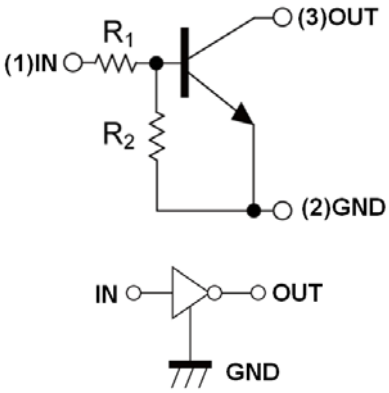
## Features

●Epoxy meets UL-94 V-0 flammability rating
●Moisture Sensitivity Level 1
●Built-in bias resistors enable the configuration of an inverter circuit without connecting external input resistors
●Surface mount package ideally Suited for Automatic Insertion
●NPN

## Mechanical Data

- **Package**: SOT-723
- **Terminals**: Tin plated leads, solderable per J-STD-002 and JESD22-B102
- **Marking:** E42

## ■Equivalent circuit







## ■Maximum Ratings (Ta=25℃ Unless otherwise specified)

| ITEM | SYMBOL | UNIT | CONDITIONS | VALUE |
|---|---|---|---|---|
| Supply Voltage | $V_{CC}$ | V | | 50 |
| Input Voltage | $V_{IN}$ | V | | -5 to +12 |
| Output Current | $I_O$ | mA | | 100 |
| Power Dissipation | $P_D$ | mW | | 100 |
| Junction Temperature | $T_j$ | ℃ | | 150 |
| Storage Temperature | $T_{STG}$ | ℃ | | -55 to +150 |

## ■Electrical Characteristics (Ta=25℃ unless otherwise specified)

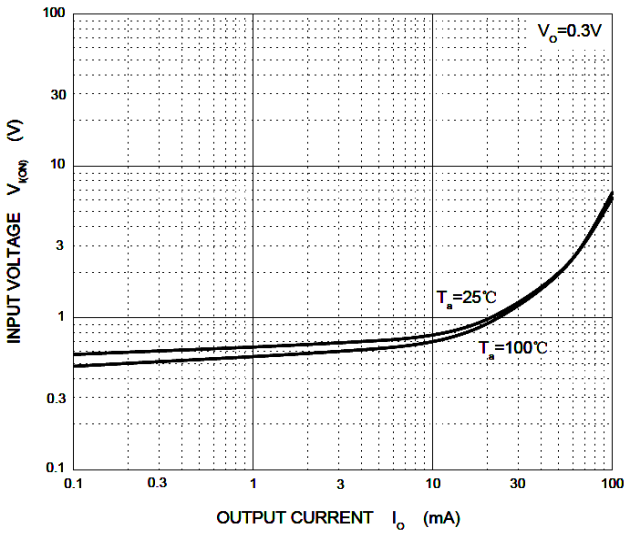
| ITEM | SYMBOL | UNIT | CONDITIONS | MIN | TYP | MAX |
|---|---|---|---|---|---|---|
| Input voltage | $VI_{(off)}$ | V | VCC=5V,Ic=100uA | 0.5 | | |
| | $VI_{(on)}$ | V | V0=0.3V,Ic=5mA | | | 1.1 |
| Output voltage | $Vo_{(on)}$ | V | Io /Ii =10mA/0.25 mA | | 0.1 | 0.3 |
| Output current | $I_{O(off)}$ | uA | VCC=50V, Vi=0 | | | 0.5 |
| DC current gain | GI | | Vo=5V, Io =10mA | 80 | | |
| Input resistance | $R_1$ | kΩ | | 1.54 | 2.2 | 2.86 |
| Resistance ratio | $R_2/R_1$ | | | 17 | 21 | 26 |
| Transition frequency | fT | MHz | Vo=10V,IO=5mA,f=100MHz | | 250 | |

## ■ Ordering Information (Example)

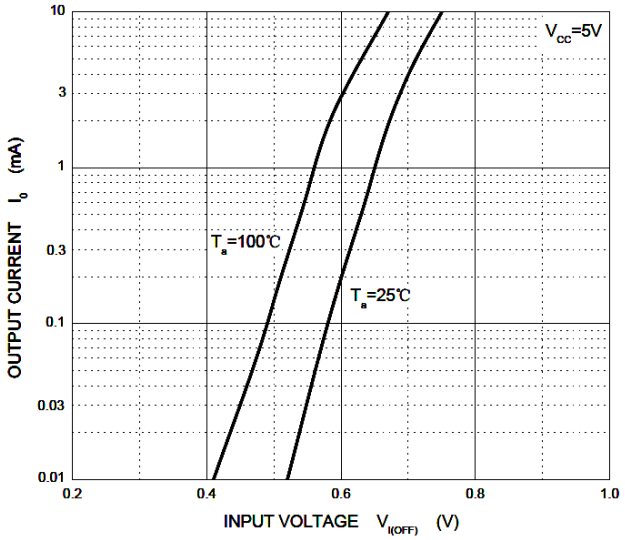
| PREFERED P/N | PACKING CODE | UNIT WEIGHT(g) | MINIMUM PACKAGE(pcs) | INNER BOX QUANTITY(pcs) | OUTER CARTON QUANTITY(pcs) | DELIVERY MODE |
|---|---|---|---|---|---|---|
| DTC123JM | F2 | Approximate 0.0013 | 8000 | 80000 | 320000 | 7” reel |

## ■ Characteristics (Typical)

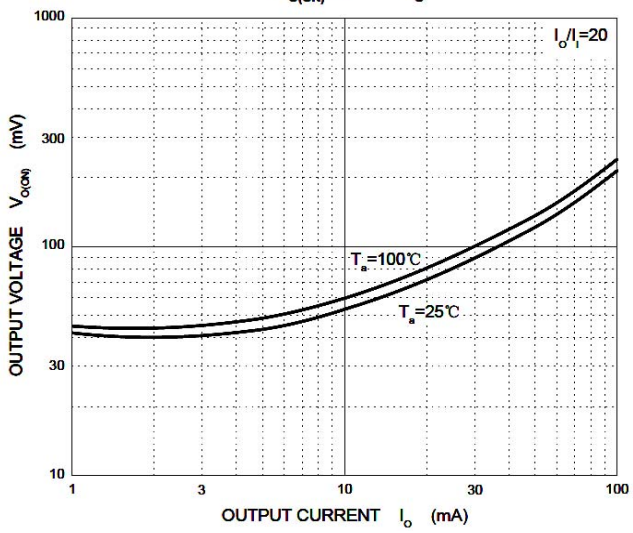
ON Characteristics



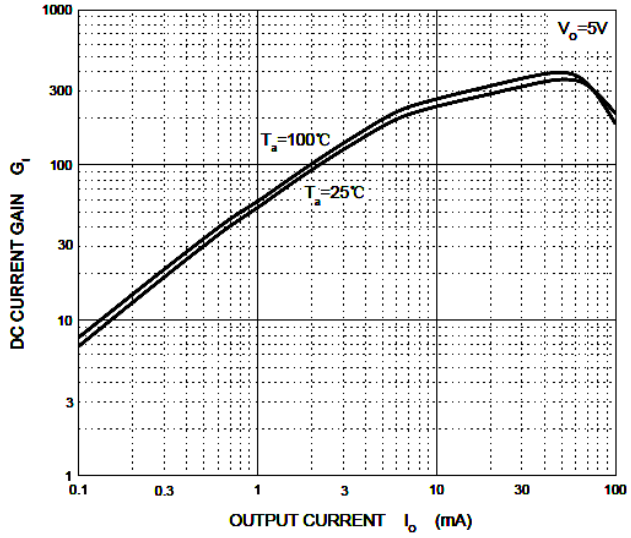

OFF Characteristics



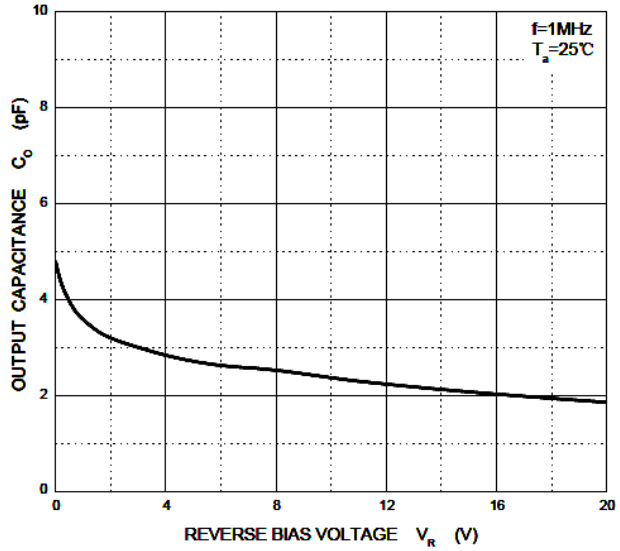

$V_{O(ON)}$ —— $I_O$



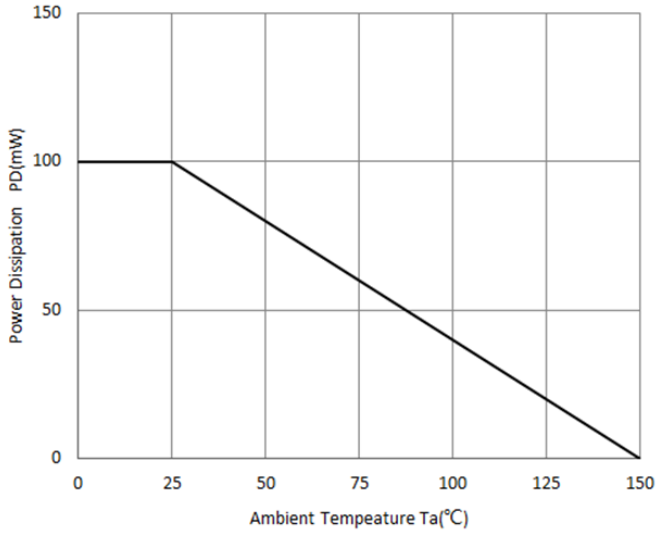

$G_I$ —— $I_O$



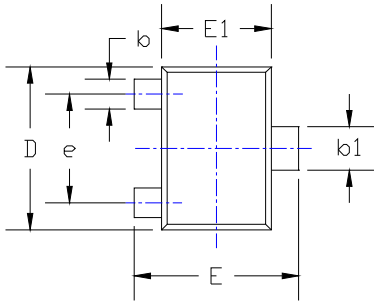

$C_O$ —— $V_R$



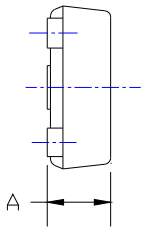

Power Derating Curve



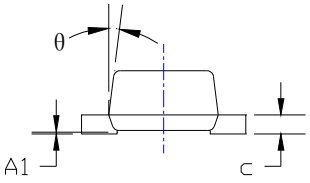
## ■SOT-723 Package Outline Dimensions



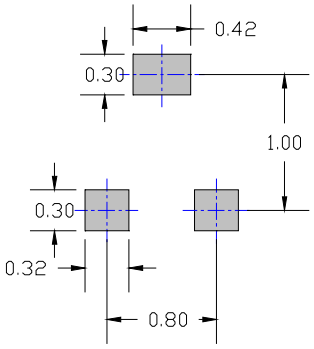

TOP VIEW




SIDE VIEW




SIDE VIEW




SUGGESTED SOLDER PAD LAYOUT

| DIMENSIONS | | | | |
|---|---|---|---|---|
| SYMBOL | INCHES | | Millimeter | |
| | MIN. | MAX. | MIN. | MAX. |
| A | 0.017 | 0.022 | 0.430 | 0.550 |
| A1 | 0.000 | 0.002 | 0.000 | 0.050 |
| b | 0.007 | 0.011 | 0.170 | 0.270 |
| b1 | 0.011 | 0.015 | 0.270 | 0.370 |
| c | 0.003 | 0.008 | 0.080 | 0.200 |
| D | 0.045 | 0.049 | 1.150 | 1.250 |
| E | 0.045 | 0.049 | 1.150 | 1.250 |
| E1 | 0.030 | 0.033 | 0.750 | 0.850 |
| e | 0.031TYP. | | 0.800TYP. | |
| θ | 7°REF. | | 7°REF. | |

NOTE:
1.PACKAGE BODY SIZES EXCLUDE MOLD FLASH AND GATE BURRS.
2.TOLERANCE 0.1mm UNLESS OTHERWISE SPECIFIED.
3.THE PAD LAYOUT IS FOR REFERENCE PURPOSES ONLY.

Note:
1. All dimensions are in millimeters (mm) unless otherwise specified.
[所有尺寸均以毫米为单位，除非另有说明]
2. General tolerances: ±0.10mm unless otherwise specified.
[通用公差为±0.10mm，除非另有说明]
3. Dimensions and tolerances per ASME Y14.5M-2018.
[尺寸和公差遵循 ASME Y14.5M-2018 标准]
4.All dimensions shown are exclusive of burrs and gate residues. Burrs and gate vestiges shall not exceed 0.15 mm in maximum.
[所有尺寸均不包括毛刺和浇口残留。毛刺与浇口残留的尺寸最大不得超过 0.15mm]
5.Dimension b does not include dambar protrusion of max 0.100 mm per side.
[尺寸b不包括单边最大0.100 MM的中筋凸出部分]
6.Dimensions D and E1are the overall extreme outer dimensions of the mold compound. These dimensions exclude mold flash, lead flash, protrusions and burrs but include the maximum allowable mold mismatch.
[D和E是塑封体的外部极限尺寸，不包括包封溢料、内引线溢料、凸出部分以及胶体毛刺，但是包含了包封错位的最大尺寸]
7.Formed leads shall be planar with respect to one another within a maximum of 0.076 mm relative to the seating plane.
[成型的管脚应为同一平面，共面性最大为0.1mm]
8. ★It is the key size.
[★ 标记为关键尺寸]

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