

## Features

- Built-In Bias Resistors Enable the Configuration of an Inverter Circuit Without Connecting External Input Resistors
- 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
- Halogen Free. "Green" Device (Note 1)
- Moisture Sensitivity Level 1
- Epoxy Meets UL 94 V-0 Flammability Rating
- Lead Free Finish/RoHS Compliant ("P" Suffix Designates RoHS Compliant. See Ordering Information)

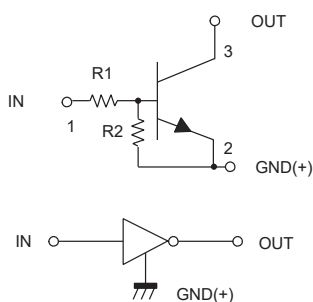
## Maximum Ratings @ 25°C Unless Otherwise Specified

| Parameter            | Symbol    | Min | Typ | Max | Unit |
|----------------------|-----------|-----|-----|-----|------|
| Supply Voltage       | $V_{CC}$  | --- | --- | 50  | V    |
| Input Voltage        | $V_{IN}$  | -10 | --- | 30  | V    |
| Collector Current    | $I_C$     | --- | 100 | --- | mA   |
| Power Dissipation    | $P_D$     | --- | 150 | --- | mW   |
| Junction Temperature | $T_J$     | --- | --- | 150 | °C   |
| Storage Temperature  | $T_{stg}$ | -55 | --- | 150 | °C   |

Note: 1. Halogen free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.

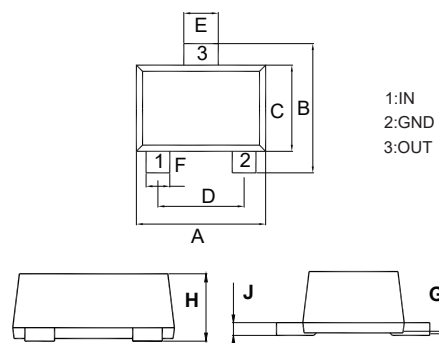
## Device Marking: 23

### Internal Structure



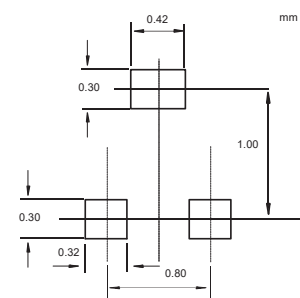
## NPN Digital Transistor

### SOT-723



| DIM | INCHES |       | MM   |      | NOTE |
|-----|--------|-------|------|------|------|
|     | MIN    | MAX   | MIN  | MAX  |      |
| A   | 0.043  | 0.051 | 1.10 | 1.30 |      |
| B   | 0.043  | 0.051 | 1.10 | 1.30 |      |
| C   | 0.028  | 0.035 | 0.70 | 0.90 |      |
| D   | 0.031  |       | 0.80 |      | TYP. |
| E   | 0.009  | 0.017 | 0.22 | 0.42 |      |
| F   | 0.005  | 0.013 | 0.12 | 0.32 |      |
| G   | 0.000  | 0.002 | 0.00 | 0.05 |      |
| H   | 0.017  | 0.021 | 0.43 | 0.54 |      |
| J   | 0.003  | 0.006 | 0.08 | 0.15 |      |

### Suggested Solder Pad Layout



## Electrical Characteristics @ 25°C Unless Otherwise Specified

| Parameter            | Symbol       | Min  | Typ | Max  | Unit       | Conditions                       |
|----------------------|--------------|------|-----|------|------------|----------------------------------|
| Input Voltage        | $V_{I(off)}$ | 0.5  | --- | ---  | V          | $V_{CC}=5V, I_O=100\mu A$        |
|                      | $V_{I(on)}$  | ---  | --- | 3.0  | V          | $V_O=0.3V, I_O=20mA$             |
| Output Voltage       | $V_{O(on)}$  | ---  | --- | 0.3  | V          | $I_O=10mA, I_I=0.5mA$            |
| Input Current        | $I_I$        | ---  | --- | 1.8  | mA         | $V_I=5V$                         |
| Output Current       | $I_{O(off)}$ | ---  | --- | 0.5  | $\mu A$    | $V_{CC}=50V, V_I=0$              |
| DC Current Gain      | $G_I$        | 20   | --- | ---  |            | $V_O=5V, I_O=10mA$               |
| Input Resistance     | $R_1$        | 3.29 | 4.7 | 6.11 | K $\Omega$ |                                  |
| Resistance Ratio     | $R_2/R_1$    | 0.8  | 1.0 | 1.2  |            |                                  |
| Transition Frequency | $f_T$        | ---  | 250 | ---  | MHz        | $V_{CE}=10V, I_E=-5mA, f=100MHz$ |

## Curve Characteristics

Fig. 1 - DC Current Gain Characteristics

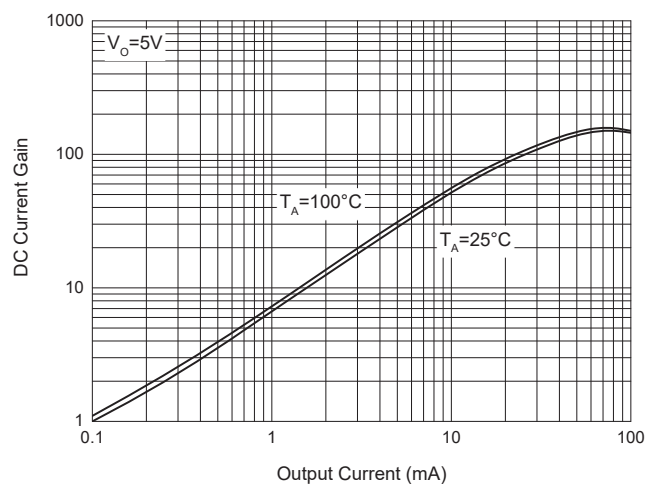


Fig. 2 - Input Voltage (on) Characteristics

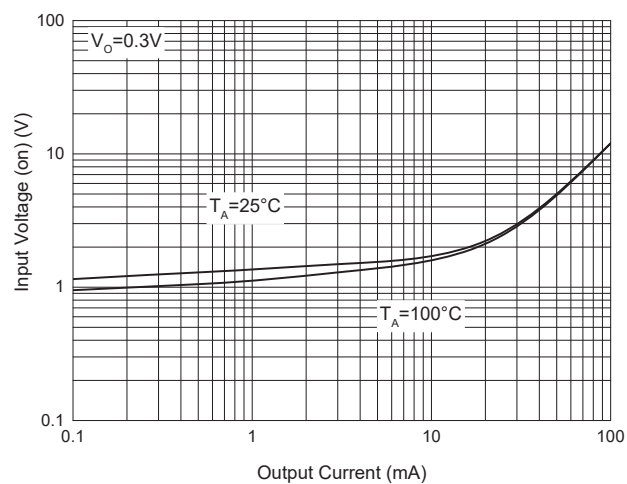


Fig. 3 - Input Voltage (off) Characteristics

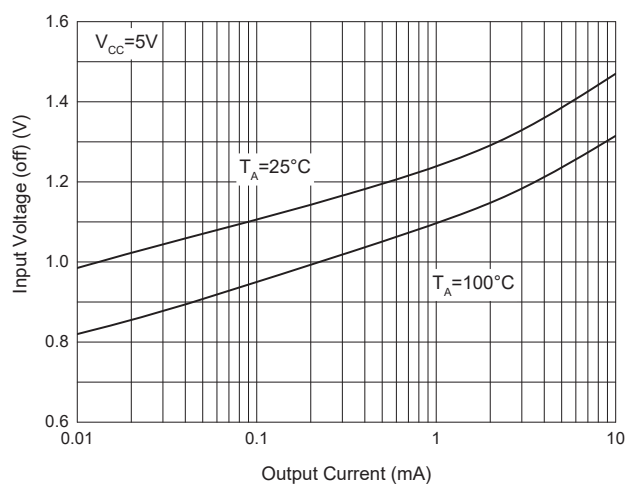


Fig. 4 - Output Voltage Characteristics

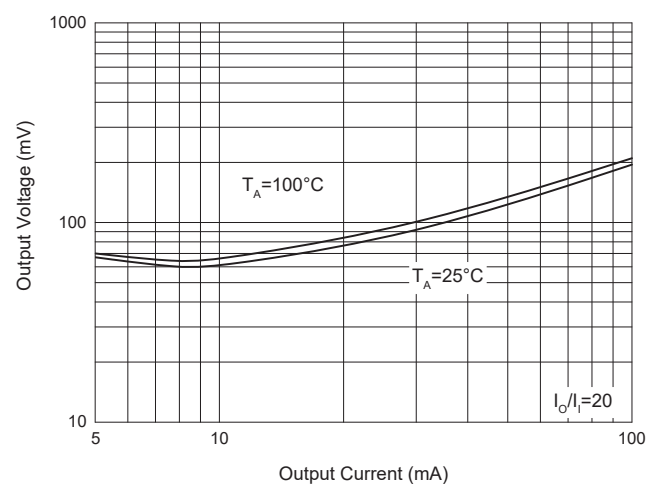
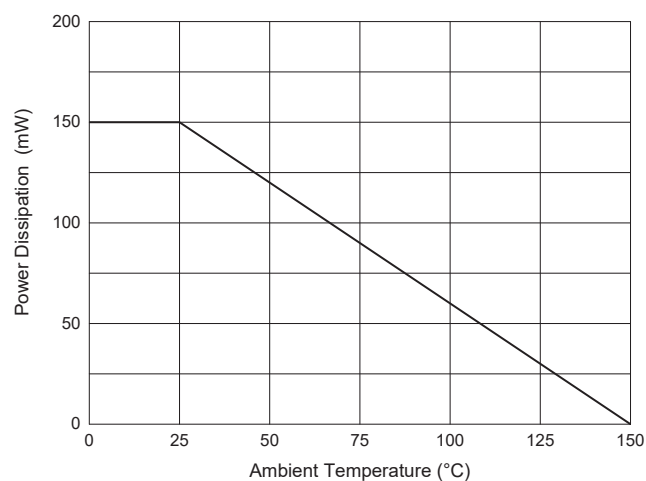


Fig. 5 - Power Derating Curve



## Ordering Information

| Device         | Packing              |
|----------------|----------------------|
| Part Number-TP | Tape&Reel:8Kpcs/Reel |

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