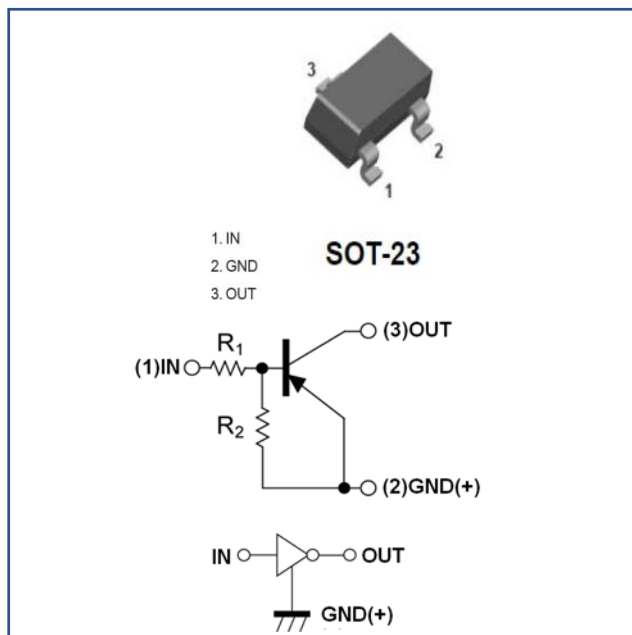


## PNP Digital Transistors (Built-in Resistors)



### Features

- Moisture sensitivity level 1
- Halogen free and RoHS compliant
- Surface mount package ideally suited for automatic Insertion

### Application

- Signal amplification
- Switching circuit

### Mechanical data

- **Package:** SOT-23
- **Terminals:** Tin plated leads, solderable per J-STD-002 and JESD22-B102

### ■ Maximum Ratings ( $T_a=25^{\circ}\text{C}$ Unless otherwise specified)

| Item                           | Symbol    | Unit               | Conditions | Value       |
|--------------------------------|-----------|--------------------|------------|-------------|
| Device marking code            |           |                    |            | 52          |
| Collector-base voltage         | $V_{CC}$  | V                  |            | -50         |
| Collector-emitter voltage      | $V_{IN}$  | V                  |            | -12 to +5   |
| Collector current              | $I_o$     | mA                 |            | -100        |
| Power dissipation              | $P_D$     | mW                 |            | 200         |
| Operation junction temperature | $T_J$     | $^{\circ}\text{C}$ |            | -55 to +150 |
| Storage temperature            | $T_{STG}$ | $^{\circ}\text{C}$ |            | -55 to +150 |



# DTA123YCA

RoHS  
COMPLIANT

## ■ Electrical Characteristics (T<sub>a</sub>=25°C Unless otherwise specified)

| Item                 | Symbol                         | Unit | Conditions                                           | Min  | Typ | Max  |
|----------------------|--------------------------------|------|------------------------------------------------------|------|-----|------|
| Input voltage        | V <sub>I(off)</sub>            | V    | V <sub>CC</sub> =-5V, I <sub>c</sub> =-100uA         | -0.3 |     |      |
|                      | V <sub>I(on)</sub>             | V    | V <sub>O</sub> =-0.3V, I <sub>c</sub> =-20mA         |      |     | -3   |
| Output voltage       | V <sub>O(on)</sub>             | V    | I <sub>o</sub> /I <sub>i</sub> =-10mA/-0.5 mA        |      |     | -0.3 |
| Input current        | I <sub>i</sub>                 | mA   | V <sub>i</sub> =5V                                   |      |     | -3.8 |
| Output current       | I <sub>O(off)</sub>            | uA   | V <sub>CC</sub> =-50V, V <sub>i</sub> =0             |      |     | -0.5 |
| DC current gain      | G <sub>I</sub>                 |      | V <sub>o</sub> =-5V, I <sub>o</sub> =-10mA           | 33   |     |      |
| Input resistance     | R <sub>1</sub>                 | kΩ   |                                                      | 1.54 | 2.2 | 2.86 |
| Resistance ratio     | R <sub>2</sub> /R <sub>1</sub> |      |                                                      | 3.6  | 4.5 | 5.5  |
| Transition frequency | f <sub>T</sub>                 | MHz  | V <sub>o</sub> =-10V, I <sub>o</sub> =-5mA, f=100MHz |      | 250 |      |

## ■ Thermal Characteristics

| Parameter                               | Symbol                           | Unit | Value |
|-----------------------------------------|----------------------------------|------|-------|
| Thermal resistance, junction-to-ambient | R <sub>θJ-A</sub> <sup>(1)</sup> | °C/W | 625   |
| Thermal resistance, junction-to-case    | R <sub>θJ-C</sub> <sup>(1)</sup> | °C/W | 500   |

### Note:

(1) Device mounted on PCB, single-sided copper, with standard footprint

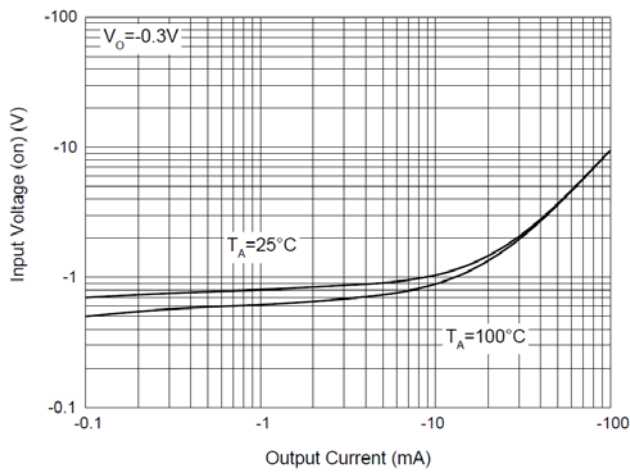
## ■ Ordering Information

| Preferred P/N | Packing code | Unit weight(g)    | Minimum package(pcs) | Inner box quantity(pcs) | Outer carton quantity(pcs) | Delivery mode |
|---------------|--------------|-------------------|----------------------|-------------------------|----------------------------|---------------|
| DTA123YCA     | F2           | Approximate 0.008 | 3000                 | 30000                   | 120000                     | 7" reel       |

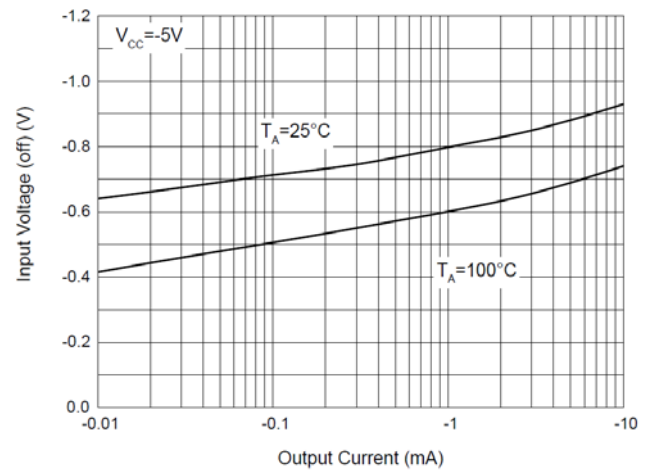


## ■ Characteristics

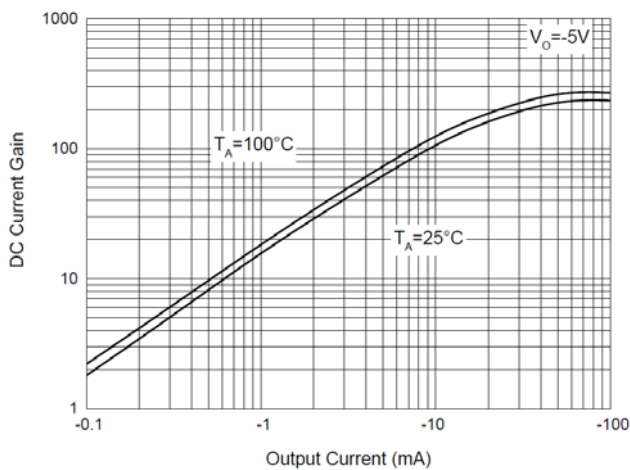
**Fig 1: Input Voltage (On) Characteristics**



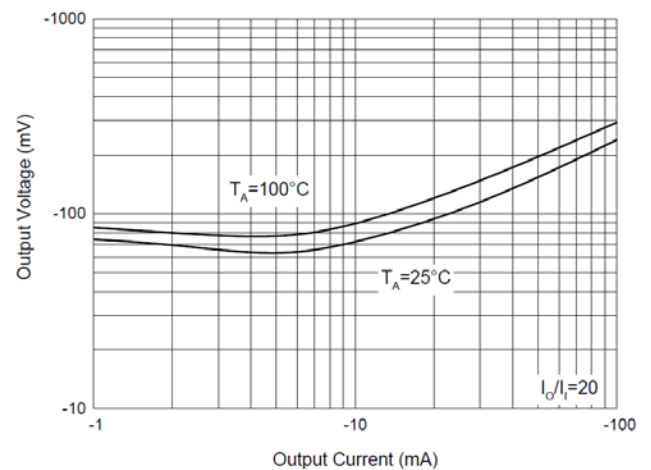
**Fig 2: Input Voltage (Off) Characteristic**



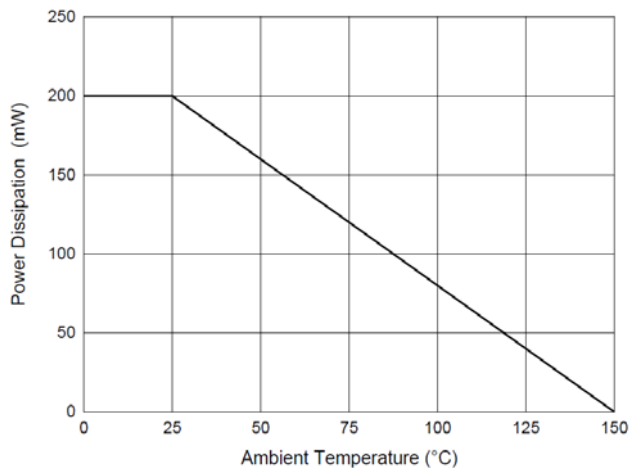
**Fig 3: DC Current Gain Characteristics**



**Fig 4: Output Voltage Characteristics**

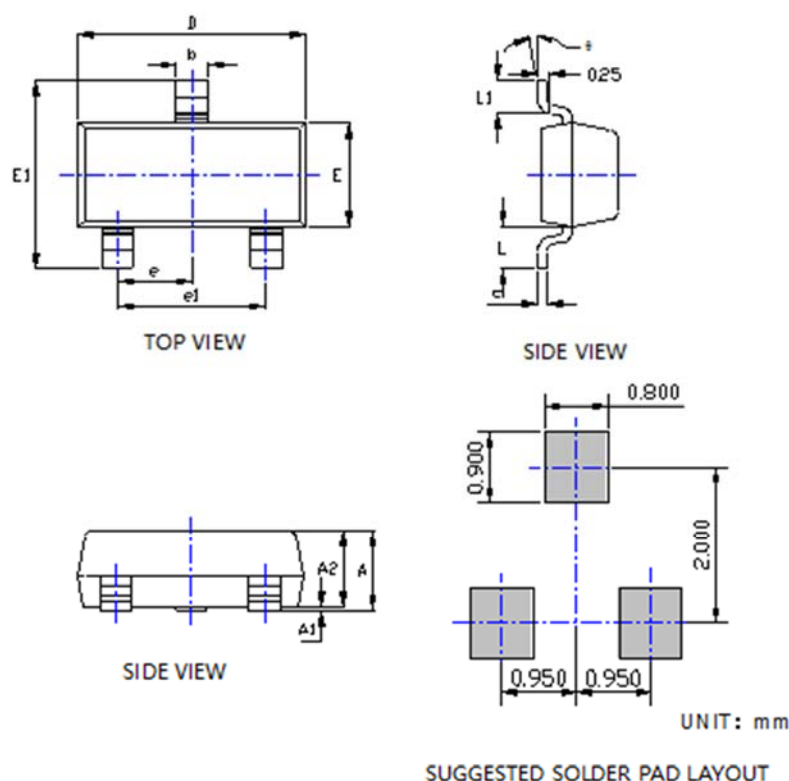


**Fig 5: P<sub>D</sub>-T<sub>a</sub> Curve**





## ■ Outline Dimensions



| SYMBOL | DIMENSIONS |  | INCHES   |       | Millimeter |       |
|--------|------------|--|----------|-------|------------|-------|
|        |            |  | MIN.     | MAX.  | MIN.       | MAX.  |
| A      |            |  | 0.035    | 0.045 | 0.900      | 1.150 |
| A1     |            |  | 0.000    | 0.004 | 0.000      | 0.100 |
| A2     |            |  | 0.035    | 0.041 | 0.900      | 1.050 |
| b      |            |  | 0.012    | 0.020 | 0.300      | 0.500 |
| c      |            |  | 0.004    | 0.008 | 0.100      | 0.200 |
| D      |            |  | 0.110    | 0.118 | 2.800      | 3.000 |
| E      |            |  | 0.047    | 0.055 | 1.200      | 1.400 |
| E1     |            |  | 0.089    | 0.100 | 2.250      | 2.550 |
| e      |            |  | 0.037TYP |       | 0.950TYP   |       |
| e1     |            |  | 0.071    | 0.079 | 1.800      | 2.000 |
| L      |            |  | 0.022REF |       | 0.550REF   |       |
| L1     |            |  | 0.012    | 0.020 | 0.300      | 0.500 |
| φ      |            |  | 0°       | 8°    | 0°         | 8°    |

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:

- 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]
- General tolerances:  $\pm 0.10\text{mm}$  unless otherwise specified.  
[通用公差为 $\pm 0.10\text{mm}$ ，除非另有说明]
- Dimensions and tolerances per ASME Y14.5M-2018.  
[尺寸和公差遵循 ASME Y14.5M-2018 标准]
- 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]
- 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]
- Dimensions D and E are 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]
- 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]
- ★It is the key size.  
[★ 标记为关键尺寸]



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