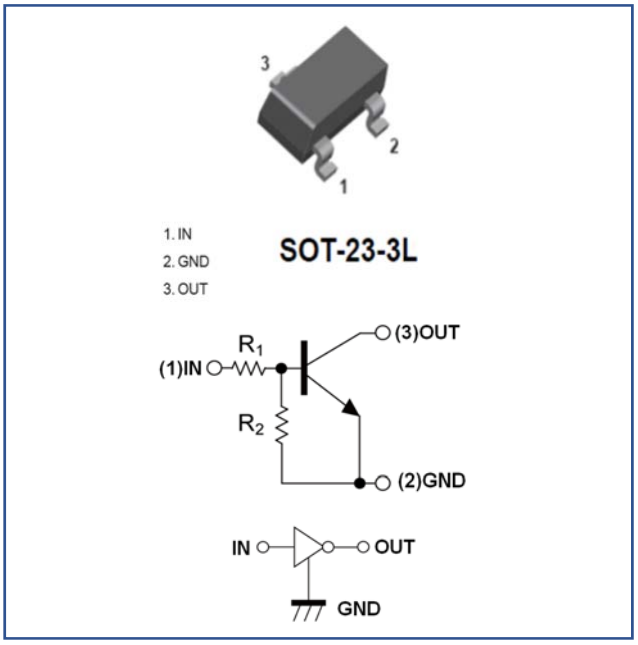
# NPN Digital Transistors (Built-in Resistors)




## Features

- Moisture sensitivity level 1
- General switching and amplification
- Surface mount package ideally suited for automatic Insertion

## Application

- Digital applications
- Switching loads

## Mechanical data

- **Package**: SOT-23-3L
- **Terminals**: Tin plated leads, solderable per J-STD-002 and JESD22-B102

■ **Maximum Ratings** ($T_a$=25℃ Unless otherwise specified)

| Item | Symbol | Unit | Conditions | Value |
|---|---|---|---|---|
| Device marking code | | | | 64 |
| Collector-base voltage | $V_{CC}$ | V | | 50 |
| Collector-emitter voltage | $V_{IN}$ | V | | -6 to +40 |
| Collector current | $I_O$ | mA | | 70 |
| Power dissipation | $P_D$ | mW | | 200 |
| Operation junction temperature | $T_J$ | ℃ | | -55 to +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 | 0.3 | | |
| | $VI_{(on)}$ | V | Vo=0.3V,Ic=1mA | | | 1.4 |
| Output voltage | $Vo_{(on)}$ | V | Io /Ii =5mA/0.25 mA | | | 0.3 |
| Input current | $I_I$ | mA | $V_I$=5V | | | 0.88 |
| Output current | $I_{O(off)}$ | uA | $V_{CC}$=50V, $V_i$=0 | | | 0.5 |
| DC current gain | GI | | $V_o$=5V, $I_o$ =20mA | 68 | | |
| Input resistance | $R_1$ | kΩ | | 7 | 10 | 13 |
| Resistance ratio | $R_2/R_1$ | | | 3.7 | 4.7 | 5.7 |
| Transition frequency | fT | MHz | $V_o$=10V,$I_O$=5mA,f=100MHz | | 250 | |

## ■ Thermal Characteristics

| Parameter | Symbol | Unit | Value |
|---|---|---|---|
| Thermal resistance, junction-to-ambient | $R_{\theta J\text{-}A}$(1) | ℃/W | 625 |
| Thermal resistance, junction-to-case | $R_{\theta J\text{-}C}$(1) | ℃/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 |
|---|---|---|---|---|---|---|
| DTC114YKA | F2 | Approximate 0.014 | 3000 | 30000 | 120000 | 7” reel |

## ■Characteristics

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

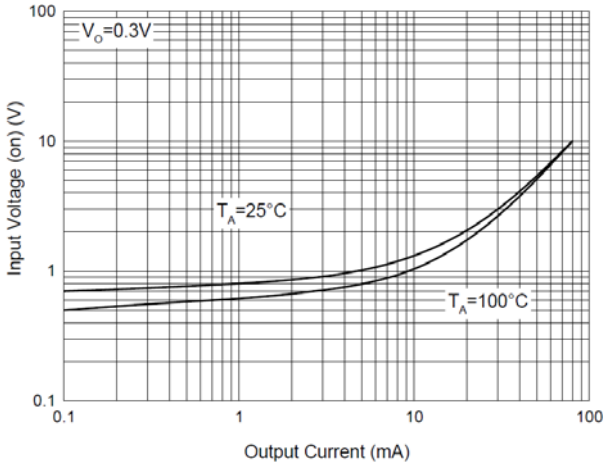



**Fig 2：Input Current (Off) Characteristic**

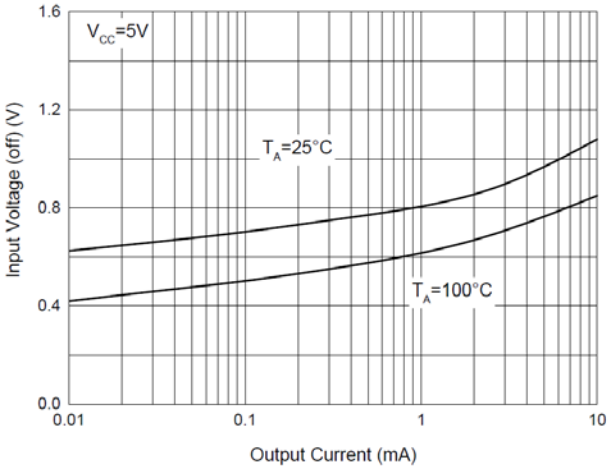



**Fig 3：DC Current Gain Characteristics**

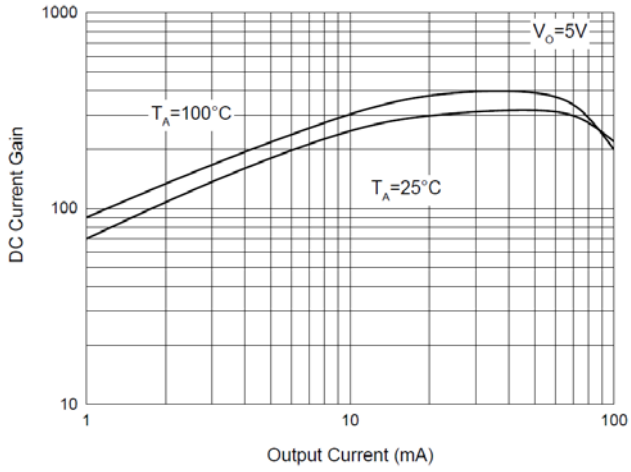



**Fig 4：Output Voltage Characteristics**

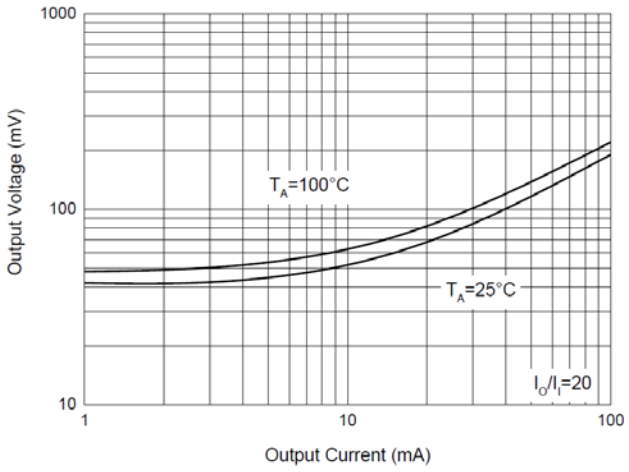
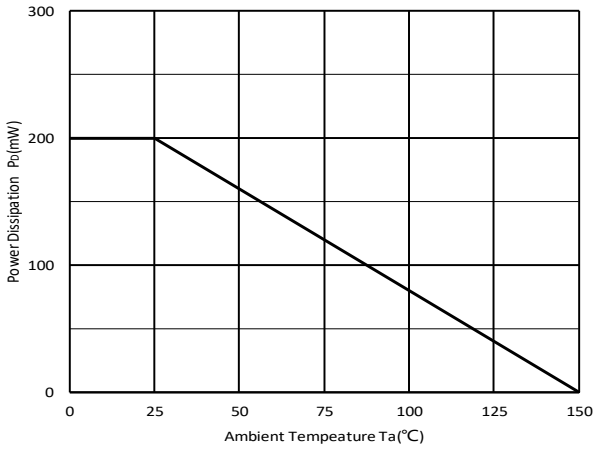
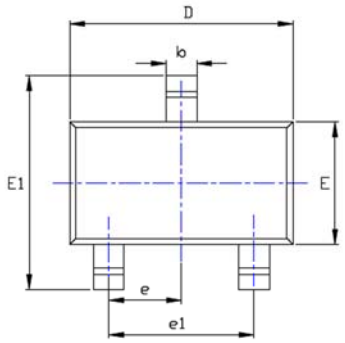


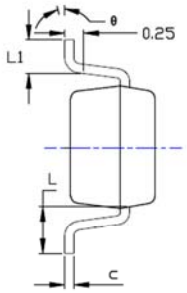

**Fig 5：$P_D$-Ta Curve**



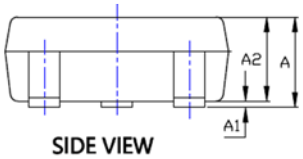
## ■ Outline Dimensions



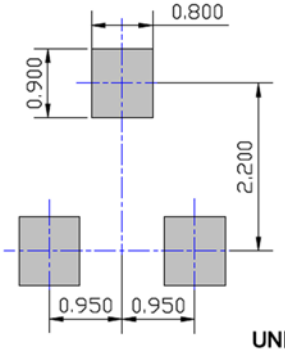

TOP VIEW




SIDE VIEW




SIDE VIEW




UNIT：mm

SUGGESTED SOLDER PAD LAYOUT

| DIMENSIONS | | | | |
|---|---|---|---|---|
| SYMBOL | INCHES | | Millimeter | |
| | MIN. | MAX. | MIN. | MAX. |
| A | 0.041 | 0.049 | 1.050 | 1.250 |
| A1 | 0.000 | 0.008 | 0.000 | 0.200 |
| A2 | 0.041 | 0.045 | 1.050 | 1.150 |
| b | 0.012 | 0.020 | 0.300 | 0.500 |
| c | 0.004 | 0.008 | 0.100 | 0.200 |
| D | 0.111 | 0.119 | 2.820 | 3.020 |
| E | 0.059 | 0.067 | 1.500 | 1.700 |
| E1 | 0.104 | 0.116 | 2.650 | 2.950 |
| e | 0.037TYP | | 0.950TYP | |
| e1 | 0.071 | 0.079 | 1.800 | 2.000 |
| L | 0.024REF | | 0.600REF | |
| L1 | 0.012 | 0.024 | 0.300 | 0.600 |
| ø | 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:
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 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]
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]

## Notice

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