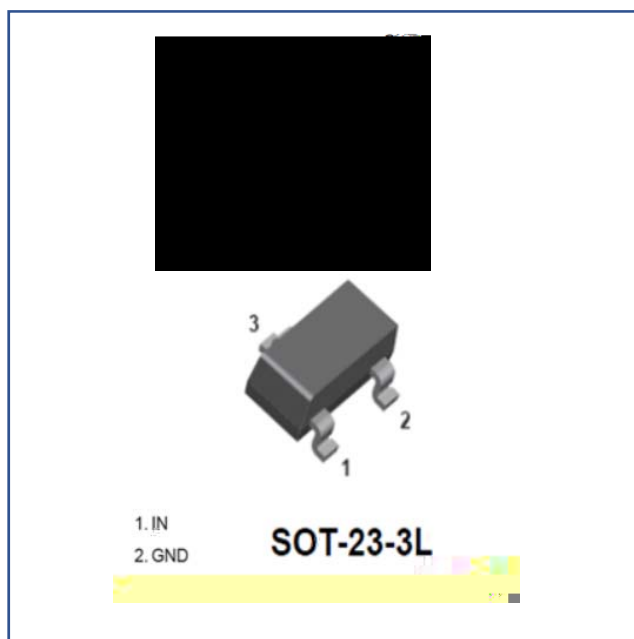


## Digital Transistors (Built-in Resistors)



### 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<sub>a</sub>=25 Unless otherwise specified)

| Item                           | Symbol           | Unit | Conditions | Value       |
|--------------------------------|------------------|------|------------|-------------|
| Device marking code            |                  |      |            | 64          |
| Collector-base voltage         | V <sub>CC</sub>  | V    |            | 50          |
| Collector-emitter voltage      | V <sub>IN</sub>  | V    |            | -6 to +40   |
| Collector current              | I <sub>o</sub>   | mA   |            | 70          |
| Power dissipation              | P <sub>D</sub>   | mW   |            | 200         |
| Operation junction temperature | T <sub>J</sub>   |      |            | -55 to +150 |
| Storage temperature            | T <sub>STG</sub> |      |            | -55 to +150 |



## Electrical Characteristics (T<sub>a</sub>=25 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> =1mA          |     |     | 1.4  |
| Output voltage       | V <sub>O(on)</sub>             | V             | I <sub>O</sub> / I <sub>I</sub> = 5mA/0.25 mA      |     |     | 0.3  |
| Input current        | I <sub>I</sub>                 | <del>nA</del> | V <sub>I</sub> =5V                                 |     |     | 0.88 |
| 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> =20mA           | 68  |     |      |
| Input resistance     | R <sub>1</sub>                 | k             |  | 7   | 10  | 13   |
| Resistance ratio     | R <sub>2</sub> /R <sub>1</sub> |               |  | 3.7 | 4.7 | 5.7  |
| Transition frequency | f <sub>T</sub>                 | MHz           | V <sub>O</sub> =10V, I <sub>O</sub> =5mA, f=100MHz |     | 250 |      |

## Thermal Characteristics

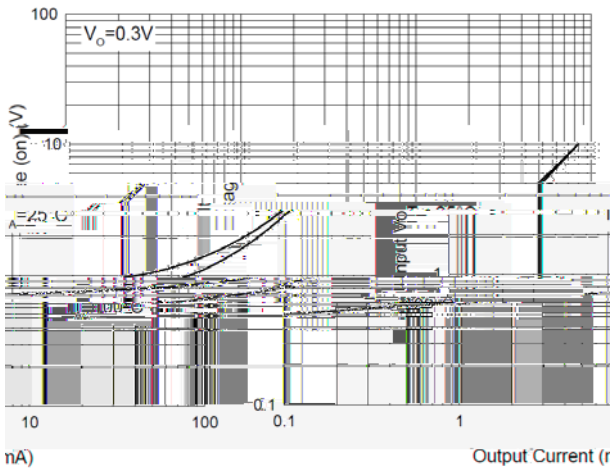
| Parameter                               | Symbol                          | Unit | Value |
|---|---------------------------------|------|-------|
| Thermal resistance, junction-to-ambient | R <sub>J-A</sub> <sup>(1)</sup> | /W   | 625   |
| Thermal resistance, junction-to-case    | R <sub>J-C</sub>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

Note:

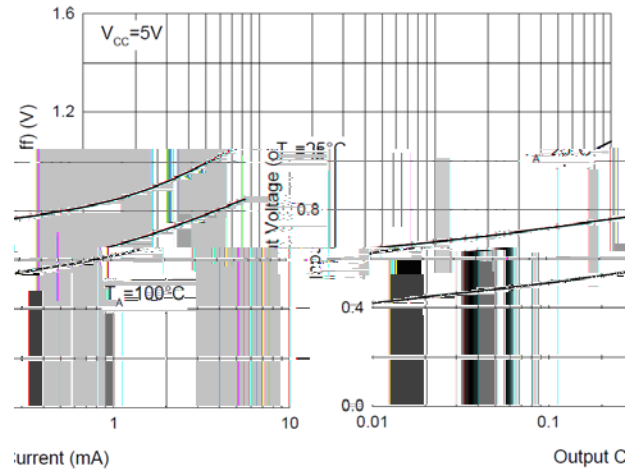
- 1 Device mounted on PCB single-sided copper with standard footprint.

## Characteristics

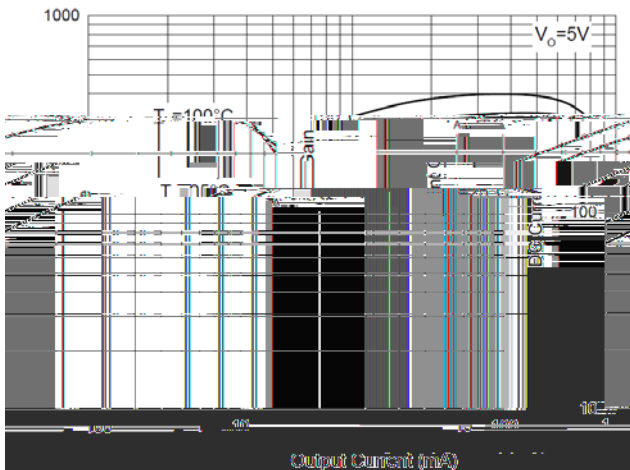
**Fig 1 Input Voltage (On) Characteristics**



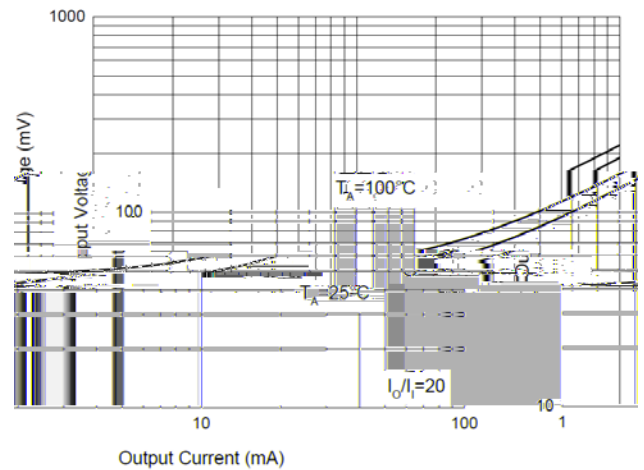
**Fig 2 Input Current (Off) Characteristic**



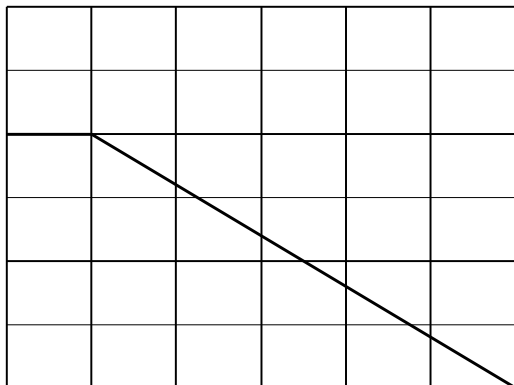
**Fig 3 DC Current Gain Characteristics**



**Fig 4 Output Voltage Characteristics**



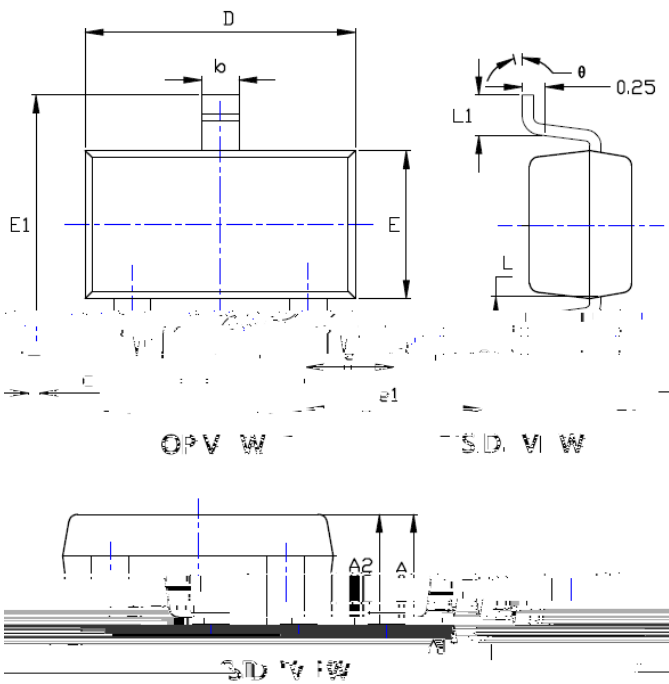
**Fig 5 P<sub>D</sub>-T<sub>a</sub> Curve**



## Ordering Information

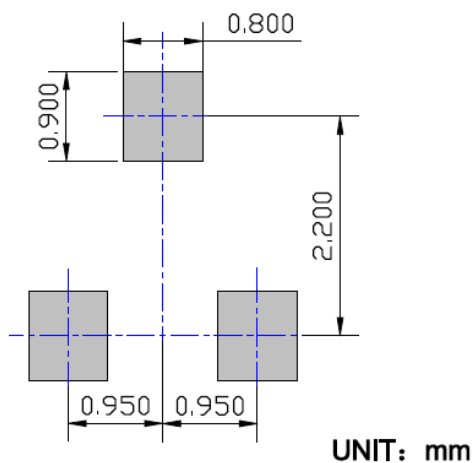
| Preferred P/N | Packing code | Unit weight(g)    | Minimum package(pcs) | Inner box quantity(pcs) | Outer carton quantity(pcs) | Delivery mode |
|---------------|--------------|-------------------|----------------------|-------------------------|----------------------------|---------------|
| DTC114YKA     | F2           | Approximate 0.014 | 3000                 | 30000                   | 120000                     | 7" reel       |

## Outline Dimensions



| SYMBOL   | DIMENSIONS |          |            |       |       |
|----------|------------|----------|------------|-------|-------|
|          | 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 |       |
| 2        | 0.067      | 1.500    | 1.700      | 0.050 |       |
| 1        | 0.116      | 2.650    | 2.950      | 1     | 0.104 |
| 0.037 YP |            | 0.950 YP |            | e     |       |
| 1        | 0.079      | 1.800    | 2.000      | e1    | 0.070 |
| 0.024R1  |            | 0.600R1  |            | l     |       |
| 0.024    | 0.300      | 0.600    | 1          | 0.012 |       |
| 8°       | 0°         | 8°       | φ          | 0°    |       |

## Suggested Pad Layout





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