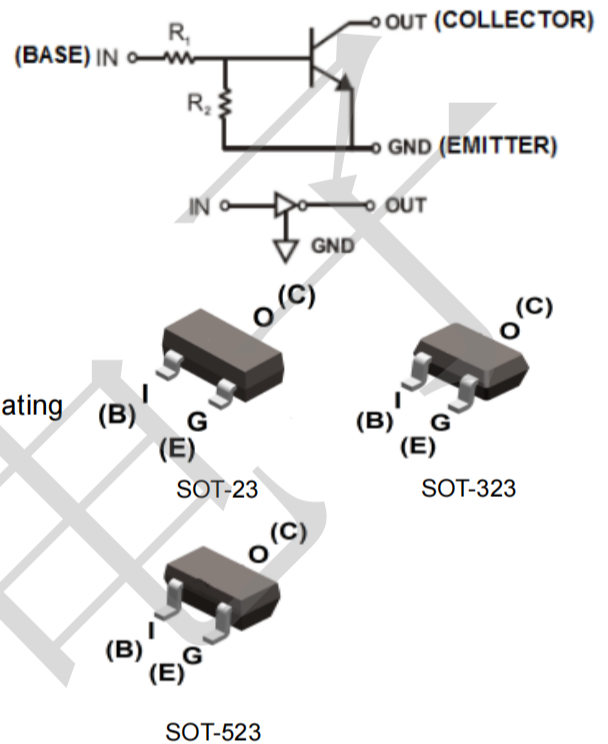


## Features

- Epitaxial planar die construction
- Built-in biasing resistors ( $R_1$ : 10k $\Omega$ ,  $R_2$ : 47k $\Omega$ )
- Also available in lead free version
- RoHS compliant with Halogen-free

## Mechanical Data

- Case: SOT-23, SOT-323, SOT-523,
- Molding Compound: UL Flammability Classification Rating 94V-0
- Terminals: Matte tin-plated leads; solderability-per MIL-STD-202, Method 208



## Ordering Information

| Part Number | Package | Shipping Quantity      | Marking Code |
|-------------|---------|------------------------|--------------|
| DTC114YCA   | SOT-23  | 3000 pcs / Tape & Reel | 64           |
| DTC114YUA   | SOT-323 | 3000 pcs / Tape & Reel | 64           |
| DTC114YE    | SOT-523 | 3000 pcs / Tape & Reel | 64           |

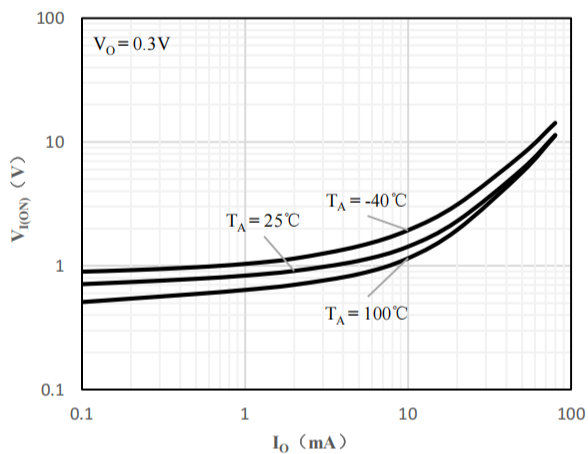
**Maximum Ratings** (@  $T_A = 25^\circ\text{C}$  unless otherwise specified)

| Parameter                  | Symbol              | Value      |         |         | Unit             |
|----------------------------|---------------------|------------|---------|---------|------------------|
|                            |                     | SOT-23     | SOT-323 | SOT-523 |                  |
| Supply Voltage             | $V_{CC}$            | 50         |         |         | V                |
| Input Voltage              | $V_I$               | +6 to -40  |         |         | V                |
| Output Current             | $I_O$               | 70         |         |         | mA               |
| Collector Current          | $I_{C(\text{Max})}$ | 100        |         |         | mA               |
| Power Dissipation          | $P_D$               | 200        | 200     | 150     | mW               |
| Junction Temperature Range | $T_J$               | -55 ~ +150 |         |         | $^\circ\text{C}$ |
| Storage Temperature Range  | $T_{STG}$           | -55 ~ +150 |         |         | $^\circ\text{C}$ |

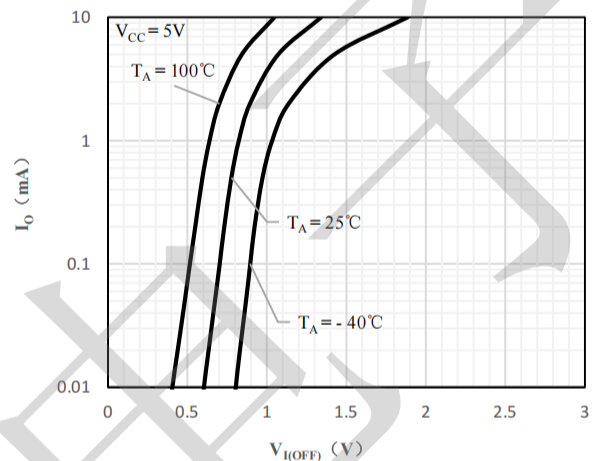
**Electrical Characteristics** (@  $T_A = 25^\circ\text{C}$  unless otherwise specified)

| Parameter              | Symbol              | Test Condition                                                 | Min. | Typ. | Max. | Unit          |
|------------------------|---------------------|----------------------------------------------------------------|------|------|------|---------------|
| Input Voltage          | $V_{I(\text{OFF})}$ | $V_{CC} = 5\text{V}, I_O = 100\mu\text{A}$                     | 0.3  | -    | -    | V             |
| Input Voltage          | $V_{I(\text{ON})}$  | $V_O = 0.3\text{V}, I_O = 1\text{mA}$                          | -    | -    | 1.4  | V             |
| Output Voltage         | $V_{O(\text{on})}$  | $I_O = 5\text{mA}, I_I = 0.25\text{mA}$                        | -    | -    | 0.3  | V             |
| Input Current          | $I_I$               | $V_I = 5\text{V}$                                              | -    | -    | 0.88 | mA            |
| Output Current         | $I_{O(\text{off})}$ | $V_{CC} = 50\text{V}, V_I = 0\text{V}$                         | -    | -    | 0.5  | $\mu\text{A}$ |
| DC Current Gain        | $G_I$               | $V_O = 5\text{V}, I_O = 5\text{mA}$                            | 68   | -    | -    | -             |
| Input Resistor         | $R_I$               |                                                                | 7    | 10   | 13   | k $\Omega$    |
| Resistance ratio       | $R_2/R_1$           |                                                                | 3.7  | 4.7  | 5.7  | -             |
| Gain-Bandwidth Product | $f_T$               | $V_{CE} = 10\text{V}, I_E = 5\text{mA}$<br>$f = 100\text{MHz}$ | -    | 250  | -    | MHz           |

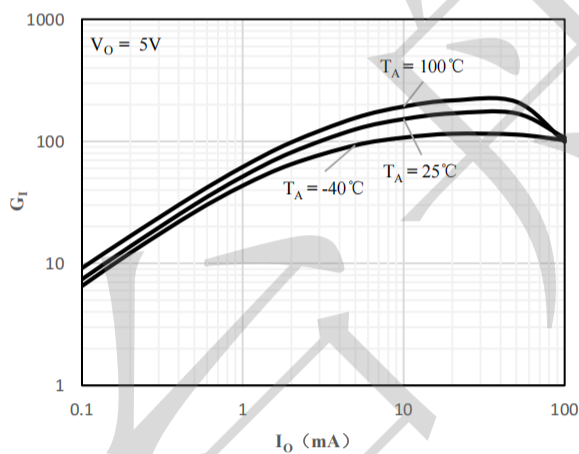
**Ratings and Characteristic Curves (@  $T_A = 25^\circ\text{C}$  unless otherwise specified)**



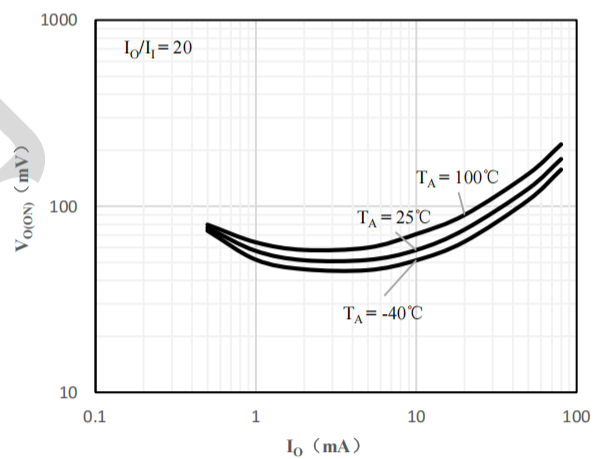
**Fig 1 Input Voltage vs Output Current**



**Fig 2 Output Current vs Input Voltage**



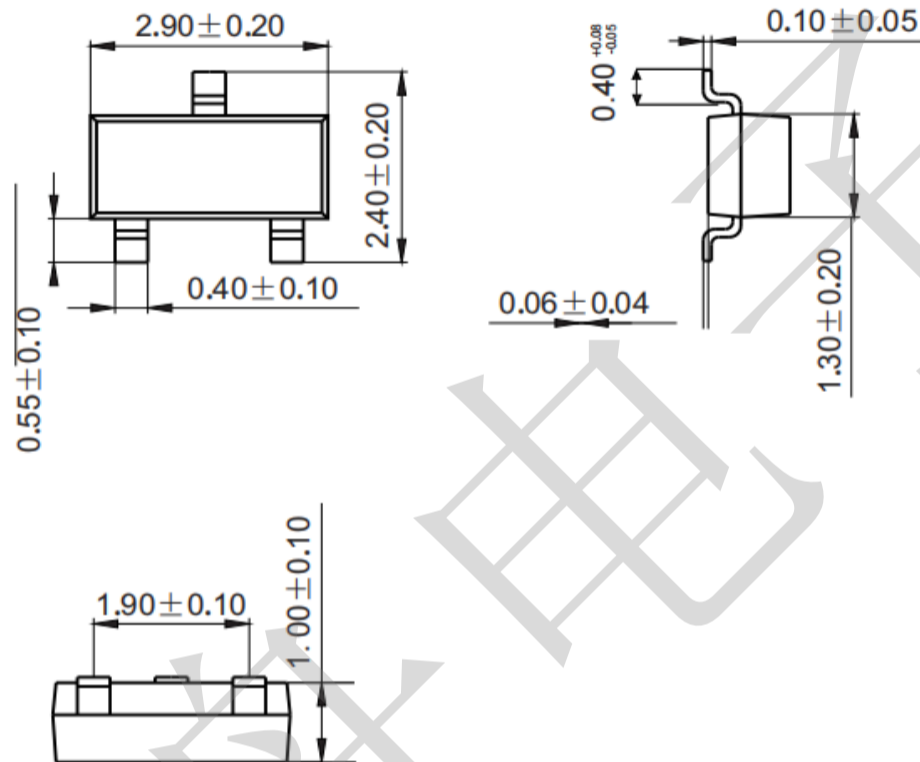
**Fig 3 DC Current Gain vs Output Current**



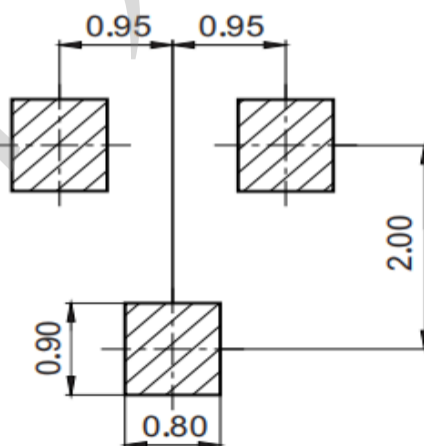
**Fig 4 Output Voltage vs Output Current**

## Package Outline Dimensions (unit:mm)

SOT-23

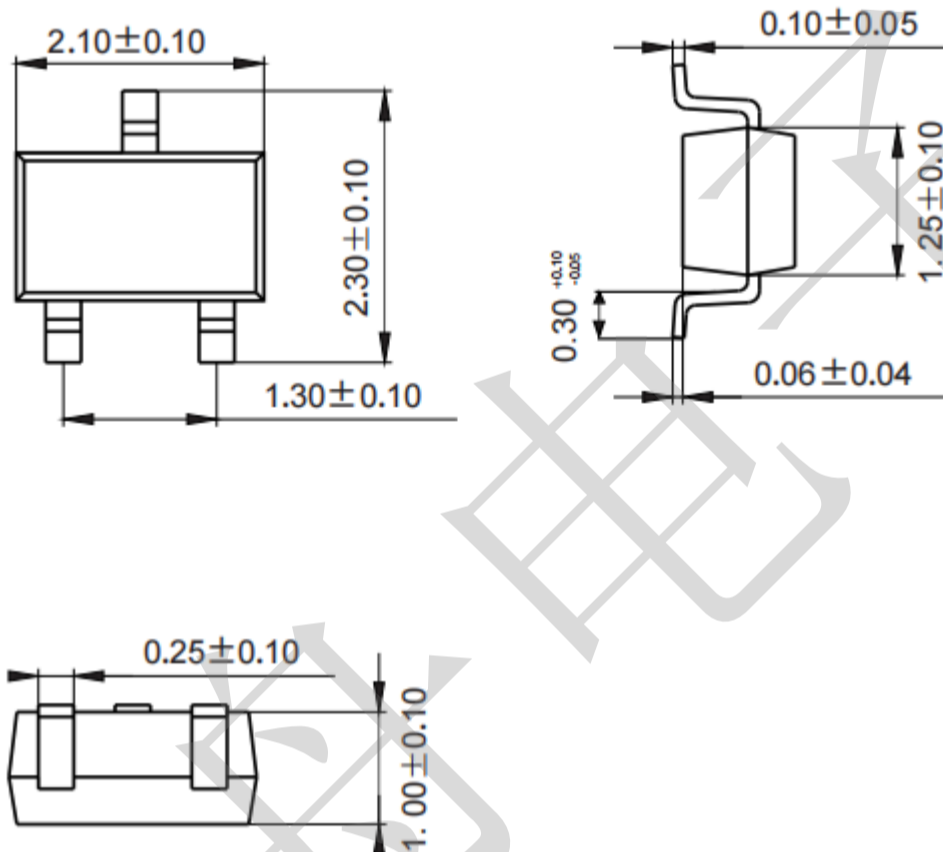


## Mounting Pad Layout (unit: mm)

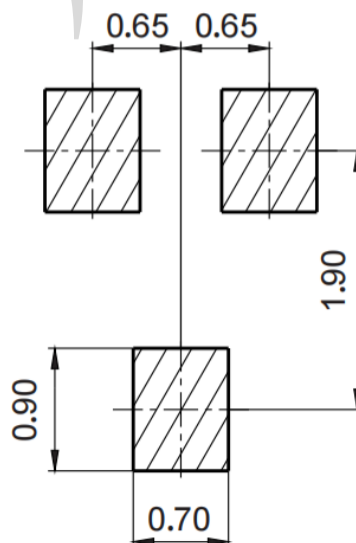


## Package Outline Dimensions (unit:mm)

SOT-323

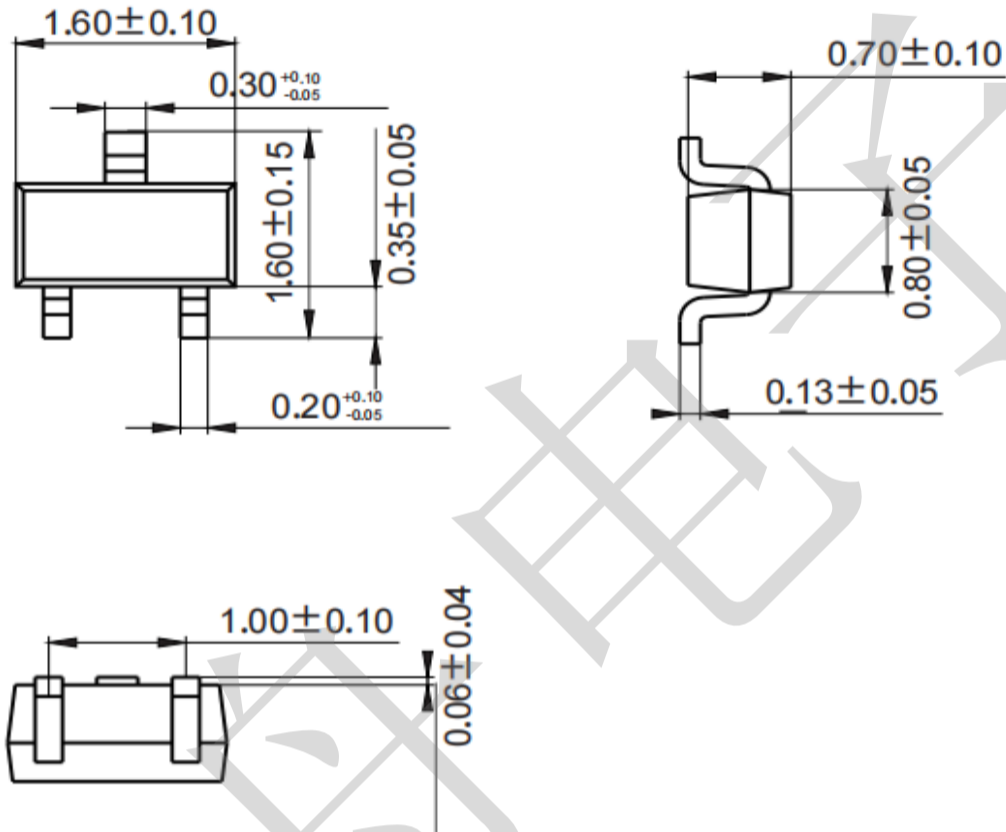


## Mounting Pad Layout (unit: mm)



**Package Outline Dimensions** (unit:mm)

SOT-523



**Mounting Pad Layout** (unit: mm)

