



**CHENMKO ENTERPRISE CO.,LTD**

**CHDTC123YUPT**

*Lead free devices*

**SURFACE MOUNT  
NPN Digital Silicon Transistor**

VOLTAGE 50 Volts CURRENT 100 mAmpere

**APPLICATION**

\* Switching circuit, Inverter, Interface circuit, Driver circuit.

**FEATURE**

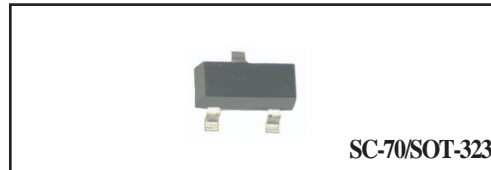
- \* Small surface mounting type. (SC-70/SOT-323)
- \* High current gain.
- \* Suitable for high packing density.
- \* Low collector-emitter saturation.
- \* High saturation current capability.
- \* Internal isolated NPN transistors in one package.
- \* Built in bias resistor(R1=2.2kΩ, Typ. )

**CONSTRUCTION**

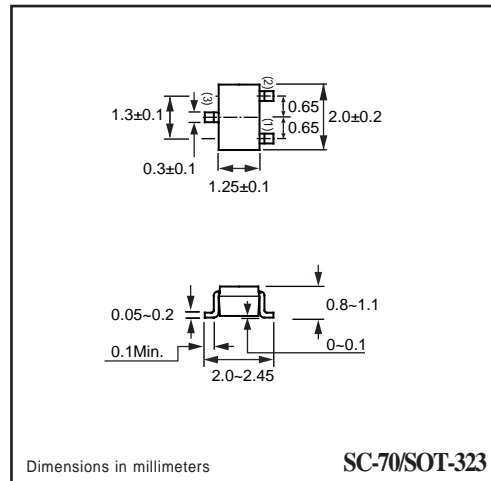
\* One NPN transistors and bias of thin-film resistors in one package.

**MARKING**

YUA



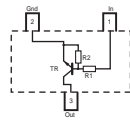
**SC-70/SOT-323**



Dimensions in millimeters

**SC-70/SOT-323**

**CIRCUIT**



**LIMITING VALUES**

In accordance with the Absolute Maximum Rating System (IEC 60134).

| SYMBOL               | PARAMETER               | CONDITIONS                       | MIN. | MAX. | UNIT |
|----------------------|-------------------------|----------------------------------|------|------|------|
| V <sub>CC</sub>      | Supply voltage          |                                  | -    | 50   | V    |
| V <sub>IN</sub>      | Input voltage           |                                  | -5   | +12  | V    |
| I <sub>O</sub>       | DC Output current       |                                  | -    | 100  | mA   |
| I <sub>C(Max.)</sub> |                         |                                  | -    | 100  |      |
| P <sub>TOT</sub>     | Total power dissipation | T <sub>amb</sub> ≤ 25 °C, Note 1 | -    | 200  | mW   |
| T <sub>STG</sub>     | Storage temperature     |                                  | -55  | +150 | °C   |
| T <sub>J</sub>       | Junction temperature    |                                  | -    | 150  | °C   |
| R <sub>θJ-S</sub>    | Thermal resistance      | junction - soldering point       | -    | 140  | °C/W |

**Note**

1. Transistor mounted on an FR4 printed-circuit board.

## RATING CHARACTERISTIC ( CHDTC123YUPT )

### CHARACTERISTICS

$T_{amb} = 25\text{ }^{\circ}\text{C}$  unless otherwise specified.

| SYMBOL       | PARAMETER            | CONDITIONS  | MIN. | TYP. | MAX. | UNIT             |
|--------------|----------------------|---|------|------|------|------------------|
| $V_{I(off)}$ | Input off voltage    | $I_o=100\mu\text{A}; V_{CC}=5.0\text{V}$                    | 0.3  | –    | –    | V                |
| $V_{I(on)}$  | Input on voltage     | $I_o=20\text{mA}; V_o=0.3\text{V}$                          | –    | –    | 3.0  | V                |
| $V_{O(on)}$  | Output voltage       | $I_o=10\text{mA}; I_i=0.5\text{mA}$                         | –    | 0.1  | 0.3  | V                |
| $I_i$        | Input current        | $V_i=5\text{V}$   | –    | –    | 3.8  | mA               |
| $I_{O(off)}$ | Output current       | $V_i=0\text{V}; V_{CC}=50\text{V}$                          | –    | –    | 0.5  | $\mu\text{A}$    |
| $h_{FE}$     | DC current gain      | $I_o=10\text{mA}; V_o=5.0\text{V}$                          | 33   | –    | –    |                  |
| $R_1$        | Input resistor       |   | 1.54 | 2.2  | 2.86 | $\text{K}\Omega$ |
| $R_2/R_1$    | Resistor ratio       |   | 3.6  | 4.5  | 5.5  |                  |
| $f_T$        | Transition frequency | $I_E=-5\text{mA}, V_{CE}=10.0\text{V}$<br>$f=100\text{MHz}$ | –    | 250  | –    | MHz              |

### Note

1. Pulse test:  $t_p \leq 300\mu\text{s}; \delta \leq 0.02$ .

## RATING CHARACTERISTIC CURVES ( CHDTC123YUPT )

### Typical Electrical Characteristics

Fig.1 Input voltage vs. output current (ON characteristics)

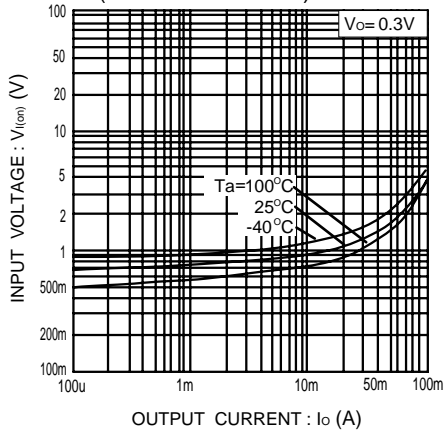


Fig.2 Output current vs. input voltage (OFF characteristics)

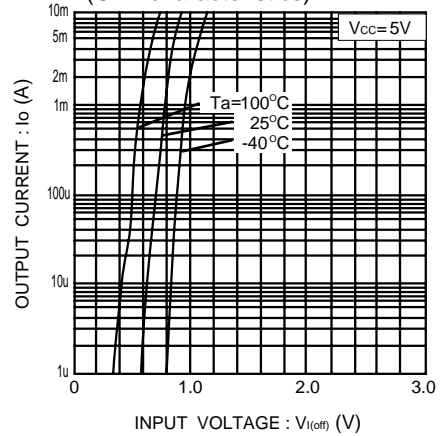


Fig.3 DC current gain vs. output current

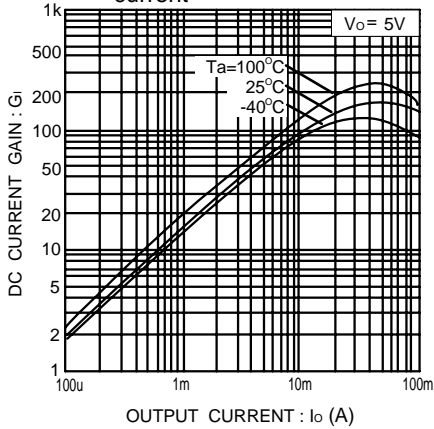


Fig.4 Output voltage vs. output current

