



**CHENMKO ENTERPRISE CO.,LTD**

**CHDTC643TKPT**

**SURFACE MOUNT  
NPN Digital Silicon Transistor**

VOLTAGE 20 Volts CURRENT 600 mAmpere

*Lead free devices*

**APPLICATION**

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

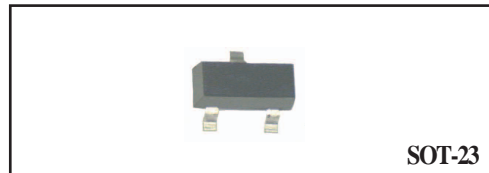
**FEATURE**

- \* Small surface mounting type. (SOT-23)
- \* In addition to the features of regular digital transistor.  
V<sub>CE(sat)</sub>=40mV at I<sub>C</sub>/I<sub>B</sub>=50mA/2.5mA, makes these transistors ideal for muting circuits.
- \* These transistors can be used at high current levels, I<sub>C</sub>=600mA
- \* Internal isolated NPN transistors in one package.
- \* Built in single resistor (R<sub>1</sub>=4.7kΩ, Typ. )

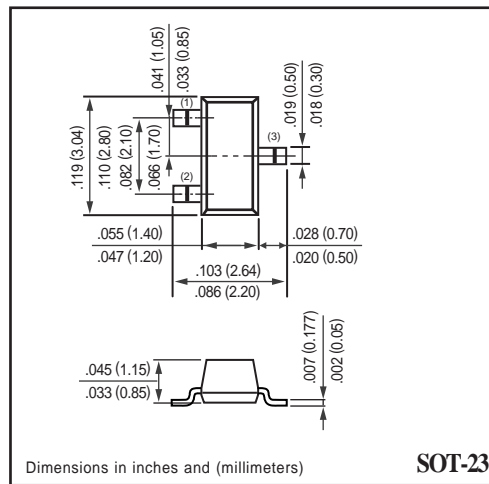
**CONSTRUCTION**

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

**MARKING**

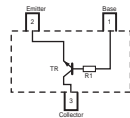


**SOT-23**



**SOT-23**

**CIRCUIT**



**LIMITING VALUES**

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

| SYMBOL               | PARAMETER                 | CONDITIONS                       | VALUE    | UNIT |
|----------------------|---------------------------|----------------------------------|----------|------|
| V <sub>CBO</sub>     | Collector-Base voltage    |                                  | 20       | V    |
| V <sub>CEO</sub>     | Collector-Emitter voltage |                                  | 20       | V    |
| V <sub>EBO</sub>     | Emitter-Base voltage      |                                  | 12       | V    |
| I <sub>C(Max.)</sub> | Collector current         |                                  | 600      | mA   |
| P <sub>D</sub>       | 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      |                                  | -55 +150 |      |

**Note**

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

## RATING CHARACTERISTIC ( CHDTC643TKPT )

### CHARACTERISTICS

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

| SYMBOL        | PARAMETER                            | CONDITIONS   | MIN. | TYP. | MAX. | UNIT             |
|---------------|--------------------------------------|--|------|------|------|------------------|
| BVCBO         | Collector-base breakdown voltage     | $I_C=50\mu\text{A}$  | 20   | –    | –    | V                |
| BVCEO         | Collector-emitter breakdown voltage  | $I_C=1.0\text{mA}$   | 20   | –    | –    | V                |
| BVEBO         | Emitter-base breakdown voltage       | $I_E=50\mu\text{A}$  | 12   | –    | –    | V                |
| ICBO          | Collector cutoff current             | $V_{CB}=20\text{V}$  | –    | –    | 0.5  | $\mu\text{A}$    |
| IEBO          | Emitter cutoff current               | $V_{EB}=12\text{V}$  | –    | –    | 0.5  | $\mu\text{A}$    |
| $V_{CE(sat)}$ | Collector-emitter saturation voltage | $I_C/I_B=50\text{mA}/2.5\text{mA}$                           | –    | 40   | 150  | mV               |
| $h_{FE}$      | DC current gain                      | $I_C=50\text{mA}; V_{CE}=5.0\text{V}$                        | 820  | –    | 2700 |                  |
| $R_1$         | Input resistor                       |  | 3.29 | 4.7  | 6.11 | $\text{K}\Omega$ |
| $f_T$         | Transition frequency                 | $I_E=-50\text{mA}, V_{CE}=10.0\text{V}$<br>$f=100\text{MHz}$ | –    | 150  | –    | MHz              |
| $R_{ON}$      | Output "ON" resistance               | $V_I=5\text{V}, R_L=1\text{K}\Omega, f=1\text{KHz}$          | –    | 0.55 | –    | $\Omega$         |

### Note

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

## RATING CHARACTERISTIC CURVES ( CHDTC643TKPT )

### Typical Electrical Characteristics

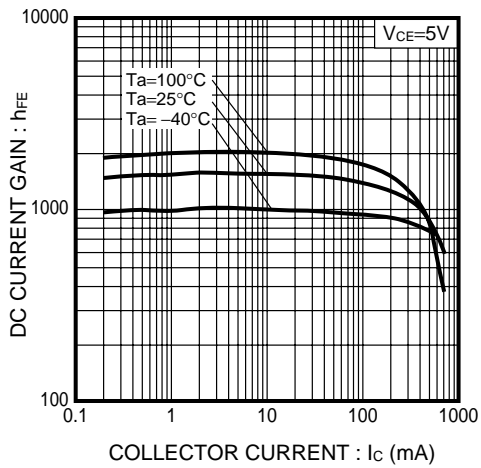


Fig.1 DC Current Gain vs. Collector Current

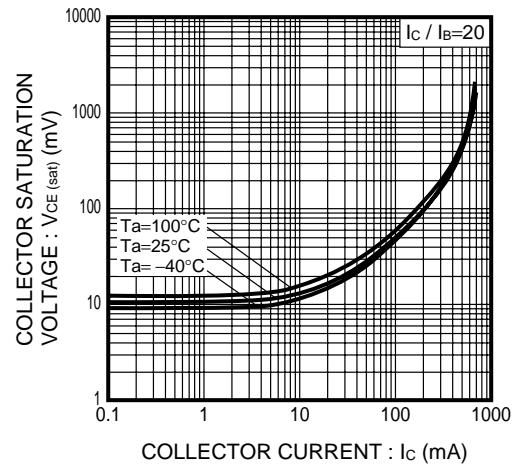


Fig.2 Collector-Emitter Saturation Voltage vs. Collector Current

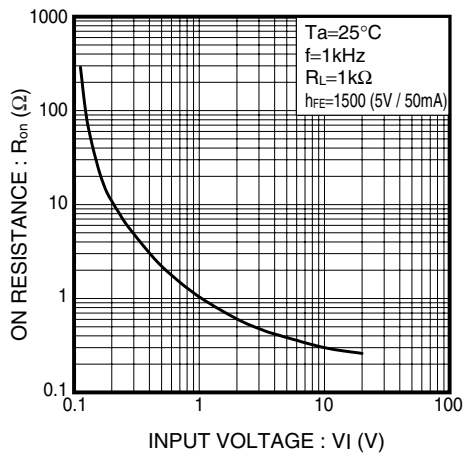


Fig.3 "ON" resistance vs. Input Voltage