



CHENMKO ENTERPRISE CO.,LTD

Halogens free devices

**SURFACE MOUNT
NPN Switching Transistor**

VOLTAGE 40 Volts CURRENT 0.6 Ampere

CHT4401WGP

APPLICATION

- * Telephony and professional communication equipment.
- * Other switching applications.

FEATURE

- * Small surface mounting type. (SC-70/SOT-323)
- * Low current (Max.=600mA).
- * Suitable for high packing density.
- * Low voltage (Max.=40V) .
- * High saturation current capability.
- * Voltage controlled small signal switch.

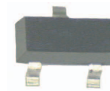
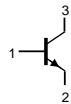
CONSTRUCTION

- * NPN Switching Transistor

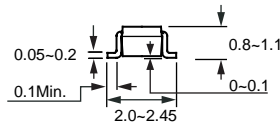
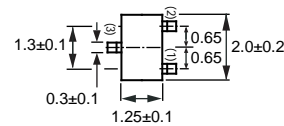
MARKING

- * UA

CIRCUIT



SC-70/SOT-323



Dimensions in millimeters

SC-70/SOT-323

LIMITING VALUES

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

| SYMBOL | PARAMETER | CONDITIONS | MIN. | MAX. | UNIT |
|------------------|-------------------------------|----------------------------------|------|------|------|
| V _{CBO} | collector-base voltage | open emitter | — | 60 | V |
| V _{CEO} | collector-emitter voltage | open base | — | 40 | V |
| V _{EBO} | emitter-base voltage | open collector | — | 6 | V |
| I _C | collector current DC | | — | 600 | mA |
| P _{tot} | total power dissipation | T _{amb} ≤ 25 °C; note 1 | — | 300 | mW |
| T _{stg} | storage temperature | | -55 | +150 | °C |
| T _j | junction temperature | | — | 150 | °C |
| T _{amb} | operating ambient temperature | | -55 | +150 | °C |

Note

2004-11

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

RATING CHARACTERISTIC CURVES (CHT4401WGP)

THERMAL CHARACTERISTICS

| SYMBOL | PARAMETER | CONDITIONS | VALUE | UNIT |
|---------------|---|------------|-------|------|
| $R_{th\ j-a}$ | thermal resistance from junction to ambient | note 1 | 200 | °C/W |

Note

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

CHARACTERISTICS

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

| SYMBOL | PARAMETER | CONDITIONS | MIN. | MAX. | UNIT |
|-------------|--------------------------------------|--|-----------------------------|-------------------------|------|
| I_{CBO} | collector cut-off current | $I_E = 0; V_{CB} = 60\text{ V}$ | – | 50 | nA |
| I_{EBO} | emitter cut-off current | $I_C = 0; V_{EB} = 6\text{ V}$ | – | 50 | nA |
| h_{FE} | DC current gain | $V_{CE} = 1\text{ V}$; note 1 $I_C = 0.1\text{ mA}$ $I_C = 1\text{ mA}$ $I_C = 10\text{ mA}$ $I_C = 150\text{ mA}$ $V_{CE} = 2\text{ V}$; note 2 $I_C = 500\text{ mA}$ | 20 40 80 100 40 | – – – 300 – | |
| V_{CEsat} | collector-emitter saturation voltage | $I_C = 150\text{ mA}; I_B = 15\text{ mA}$ | – | 400 | mV |
| | | $I_C = 500\text{ mA}; I_B = 50\text{ mA}$ | – | 750 | mV |
| V_{BEsat} | base-emitter saturation voltage | $I_C = 150\text{ mA}; I_B = 15\text{ mA}$ | 750 | 950 | mV |
| | | $I_C = 500\text{ mA}; I_B = 50\text{ mA}$ | – | 1200 | mV |
| C_c | collector capacitance | $I_E = I_E = 0; V_{CB} = 5\text{ V}; f = 1\text{ 4 0 K Hz}$ | – | 6.5 | pF |
| C_e | emitter capacitance | $I_C = I_C = 0; V_{BE} = 500\text{ mV}; f = 140\text{ KHz}$ | – | 30 | pF |
| f_T | transition frequency | $I_C = 20\text{ mA}; V_{CE} = 10\text{ V}; f = 100\text{ MHz}$ | 250 | – | MHz |

Switching times (between 10% and 90% levels);

| | | | | | |
|-----------|---------------|---|---|-----|----|
| t_{on} | turn-on time | $I_{Con} = 150\text{ mA}; I_{Bon} = 15\text{ mA}; I_{Boff} = -15\text{ mA}$ | – | 35 | ns |
| t_d | delay time | | – | 15 | ns |
| t_r | rise time | | – | 20 | ns |
| t_{off} | turn-off time | | – | 250 | ns |
| t_s | storage time | | – | 200 | ns |
| t_f | fall time | | – | 60 | ns |

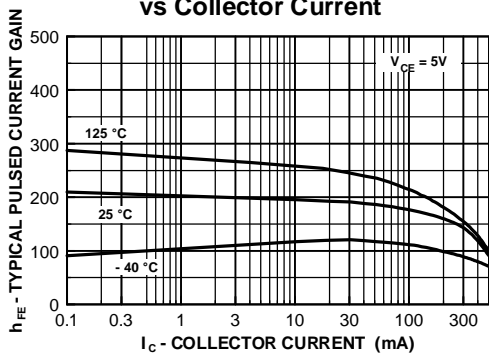
Note

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

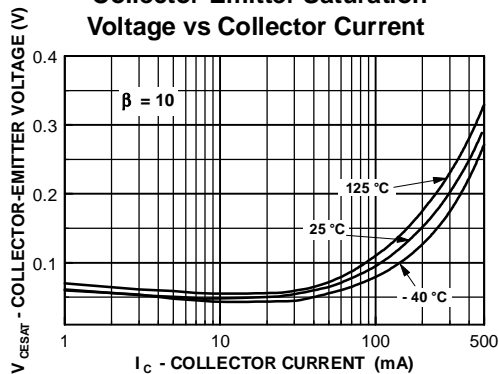
RATING CHARACTERISTIC CURVES (CHT4401WGP)

Typical Characteristics

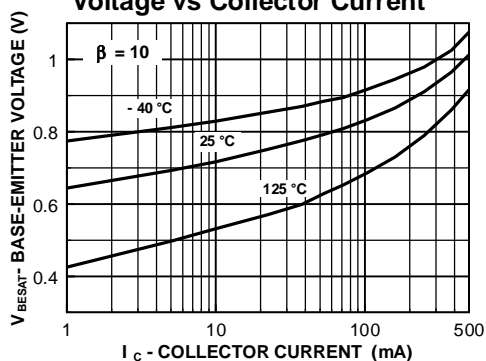
Typical Pulsed Current Gain vs Collector Current



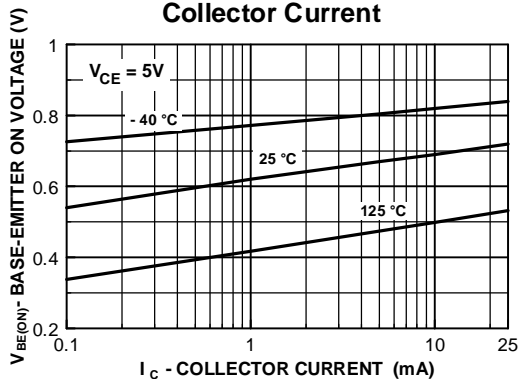
Collector-Emitter Saturation Voltage vs Collector Current



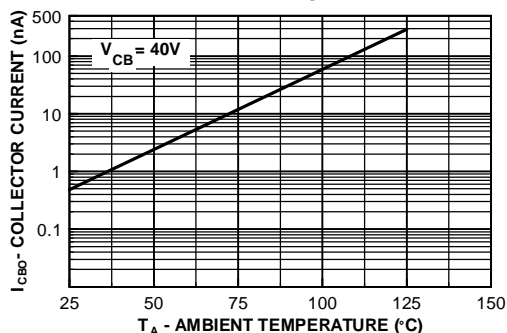
Base-Emitter Saturation Voltage vs Collector Current



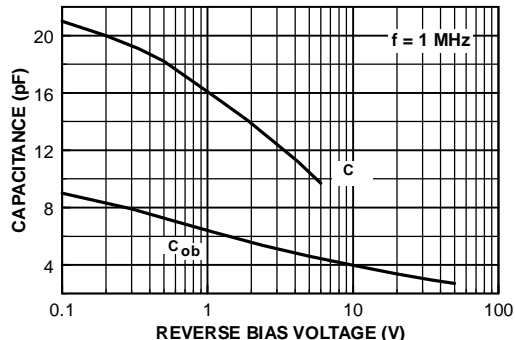
Base-Emitter ON Voltage vs Collector Current



Collector-Cutoff Current vs Ambient Temperature

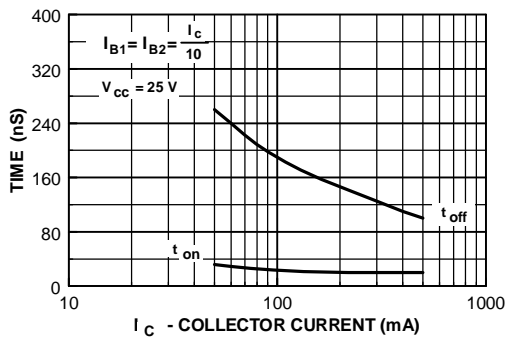


Emitter Transition and Output Capacitance vs Reverse Bias Voltage

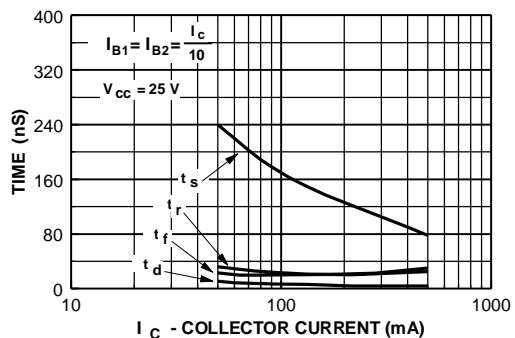


RATING CHARACTERISTIC CURVES (CHT4401WGP)

**Turn On and Turn Off Times
vs Collector Current**



**Switching Times
vs Collector Current**



**Power Dissipation vs
Ambient Temperature**

