



CHENMKO ENTERPRISE CO.,LTD

Halogens free devices

**SURFACE MOUNT
NPN Switching Transistor**

VOLTAGE 40 Volts CURRENT 0.6 Ampere

CHT2222XGP

APPLICATION

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

FEATURE

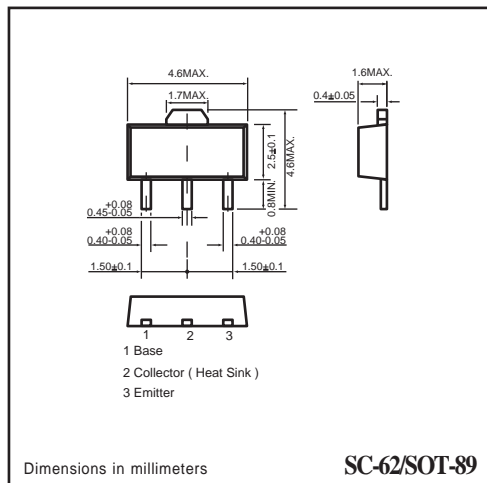
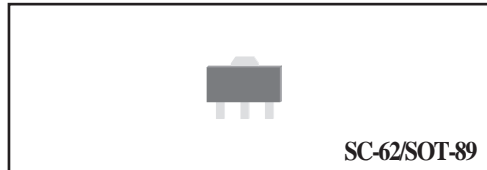
- * Small flat package. (SC-62/SOT-89)
- * High current (Max.=600mA).
- * Suitable for high packing density.
- * Low voltage (Max.=40V) .
- * High saturation current capability.
- * Voltage controlled small signal switch.

CONSTRUCTION

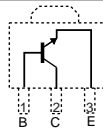
- * NPN Switching Transistor

MARKING

- * XAN



CIRCUIT



LIMITING VALUES

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

| SYMBOL | PARAMETER | CONDITIONS | MIN. | MAX. | UNIT |
|------------------|-------------------------------|----------------------------------|------|------|------|
| V _{CB0} | collector-base voltage | open emitter | — | 75 | V |
| V _{CEO} | collector-emitter voltage | open base | — | 40 | V |
| V _{EB0} | emitter-base voltage | open collector | — | 6 | V |
| I _C | collector current (DC) | | — | 600 | mA |
| I _{CM} | peak collector current | | — | 800 | mA |
| I _{BM} | peak base current | | — | 200 | mA |
| P _{tot} | total power dissipation | T _{amb} ≤ 25 °C; note 1 | — | 1.2 | W |
| T _{stg} | storage temperature | | -65 | +150 | °C |
| T _j | junction temperature | | — | 150 | °C |
| T _{amb} | operating ambient temperature | | -65 | +150 | °C |

Note

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

RATING CHARACTERISTIC CURVES (CHT2222XGP)

THERMAL CHARACTERISTICS

| SYMBOL | PARAMETER | CONDITIONS | VALUE | UNIT |
|---------------|---|------------|-------|------|
| $R_{th\ j-a}$ | thermal resistance from junction to ambient | note 1 | 357 | K/W |

Note

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

CHARACTERISTICS

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

| SYMBOL | PARAMETER | CONDITIONS | MIN. | MAX. | UNIT |
|-------------|--------------------------------------|---|------|------|------|
| I_{CBO} | collector cut-off current | $I_E = 0; V_{CB} = 60\text{ V}$ | – | 10 | nA |
| | | $I_C = 0; V_{CB} = 60\text{ V}; T_j = 125\text{ }^{\circ}\text{C}$ | – | 10 | uA |
| I_{EBO} | emitter cut-off current | $I_C = 0; V_{EB} = 5\text{ V}$ | – | 10 | nA |
| h_{FE} | DC current gain | $I_C = 0.1\text{ mA}; V_{CE} = 10\text{ V};$ note 1 | 35 | – | |
| | | $I_C = 1.0\text{ mA}; V_{CE} = 10\text{ V}$ | 50 | – | |
| | | $I_C = 10\text{ mA}; V_{CE} = 10\text{ V}$ | 75 | – | |
| | | $I_C = 10\text{ mA}; V_{CE} = 10\text{ V}; T_{amb} = -55^{\circ}\text{C}$ | 35 | – | |
| | | $I_C = 150\text{ mA}; V_{CE} = 10\text{ V}$ | 100 | 300 | |
| | | $I_C = 150\text{ mA}; V_{CE} = 1.0\text{ V}$ | 50 | – | |
| V_{CEsat} | collector-emitter saturation voltage | $I_C = 150\text{ mA}; I_B = 15\text{ mA}$ | – | 300 | mV |
| | | $I_C = 500\text{ mA}; I_B = 50\text{ mA}$ | – | 1 | V |
| V_{BEsat} | base-emitter saturation voltage | $I_C = 150\text{ mA}; I_B = 10\text{ mA}$ | 0.6 | 1.2 | V |
| | | $I_C = 500\text{ mA}; I_B = 50\text{ mA}$ | – | 2.0 | V |
| C_c | collector capacitance | $I_E = i_e = 0; V_{CB} = 5\text{ V}; f = 1\text{ MHz}$ | – | 8 | pF |
| C_e | emitter capacitance | $I_C = i_c = 0; V_{BE} = 500\text{ mV}; f = 1\text{ MHz}$ | – | 25 | pF |
| f_T | transition frequency | $I_C = 20\text{ mA}; V_{CE} = 20\text{ V}; f = 100\text{ MHz}$ | 300 | – | MHz |
| F | noise figure | $I_C = 100\text{ }\mu\text{A}; V_{CE} = 5\text{ V}; R_S = 1\text{ k}\Omega; f = 1.0\text{ kHz}$ | – | 4 | dB |

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

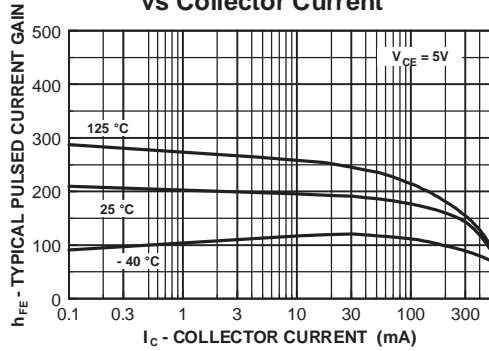
| | | | | | |
|-----------|---------------|---|---|-----|----|
| t_{on} | turn-on time | $I_{Con} = 150\text{ mA}; I_{Bon} = 15\text{ mA}; I_{Boff} = -15\text{ mA}$ | – | 35 | ns |
| t_d | delay time | | – | 15 | ns |
| t_r | rise time | | – | 20 | ns |
| t_{off} | turn-off time | | – | 250 | ns |
|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

Note

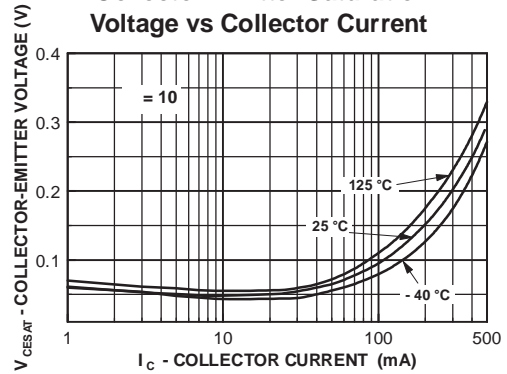
1. Pulse test: $t_p \leq 300\text{ }\mu\text{s}; \delta \leq 0.02$.

RATING CHARACTERISTIC CURVES (CHT2222XGP)

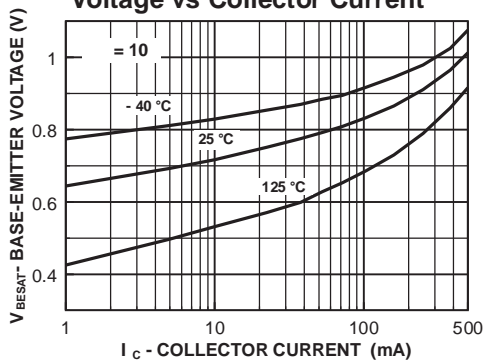
Typical Pulsed Current Gain vs Collector Current



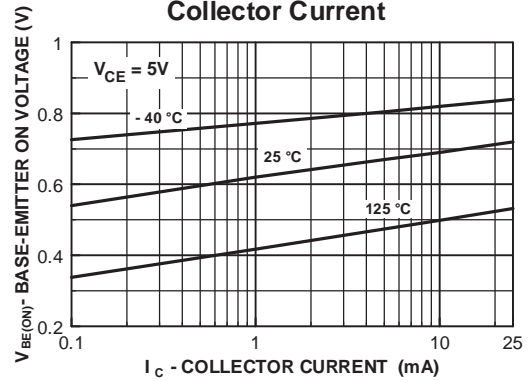
Collector-Emitter Saturation Voltage vs Collector Current



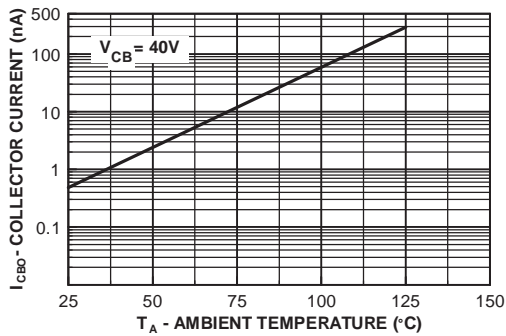
Base-Emitter Saturation Voltage vs Collector Current



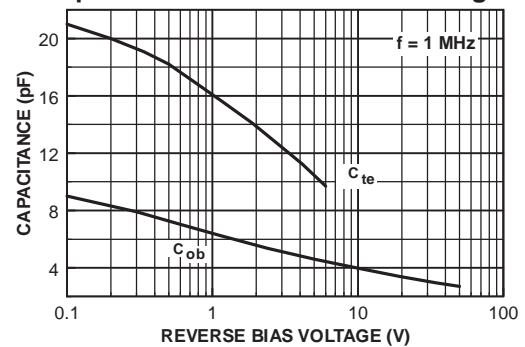
Base-Emitter ON Voltage vs Collector Current



Collector-Cutoff Current vs Ambient Temperature

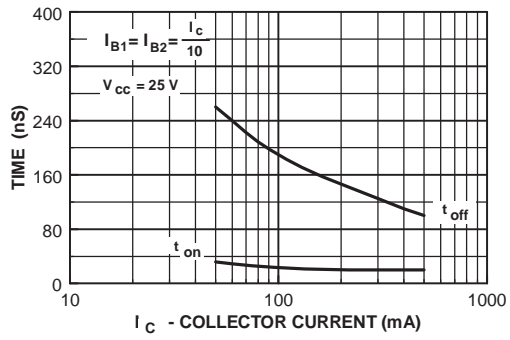


Emitter Transition and Output Capacitance vs Reverse Bias Voltage

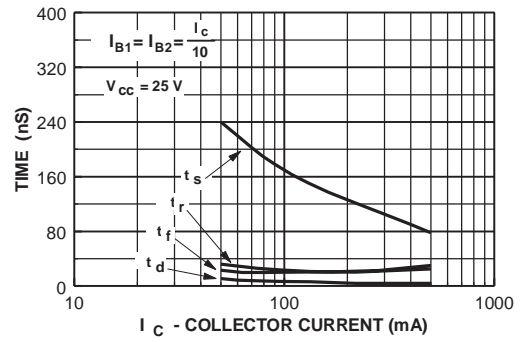


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Turn On and Turn Off Times vs Collector Current

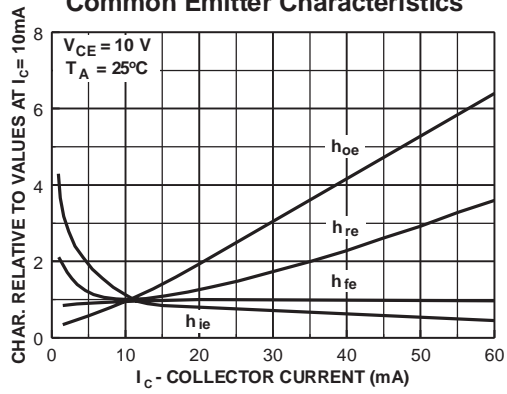


Switching Times vs Collector Current

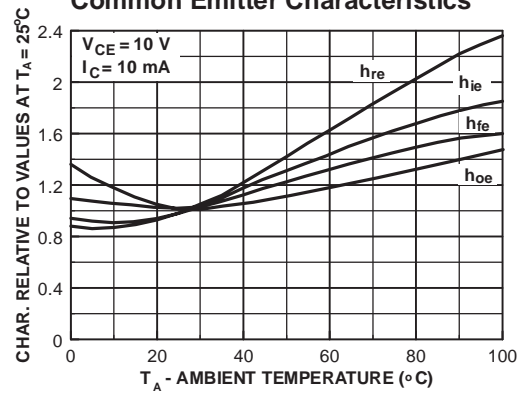


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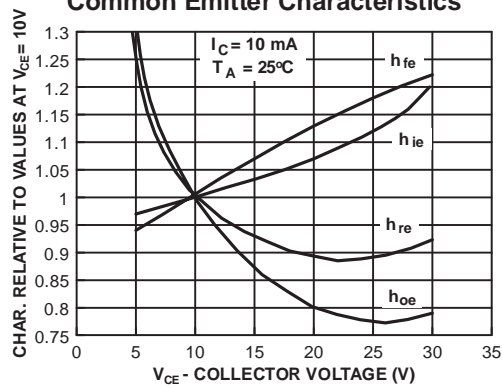
Common Emitter Characteristics



Common Emitter Characteristics

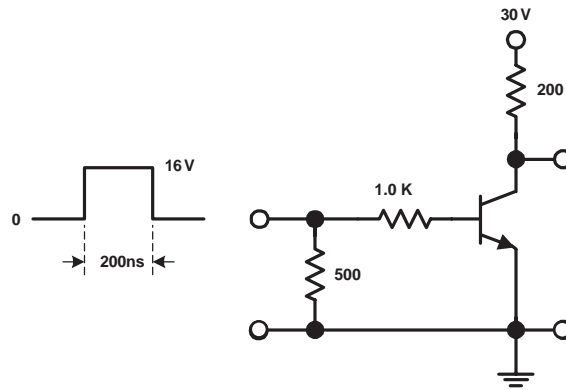


Common Emitter Characteristics

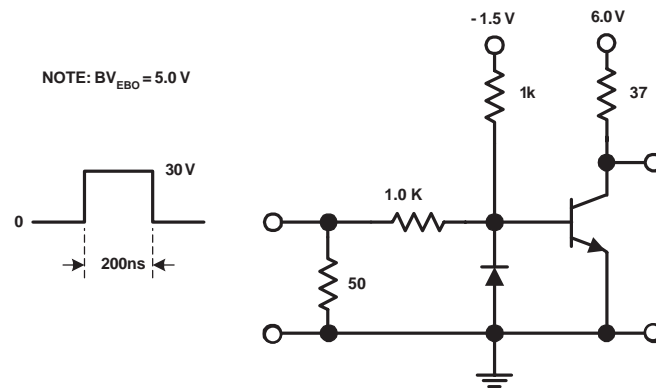


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Test Circuits



Saturated Turn-On Switching Time



Saturated Turn-Off Switching Time