

SOT-23 Formed SMD Package

CMBT5400

HIGH VOLTAGE TRANSISTOR

P-N-P transistor

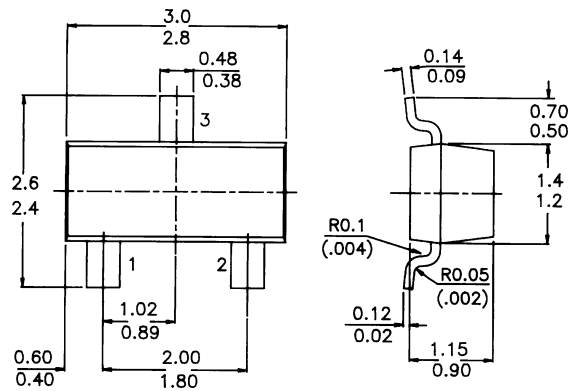
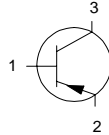
Marking

CMBT5400 = K2

PACKAGE OUTLINE DETAILS
ALL DIMENSIONS IN mm

Pin configuration

- 1 = BASE
- 2 = EMITTER
- 3 = COLLECTOR



ABSOLUTE MAXIMUM RATINGS

| | | | |
|---|------------|------|--------|
| Collector-base voltage (open emitter) | $-V_{CBO}$ | max. | 130 V |
| Collector-emitter voltage (open base) | $-V_{CEO}$ | max. | 120 V |
| Emitter-base voltage (open collector) | $-V_{EBO}$ | max. | 5 V |
| Collector current (d.c.) | $-I_C$ | max. | 500 mA |
| Total power dissipation at $T_{amb} = 25^\circ C$ | P_{tot} | max | 250 mW |
| D.C. current gain | h_{FE} | min. | 40 |
| $-I_C = 10 \text{ mA}; -V_{CE} = 5 \text{ V}$ | | max. | 180 |

RATINGS (at $T_A = 25^\circ C$ unless otherwise specified)

Limiting values

| | | | |
|---------------------------------------|------------|------|--------|
| Collector-base voltage (open emitter) | $-V_{CBO}$ | max. | 130 V |
| Collector-emitter voltage (open base) | $-V_{CEO}$ | max. | 120 V |
| Emitter-base voltage (open collector) | $-V_{EBO}$ | max. | 5 V |
| Collector current (d.c.) | $-I_C$ | max. | 500 mA |

CMBT5400

| | | | |
|--|-----------|-------------|----------------|
| Total power dissipation at $T_{amb} = 25^{\circ}C$ | P_{tot} | <i>max.</i> | 250 mW |
| Storage temperature | T_{stg} | | -55 to +150 °C |
| Junction temperature | T_j | <i>max.</i> | 150 °C |

THERMAL CHARACTERISTICS

$$T_j = P (R_{th\ j-t} + R_{th\ s-a}) + T_{amb}$$

Thermal resistance

| | | | |
|--------------------------|---------------|--|-----------|
| from junction to ambient | $R_{th\ j-a}$ | | 200 °C/mW |
|--------------------------|---------------|--|-----------|

CHARACTERISTICS (at $T_A = 25^{\circ}C$ unless otherwise specified)

Collector-emitter breakdown voltage

| | | | |
|-------------------------|----------------|-------------|-------|
| $-I_C = 1\ mA; I_B = 0$ | $-V_{(BR)CEO}$ | <i>min.</i> | 120 V |
|-------------------------|----------------|-------------|-------|

Collector-base breakdown voltage

| | | | |
|------------------------------|----------------|-------------|-------|
| $-I_C = 100\ \mu A; I_E = 0$ | $-V_{(BR)CBO}$ | <i>min.</i> | 130 V |
|------------------------------|----------------|-------------|-------|

Emitter-base breakdown voltage

| | | | |
|-----------------------------|----------------|-------------|-----|
| $-I_E = 10\ \mu A; I_C = 0$ | $-V_{(BR)EBO}$ | <i>min.</i> | 5 V |
|-----------------------------|----------------|-------------|-----|

Collector cut-off current

| | | | |
|--------------------------------|------------|-------------|--------|
| $-V_{CB} = 100\ V; I_E = 0\ V$ | $-I_{CBO}$ | <i>max.</i> | 100 nA |
|--------------------------------|------------|-------------|--------|

Emitter cut-off current

| | | | |
|---------------------------|------------|-------------|-------|
| $-V_{EB} = 3\ V; I_C = 0$ | $-I_{EBO}$ | <i>max.</i> | 50 nA |
|---------------------------|------------|-------------|-------|

Output capacitance at $f = 1\ MHz$

| | | | |
|----------------------------|-------|-------------|------|
| $I_E = 0; -V_{CB} = 10\ V$ | C_c | <i>max.</i> | 6 pF |
|----------------------------|-------|-------------|------|

Saturation voltages

| | | | |
|-------------------------------|--------------|-------------|-------|
| $-I_C = 10\ mA; -I_B = 1\ mA$ | $-V_{CEsat}$ | <i>max.</i> | 0.2 V |
|-------------------------------|--------------|-------------|-------|

| | | | |
|--|--------------|-------------|-----|
| | $-V_{BEsat}$ | <i>max.</i> | 1 V |
|--|--------------|-------------|-----|

| | | | |
|-------------------------------|--------------|-------------|-------|
| $-I_C = 50\ mA; -I_B = 5\ mA$ | $-V_{CEsat}$ | <i>max.</i> | 0.5 V |
|-------------------------------|--------------|-------------|-------|

| | | | |
|-------------------------------|--------------|-------------|-----|
| $-I_C = 50\ mA; -I_B = 5\ mA$ | $-V_{BEsat}$ | <i>max.</i> | 1 V |
|-------------------------------|--------------|-------------|-----|

D.C. current gain

| | | | |
|--------------------------------|----------|-------------|----|
| $-I_C = 1\ mA; -V_{CE} = 5\ V$ | h_{FE} | <i>min.</i> | 50 |
|--------------------------------|----------|-------------|----|

| | | | |
|---------------------------------|----------|-------------|----|
| $-I_C = 10\ mA; -V_{CE} = 5\ V$ | h_{FE} | <i>min.</i> | 40 |
|---------------------------------|----------|-------------|----|

| | | | |
|--|--|-------------|-----|
| | | <i>max.</i> | 180 |
|--|--|-------------|-----|

| | | | |
|---------------------------------|----------|-------------|----|
| $-I_C = 50\ mA; -V_{CE} = 5\ V$ | h_{FE} | <i>min.</i> | 40 |
|---------------------------------|----------|-------------|----|

Noise figure at $R_S = 1\ k\Omega$

| | | | |
|-------------------------------------|------|-------------|------|
| $-I_C = 200\ \mu A; -V_{CE} = 5\ V$ | | | |
| $f = 10\ Hz\ to\ 15.7\ kHz$ | NF | <i>max.</i> | 8 dB |

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