

SOT-23 Formed SMD Package

CMBT5401

SILICON P-N-P HIGH-VOLTAGE TRANSISTOR

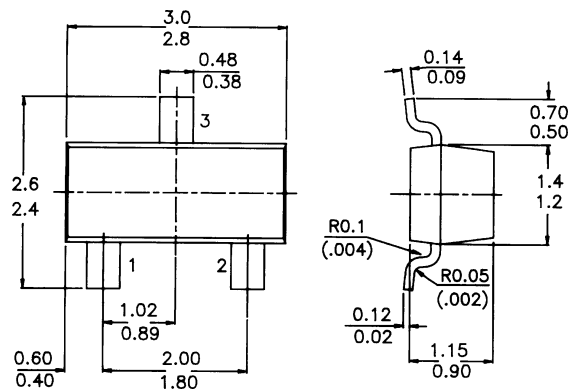
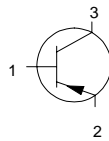
P-N-P transistor

Marking

CMBT5401 = 2L

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.	160 V
Collector-emitter voltage (open base)	$-V_{CEO}$	max.	150 V
Collector current	$-I_C$	max.	500 mA
Total power dissipation up to $T_{amb} = 25^\circ C$	P_{tot}	max.	250 mW
Collector-emitter saturation voltage			
$I_C = 50 \text{ mA}; I_B = 5 \text{ mA}$	V_{CEsat}	max.	0.5 V
D.C. current gain			
$I_C = 10 \text{ mA}; V_{CE} = -5 \text{ V}$	h_{FE}		60 to 240

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

Limiting values

Collector-base voltage (open emitter)	$-V_{CBO}$	max.	160 V
Collector-emitter voltage (open base)	$-V_{CEO}$	max.	150 V
Emitter-base voltage (open collector)	$-V_{EBO}$	max.	5 V
Collector current	$-I_C$	max.	500 mA

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Total power dissipation up to $T_{amb} = 25^{\circ}\text{C}$	P_{tot}	max	250 mW
Junction temperature	T_j	max.	150 $^{\circ}\text{C}$
Storage temperature	T_{stg}		-55 to +150 $^{\circ}\text{C}$

THERMAL RESISTANCE

from junction to ambient	$R_{th\ j-a}$		500 K/W
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CHARACTERISTICS (at $T_A = 25^{\circ}\text{C}$ unless otherwise specified)

Collector cut-off current

$I_E = 0; -V_{CB} = 120\text{ V}$	$-I_{CBO}$	max.	50 nA
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$I_E = 0; -V_{CB} = 120\text{ V}; T_{amb} = 150^{\circ}\text{C}$	$-I_{CBO}$	max.	50 μA
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Breakdown voltages

$I_C = 1\text{ mA}; I_B = 0$	$-V_{(BR)CEO}$	min.	150 V
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$I_C = 100\ \mu\text{A}; I_E = 0$	$-V_{(BR)CBO}$	min.	160 V
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$I_C = 0; I_E = 10\ \mu\text{A}$	$-V_{(BR)EBO}$	min.	5 V
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Saturation voltages

$-I_C = 10\text{ mA}; -I_B = 1\text{ mA}$	$-V_{CEsat}$	max.	0.2 V
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	$-V_{BEsat}$	max.	1 V
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$-I_C = 50\text{ mA}; -I_B = 5\text{ mA}$	$-V_{CEsat}$	max.	0.5 V
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	$-V_{BEsat}$	max.	1 V
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D.C. current gain

$I_C = 1\text{ mA}; -V_{CE} = 5\text{ V}$	h_{FE}	min.	50
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$I_C = 10\text{ mA}; -V_{CE} = 5\text{ V}$	h_{FE}	min.	60
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	h_{FE}	max.	240
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$I_C = 50\text{ mA}; -V_{CE} = 5\text{ V}$	h_{FE}	min.	50
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Small-signal current gain

$I_C = 1\text{ mA}; -V_{CE} = 10\text{ V}; f = 1\text{ kHz}$	h_{fe}	min.	40
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	h_{fe}	max.	200
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Output capacitance at $f = 1\text{ MHz}$

$I_E = 0; -V_{CB} = 10\text{ V}$	C_o	max.	6 pF
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Transition frequency at $f = 100\text{ MHz}$

$-I_C = 10\text{ mA}; -V_{CE} = 10\text{ V}; T_{amb} = 25^{\circ}\text{C}$	f_T	min.	100 MHz
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	f_T	max.	300 MHz
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Noise figure at $R_S = 10\ \Omega$

$I_C = 200\ \mu\text{A}; -V_{CE} = 5\text{ V}$	F	max.	8 dB
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$f = 10\text{ Hz to } 15.7\text{ kHz}; T_{amb} = 25^{\circ}\text{C}$			
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Disclaimer

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