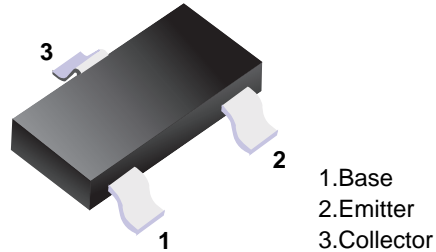


## ■ NPN Transistors

### ■ Features

- Low current (max. 100 mA)
- Low voltage (max. 45 V).



■ Simplified outline(SOT-23)

### ■ Absolute Maximum Ratings $T_a = 25^\circ\text{C}$

Parameter	Symbol	Rating	Unit
collector-base voltage	$V_{CB0}$	30	V
		50	V
collector-emitter voltage	$V_{CE0}$	30	V
		45	V
emitter-base voltage	$V_{EB0}$	5	V
collector current (DC)	$I_C$	100	mA
peak collector current	$I_{CM}$	200	mA
peak base current	$I_{BM}$	200	mA
total power dissipation $T_{amb} \leq 25^\circ\text{C}^*$	$P_{tot}$	250	mW
storage temperature	$T_{stg}$	-65 to 150	$^\circ\text{C}$
junction temperature	$T_j$	150	$^\circ\text{C}$
operating ambient temperature	$T_{amb}$	-65 to 150	$^\circ\text{C}$
thermal resistance from junction to ambient *	$R_{th(j-a)}$	500	K/W

\* Transistor mounted on an FR4 printed-circuit board.

## ■ Electrical Characteristics Ta = 25°C

Parameter	Symbol	Testconditions	Min	Typ	Max	Unit
collector cut-off current	I <sub>CBO</sub>	I <sub>E</sub> = 0; V <sub>CB</sub> = 30 V			15	nA
		I <sub>E</sub> = 0; V <sub>CB</sub> = 30 V; T <sub>j</sub> = 150 °C			5	μA
emitter cut-off current	I <sub>EBO</sub>	I <sub>C</sub> = 0; V <sub>EB</sub> = 5 V			100	nA
DC current gain BC849B; BC850B BC849C; BC850C	h <sub>FE</sub>	I <sub>C</sub> = 10 μA; V <sub>CE</sub> = 5 V;		240		
		I <sub>C</sub> = 2 mA; V <sub>CE</sub> = 5 V;	200	290	450	
DC current gain BC849B; BC850B BC849C; BC850C	h <sub>FE</sub>	I <sub>C</sub> = 10 μA; V <sub>CE</sub> = 5 V;	420	520	800	
		I <sub>C</sub> = 2 mA; V <sub>CE</sub> = 5 V;				
collector-emitter saturation voltage	V <sub>CEsat</sub>	I <sub>C</sub> = 10 mA; I <sub>B</sub> = 0.5 mA		90	250	mV
		I <sub>C</sub> = 100 mA; I <sub>B</sub> = 5 mA		200	600	mV
base-emitter saturation voltage	V <sub>BEsat</sub>	I <sub>C</sub> = 10 mA; I <sub>B</sub> = 0.5 mA; *1		700		mV
		I <sub>C</sub> = 100 mA; I <sub>B</sub> = 5 mA; *1		900		mV
base-emitter voltage	V <sub>BE</sub>	I <sub>C</sub> = 2 mA; V <sub>CE</sub> = 5 V; *2	580	660	700	mV
		I <sub>C</sub> = 10 mA; V <sub>CE</sub> = 5 V; *2			770	mV
collector capacitance	C <sub>c</sub>	I <sub>E</sub> = I <sub>e</sub> = 0; V <sub>CB</sub> = 10 V; f = 1 MHz		2.5		pF
emitter capacitance	C <sub>e</sub>	I <sub>C</sub> = I <sub>c</sub> = 0; V <sub>EB</sub> = 500 mV; f = 1 MHz		11		pF
transition frequency	f <sub>T</sub>	I <sub>C</sub> = 10 mA; V <sub>CE</sub> = 5 V; f = 100 MHz	100			MHz
noise figure	F	I <sub>C</sub> = 200 μA; V <sub>CE</sub> = 5 V; R <sub>S</sub> = 2 kΩ, f = 10 Hz to 15.7 kHz			4	dB
		I <sub>C</sub> = 200 μA; V <sub>CE</sub> = 5 V; R <sub>S</sub> = 2 kΩ, f = 1 kHz; B = 200 Hz			4	dB

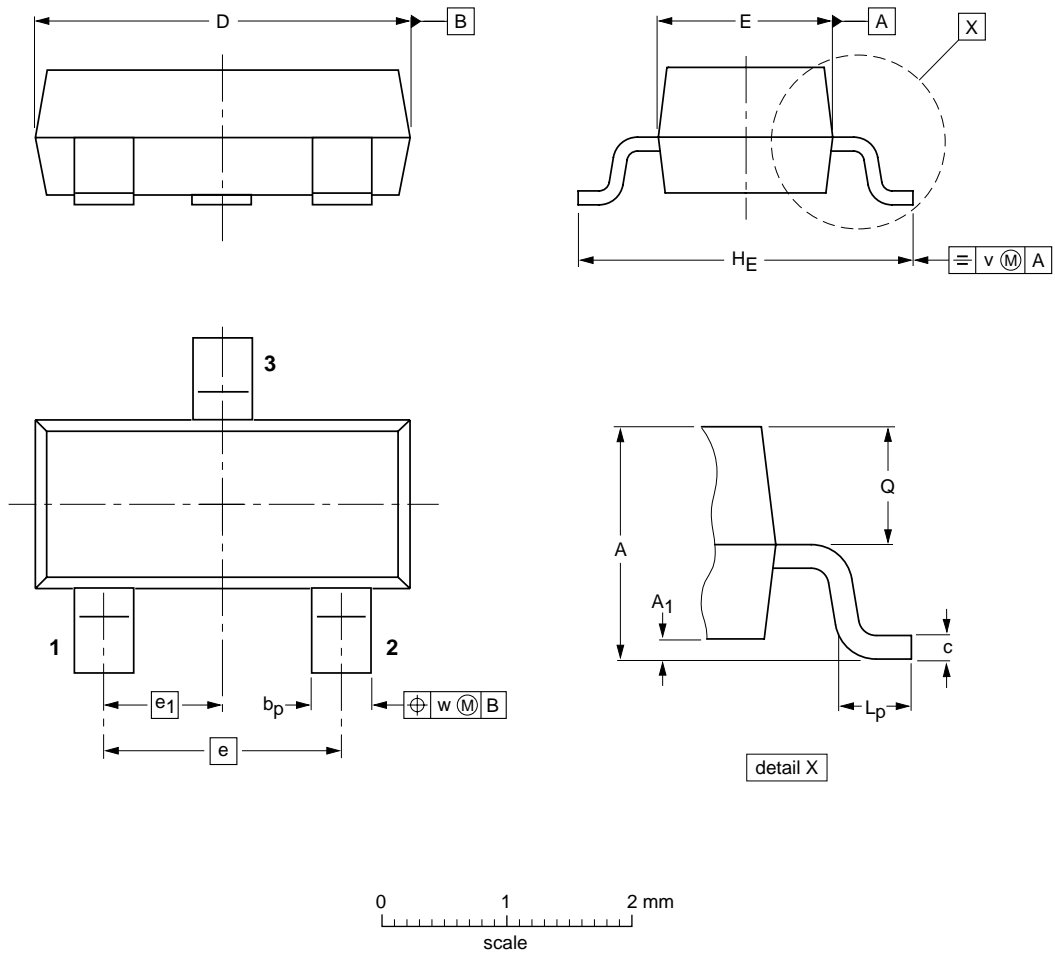
\*1 V<sub>BEsat</sub> decreases by about 1.7 mV/K with increasing temperature.

\*2 V<sub>BE</sub> decreases by about 2 mV/K with increasing temperature.

## ■ hFE Classification

TYPE	BC849B	BC849C	BC850B	BC850C
Marking	2B	2C	2F	2G

## ■ SOT-23



**DIMENSIONS (mm are the original dimensions)**

UNIT	A	A <sub>1</sub> max.	b <sub>p</sub>	c	D	E	e	e <sub>1</sub>	H <sub>E</sub>	L <sub>p</sub>	Q	v	w
mm	1.1 0.9	0.1	0.48 0.38	0.15 0.09	3.0 2.8	1.4 1.2	1.9	0.95	2.5 2.1	0.45 0.15	0.55 0.45	0.2	0.1