

SOT-23 Formed SMD Package

**BC849
BC850**

SILICON PLANAR EPITAXIAL TRANSISTORS

N-P-N transistors

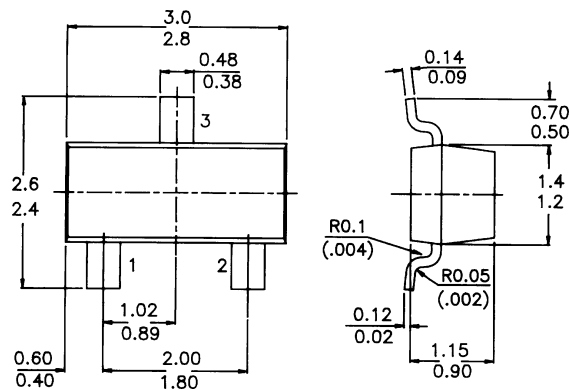
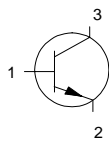
Marking

- BC849 = 2D
- BC849B = 2B
- BC849C = 2C
- BC850 = 2H
- BC850B = 2F
- 8C850C = 2G

**PACKAGE OUTLINE DETAILS
ALL DIMENSIONS IN mm**

Pin configuration

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



ABSOLUTE MAXIMUM RATINGS

		BC849	BC850	
Collector-emitter voltage ($V_{BE} = 0$)	V_{CES}	max. 30	50	V
Collector-emitter voltage (open base)	V_{CE0}	max. 30	45	V
Collector current (peak value)	I_{CM}	max. 200	200	mA
Total power dissipation up to $T_{amb} = 25\text{ }^{\circ}\text{C}$	P_{tot}	max. 250	250	mW
Junction temperature	T_j	max. 150	150	$^{\circ}\text{C}$
Small-signal current gain $I_C = 2\text{ mA}; V_{CE} = 5\text{ V}; f = 1\text{ kHz}$	h_{fe}	> 240	240	
		< 900	900	
Transition frequency $I_C = 10\text{ mA}; V_{CE} = 5\text{ V}; f = 100\text{ MHz}$	f_T	> 100	> 100	MHz
Noise figure at $R_S = 2\text{ k}\Omega$ $I_C = 200\text{ }\mu\text{A}; V_{CE} = 5\text{ V}$ $f = 30\text{ Hz to }15\text{ kHz}$	F	typ. 1,4	1,4	dB
		< 4	3	dB
$f = 1\text{ kHz}; B = 200\text{ Hz}$	F	typ. 1,2	1	dB
$f = 10\text{ Hz to }50\text{ Hz}$ (equivalent noise voltage)	V_n	< —	0,135	mV

BC849
BC850

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

Limiting values

		BC849	BC850	
Collector-base voltage (open emitter)	V_{CBO} max.	30	50	V
Collector-emitter voltage ($V_{BE} = 0$)	V_{CES} max.	30	50	V
Collector-emitter voltage (open base)	V_{CEO} max.	30	45	V
Emitter-base voltage (open collector)	V_{EBO} max.	5		V
Collector current (d.c.)	I_C max.	100		mA
Collector current (peak value)	I_{CM} max.	200		mA
Emitter current (peak value)	$-I_{EM}$ max.	200		mA
Base current (peak value)	I_{BM} max.	200		mA
Total power dissipation up to $T_{amb} = 25^\circ\text{C}$	P_{tot} max.	250		mW
Storage temperature	T_{stg}	-55 to +150		$^\circ\text{C}$
Junction temperature	T_j max.	150		$^\circ\text{C}$

THERMAL RESISTANCE

From junction to ambient*

$$R_{th\ j-a} = 500\ \text{KW}$$

CHARACTERISTICS

$T_j = 25^\circ\text{C}$ unless otherwise specified

Collector cut-off current

$I_E = 0; V_{CB} = 30\ \text{V}$

$I_E = 0; V_{CB} = 30\ \text{V}; T_j = 150^\circ\text{C}$

Base emitter voltage

$I_C = 2\ \text{mA}; V_{CE} = 5\ \text{V}$

$$I_{CBO} < 15\ \text{nA}$$

$$I_{CBO} < 5\ \mu\text{A}$$

$$V_{BE} \text{ typ. } 660\ \text{mV}$$

$$580\ \text{to } 700\ \text{mV}$$

$$V_{BE} < 770\ \text{mV}$$

$I_C = 10\ \text{mA}; V_{CE} = 5\ \text{V}$

Saturation voltages

$I_C = 10\ \text{mA}; I_B = 0,5\ \text{mA}$

$$V_{CEsat} \text{ typ. } 90\ \text{mV}$$

$$250\ \text{mV}$$

$$V_{BEsat} \text{ typ. } 700\ \text{mV}$$

$I_C = 100\ \text{mA}; I_B = 5\ \text{mA}$

$$V_{CEsat} \text{ typ. } 200\ \text{mV}$$

$$< 600\ \text{mV}$$

$$V_{BEsat} \text{ typ. } 900\ \text{mV}$$

Collector capacitance at $f = 1\ \text{MHz}$

$I_E = I_e = 0; V_{CB} = 10\ \text{V}$

Transition frequency at $f = 100\ \text{MHz}$

$I_C = 10\ \text{mA}; V_{CE} = 5\ \text{V}$

$$C_c \text{ typ. } 2,5\ \text{pF}$$

$$f_T > 100\ \text{MHz}$$

Small signal current gain at $f = 1\ \text{kHz}$

$I_C = 2\ \text{mA}; V_{CE} = 5\ \text{V}$

Noise figure at $R_S = 2\ \text{k}\Omega$,

$I_C = 200\ \mu\text{A}; V_{CE} = 5\ \text{V}$

$f = 30\ \text{Hz to } 15\ \text{kHz}$

$f = 1\ \text{kHz}; B = 200\ \text{Hz}$

$$h_{fe} \quad 110 - 800$$

BC849 **BC850**

$$\text{typ. } 1,4 \quad | \quad 1,4 \quad \text{dB}$$

$$F < 4 \quad | \quad 3 \quad \text{dB}$$

$$\text{typ. } 1,2 \quad | \quad 1 \quad \text{dB}$$

$$F < 4 \quad | \quad 4 \quad \text{dB}$$

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Equivalent noise voltage at $R_S = 2 \text{ k}\Omega$

$I_C = 200 \mu\text{A}; V_{CE} = 5 \text{ V}$
 $f = 10 \text{ Hz to } 50 \text{ Hz}; T_{amb} = 25^\circ\text{C}$

V_n max. — 0,135 mV

	BC849B	BC849C
	BC850B	BC850C

D.C. current gain

$I_C = 10 \mu\text{A}; V_{CE} = 5 \text{ V}$

h_{FE} typ. 150 270

> 200 420

$I_C = 2 \text{ mA}; V_{CE} = 5 \text{ V}$

h_{FE} typ. 290 520

< 450 800

Disclaimer

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