

SILICON PLANAR EPITAXIAL TRANSISTORS

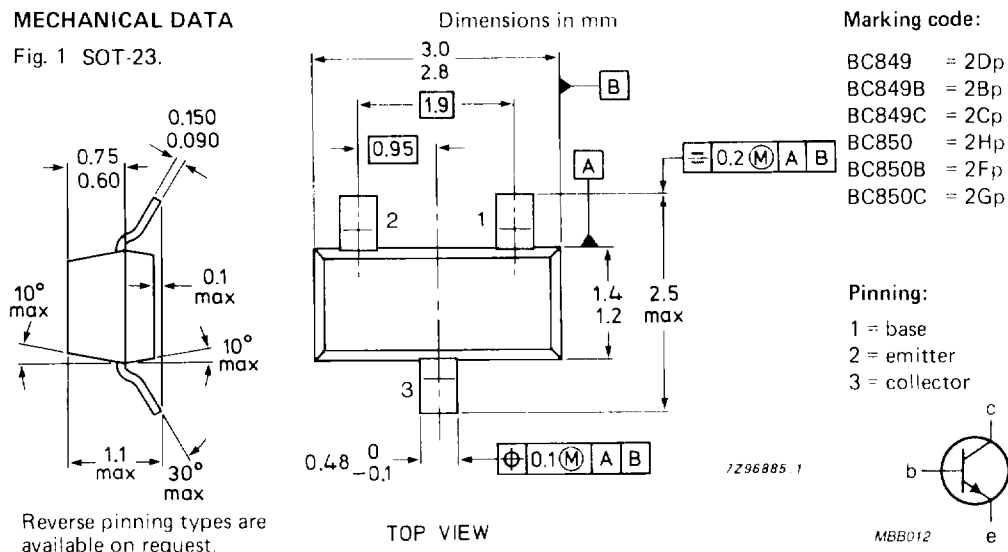
N-P-N transistors in a plastic SOT-23 package.

QUICK REFERENCE DATA

			BC849	BC850	
Collector-emitter voltage ($V_{BE} = 0$)	V_{CES}	max.	30	50	V
Collector-emitter voltage (open base)	V_{CEO}	max.	30	45	V
Collector current (peak value)	I_{CM}	max.	200	200	mA
Total power dissipation up to $T_{amb} = 25^{\circ}\text{C}$	P_{tot}	max.	250	250	mW
Junction temperature	T_j	max.	150	150	$^{\circ}\text{C}$
DC current gain					
$I_C = 2\text{ mA}; V_{CE} = 5\text{ V}$	h_{fe}	$>$	200	200	
		$<$	800	800	
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	μV

MECHANICAL DATA

Fig. 1 SOT-23.



RATINGS

Limiting values in accordance with the Absolute Maximum System (IEC 134)

			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	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 $T_{amb} = 25\text{ }^{\circ}\text{C}$	P_{tot}	max.	250		mW
Storage temperature	T_{stg}		-65 to + 150		$^{\circ}\text{C}$
Junction temperature	T_j	max.	150		$^{\circ}\text{C}$

THERMAL RESISTANCE

From junction to ambient* $R_{th\ j-a} = 500\text{ K/W}$

* Mounted on an FR4 printed-circuit board 8 mm x 10 mm x 0.7 mm.

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

Collector cut-off current

 $I_E = 0; V_{CB} = 30\text{ V}$ $I_{CBO} < 15\text{ nA}$ $I_E = 0; V_{CB} = 30\text{ V}; T_j = 150\text{ }^{\circ}\text{C}$ $I_{CBO} < 5\text{ }\mu\text{A}$

Base emitter voltage*

 $I_C = 2\text{ mA}; V_{CE} = 5\text{ V}$ V_{BE} typ. 660 mV
580 to 700 mV $I_C = 10\text{ mA}; V_{CE} = 5\text{ V}$ $V_{BE} < 770\text{ mV}$

Saturation voltages**

 $I_C = 10\text{ mA}; I_B = 0,5\text{ mA}$ V_{CEsat} typ. 90 mV
< 250 mV V_{BEsat} typ. 700 mV $I_C = 100\text{ mA}; I_B = 5\text{ mA}$ V_{CEsat} typ. 200 mV
< 600 mV V_{BEsat} typ. 900 mVCollector capacitance at $f = 1\text{ MHz}$ $I_E = I_e = 0; V_{CB} = 10\text{ V}$ C_c typ. 2,5 pFTransition frequency at $f = 100\text{ MHz}$ $I_C = 10\text{ mA}; V_{CE} = 5\text{ V}$ $f_T > 100\text{ MHz}$ * V_{BE} decreases by about 2 mV/K with increasing temperature.** V_{BEsat} decreases by about 1,7 mV/K with increasing temperature.

BC849
BC850

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

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

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

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

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

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

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

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

$f = 10 \text{ Hz to } 50 \text{ Hz}; T_{\text{amb}} = 25 \text{ }^\circ\text{C}$

D.C. current gain

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

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

$h_{fe} \quad 200 - 800$

		BC849	BC850	
F	typ.	1,4	1,4	dB
	<	4	3	dB
F	typ.	1,2	1	dB
	<	4	4	dB
V_n	max.	—	0,135	μV
		BC849B	BC849C	BC849
		BC850B	BC850C	BC850
h_{FE}	typ.	150	270	
	>	200	420	200
h_{FE}	typ.	290	520	
	<	450	800	800