

BCM857BS

PNP matched double transistor; $\Delta h_{FE} = 10$ %

Rev. 02 — 11 April 2005 Product data sheet

1. Product profile

1.1 General description

PNP matched double transistor in a SOT363 (SC-88) SMD plastic package. Matched version of BC857BS. The transistors are fully isolated internally.

NPN equivalent: BCM847BS.

1.2 Features

- Current gain matching
- Base-emitter voltage matching

1.3 Applications

- Current mirror
- Differential amplifier

1.4 Quick reference data

Table 1: Quick reference data

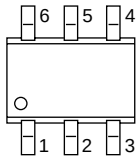
Symbol	Parameter	Conditions	Min	Typ	Max	Unit
V_{CEO}	collector-emitter voltage	open base	-	-	–45	V
I_C	collector current		-	-	–100	mA
h_{FE}	DC current gain	V_{CE} = –5 V; I_C = –2 mA	200	290	450	
Δh_{FE}	h_{FE} matching	V_{CE} = –5 V; I_C = –2 mA	-	-	10	%
ΔV_{BE}	V_{BE} matching	V_{CE} = –5 V; I_C = –2 mA	-	-	2	mV

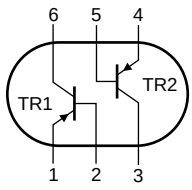
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2. Pinning information

Table 2: Pinning

Pin	Description	Simplified outline	Symbol
1	emitter TR1		
2	base TR1		
3	collector TR2		
4	emitter TR2		
5	base TR2		
6	collector TR1		





sym018

3. Ordering information

Table 3: Ordering information

Type number	Package		
	Name	Description	Version
BCM857BS	SC-88	plastic surface mounted package; 6 leads	SOT363

4. Marking

Table 4: Marking codes

Type number	Marking code [1]
BCM857BS	A9*

[1] * = -: made in Hong Kong
* = p: made in Hong Kong
* = t: made in Malaysia
* = W: made in China

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5. Limiting values

Table 5: Limiting values

In accordance with the Absolute Maximum Rating System (IEC 60134).

Symbol	Parameter	Conditions		Min	Max	Unit
Per transistor						
V_{CBO}	collector-base voltage	open emitter		-	–50	V
V_{CEO}	collector-emitter voltage	open base		-	–45	V
V_{EBO}	emitter-base voltage	open collector		-	–5	V
I_C	collector current (DC)			-	–100	mA
I_{CM}	peak collector current	single pulse; $t_p \leq 1$ ms		-	–200	mA
P_{tot}	total power dissipation	$T_{amb} \leq 25$ °C		-	200	mW
T_{stg}	storage temperature			–65	+150	°C
T_j	junction temperature			-	150	°C
T_{amb}	ambient temperature			–65	+150	°C
Per device						
P_{tot}	total power dissipation	$T_{amb} \leq 25$ °C	[1]	-	300	mW

[1] Device mounted on an FR4 Printed-Circuit Board (PCB), single-sided copper, tin-plated and standard footprint.

6. Thermal characteristics

Table 6: Thermal characteristics

Symbol	Parameter	Conditions		Min	Typ	Max	Unit
Per device							
$R_{th(j-a)}$	thermal resistance from junction to ambient	in free air	[1]	-	-	416	K/W

[1] Device mounted on an FR4 PCB, single-sided copper, tin-plated and standard footprint.

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7. Characteristics

Table 7: Characteristics

T_{amb} = 25 °C unless otherwise specified.

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Per transistor						
I_{CBO}	collector-base cut-off current	V_{CB} = –30 V; I_E = 0 A	-	-	–15	nA
		V_{CB} = –30 V; I_E = 0 A; T_j = 150 °C	-	-	–5	µA
I_{EBO}	emitter-base cut-off current	V_{EB} = –5 V; I_C = 0 A	-	-	–100	nA
h_{FE}	DC current gain	V_{CE} = –5 V; I_C = –10 µA	-	250	-	
		V_{CE} = –5 V; I_C = –2 mA	200	290	450	
V_{CEsat}	collector-emitter saturation voltage	I_C = –10 mA; I_B = –0.5 mA	-	–50	–200	mV
		I_C = –100 mA; I_B = –5 mA	-	–200	–400	mV
V_{BEsat}	base-emitter saturation voltage	I_C = –10 mA; I_B = –0.5 mA	-	–760	-	mV
		I_C = –100 mA; I_B = –5 mA [1]	-	–920	-	mV
V_{BE}	base-emitter voltage	V_{CE} = –5 V; I_C = –2 mA	-600	–650	–700	mV
		V_{CE} = –5 V; I_C = –10 mA	-	-	–760	mV
C_c	collector capacitance	V_{CB} = –10 V; $I_E = i_e$ = 0 A; f = 1 MHz	-	-	2.2	pF
C_e	emitter capacitance	V_{EB} = –0.5 V; $I_C = i_c$ = 0 A; f = 1 MHz	-	10	-	pF
f_T	transition frequency	V_{CE} = –5 V; I_C = –10 mA; f = 100 MHz	100	250	-	MHz
Per device						
Δh_{FE}	DC current gain matching	V_{CE} = –5 V; I_C = –2 mA	-	-	10	%
ΔV_{BE}	base-emitter voltage matching	V_{CE} = –5 V; I_C = –2 mA	-	-	2	mV

[1] Pulse test: $t_p \leq 300$ µs; $\delta \leq 0.02$.

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8. Package outline

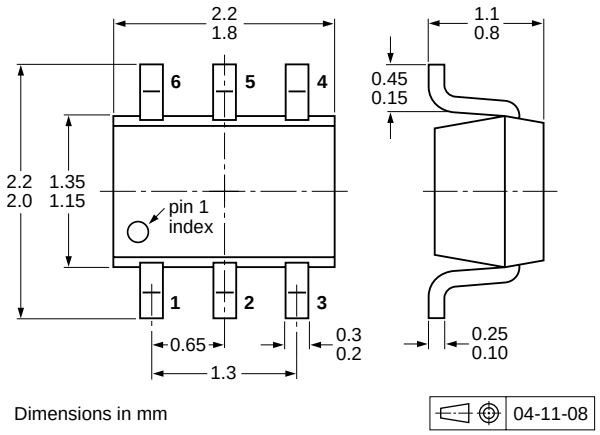


Fig 1. Package outline SOT363 (SC-88)

9. Packing information

Table 8: Packing methods

The indicated -xxx are the last three digits of the 12NC ordering code. [1]

Type number	Package	Description		Packing quantity	
				3000	10000
BCM857BS	SOT363	4 mm pitch, 8 mm tape and reel; T1	[2]	-115	-135
		4 mm pitch, 8 mm tape and reel; T2	[3]	-125	-165

[1] For further information and the availability of packing methods, see Section 14.

[2] T1: normal taping

[3] T2: reverse taping

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10. Revision history

Table 9: Revision history

Document ID	Release date	Data sheet status	Change notice	Doc. number	Supersedes
BCM857BS_2	20050411	Product data sheet	-	9397 750 14723	BCM857BS_1
Modifications:	• Table 7 Revaluation of data according to the latest control samples • Table 7 I_{CBO} unit for conditions V_{CB} = 30 V; I_E = 0 A; T_j = 150 °C amended to µA				
BCM857BS_1	20040914	Product data sheet	-	9397 750 13712	-

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11. Data sheet status

Level	Data sheet status [1]	Product status [2] [3]	Definition
I	Objective data	Development	This data sheet contains data from the objective specification for product development. Philips Semiconductors reserves the right to change the specification in any manner without notice.
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[3] For data sheets describing multiple type numbers, the highest-level product status determines the data sheet status.

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Short-form specification — The data in a short-form specification is extracted from a full data sheet with the same type number and title. For detailed information see the relevant data sheet or data handbook.

Limiting values definition — Limiting values given are in accordance with the Absolute Maximum Rating System (IEC 60134). Stress above one or more of the limiting values may cause permanent damage to the device. These are stress ratings only and operation of the device at these or at any other conditions above those given in the Characteristics sections of the specification is not implied. Exposure to limiting values for extended periods may affect device reliability.

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Date of release: 11 April 2005
Document number: 9397 750 14723

Published in The Netherlands