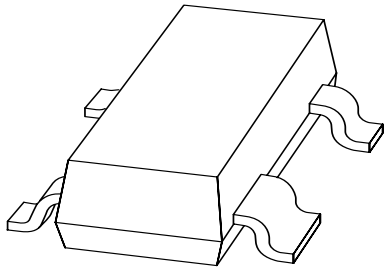


# DATA SHEET



## **BCV61** NPN general purpose double transistor

Product specification  
Supersedes data of 1997 Jun 16

1999 Apr 08

# NPN general purpose double transistor

# BCV61

### FEATURES

- Low current (max. 100 mA)
- Low voltage (max. 30 V)
- Matched pairs.

### APPLICATIONS

- For use in applications where the working point must be independent of temperature
- Current mirrors.

### DESCRIPTION

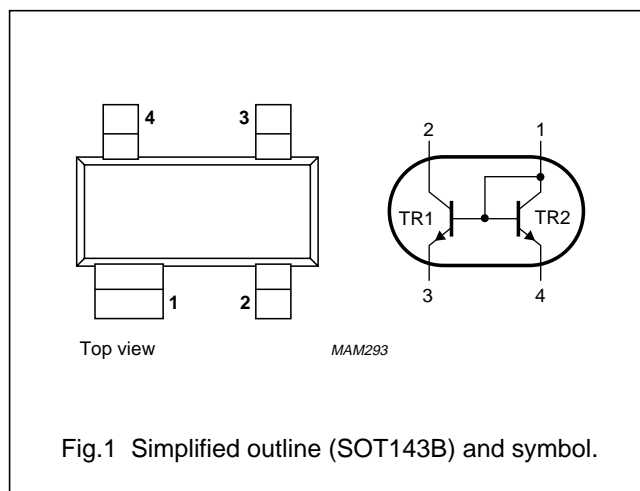
NPN double transistor in a SOT143B plastic package.  
PNP complement: BCV62.

### MARKING

TYPE NUMBER	MARKING CODE	TYPE NUMBER	MARKING CODE
BCV61	1Mp	BCV61B	1Kp
BCV61A	1Jp	BCV61C	1Lp

### PINNING

PIN	DESCRIPTION
1	collector TR2; base TR1 and TR2
2	collector TR1
3	emitter TR1
4	emitter TR2



### LIMITING VALUES

In accordance with the Absolute Maximum Rating System (IEC 134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
$V_{CBO}$	collector-base voltage TR1	open emitter	–	30	V
$V_{CEO}$	collector-emitter voltage TR1	open base	–	30	V
$V_{EBS}$	emitter-base voltage	$V_{CE} = 0$	–	6	V
$I_C$	collector current (DC)		–	100	mA
$I_{CM}$	peak collector current		–	200	mA
$I_{BM}$	peak base current TR1		–	200	mA
$P_{tot}$	total power dissipation	$T_{amb} \leq 25\text{ °C}$ ; note 1	–	250	mW
$T_{stg}$	storage temperature		–65	+150	°C
$T_j$	junction temperature		–	150	°C
$T_{amb}$	operating ambient temperature		–65	+150	°C

### Note

1. Transistor mounted on an FR4 printed-circuit board.

## NPN general purpose double transistor

## BCV61

## THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
$R_{th\ j-a}$	thermal resistance from junction to ambient	note 1	500	K/W

## Note

1. Transistor mounted on an FR4 printed-circuit board.

## CHARACTERISTICS

$T_j = 25\text{ °C}$  unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
<b>Transistor TR1</b>						
$I_{CBO}$	collector cut-off current	$I_E = 0; V_{CB} = 30\text{ V}$	–	–	15	nA
		$I_E = 0; V_{CB} = 30\text{ V}; T_j = 150\text{ °C}$	–	–	5	$\mu\text{A}$
$I_{EBO}$	emitter cut-off current	$I_C = 0; V_{EB} = 5\text{ V}$	–	–	100	nA
$h_{FE}$	DC current gain	$I_C = 100\text{ }\mu\text{A}; V_{CE} = 5\text{ V}$	100	–	–	
		$I_C = 2\text{ mA}; V_{CE} = 5\text{ V}$	110	–	800	
$V_{CEsat}$	collector-emitter saturation voltage	$I_C = 10\text{ mA}; I_B = 0.5\text{ mA}$	–	90	250	mV
		$I_C = 100\text{ mA}; I_B = 5\text{ mA}$	–	200	600	mV
$V_{BEsat}$	base-emitter saturation voltage	$I_C = 10\text{ mA}; I_B = 0.5\text{ mA}; \text{note 1}$	–	700	–	mV
		$I_C = 100\text{ mA}; I_B = 5\text{ mA}; \text{note 1}$	–	900	–	mV
$V_{BE}$	base-emitter voltage	$I_C = 2\text{ mA}; V_{CE} = 5\text{ V}; \text{note 2}$	580	660	700	mV
		$I_C = 10\text{ mA}; V_{CE} = 5\text{ V}; \text{note 2}$	–	–	770	mV
$C_c$	collector capacitance	$I_E = I_E = 0; V_{CB} = 10\text{ V}; f = 1\text{ MHz}$	–	2.5	–	pF
$f_T$	transition frequency	$I_C = 10\text{ mA}; V_{CE} = 5\text{ V}; f = 100\text{ MHz}$	100	–	–	MHz
F	noise figure	$I_C = 200\text{ }\mu\text{A}; V_{CE} = 5\text{ V}; R_S = 2\text{ k}\Omega;$ $f = 1\text{ kHz}; B = 200\text{ Hz}$	–	–	10	dB
<b>Transistor TR2</b>						
$V_{EBS}$	base-emitter forward voltage	$V_{CB} = 0; I_E = -250\text{ mA}$	–	–	-1.8	V
		$V_{CB} = 0; I_E = -10\text{ }\mu\text{A}$	-400	–	–	mV
$h_{FE}$	DC current gain	$I_C = 2\text{ mA}; V_{CE} = 5\text{ V}$	110	–	220	
			200	–	450	
			420	–	800	

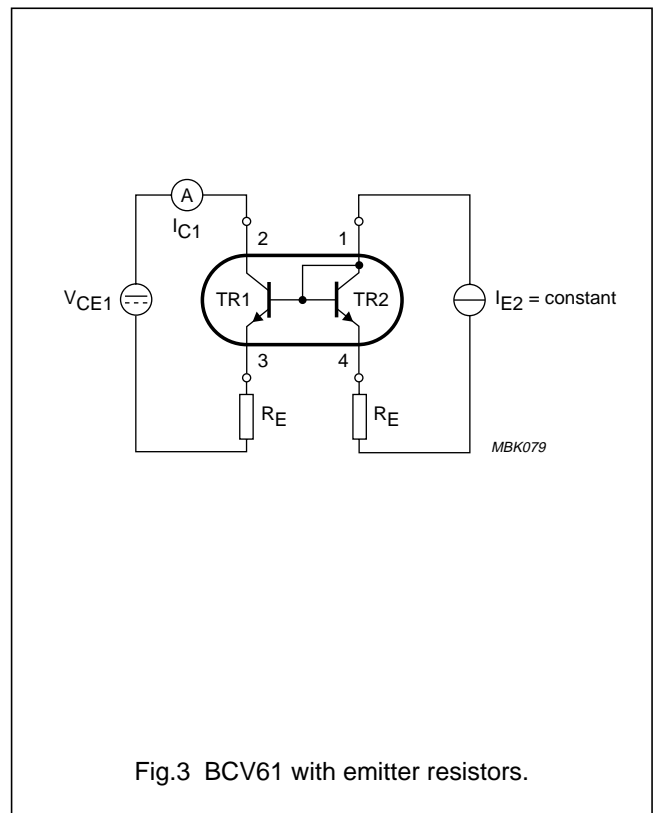
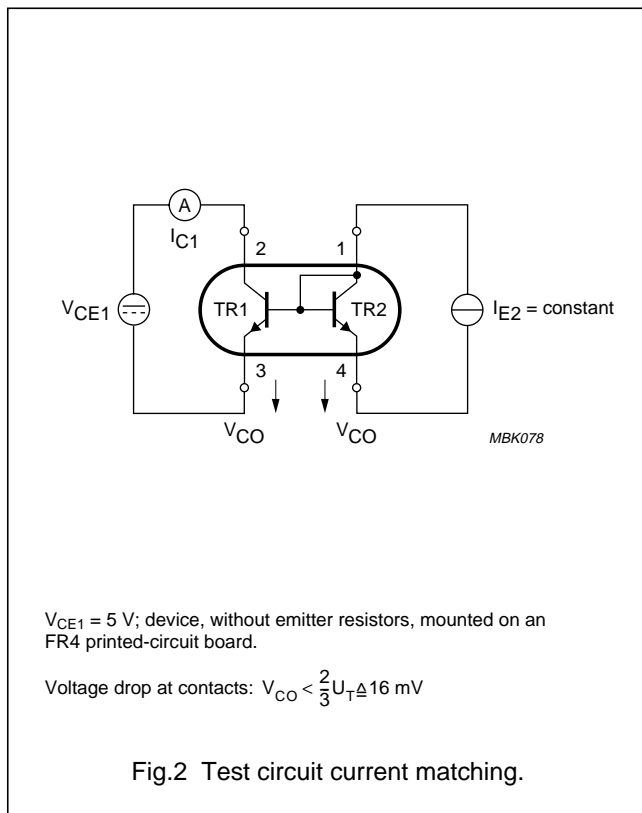
NPN general purpose double transistor

BCV61

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
<b>Transistors TR1 and TR2</b>						
$\frac{I_{C1}}{I_{E2}}$	current matching of transistors TR1 and TR2	$I_{E2} = -0.5 \text{ mA}; V_{CE1} = 5 \text{ V}; T_{\text{amb}} \leq 25 \text{ }^\circ\text{C}$	0.7	–	1.3	
		$I_{E2} = -0.5 \text{ mA}; V_{CE1} = 5 \text{ V}; T_{\text{amb}} \leq 150 \text{ }^\circ\text{C}$	0.7	–	1.3	
$I_{E2}$	emitter current for thermal stability of $I_{C1}$	$V_{CE1} = 5 \text{ V};$ note 3; (see Fig.2)	–	–	–5	mA

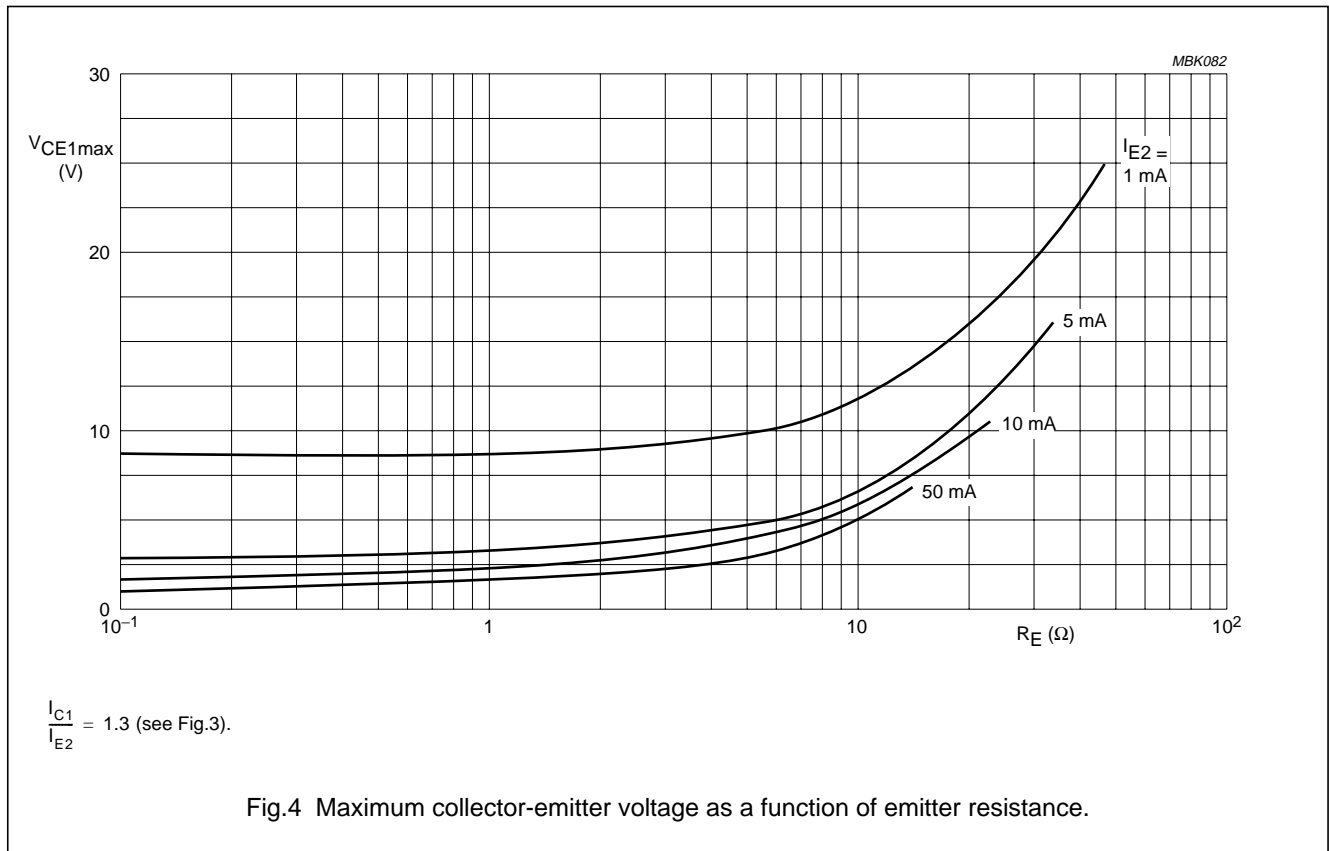
Notes

1. Decreasing 1.7 mV/°C with increasing temperature.
2. Decreasing 2 mV/°C with increasing temperature.
3. Device, without emitter resistors, mounted on an FR4 printed-circuit board.



NPN general purpose double transistor

BCV61



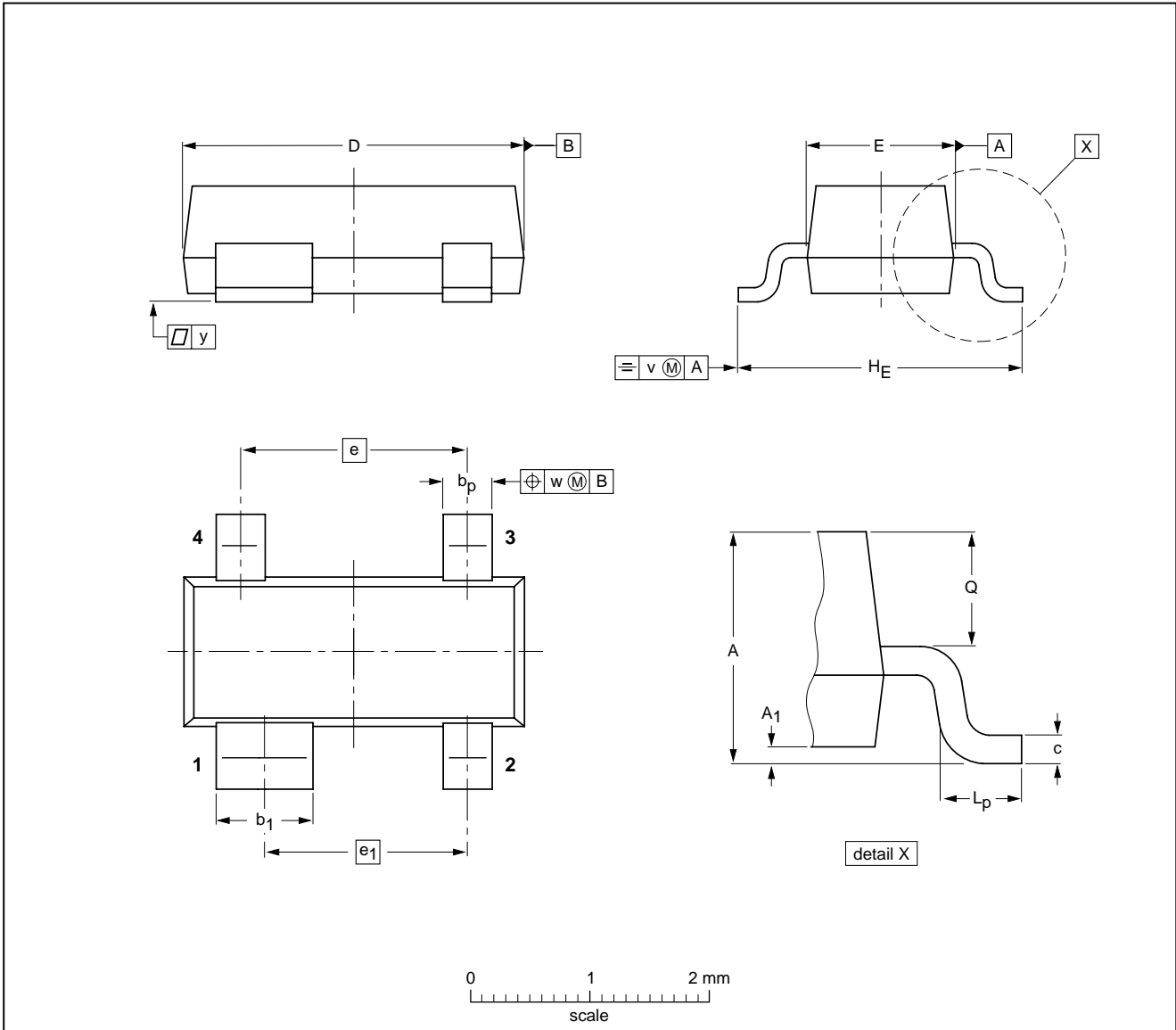
NPN general purpose double transistor

BCV61

PACKAGE OUTLINE

Plastic surface mounted package; 4 leads

SOT143B



DIMENSIONS (mm are the original dimensions)

UNIT	A	A <sub>1</sub> max	b <sub>p</sub>	b <sub>1</sub>	c	D	E	e	e <sub>1</sub>	H <sub>E</sub>	L <sub>p</sub>	Q	v	w	y
mm	1.1 0.9	0.1	0.48 0.38	0.88 0.78	0.15 0.09	3.0 2.8	1.4 1.2	1.9	1.7	2.5 2.1	0.45 0.15	0.55 0.45	0.2	0.1	0.1

OUTLINE VERSION	REFERENCES				EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	EIAJ			
SOT143B						97-02-28

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**NPN general purpose double transistor****BCV61**

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<b>Data Sheet Status</b>	
Objective specification	This data sheet contains target or goal specifications for product development.
Preliminary specification	This data sheet contains preliminary data; supplementary data may be published later.
Product specification	This data sheet contains final product specifications.
<b>Limiting values</b>	
Limiting values given are in accordance with the Absolute Maximum Rating System (IEC 134). 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.	
<b>Application information</b>	
Where application information is given, it is advisory and does not form part of the specification.	

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