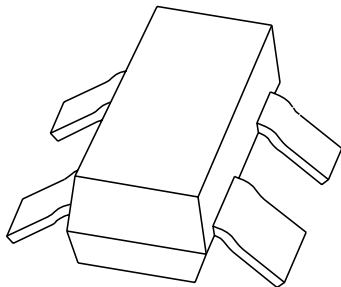


DATA SHEET



BCV61

**NPN general purpose double
transistor**

Product specification
Supersedes data of September 1994
File under Discrete Semiconductors, SC04

1997 Jun 16

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

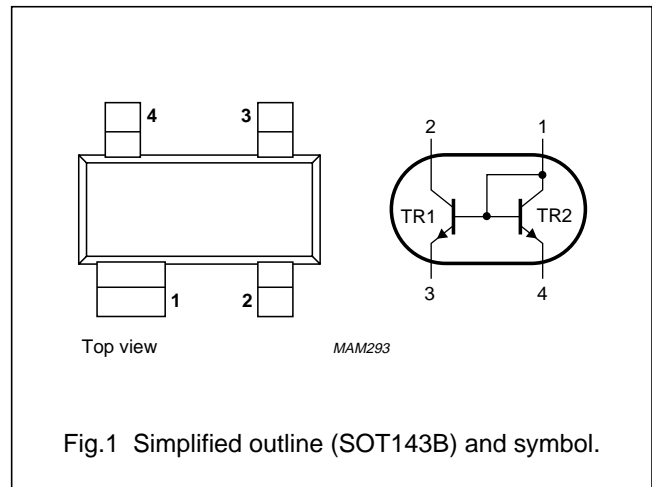
NPN double transistor in a SOT143B plastic package.
PNP complement: BCV62.

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



QUICK REFERENCE DATA

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
I_{CM}	peak collector current		–	200	mA
P_{tot}	total power dissipation	$T_{amb} \leq 25\text{ °C}$	–	250	mW
h_{FE}	DC current gain	$I_C = 100\ \mu\text{A}; V_{CE} = 5\ \text{V}$	100	–	
f_T	transition frequency	$I_C = 10\ \text{mA}; V_{CE} = 5\ \text{V}; f = 100\ \text{MHz}$	100	–	MHz

NPN general purpose double transistor

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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.

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.

NPN general purpose double transistor

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CHARACTERISTICS

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

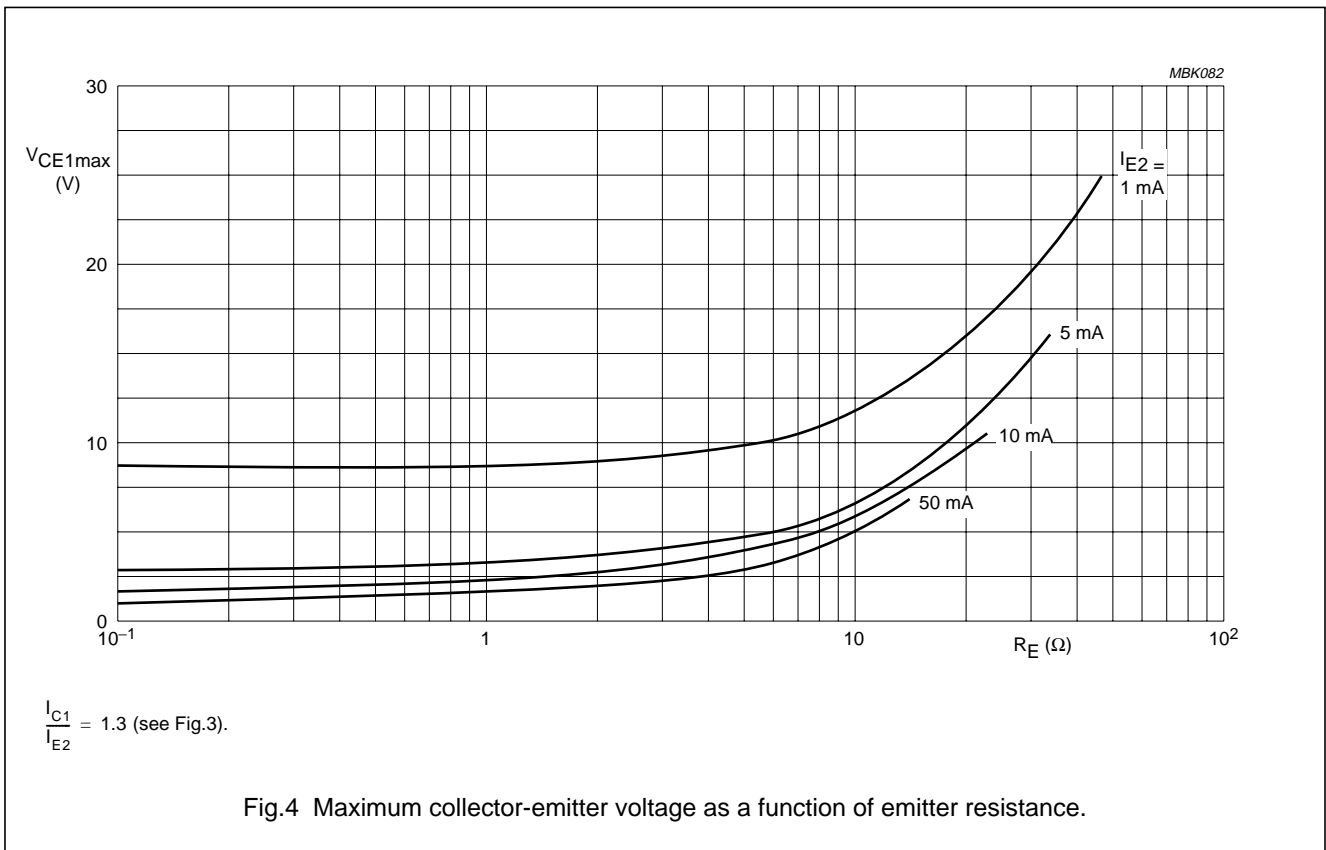
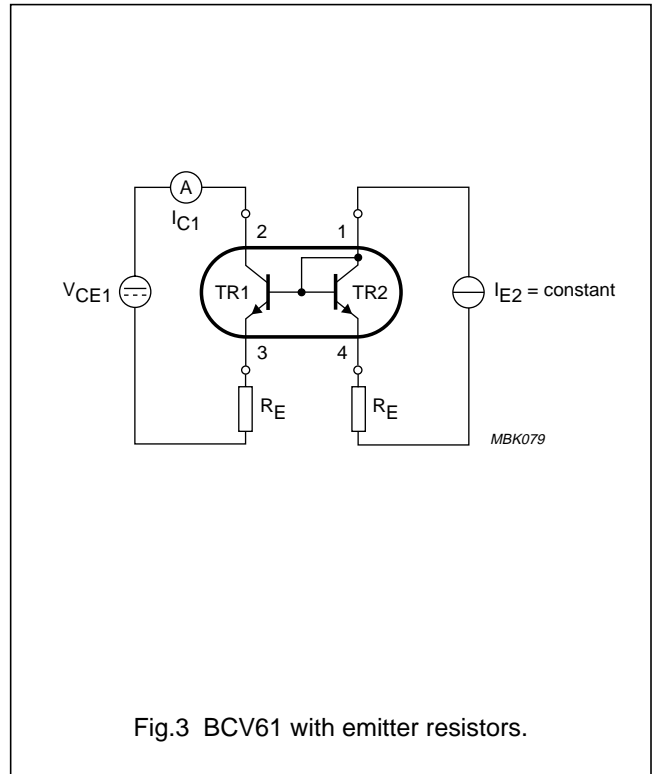
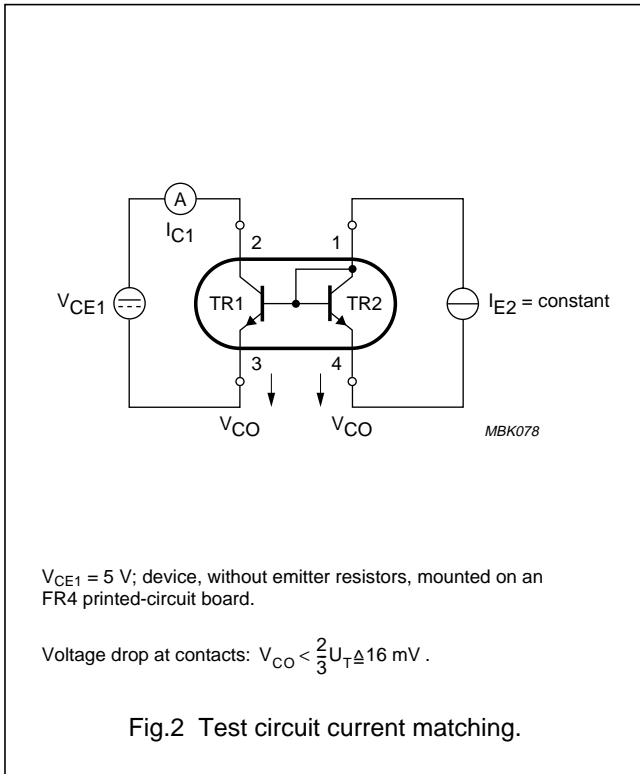
SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
Transistor TR1						
I_{CBO}	collector cut-off current	$I_E = 0; V_{CB} = 30\text{ V}$	–	–	15	nA
		$I_E = 0; V_{CB} = 30\text{ V}; T_j = 150\text{ °C}$	–	–	5	μA
I_{EBO}	emitter cut-off current	$I_C = 0; V_{EB} = 5\text{ V}$	–	–	100	nA
h_{FE}	DC current 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
Transistor TR2						
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 BCV61A BCV61B BCV61C	$I_C = 2\text{ mA}; V_{CE} = 5\text{ V}$	110	–	220	
			200	–	450	
			420	–	800	
Transistors TR1 and TR2						
$\frac{I_{C1}}{I_{E2}}$	current matching of transistors TR1 and TR2	$I_{E2} = -0.5\text{ mA}; V_{CE1} = 5\text{ V};$ $T_{amb} \leq 25\text{ °C}$	0.7	–	1.3	
		$I_{E2} = -0.5\text{ mA}; V_{CE1} = 5\text{ V};$ $T_{amb} \leq 150\text{ °C}$	0.7	–	1.3	
I_{E2}	emitter current for thermal stability of I_{C1}	$V_{CE1} = 5\text{ V}; \text{note 3}; \text{see Fig.2}$	–	–	-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



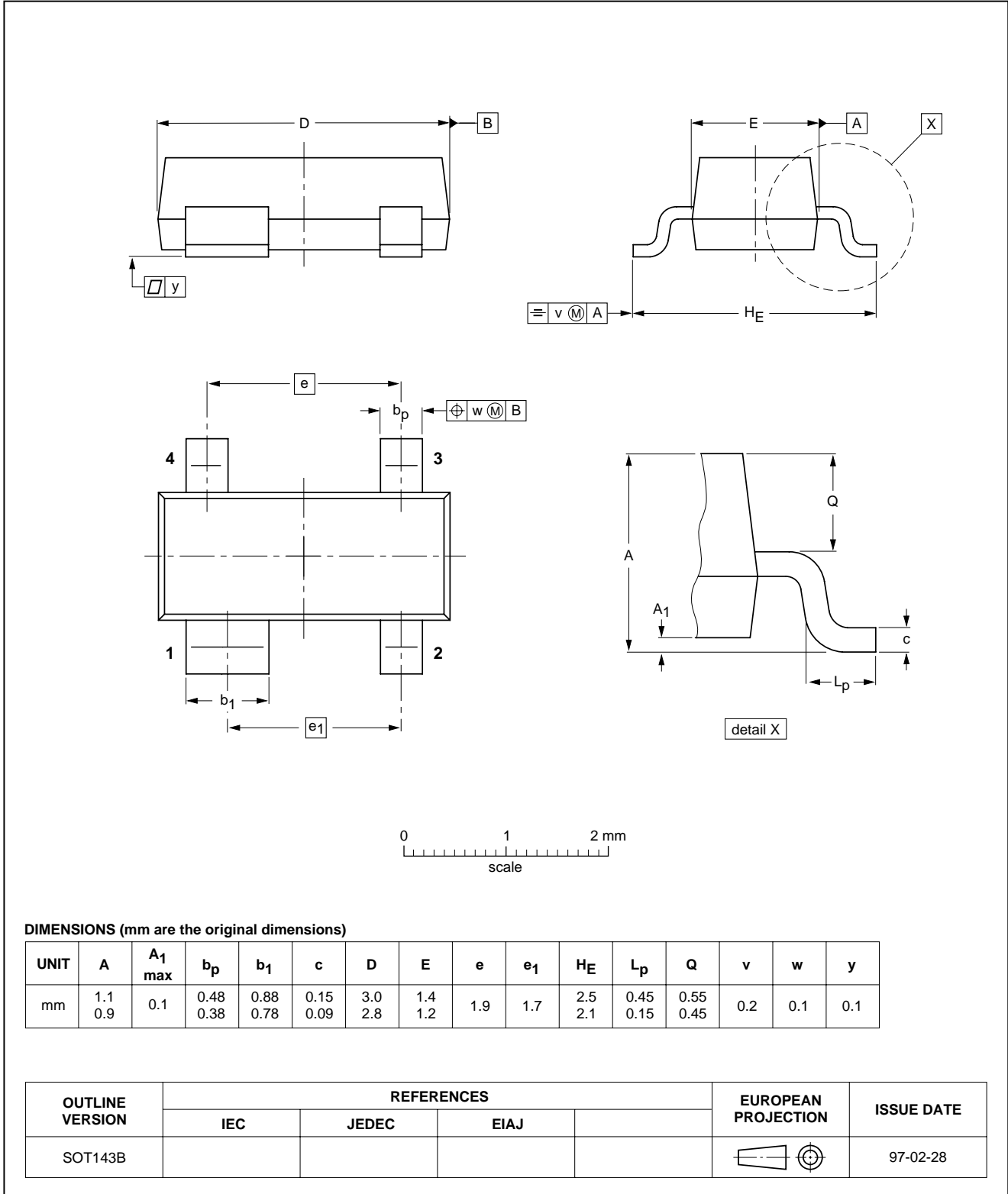
NPN general purpose double transistor

BCV61

PACKAGE OUTLINE

Plastic surface mounted package; 4 leads

SOT143B



NPN general purpose double transistor

BCV61

DEFINITIONS

Data Sheet Status	
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.
Limiting values	
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.	
Application information	
Where application information is given, it is advisory and does not form part of the specification.	

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