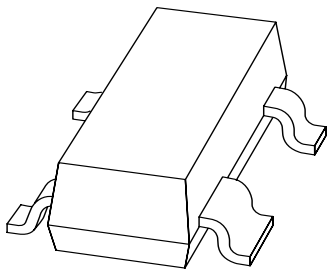


# DATA SHEET



## **BCV63; BCV63B** NPN general purpose double transistors

Product specification  
Supersedes data of 1997 Mar 10

1999 May 21

# NPN general purpose double transistors

# BCV63; BCV63B

### FEATURES

- Low current (max. 100 mA)
- Low voltage (max. 30 and 6 V).

### APPLICATIONS

- General purpose switching and amplification
- For use in Schmitt-trigger applications.

### DESCRIPTION

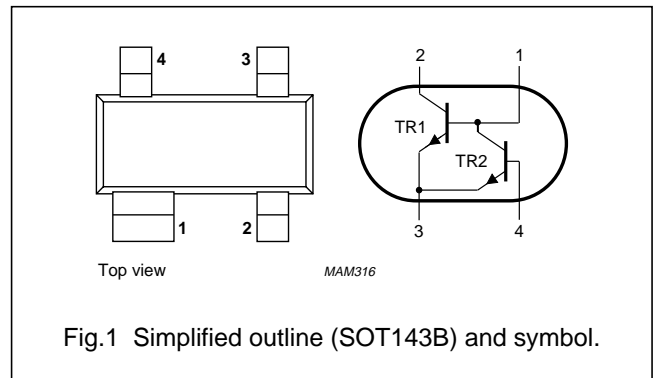
NPN double transistor in a SOT143B plastic package.  
PNP complement: BCV64B.

### MARKING

TYPE NUMBER	MARKING CODE
BCV63	D95
BCV63B	D96

### PINNING

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



### LIMITING VALUES

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V <sub>CBO</sub>	collector-base voltage	open emitter			
	TR1		–	30	V
	TR2		–	6	V
V <sub>CEO</sub>	collector-emitter voltage	open base			
	TR1		–	30	V
	TR2		–	6	V
V <sub>EBO</sub>	emitter-base voltage	open collector	–	6	V
I <sub>C</sub>	collector current (DC)		–	100	mA
I <sub>CM</sub>	peak collector current		–	200	mA
I <sub>B</sub>	base current (DC)		–	100	mA
P <sub>tot</sub>	total power dissipation	T <sub>amb</sub> ≤ 25 °C; note 1	–	250	mW
T <sub>stg</sub>	storage temperature		–65	+150	°C
T <sub>j</sub>	junction temperature		–	150	°C
T <sub>amb</sub>	operating ambient temperature		–65	+150	°C

### Note

1. Transistor mounted on a printed-circuit board.

## NPN general purpose double transistors

## BCV63; BCV63B

## 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 a printed-circuit board.

## CHARACTERISTICS

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$I_{CBO}$	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	$\mu\text{A}$
$h_{FE}$	DC current gain					
	BCV63 TR1	$I_C = 2\text{ mA}; V_{CE} = 5\text{ V}$	110	–	800	
	BCV63 TR2	$I_C = 2\text{ mA}; V_{CE} = 700\text{ mV}; \text{note 1}$	110	–	800	
	BCV63B TR1	$I_C = 2\text{ mA}; V_{CE} = 5\text{ V}$	200	–	450	
	BCV63B TR2	$I_C = 2\text{ mA}; V_{CE} = 700\text{ mV}; \text{note 1}$	200	–	450	
$V_{CEsat}$	collector-emitter saturation voltage	$I_C = 10\text{ mA}; I_B = 0.5\text{ mA}$	–	75	300	mV
	collector-emitter saturation voltage	$I_C = 100\text{ mA}; I_B = 5\text{ mA}$				
	TR1		–	250	650	mV
	TR2		–	250	–	mV
$V_{BEsat}$	base-emitter saturation voltage	$I_C = 10\text{ mA}; I_B = 0.5\text{ mA}; \text{note 2}$	–	700	–	mV
	base-emitter saturation voltage	$I_C = 100\text{ mA}; I_B = 5\text{ mA}; \text{note 2}$				
	TR1		–	–850	–	mV
$V_{BE}$	base-emitter voltage					
	TR1	$I_C = 2\text{ mA}; V_{CE} = 5\text{ V}; \text{note 3}$	600	650	750	mV
	TR1	$I_C = 10\text{ mA}; V_{CE} = 5\text{ V}; \text{note 3}$	–	–	820	mV
	TR2	$I_C = 2\text{ mA}; V_{CE} = 700\text{ mV}; \text{note 3}$	–	700	–	mV
$C_c$	collector capacitance	$I_E = I_e = 0; V_{CB} = 10\text{ V}; f = 1\text{ MHz}$				
	TR1		–	4	–	pF
$f_T$	transition frequency	$I_C = 10\text{ mA}; V_{CE} = 5\text{ V}; f = 100\text{ MHz}$				
	TR1		100	–	–	MHz

## Notes

1. Group selection will be done on TR1. Due to matched dies,  $h_{FE}$  values for TR2 are the same as for TR1.
2.  $V_{BEsat}$  decreases by approximately 1.7 mV/K with increasing temperature.
3.  $V_{BE}$  decreases by approximately 2 mV/K with increasing temperature.

NPN general purpose double transistors

BCV63; BCV63B

APPLICATION INFORMATION

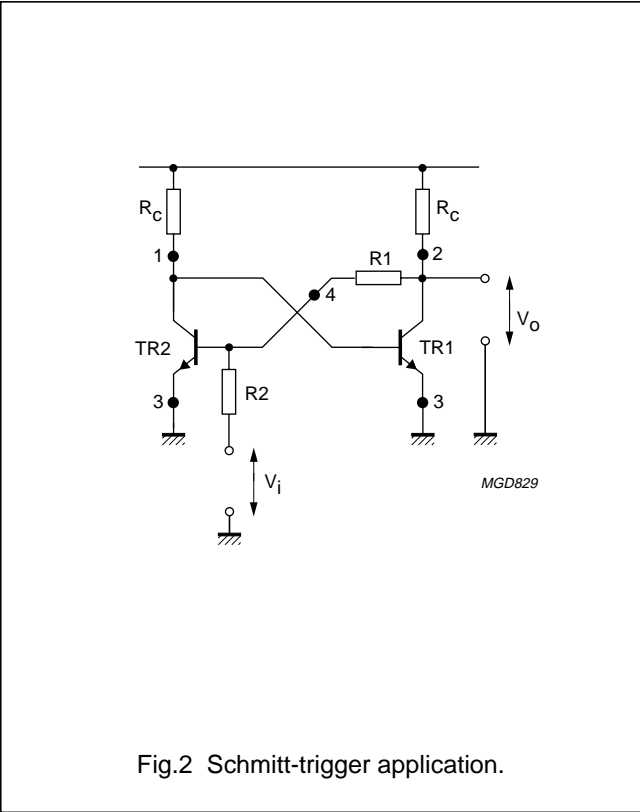


Fig.2 Schmitt-trigger application.

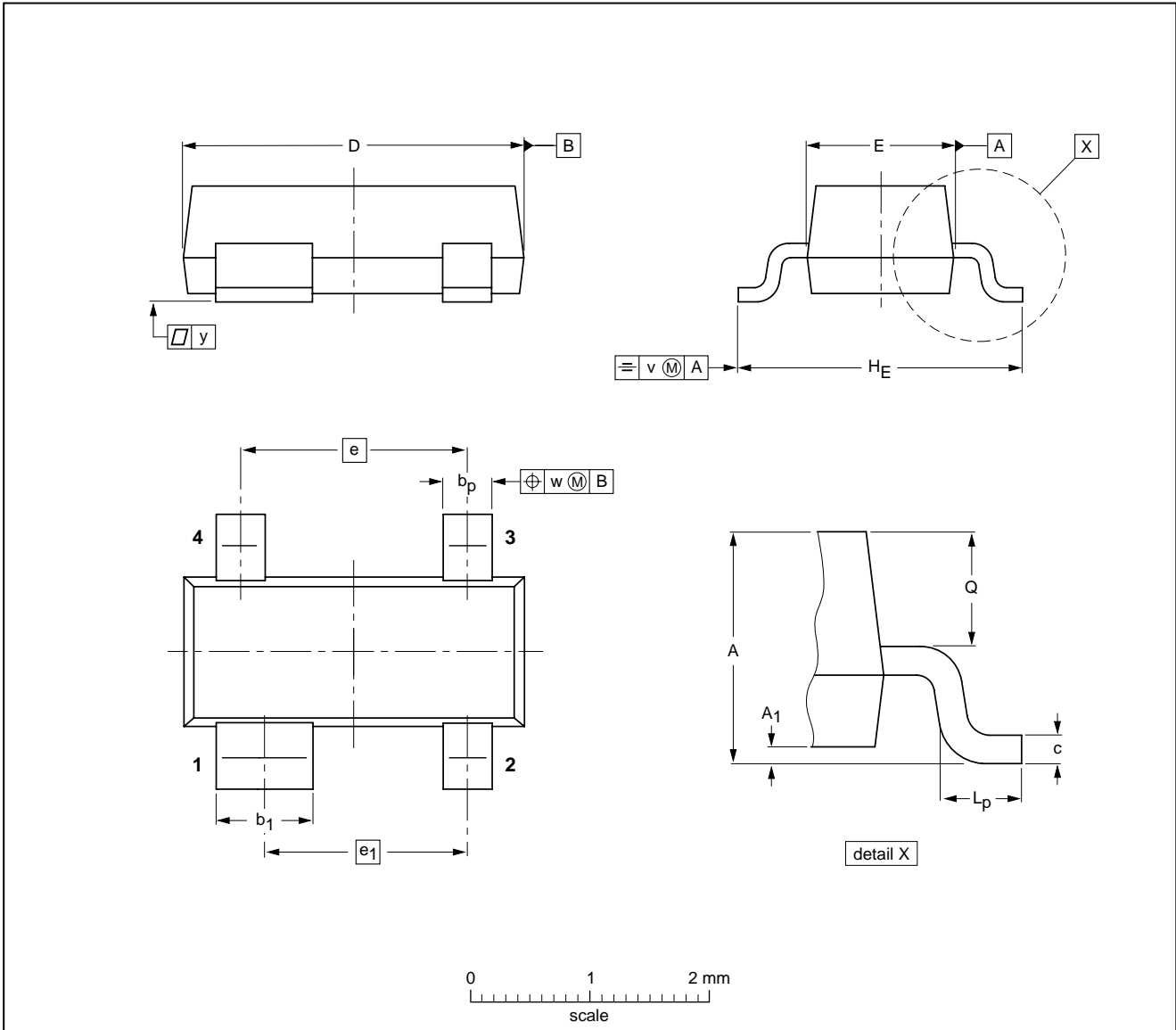
NPN general purpose double transistors

BCV63; BCV63B

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

## NPN general purpose double transistors

## BCV63; BCV63B

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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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NPN general purpose double transistors

BCV63; BCV63B

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