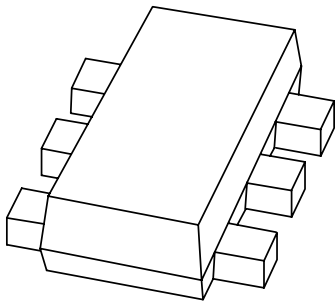


# DATA SHEET



## **BC847BVN** NPN/PNP general purpose transistor

Product data sheet  
Supersedes data of 2001 Aug 30

2001 Nov 07

# NPN/PNP general purpose transistor

# BC847BVN

### FEATURES

- 300 mW total power dissipation
- Very small 1.6 mm x 1.2 mm ultra thin package
- Excellent coplanarity due to straight leads
- Replaces two SC-75/SC-89 packaged transistors on same PCB area
- Reduced required PCB area
- Reduced pick and place costs.

### APPLICATIONS

- General purpose switching and amplification
- Switch mode power supply complementary MOSFET driver
- Complementary driver for audio amplifiers.

### DESCRIPTION

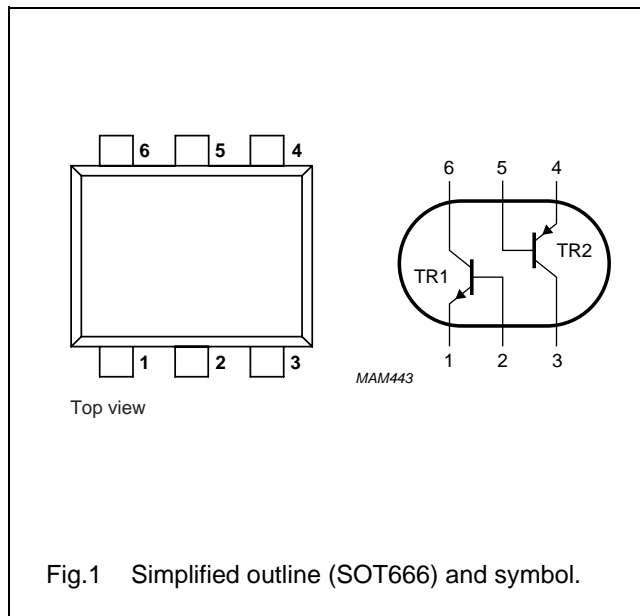
NPN/PNP transistor pair in a SOT666 plastic package.

### MARKING

TYPE NUMBER	MARKING CODE
BC847BVN	13

### PINNING

PIN	DESCRIPTION
1, 4	emitter TR1; TR2
2, 5	base TR1; TR2
6, 3	collector TR1; TR2



### LIMITING VALUES

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
<b>Per transistor; for the PNP transistor with negative polarity</b>					
$V_{CBO}$	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		–	200	mA
$I_{BM}$	peak base current		–	200	mA
$P_{tot}$	total power dissipation	$T_{amb} \leq 25\text{ }^\circ\text{C}$ ; note 1	–	200	mW
$T_{stg}$	storage temperature		–65	+150	$^\circ\text{C}$
$T_j$	junction temperature		–	150	$^\circ\text{C}$
$T_{amb}$	operating ambient temperature		–65	+150	$^\circ\text{C}$
<b>Per device</b>					
$P_{tot}$	total power dissipation	$T_{amb} \leq 25\text{ }^\circ\text{C}$ ; note 1	–	300	mW

### Note

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

## NPN/PNP general purpose transistor

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## THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
$R_{th\ j-a}$	thermal resistance from junction to ambient	notes 1 and 2	416	K/W

## Notes

1. Transistor mounted on an FR4 printed-circuit board.
2. The only recommended soldering is reflow soldering.

## CHARACTERISTICS

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

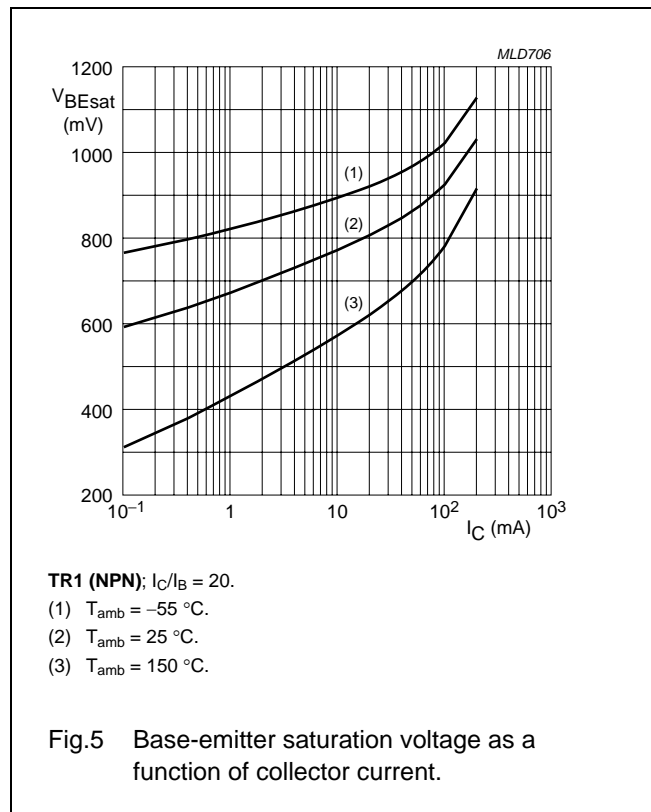
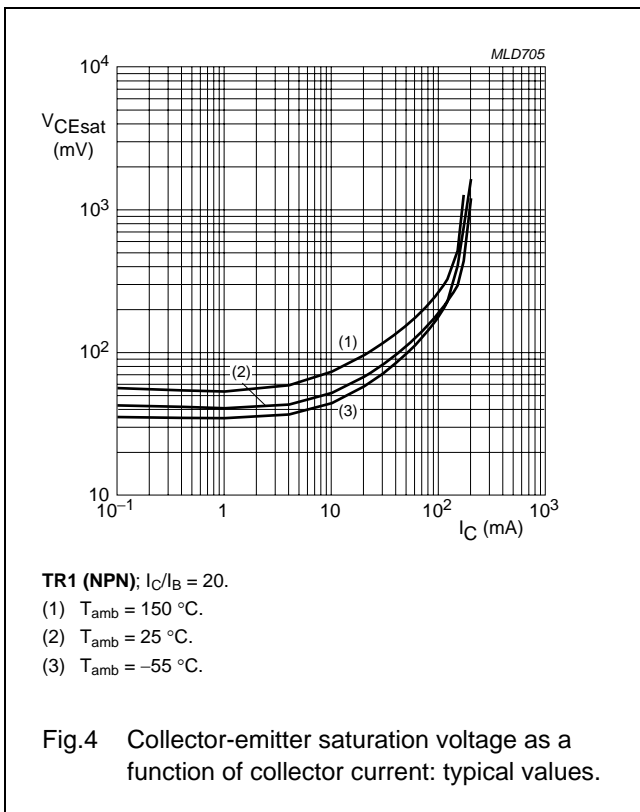
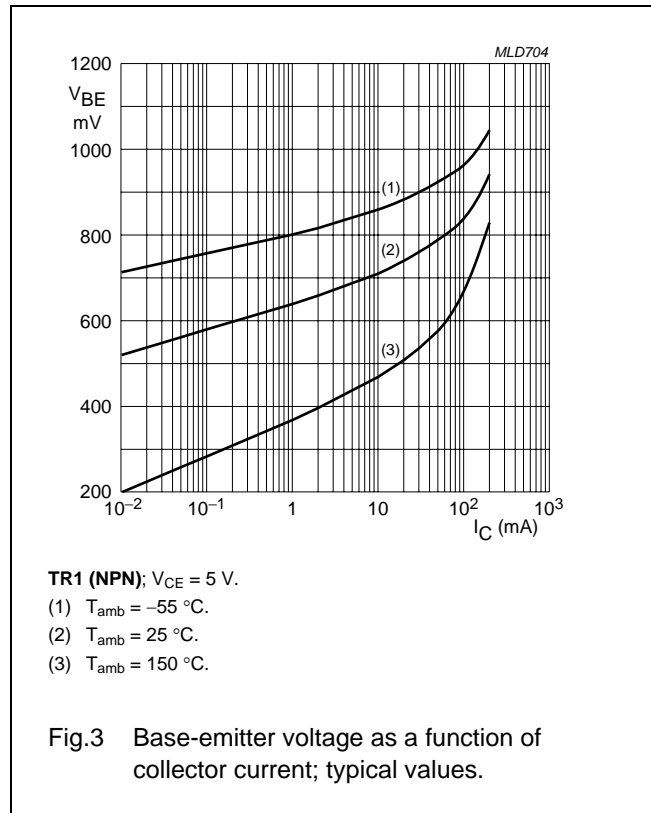
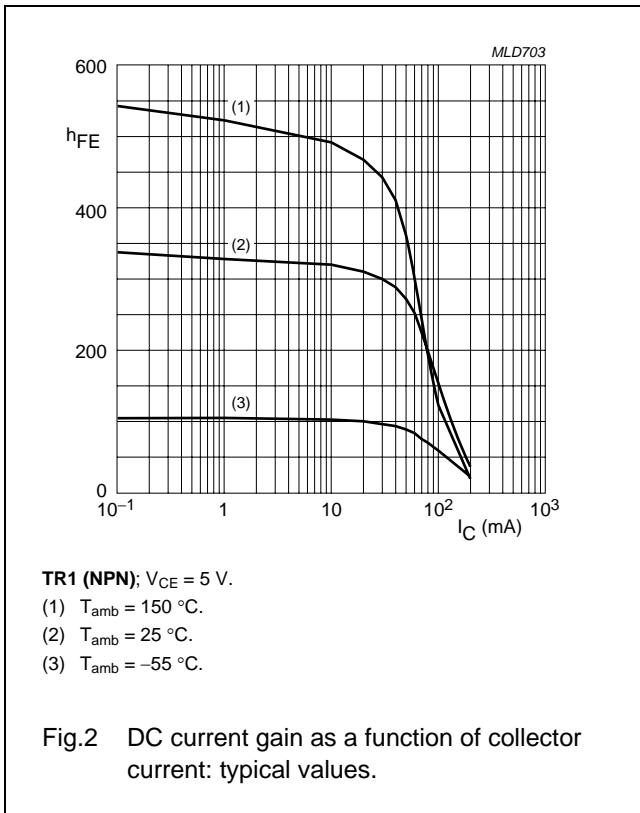
SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
<b>Per transistor; for the PNP transistor with negative polarity</b>						
$I_{CBO}$	collector-base cut-off current	$V_{CB} = 30\text{ V}; I_E = 0$	–	–	15	nA
		$V_{CB} = 30\text{ V}; I_E = 0; T_j = 150\text{ °C}$	–	–	5	$\mu\text{A}$
$I_{EBO}$	emitter-base cut-off current	$V_{EB} = 5\text{ V}; I_C = 0$	–	–	100	nA
$h_{FE}$	DC current gain	$V_{CE} = 5\text{ V}; I_C = 2\text{ mA}$	200	–	450	
$V_{CEsat}$	collector-emitter saturation voltage	$I_C = 10\text{ mA}; I_B = 0.5\text{ mA}$	–	–	100	mV
		$I_C = 100\text{ mA}; I_B = 5\text{ mA}; \text{note 1}$	–	–	300	mV
$V_{BEsat}$	collector-emitter saturation voltage	$I_C = 10\text{ mA}; I_B = 0.5\text{ mA}$	–	755	–	mV
$f_T$	transition frequency	$I_C = 10\text{ mA}; V_{CE} = 5\text{ V}; f = 100\text{ MHz}$	100	–	–	MHz
<b>NPN transistor</b>						
$V_{BE}$	base-emitter turn-on voltage	$V_{CE} = 5\text{ V}; I_C = 2\text{ mA}$	580	655	700	mV
$C_c$	collector capacitance	$V_{CB} = 10\text{ V}; I_E = I_e = 0; f = 1\text{ MHz}$	–	–	1.5	pF
$C_e$	emitter capacitance	$V_{EB} = 500\text{ mV}; I_C = I_c = 0; f = 1\text{ MHz}$	–	11	–	pF
<b>PNP transistor</b>						
$V_{BE}$	base-emitter turn-on voltage	$V_{CE} = -5\text{ V}; I_C = -2\text{ mA}$	600	655	750	mV
$C_c$	collector capacitance	$V_{CB} = -10\text{ V}; I_C = I_c = 0; f = 1\text{ MHz}$	–	–	2.2	pF
$C_e$	emitter capacitance	$V_{EB} = -500\text{ mV}; I_E = I_e = 0; f = 1\text{ MHz}$	–	10	–	pF

## Note

1. Pulse test:  $t_p \leq 300\text{ }\mu\text{s}; \delta \leq 0.02$ .

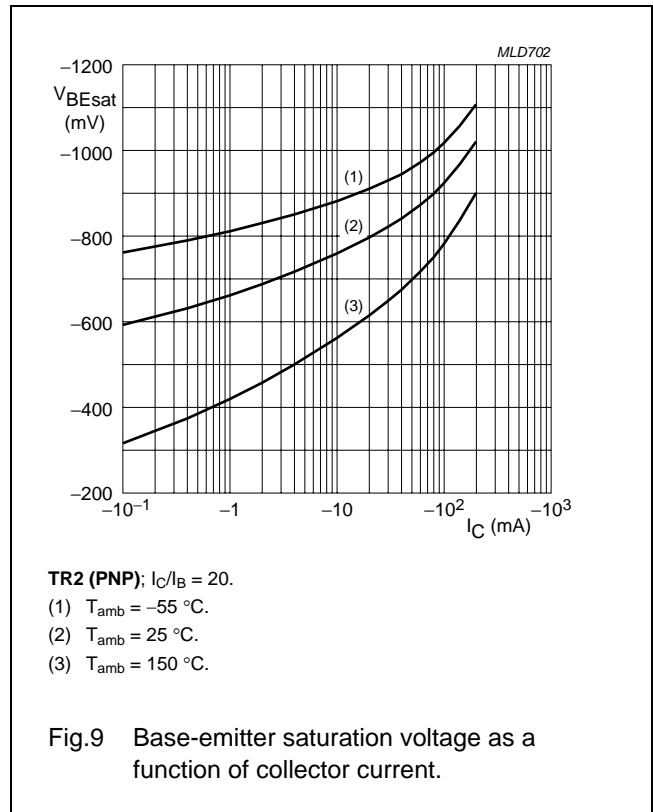
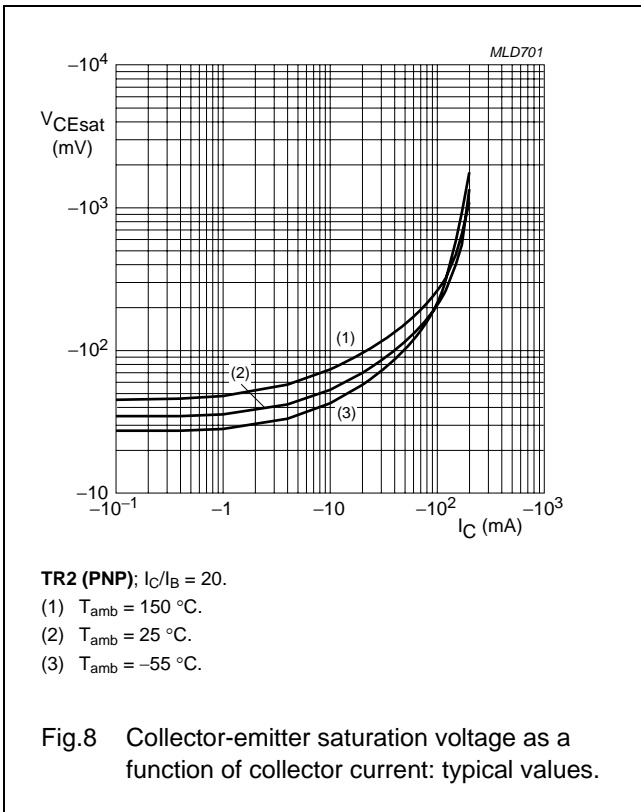
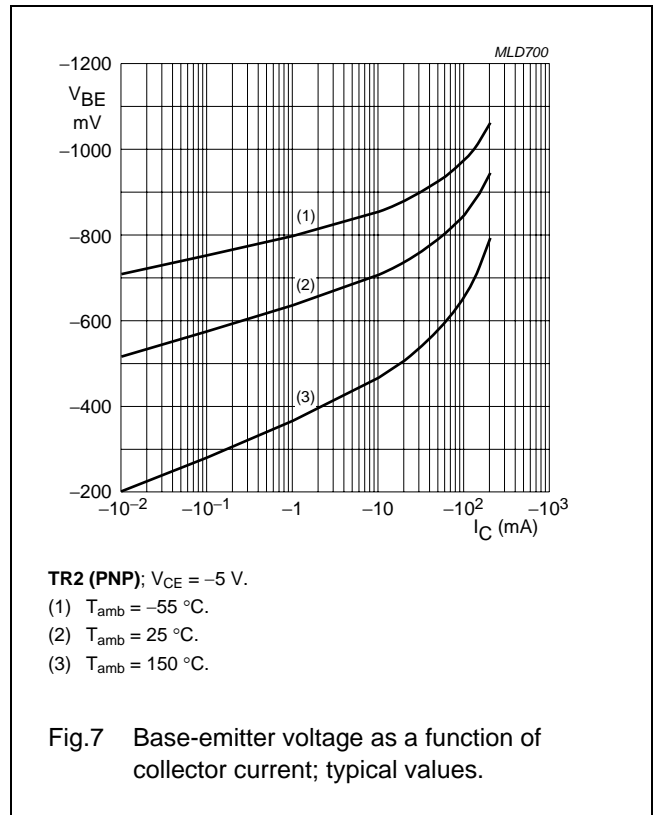
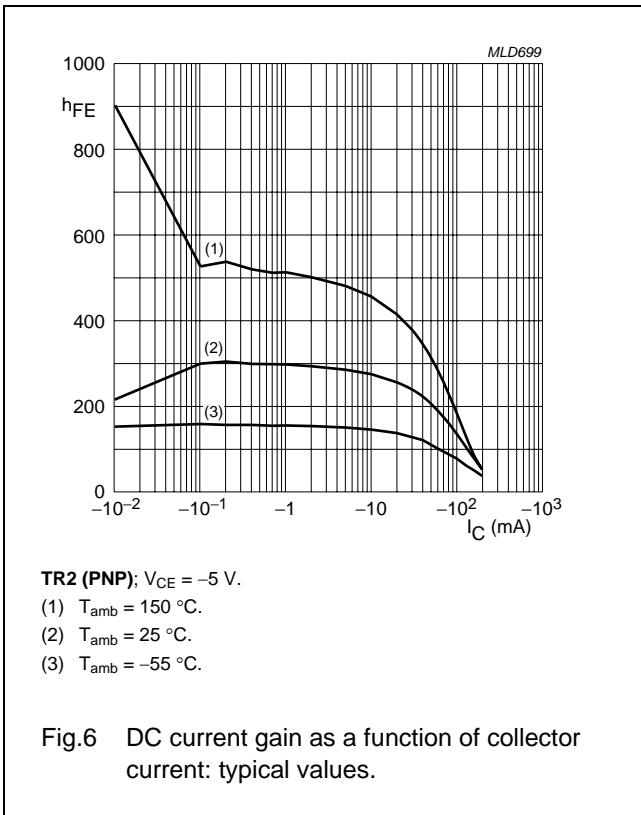
NPN/PNP general purpose transistor

BC847BVN



NPN/PNP general purpose transistor

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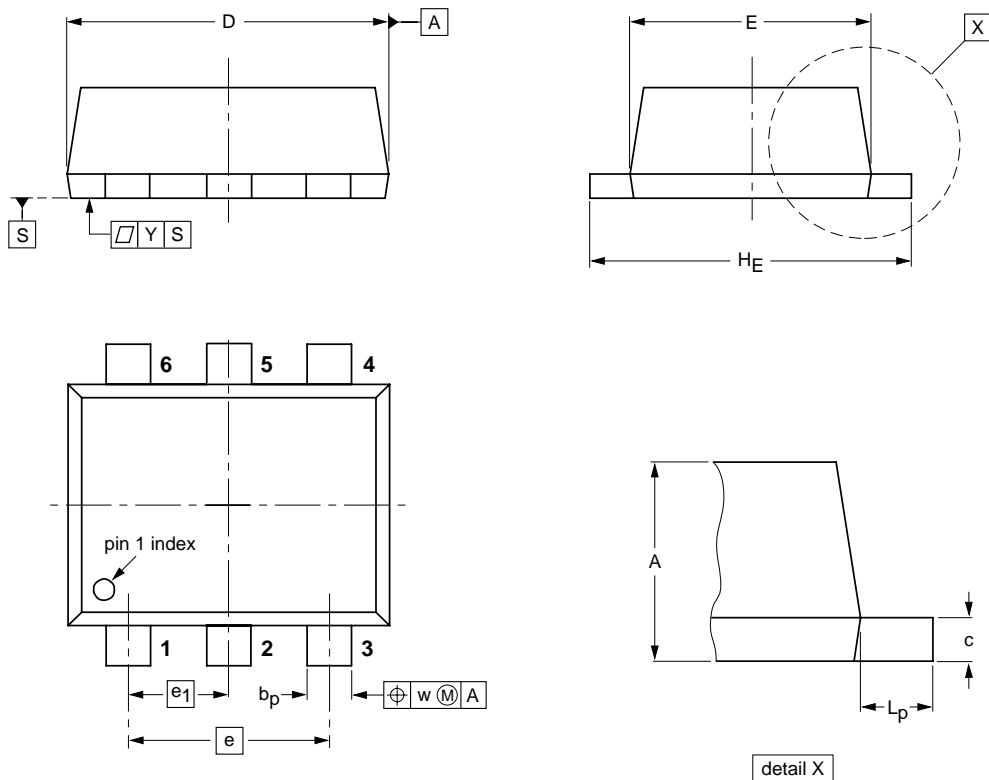
NPN/PNP general purpose transistor

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PACKAGE OUTLINE

Plastic surface mounted package; 6 leads

SOT666



DIMENSIONS (mm are the original dimensions)

UNIT	A	$b_p$	c	D	E	e	$e_1$	$H_E$	$L_p$	w	y
mm	0.6 0.5	0.27 0.17	0.18 0.08	1.7 1.5	1.3 1.1	1.0	0.5	1.7 1.5	0.3 0.1	0.1	0.1

OUTLINE VERSION	REFERENCES				EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	EIAJ			
SOT666						-01-01-04 01-08-27

## NPN/PNP general purpose transistor

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## DATA SHEET STATUS

DOCUMENT STATUS <sup>(1)</sup>	PRODUCT STATUS <sup>(2)</sup>	DEFINITION
Objective data sheet	Development	This document contains data from the objective specification for product development.
Preliminary data sheet	Qualification	This document contains data from the preliminary specification.
Product data sheet	Production	This document contains the product specification.

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