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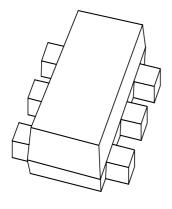
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Kind regards,

Team Nexperia

# **DISCRETE SEMICONDUCTORS**

# DATA SHEET



# BC847BV NPN general purpose double transistor

Product data sheet 2001 Sep 10



# NPN general purpose double transistor

BC847BV

### **FEATURES**

- 300 mW total power dissipation
- Very small 1.6 mm × 1.2 mm × 0.55 mm ultra thin package
- · Excellent coplanarity due to straight leads
- · Low collector capacitance
- Improved thermal behaviour due to flat leads
- · Reduces number of components as replacement of two SC-75/SC-89 packaged BISS transistors
- · Reduces required board space
- · Reduces pick and place costs.

# **APPLICATIONS**

· General purpose switching and amplification.

# **DESCRIPTION**

NPN double transistor in a SOT666 plastic package. PNP complement: BC857BV.

# **MARKING**

TYPE NUMBER	MARKING CODE		
BC847BV	1F		

### **PINNING**

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

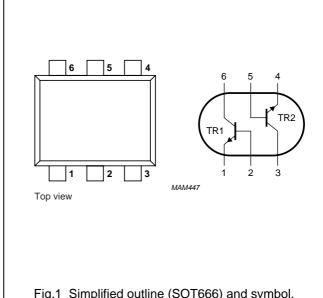


Fig.1 Simplified outline (SOT666) and symbol.

# NPN general purpose double transistor

BC847BV

# **LIMITING VALUES**

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT	
Per transis	Per transistor					
V <sub>CBO</sub>	collector-base voltage	open emitter	_	50	٧	
$V_{CEO}$	collector-emitter voltage	open base	-	45	V	
V <sub>EBO</sub>	emitter-base voltage	open collector	-	5	V	
I <sub>C</sub>	collector current (DC)		_	100	mA	
I <sub>CM</sub>	peak collector current		_	200	mA	
I <sub>BM</sub>	peak base current		-	200	mA	
P <sub>tot</sub>	total power dissipation	T <sub>amb</sub> ≤ 25 °C; note 1	_	200	mW	
T <sub>stg</sub>	storage temperature		-65	+150	°C	
Tj	junction temperature		_	150	°C	
T <sub>amb</sub>	operating ambient temperature		-65	+150	°C	
Per device	Per device					
P <sub>tot</sub>	total power dissipation	T <sub>amb</sub> ≤ 25 °C; note 1	_	300	mW	

# Note

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

# THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT	
R <sub>th j-a</sub>	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 method is reflow soldering.

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# NPN general purpose double transistor

BC847BV

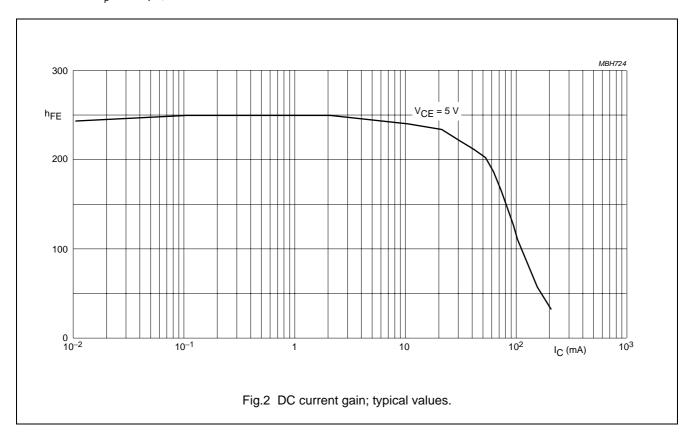
# **CHARACTERISTICS**

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
Per transis	Per transistor					
I <sub>CBO</sub>	collector-base cut-off current	I <sub>E</sub> = 0; V <sub>CB</sub> = 30 V	_	_	15	nA
		I <sub>E</sub> = 0; V <sub>CB</sub> = 30 V; T <sub>j</sub> = 150 °C	_	-	5	μΑ
I <sub>EBO</sub>	emitter-base cut-off current	I <sub>C</sub> = 0; V <sub>EB</sub> = 5 V	_	_	100	nA
h <sub>FE</sub>	DC current gain	$I_C = 2 \text{ mA}; V_{CE} = 5 \text{ V}$	200	-	450	
$V_{BE}$	base-emitter voltage	$I_C = 2 \text{ mA}; V_{CE} = 5 \text{ V}$	580	655	700	mV
V <sub>CEsat</sub>	collector-emitter saturation	$I_C = 10 \text{ mA}; I_B = 0.5 \text{ mA}$	_	-	100	mV
	voltage	$I_C = 100 \text{ mA}$ ; $I_B = 5 \text{ mA}$ ; note 1	_	_	300	mV
V <sub>BEsat</sub>	base-emitter saturation voltage	$I_C = 10 \text{ mA}; I_B = 0.5 \text{ mA}$	_	755	_	mV
C <sub>c</sub>	collector capacitance	$I_E = I_e = 0$ ; $V_{CB} = 10 \text{ V}$ ; $f = 1 \text{ MHz}$	_	-	1.5	pF
C <sub>e</sub>	emitter capacitance	$I_C = I_C = 0$ ; $V_{EB} = 500 \text{ mV}$ ; $f = 1 \text{ MHz}$	_	11	_	pF
f <sub>T</sub>	transition frequency	$I_C = 10 \text{ mA}; V_{CE} = 5 \text{ V}; f = 100 \text{ MHz}$	100	_	_	MHz

# Note

1. Pulse test:  $t_p \leq 300~\mu s;~\delta \leq 0.02.$ 

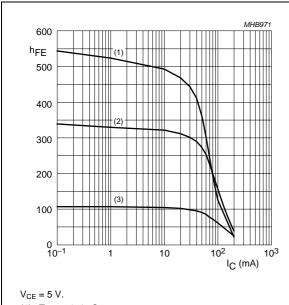


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# NPN general purpose double transistor

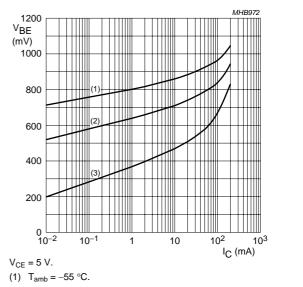
BC847BV

# **Graphical information BC847BV**



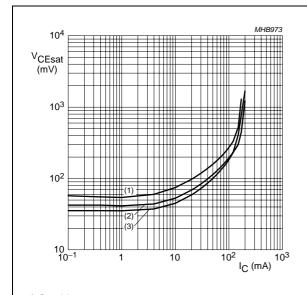
- (1)  $T_{amb} = 150 \, ^{\circ}C$ .
- (2)  $T_{amb} = 25 \, ^{\circ}C$ .
- (3)  $T_{amb} = -55 \, ^{\circ}C$ .

Fig.3 DC current gain; typical values.



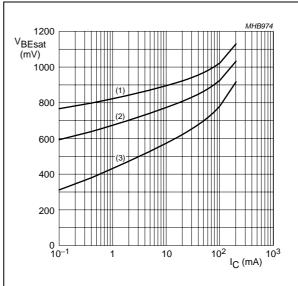
- (2)  $T_{amb} = 25 \, ^{\circ}C$ .
- (3)  $T_{amb} = 150 \, ^{\circ}C$ .

Fig.4 Base-emitter voltage as a function of collector current; typical values.



- $I_{\rm C}/I_{\rm B} = 20.$
- (1)  $T_{amb} = 150 \, ^{\circ}C$ .
- (2)  $T_{amb} = 25 \, ^{\circ}C$ .
- (3)  $T_{amb} = -55 \, ^{\circ}C$ .

Fig.5 Collector-emitter saturation voltage as a function of collector current; typical values.



I<sub>C</sub>/I<sub>B</sub> 20.

- (1)  $T_{amb} = -55 \, ^{\circ}C$ .
- (2)  $T_{amb} = 25 \,^{\circ}C$ .
- (3)  $T_{amb} = 150 \, ^{\circ}C$ .

Fig.6 Base-emitter saturation voltage as a function of collector current; typical values.

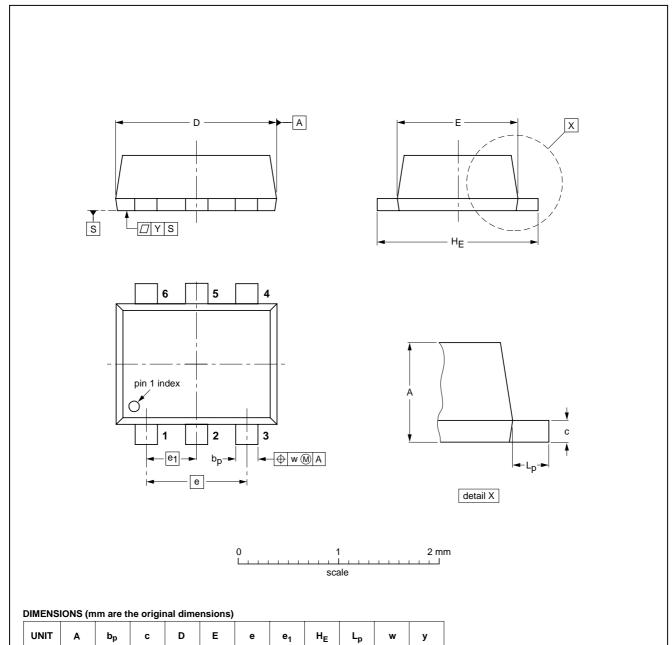
# NPN general purpose double transistor

BC847BV

# **PACKAGE OUTLINE**

Plastic surface mounted package; 6 leads

SOT666



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

6

1.5

0.1

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0.6 0.5

0.27

0.17

0.18

# NPN general purpose double transistor

BC847BV

### **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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# **Customer notification**

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# **Contact information**

For additional information please visit: http://www.nxp.com

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