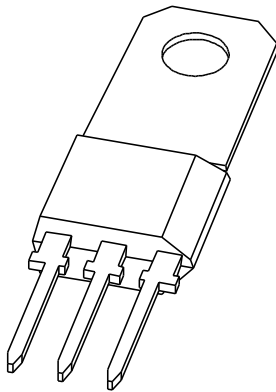


# DATA SHEET



## **BF857; BF858; BF859** NPN high-voltage transistors

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

1996 Dec 09

## NPN high-voltage transistors

## BF857; BF858; BF859

### DESCRIPTION

NPN transistors in a TO-202 plastic package.

An A-version with e-b-c pinning instead of e-c-b is available on request.

### APPLICATIONS

- For use in video output stages of black and white and colour television receivers.

### PINNING

PIN	DESCRIPTION
1	emitter
2	collector, connected to mounting base
3	base

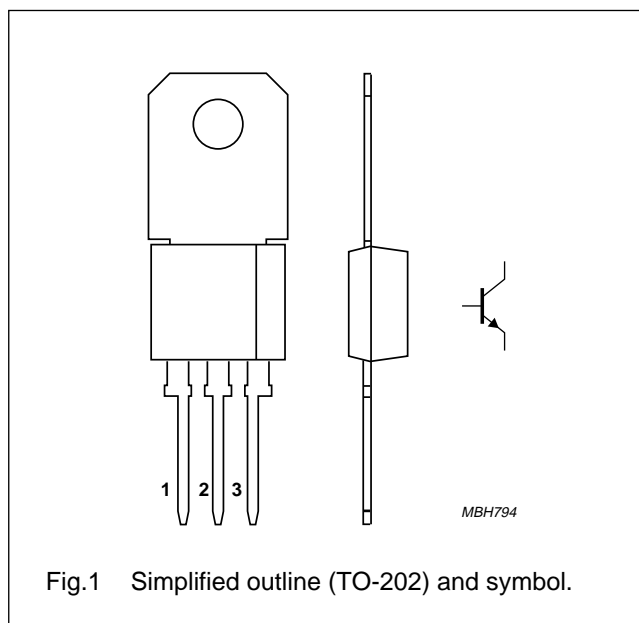


Fig.1 Simplified outline (TO-202) and symbol.

### QUICK REFERENCE DATA

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
$V_{CBO}$	collector-base voltage	open emitter			
	BF857		–	160	V
	BF858		–	250	V
	BF859		–	300	V
$V_{CEO}$	collector-emitter voltage	open base			
	BF857		–	160	V
	BF858		–	250	V
	BF859		–	300	V
$I_{CM}$	peak collector current		–	300	mA
$P_{tot}$	total power dissipation	$T_{mb} \leq 75\text{ °C}$	–	6	W
$h_{FE}$	DC current gain	$I_C = 30\text{ mA}; V_{CE} = 10\text{ V}$	26	–	
$C_{re}$	feedback capacitance	$I_C = I_c = 0; V_{CE} = 30\text{ V}; f = 1\text{ MHz}$	–	3	pF
$f_T$	transition frequency	$I_C = 15\text{ mA}; V_{CE} = 10\text{ V}; f = 100\text{ MHz}$	90	–	MHz

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**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			
	BF857		–	160	V
	BF858		–	250	V
	BF859		–	300	V
V <sub>CEO</sub>	collector-emitter voltage	open base			
	BF857		–	160	V
	BF858		–	250	V
	BF859		–	300	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		–	300	mA
I <sub>BM</sub>	peak base current		–	100	mA
P <sub>tot</sub>	total power dissipation	T <sub>amb</sub> ≤ 25 °C	–	2	W
		T <sub>mb</sub> ≤ 75 °C	–	6	W
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

**THERMAL CHARACTERISTICS**

SYMBOL	PARAMETER	VALUE	UNIT
R <sub>th j-a</sub>	thermal resistance from junction to ambient	62.5	K/W
R <sub>th j-mb</sub>	thermal resistance from junction to mounting base	12.5	K/W

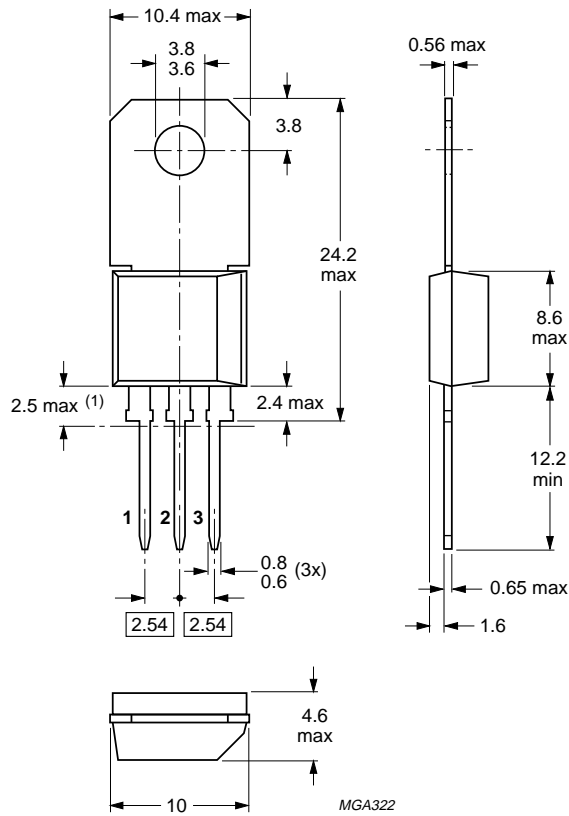
**CHARACTERISTICS**T<sub>j</sub> = 25 °C unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
I <sub>CBO</sub>	collector cut-off current	I <sub>E</sub> = 0; V <sub>CB</sub> = 100 V			
	BF857		–	0.1	μA
	BF858	I <sub>E</sub> = 0; V <sub>CB</sub> = 200 V	–	0.1	μA
I <sub>CBO</sub>	collector cut-off current	I <sub>E</sub> = 0; V <sub>CB</sub> = 250 V	–	0.1	μA
I <sub>EBO</sub>	emitter cut-off current	I <sub>C</sub> = 0; V <sub>EB</sub> = 5 V	–	100	nA
h <sub>FE</sub>	DC current gain	I <sub>C</sub> = 30 mA; V <sub>CE</sub> = 10 V	26	–	
V <sub>CEsat</sub>	collector-emitter saturation voltage	I <sub>C</sub> = 30 mA; I <sub>B</sub> = 6 mA	–	1	V
C <sub>re</sub>	feedback capacitance	I <sub>C</sub> = I <sub>c</sub> = 0; V <sub>CE</sub> = 30 V; f = 1 MHz	–	3	pF
f <sub>T</sub>	transition frequency	I <sub>C</sub> = 15 mA; V <sub>CE</sub> = 10 V; f = 100 MHz	90	–	MHz

# NPN high-voltage transistors

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## PACKAGE OUTLINE



Dimensions in mm.

(1) Terminal dimensions within this zone are uncontrolled.

Fig.2 TO-202.

## NPN high-voltage transistors

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**DEFINITIONS**

<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.	

**LIFE SUPPORT APPLICATIONS**

These products are not designed for use in life support appliances, devices, or systems where malfunction of these products can reasonably be expected to result in personal injury. Philips customers using or selling these products for use in such applications do so at their own risk and agree to fully indemnify Philips for any damages resulting from such improper use or sale.

NPN high-voltage transistors

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**NOTES**

NPN high-voltage transistors

BF857; BF858; BF859

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**NOTES**

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