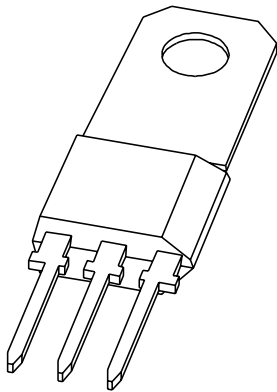


# DATA SHEET



**BF819**

**NPN high-voltage transistor**

Product specification  
Supersedes data of 1997 Jun 20  
File under Discrete Semiconductors, SC04

1997 Sep 03

# NPN high-voltage transistor

**BF819**

### FEATURES

- Low current (max. 100 mA)
- High voltage (max. 250 V).

### APPLICATIONS

- Driver for a line output transistor in colour television receivers.

### DESCRIPTION

NPN high-voltage transistor in a TO-202; SOT128B plastic package.

### PINNING

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

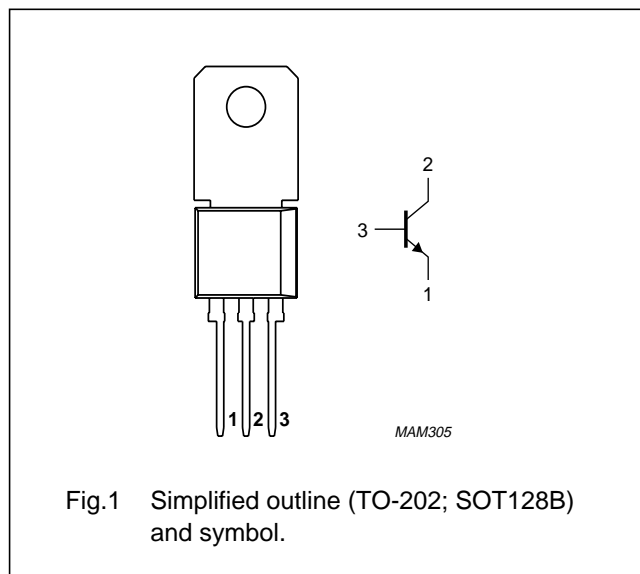


Fig.1 Simplified outline (TO-202; SOT128B) and symbol.

### QUICK REFERENCE DATA

SYMBOL	PARAMETER	CONDITIONS	TYP.	MAX.	UNIT
$V_{CBO}$	collector-base voltage	open emitter	–	300	V
$V_{CEO}$	collector-emitter voltage	open base	–	250	V
$I_{CM}$	peak collector current		–	300	mA
$P_{tot}$	total power dissipation	$T_{amb} \leq 75\text{ °C}$	–	6	W
$h_{FE}$	DC current gain	$I_C = 20\text{ mA}, V_{CE} = 10\text{ V}$	45	–	
$C_{re}$	feedback capacitance	$I_C = i_c = 0; V_{CB} = 30\text{ V}; f = 1\text{ MHz}$	–	3.5	pF
$f_T$	transition frequency	$I_C = 15\text{ mA}; V_{CE} = 10\text{ V}; f = 100\text{ MHz}$	90	–	MHz

## NPN high-voltage 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	open emitter	–	300	V
$V_{CEO}$	collector-emitter voltage	open base	–	250	V
$V_{EBO}$	emitter-base voltage	open collector	–	5	V
$I_C$	collector current (DC)		–	100	mA
$I_{CM}$	peak collector current		–	300	mA
$I_{BM}$	peak base current		–	100	mA
$P_{tot}$	total power dissipation	$T_{amb} \leq 75\text{ °C}$	–	1.2	W
		$T_{mb} \leq 75\text{ °C}$	–	6	W
$T_{stg}$	storage temperature		–65	+150	°C
$T_j$	junction temperature		–	150	°C
$T_{amb}$	operating ambient temperature		–65	+150	°C

## THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
$R_{th\ j-a}$	thermal resistance from junction to ambient	in free air	62.5	K/W
$R_{th\ j-mb}$	thermal resistance from junction to mounting base		12.5	K/W

## CHARACTERISTICS

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

SYMBOL	PARAMETER	CONDITIONS	TYP.	MAX.	UNIT
$I_{CBO}$	collector cut-off current	$I_E = 0; V_{CB} = 250\text{ V}$	–	50	nA
		$I_E = 0; V_{CB} = 250\text{ V}; T_j = 150\text{ °C}$	–	5	μA
$I_{EBO}$	emitter cut-off current	$I_C = 0; V_{EB} = 5\text{ V}$	–	100	nA
$h_{FE}$	DC current gain	$I_C = 20\text{ mA}; V_{CE} = 10\text{ V}$	45	–	
$V_{CEsat}$	collector-emitter saturation voltage	$I_C = 200\text{ mA}; I_B = 20\text{ mA}$	–	11	V
$C_c$	collector capacitance	$I_E = I_C = 0; V_{CB} = 30\text{ V}; f = 1\text{ MHz}$	–	4.5	pF
$C_{re}$	feedback capacitance	$I_C = I_C = 0; V_{CB} = 30\text{ V}; f = 1\text{ MHz}$	–	3.5	pF
$f_T$	transition frequency	$I_C = 15\text{ mA}; V_{CE} = 10\text{ V}; f = 100\text{ MHz}$	90	–	MHz

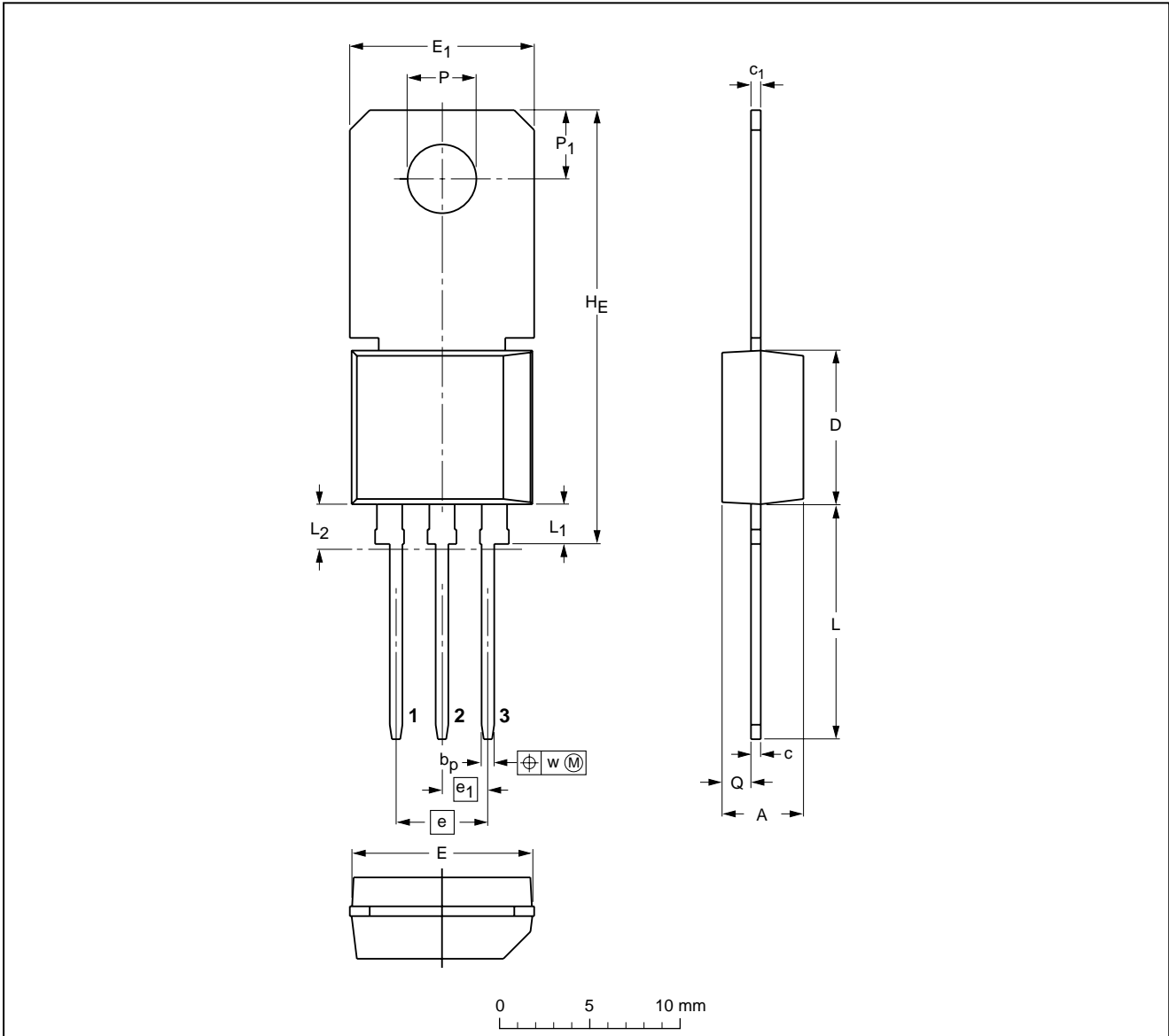
# NPN high-voltage transistor

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## PACKAGE OUTLINE

Plastic single-ended leaded (through hole) package; with cooling fin, mountable to heatsink, 1 mounting hole; 3 leads (in-line)

SOT128B



DIMENSIONS (mm are the original dimensions)

UNIT	A	b <sub>p</sub>	c	c <sub>1</sub>	D	E	E <sub>1</sub>	e	e <sub>1</sub>	H <sub>E</sub>	L	L <sub>1</sub>	L <sub>2</sub> <sup>(1)</sup> max	P	P <sub>1</sub>	Q	w
mm	4.6 4.4	0.8 0.6	0.65 0.5	0.56 0.46	8.6 8.4	10.1 9.9	10.4 10.0	5.08	2.54	24.2 23.8	13.3 12.2	2.4 2.0	2.5	3.8 3.6	3.9 3.7	1.7 1.5	0.25

**Note**

1. Plastic flash allowed within this zone

OUTLINE VERSION	REFERENCES				EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	EIAJ			
SOT128B		TO-202				97-02-28

## NPN high-voltage transistor

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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 transistor

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**NOTES**

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**NOTES**

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