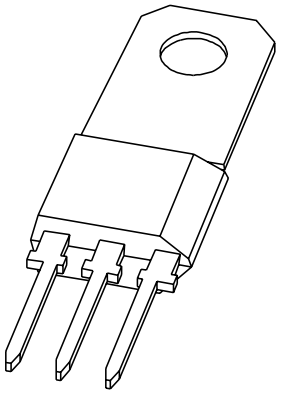
DATA SHEET



BF591; BF593
NPN high-voltage transistors

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

1997 Jul 02

Philips
Semiconductors

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NPN high-voltage transistors BF591; BF593

FEATURES

- Low current (max. 150 mA)
- High voltage (max. 210 V).

APPLICATIONS

- Telephone systems.

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

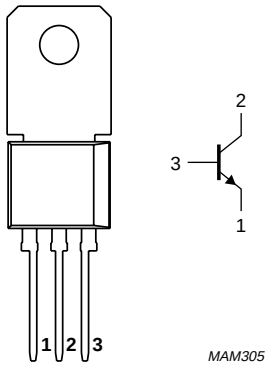


Fig.1 Simplified outline (TO-202; SOT128B) and symbol.

QUICK REFERENCE DATA

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V_{CBO}	collector-base voltage	open emitter			
	BF591		–	210	V
	BF593		–	250	V
V_{CEO}	collector-emitter voltage	open base			
	BF591		–	170	V
	BF593		–	210	V
I_{CM}	peak collector current		–	300	mA
P_{tot}	total power dissipation	$T_{amb} \leq 55$ °C	–	1.3	W
h_{FE}	DC current gain	I_C = 20 mA; V_{CE} = 5 V	30	–	
		I_C = 100 mA; V_{CE} = 6 V	30	–	

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			
	BF591		–	210	V
	BF593		–	250	V
V_{CEO}	collector-emitter voltage	open base			
	BF591		–	170	V
	BF593		–	210	V
V_{EBO}	emitter-base voltage	open collector	–	5	V
I_C	collector current (DC)		–	150	mA
I_{CM}	peak collector current		–	300	mA
I_{BM}	peak base current		–	100	mA
P_{tot}	total power dissipation	$T_{amb} \leq 55$ °C	–	1.3	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
$R_{th\ j\text{-}a}$	thermal resistance from junction to ambient	in free air	73	K/W

CHARACTERISTICS

T_j = 25 °C unless otherwise specified.

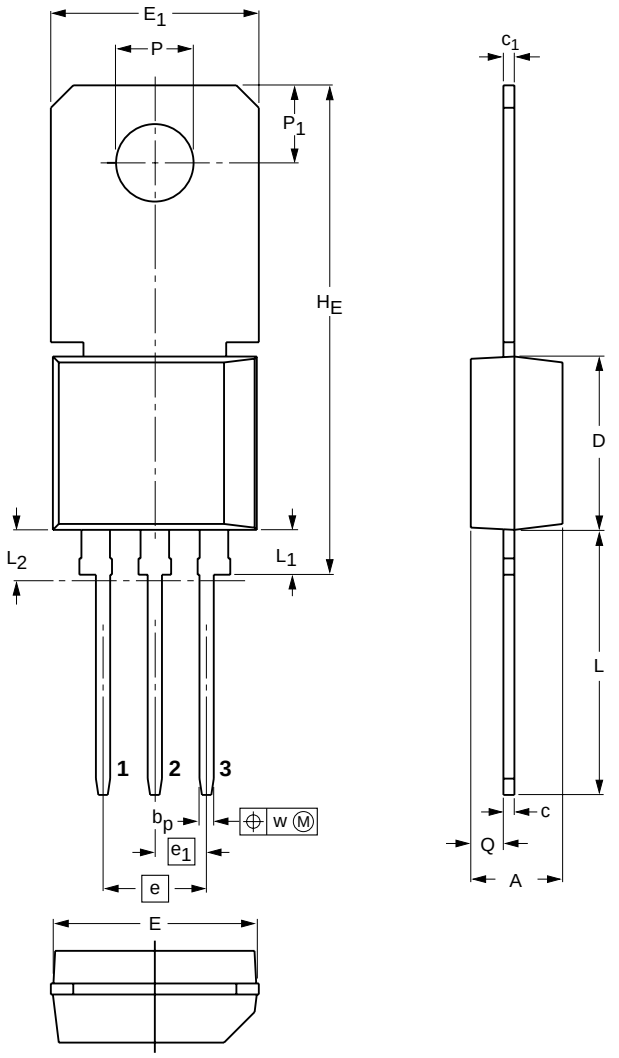
SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
I_{CBO}	collector cut-off current	I_E = 0; V_{CB} = 60 V	–	50	nA
		I_E = 0; V_{CB} = 60 V; T_j = 140 °C	–	1	μA
I_{EBO}	emitter cut-off current	I_C = 0; V_{EB} = 5 V	–	100	nA
h_{FE}	DC current gain	note 1			
		I_C = 20 mA; V_{CE} = 5 V	30	–	
		I_C = 100 mA; V_{CE} = 6 V	30	–	
		I_C = 150 mA; V_{CE} = 7 V	20	–	

Note

1. Pulse test: $t_p \leq 300$ μs; $\delta \leq 0.01$.

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_p	c	c_1	D	E	E_1	e	e_1	H_E	L	L_1	L_2 (1) max	P	P_1	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

DEFINITIONS

Data sheet status	
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.
Limiting values	
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.	
Application information	
Where application information is given, it is advisory and does not form part of the specification.	

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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.

NOTES

NOTES

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