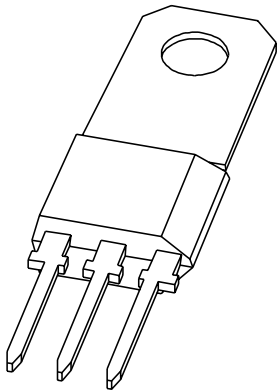


# DATA SHEET



## **BD825; BD829** NPN power transistors

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

1998 May 29

# NPN power transistors

# BD825; BD829

### FEATURES

- High current (max. 1 A)
- Low voltage (max. 80 V).

### APPLICATIONS

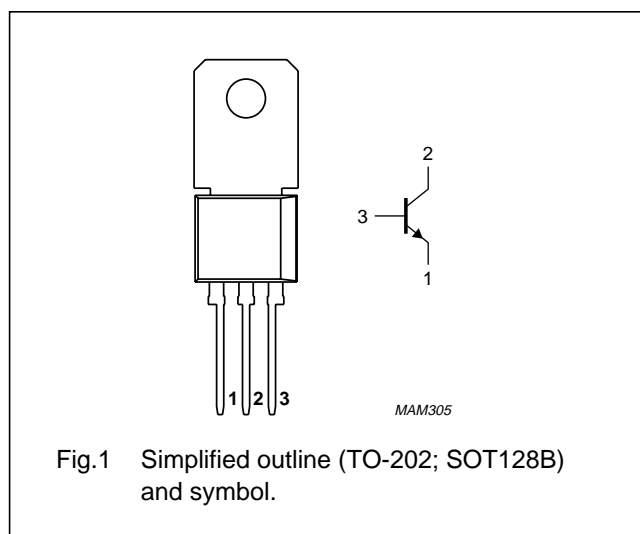
- General purpose
- Driver stages in hi-fi amplifiers and television circuits.

### DESCRIPTION

NPN power transistor in a TO-202; SOT128B plastic package. PNP complements: BD826 and BD830.

### PINNING

PIN	DESCRIPTION
1	emitter
2	collector, connected to metal part of mounting surface
3	base



### QUICK REFERENCE DATA

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V <sub>CBO</sub>	collector-base voltage BD825 BD829	open emitter	–	–	45	V
			–	–	100	V
V <sub>CEO</sub>	collector-emitter voltage BD825 BD829	open base	–	–	45	V
			–	–	80	V
I <sub>CM</sub>	peak collector current		–	–	1.5	A
P <sub>tot</sub>	total power dissipation	T <sub>amb</sub> ≤ 25 °C	–	–	2	W
		T <sub>mb</sub> ≤ 50 °C	–	–	8	W
h <sub>FE</sub>	DC current gain	I <sub>C</sub> = 150 mA; V <sub>CE</sub> = 2 V	95	–	165	
f <sub>T</sub>	transition frequency	I <sub>C</sub> = 50 mA; V <sub>CE</sub> = 5 V; f = 100 MHz	–	250	–	MHz

## NPN power transistors

## BD825; BD829

**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	–	45	V
	BD825 BD829			100	V
V <sub>CEO</sub>	collector-emitter voltage	open base	–	45	V
	BD825 BD829			80	V
V <sub>EBO</sub>	emitter-base voltage	open collector	–	5	V
I <sub>C</sub>	collector current (DC)		–	1	A
I <sub>CM</sub>	peak collector current		–	1.5	A
I <sub>BM</sub>	peak base current		–	500	mA
P <sub>tot</sub>	total power dissipation	T <sub>amb</sub> ≤ 25 °C	–	2	W
		T <sub>mb</sub> ≤ 50 °C	–	8	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	CONDITIONS	VALUE	UNIT
R <sub>th j-a</sub>	thermal resistance from junction to ambient	in free air	62.5	K/W
R <sub>th j-mb</sub>	thermal resistance from junction to mounting base		12.5	K/W

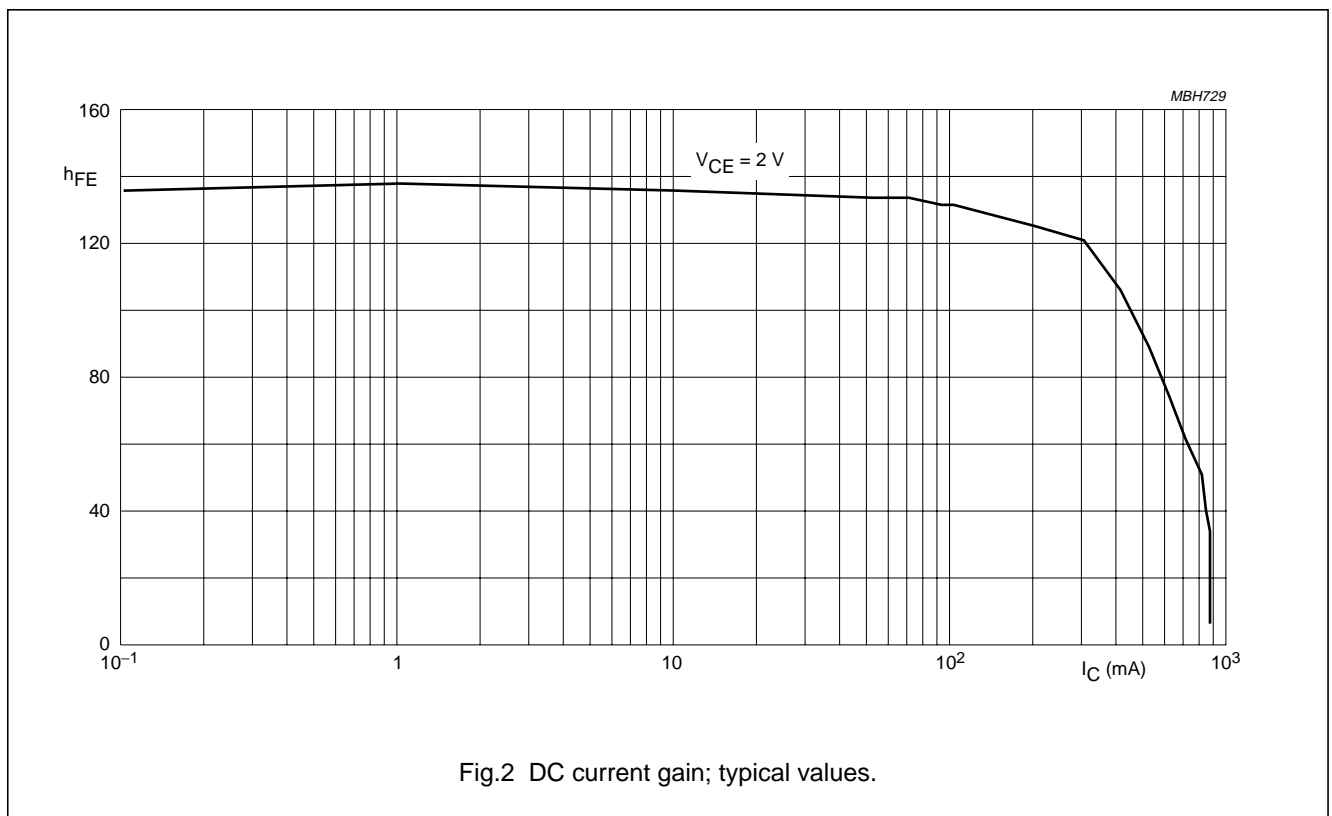
NPN power transistors

BD825; BD829

**CHARACTERISTICS**

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$I_{CBO}$	collector cut-off current	$I_E = 0; V_{CB} = 30\text{ V}$	–	–	100	nA
		$I_E = 0; V_{CB} = 30\text{ V}; T_j = 125\text{ }^\circ\text{C}$	–	–	10	$\mu\text{A}$
$I_{EBO}$	emitter cut-off current	$I_C = 0; V_{EB} = 5\text{ V}$	–	–	100	nA
$h_{FE}$	DC current gain	$V_{CE} = 2\text{ V}$ ; see Fig.2				
		$I_C = 5\text{ mA}$	40	–	–	
		$I_C = 150\text{ mA}$	95	–	165	
		$I_C = 500\text{ mA}$	25	–	–	
$V_{CEsat}$	collector-emitter saturation voltage	$I_C = 500\text{ mA}$	–	–	500	mV
$V_{BE}$	base-emitter voltage	$I_C = 500\text{ mA}; V_{CE} = 2\text{ V}$	–	–	1	V
$f_T$	transition frequency	$I_C = 50\text{ mA}; V_{CE} = 5\text{ V}; f = 100\text{ MHz}$	–	250	–	MHz



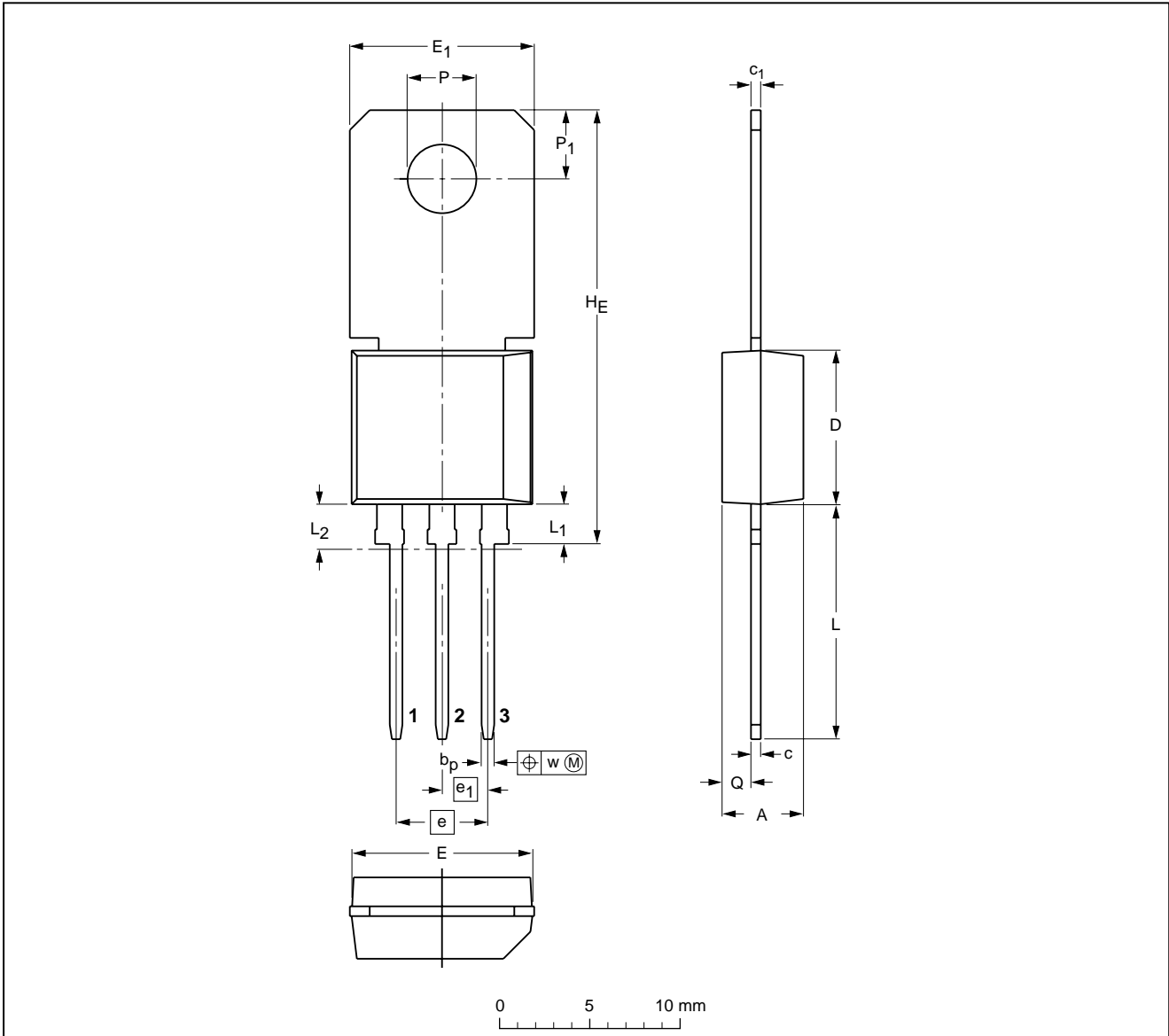
NPN power transistors

BD825; BD829

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 power transistors

BD825; BD829

**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.	

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NPN power transistors

BD825; BD829

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Printed in The Netherlands

135106/1200/03/pp8

Date of release: 1998 May 29

Document order number: 9397 750 03924

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