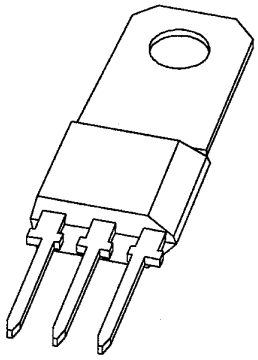
DATA SHEET



BD825; BD829
NPN power transistors

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

1998 May 29

Philips
Semiconductors

PHILIPS

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

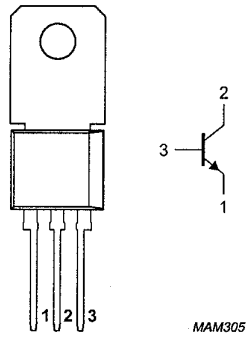


Fig.1 Simplified outline (TO-202; SOT128B) and symbol.

QUICK REFERENCE DATA

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_{CBO}	collector-base voltage	open emitter				
	BD825		–	–	45	V
	BD829		–	–	100	V
V_{CEO}	collector-emitter voltage	open base				
	BD825		–	–	45	V
	BD829		–	–	80	V
I_{CM}	peak collector current		–	–	1.5	A
P_{tot}	total power dissipation	$T_{amb} \leq 25$ °C	–	–	2	W
		$T_{mb} \leq 50$ °C	–	–	8	W
h_{FE}	DC current gain	I_C = 150 mA; V_{CE} = 2 V	95	–	165	
f_T	transition frequency	I_C = 50 mA; V_{CE} = 5 V; f = 100 MHz	–	250	–	MHz

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			
	BD825		–	45	V
	BD829		–	100	V
V_{CEO}	collector-emitter voltage	open base			
	BD825		–	45	V
	BD829		–	80	V
V_{EBO}	emitter-base voltage	open collector	–	5	V
I_C	collector current (DC)		–	1	A
I_{CM}	peak collector current		–	1.5	A
I_{BM}	peak base current		–	500	mA
P_{tot}	total power dissipation	$T_{amb} \leq 25$ °C	–	2	W
		$T_{mb} \leq 50$ °C	–	8	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	62.5	K/W
$R_{th\ j\text{-}mb}$	thermal resistance from junction to mounting base		12.5	K/W

CHARACTERISTICS

T_j = 25 °C unless otherwise specified.

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

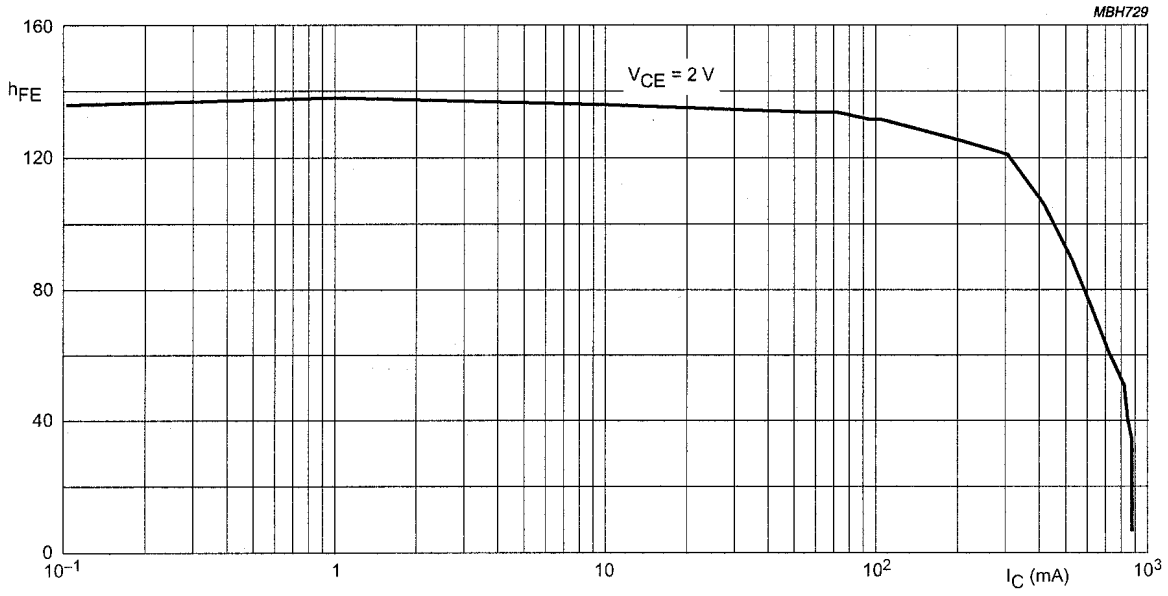
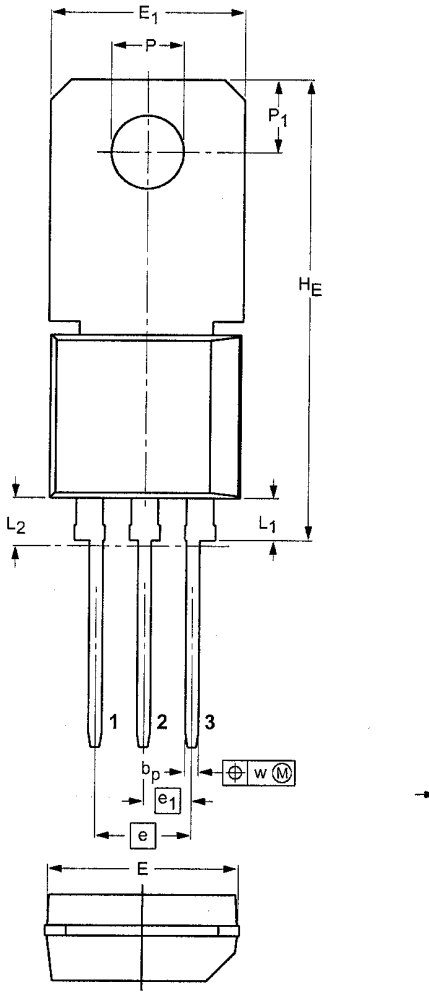


Fig.2 DC current gain; typical values.

PACKAGE OUTLINE

Plastic single-ended leaded (through hole) package; with cooling fin, mountable to heatsink, 1 mounting hole; 3 leads (in-line) **SOT128B**



0 5 10 mm
scale

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