

BD136; BD138;
BD140 PNP power
transistors

Product specification

Supersedes data of 1997Mar26

1999 Apr12

PNP power transistors

BD136; BD138; BD140

FEATURES

- High current (max.1.5A)
- Low voltage (max.80V).

APPLICATIONS

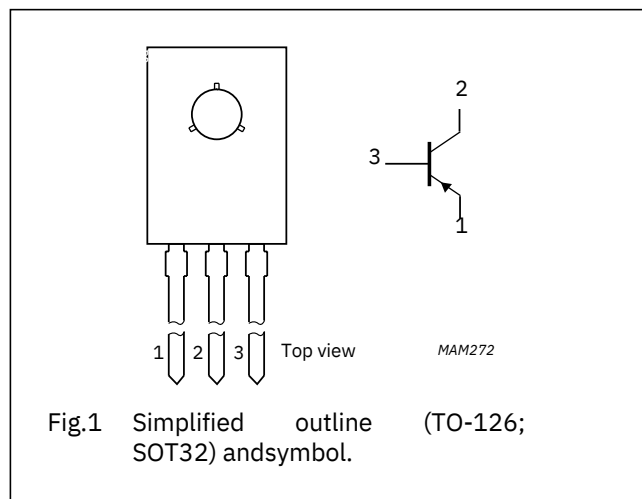
- General purpose power applications, e.g. driver stages in hi-fi amplifiers and television circuits.

DESCRIPTION

PNP power transistor in a TO-126; SOT32 plastic package. NPN complements: BD135, BD137 and BD139.

PINNING

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



LIMITING VALUES

In accordance with the Absolute Maximum Rating System (IEC134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
VCBO	collector-base voltage	open emitter			
BD136			–	–45	V
BD138			–	–60	V
BD140			–	–100	V
VCEO	collector-emitter voltage	open base			
BD136			–	–45	V
BD138			–	–60	V
BD140			–	–80	V
VEBO	emitter-base voltage	open collector	–	5	V
IC	collector current (DC)		–	–1.5	A
ICM	peak collector current		–	2	A
IBM	peak base current		–	1	A
P _{tot}	total power dissipation	T _{mb} ≤ 70°C	–	8	W
T _{stg}	storage temperature		–65	+150	°C
T _j	junction temperature		–	150	°C
T _{amb}	operating ambient temperature		–65	+150	°C

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THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
R_{thj-a}	thermal resistance from junction to ambient	note 1	100	K/W
R_{thj-mb}	thermal resistance from junction to mounting base		10	K/W

Note

1. Refer to TO-126 (SOT32) standard mounting conditions.

CHARACTERISTICS

$T_j = 25^\circ\text{C}$ 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
			$I_E = 0; V_{CB} = -30\text{V}; T_j = 125^\circ\text{C}$	–	–	–10	μA
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)				
			$I_C = 5\text{ mA}$	4	–	–	
			$I_C = 150\text{ mA}$	0	–	250	
			$I_C = 500\text{ mA}$	6	–	–	
	DC current gain	BD136-10; BD138-10; BD140-10 BD136-16; BD138-16; BD140-16	$I_C = 150\text{ mA}; V_{CE} = 2\text{V};$ – (see Fig. 2)	3	–	–	
				23	–	160	
				500	–	250	
V_{CEsat}	collector-emitter saturation voltage		$I_C = 500\text{ mA}; I_B = 50\text{ mA}$	–	–	–0.5	V
V_{BE}	base-emitter voltage		$I_C = 500\text{ mA}; V_{CE} = 2\text{V}$	–	–	–1	V
f_T	transition frequency		$I_C = 50\text{ mA}; V_{CE} = 5\text{V};$ $f = 100\text{ MHz}$	–	160	–	MHz
h_{FE1}	DC current gain ratio of the complementary pairs		$I_C = 150\text{ mA}; V_{CE} = 2\text{ V}$	–	1.3	1.6	

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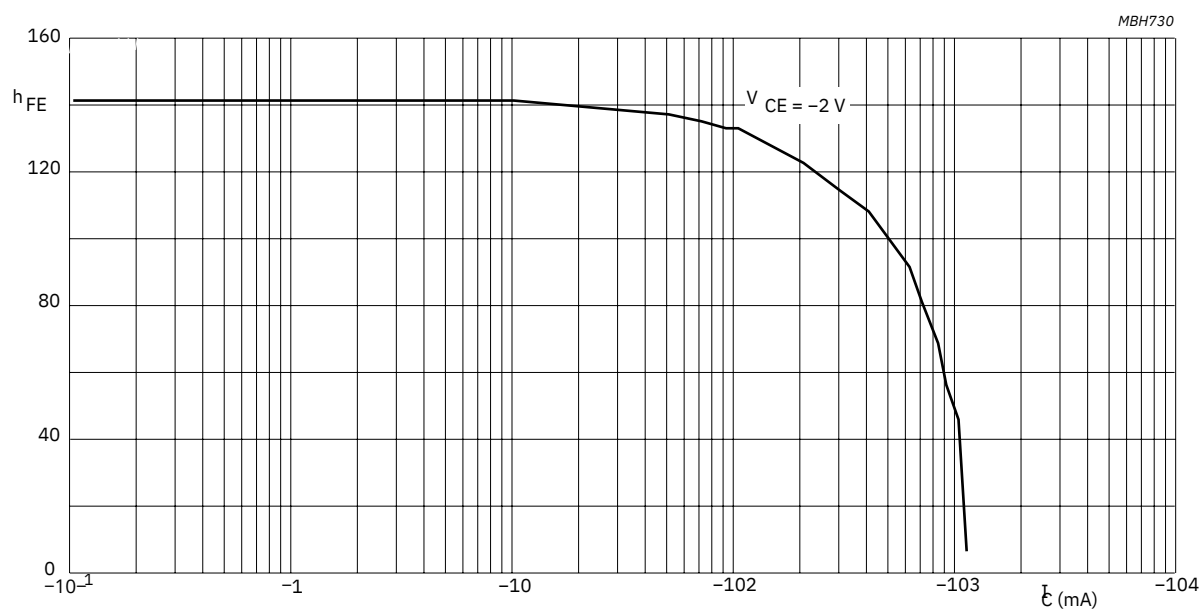


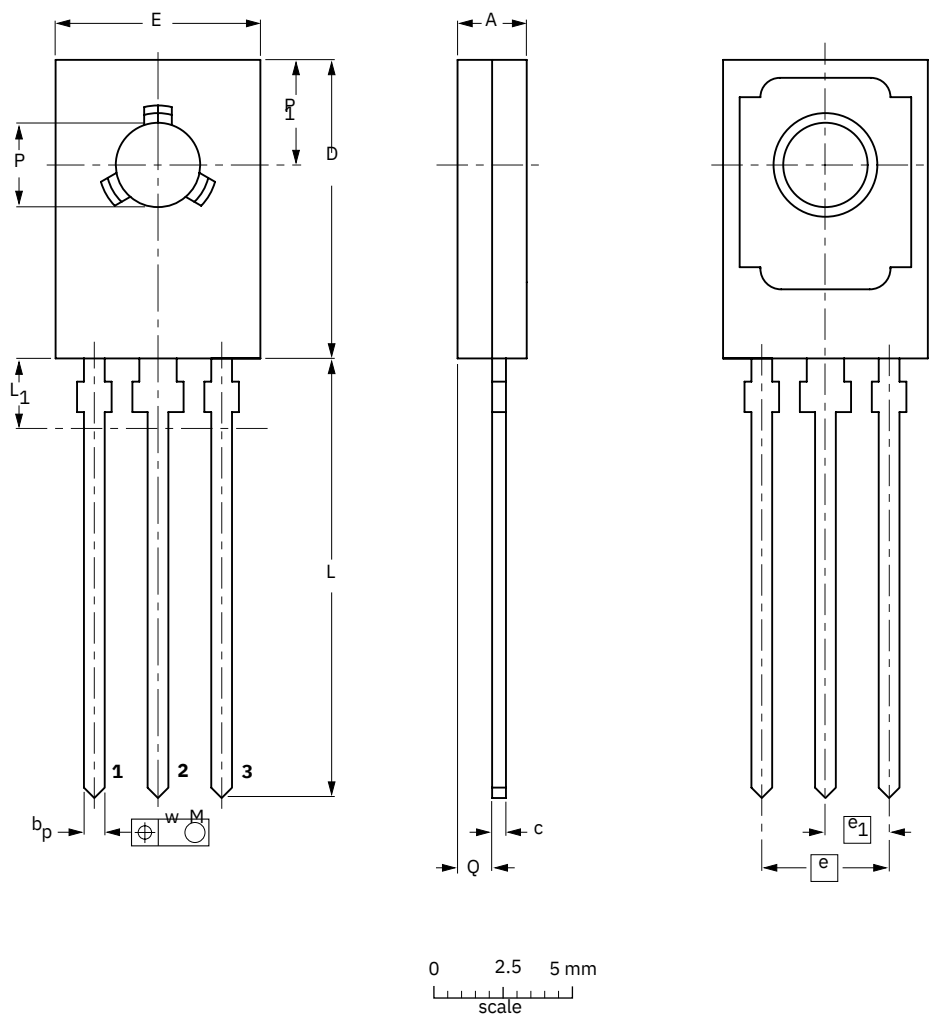
Fig.2 DCcurrent gain; typical values.

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PACKAGE OUTLINE

Plastic single-ended leaded (through hole) package; mountable to heatsink, 1 mounting hole; 3 leads

SOT32

DIMENSIONS (mm are the original dimensions)

[illegible]

Note

1. Terminal dimensions within this zone are uncontrolled to allow for flow of plastic and terminal irregularities.

OUTLINE REFERENCES

OUTLINE REFERENCES						
VERSION	IEC JEDEC EIAJ				EUROPEAN PROJECTION	ISSUE DATE
SOT32TO-126						
						97-03-04

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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.

LIFE SUPPORT APPLICATIONS

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NOTES

Philips Semiconductors – a worldwide company

Argentina: seeSouth America

Australia: 34 Waterloo Road, NORTH RYDE, NSW 2113,
Tel. +6129805 4455, Fax.+61 29805 4466

Austria: Computerstr. 6, A-1101 WIEN, P.O. Box213,
Tel.+431601011248, Fax.+431601011210

Belarus: Hotel Minsk Business Center, Bld.3, r.1211, VolodarskiStr.6,
220050MINSK, Tel.+375172200733,Fax.+375172200773

Belgium: seeThe Netherlands

Brazil: seeSouth America

Bulgaria: Philips Bulgaria Ltd., Energoproject, 15thfloor,
51JamesBourchierBlvd., 1407SOFIA,
Tel. +359 268 9211, Fax. +359 268 9102

Canada: PHILIPS SEMICONDUCTORS/COMPONENTS,
Tel.+18002347381, Fax.+18009430087

China/Hong Kong: 501HongKong Industrial Technology Centre,
72TatCheeAvenue, Kowloon Tong, HONG KONG,
Tel. +852 2319 7888, Fax. +852 2319 7700

Colombia: seeSouth America

Czech Republic: seeAustria

Denmark: Sydhavnsgade23, 1780COPENHAGENV,
Tel. +4533 29 3333, Fax. +4533 29 3905

Finland: Sinikalliontie3, FIN-02630ESPOO,
Tel. +358 9615 800,Fax. +358 96158 0920

France: 51RueCarnot, BP317, 92156SURESNE Cedex,
Tel. +3314099 6161, Fax.+33 14099 6427

Germany: Hammerbrookstraße69, D-20097HAMBURG,
Tel. +4940 2353 60, Fax. +4940 2353 6300

Hungary: see Austria

India: Philips INDIA Ltd, Band Box Building, 2nd floor,
254-D,Dr.AnnieBesantRoad, Worli, MUMBAI400025,
Tel. +9122 493 8541, Fax.+91 22 4930966

Indonesia: PT Philips Development Corporation, Semiconductors Division,
Gedung Philips, Jl. Buncit Raya Kav.99-100, JAKARTA 12510,
Tel.+62217940040ext.2501, Fax.+62217940080

Ireland: Newstead, Clonskeagh, DUBLIN14,
Tel. +353 17640 000, Fax.+353 1 7640 200

Israel: RAPACElectronics, 7KehilatSalonikiSt, PO Box 18053,
TELAVIV61180, Tel.+97236450444,Fax.+97236491007

Italy: PHILIPS SEMICONDUCTORS, PiazzalVNovembre3,
20124MILANO, Tel.+39267522531,Fax.+39267522557

Japan: PhilipsBldg13-37, Kohnan2-chome, Minato-ku,
TOKYO108-8507, Tel.+81337405130,Fax.+81337405077

Korea: PhilipsHouse, 260-199Itaewon-dong, Yongsan-ku, SEOUL,
Tel. +822709 1412, Fax. +822 7091415

Malaysia: No.76JalanUniversiti, 46200PETALINGJAYA, SELANGOR,
Tel.+60 37505214,Fax.+6037574880

Mexico: 5900GatewayEast, Suite200, ELPASO, TEXAS79905,
Tel.+9-58002347381, Fax+9-58009430087

Middle East: seeltaly

Netherlands: Postbus90050, 5600PBEINDHOVEN, Bldg.VB,
Tel. +3140 27 82785, Fax.+31 40 27 88399

New Zealand: 2WagenerPlace, C.P.O.Box1041, AUCKLAND,
Tel. +649849 4160, Fax. +649 8497811

Norway: Box1, Manglerud0612, OSLO,
Tel. +4722 74 8000, Fax. +4722 74 8341

Pakistan: seeSingapore

Philippines: Philips Semiconductors Philippines Inc.,
106ValeroSt.SalcedoVillage, P.O.Box2108MCC, MAKATI,
MetroMANILA, Tel.+6328166380,Fax.+6328173474

Poland: Ul.Lukiska10, PL04-123WARSAWA,
Tel. +4822 612 2831, Fax.+48 22 6122327

Portugal: seeSpain

Romania: seeltaly

Russia: Philips Russia, Ul.Usatcheva35A, 119048MOSCOW,
Tel. +7095 755 6918, Fax.+7 095 7556919

Singapore: Lorong1, ToaPayoh, SINGAPORE319762,
Tel. +65350 2538, Fax.+65 2516500

Slovakia: seeAustria

Slovenia: seeltaly

South Africa: S.A. PHILIPS Pty Ltd., 195-215MainRoadMartindale,
2092JOHANNESBURG, P.O.Box7430 Johannesburg2000,
Tel. +2711 470 5911, Fax.+27 11 4705494

South America: Al.Vicente Pinzon,173, 6thfloor,
04547-130SÃO PAULO, SP, Brazil,
Tel. +5511 821 2333, Fax.+55 11 8212382

Spain: Balmes22, 08007BARCELONA,
Tel. +3493 301 6312, Fax.+34 93 3014107

Sweden: Kottbygatan7, Akalla, S-16485STOCKHOLM,
Tel. +4685985 2000, Fax.+46 85985 2745

Switzerland: Allmendstrasse140, CH-8027ZÜRICH,
Tel. +411488 2741 Fax. +411 4883263

Taiwan: Philips Semiconductors, 6F, No.96, ChienKuoN.Rd.,Sec.1,
TAIPEI, Taiwan Tel.+886221342886,Fax.+886221342874

Thailand: PHILIPS ELECTRONICS (THAILAND) Ltd.,
209/2Sanpavuth-BangnaRoadPrakanong, BANGKOK10260,
Tel. +662745 4090, Fax. +662 3980793

Turkey: Talatpasa Cad. No.5, 80640GÜLTEPE/ISTANBUL,
Tel. +90212 2792770, Fax. +90212 282 6707

Ukraine: PHILIPS UKRAINE, 4PatriceLumumba str., BuildingB, Floor7,
252042KIEV, Tel.+380442642776, Fax. +380442680461

United Kingdom: Philips Semiconductors Ltd., 276BathRoad, Hayes,
MIDDLESEXUB35BX, Tel.+441817305000,Fax.+441817548421

United States: 811EastArquesAvenue, SUNNYVALE, CA94088-3409,
Tel.+18002347381, Fax.+18009430087

Uruguay: seeSouth America

Vietnam: seeSingapore

Yugoslavia: PHILIPS, TrgN. Pasica5/v, 11000BEOGRAD,
Tel. +381 11 62 5344, Fax.+381 11 63 5777

For all other countries apply to: Philips Semiconductors, **Internet:** <http://www.semiconductors.philips.com> InternationalMarketing&Sales
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