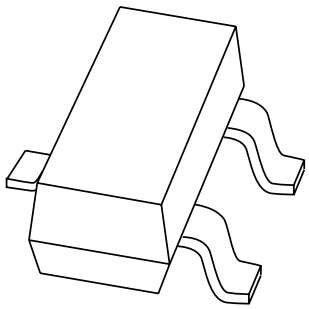
DATA SHEET



PDTB114ET
PNP resistor-equipped transistor

Objective specification
Supersedes data of February 1995
File under Discrete Semiconductors, SC04

1997 Sep 02

Philips
Semiconductors

PHILIPS

PNP resistor-equipped transistor PDTB114ET

FEATURES

- Built-in bias resistors R1 and R2 (typ. 10 kΩ each)
- Simplification of circuit design
- Reduces number of components and board space.

APPLICATIONS

- Especially suitable for space reduction in interface and driver circuits
- Inverter circuit configurations without use of external resistors.

DESCRIPTION

PNP resistor-equipped transistor in a SOT23 plastic package.
NPN complement: PDTD114ET.

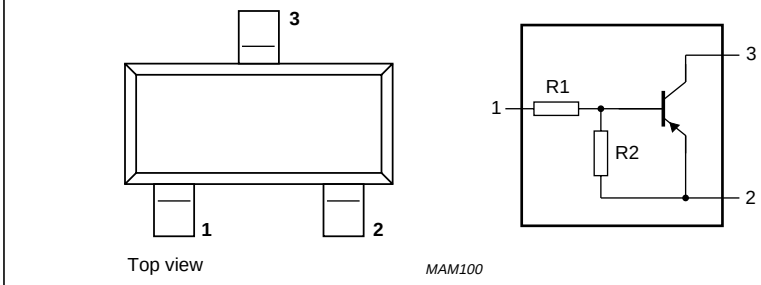


Fig.1 Simplified outline (SOT23) and symbol.

PINNING

PIN	DESCRIPTION
1	base/input
2	emitter/ground (+)
3	collector/output

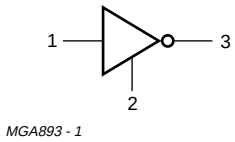


Fig.2 Equivalent inverter symbol.

MARKING

TYPE NUMBER	MARKING CODE
PDTB114ET	p09

QUICK REFERENCE DATA

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_{CEO}	collector-emitter voltage	open base	–	–	–50	V
I_O	output current (DC)		–	–	–500	mA
I_{CM}	peak collector current		–	–	–500	mA
P_{tot}	total power dissipation	$T_{amb} \leq 25$ °C	–	–	250	mW
h_{FE}	DC current gain	$I_C = -50$ mA; $V_{CE} = -5$ V	56	–	–	
R1	input resistor		7	10	13	kΩ
$\frac{R2}{R1}$	resistor ratio		0.8	1	1.2	

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	–	–50	V
V_{CEO}	collector-emitter voltage	open base	–	–50	V
V_{EBO}	emitter-base voltage	open collector	–	–10	V
V_I	input voltage				
	positive		–	+10	V
	negative		–	–40	V
I_O	output current (DC)		–	–500	mA
I_{CM}	peak collector current		–	–500	mA
P_{tot}	total power dissipation	$T_{amb} \leq 25$ °C; note 1	–	250	mW
T_{stg}	storage temperature		–65	+150	°C
T_j	junction temperature		–	150	°C
T_{amb}	operating ambient temperature		–65	+150	°C

Note

1. Transistor mounted on an FR4 printed-circuit board.

THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
$R_{th\ j\text{-}a}$	thermal resistance from junction to ambient	note 1	500	K/W

Note

1. Transistor mounted on an FR4 printed-circuit board.

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} = –50 V	–	–	–100	nA
I_{CEO}	collector cut-off current	I_B = 0; V_{CE} = –30 V	–	–	–1	µA
		I_B = 0; V_{CE} = –30 V; T_j = 150 °C	–	–	–50	µA
I_{EBO}	emitter cut-off current	I_C = 0; V_{EB} = –5 V	–	–	–500	µA
h_{FE}	DC current gain	I_C = –5 mA; V_{CE} = –5 V; note 1	56	–	–	
V_{CEsat}	collector-emitter saturation voltage	I_C = –50 mA; I_B = –2.5 mA; note 1	–	–	–300	mV
$V_{i(off)}$	input-off voltage	I_C = –100 µA; V_{CE} = –5 V	–	–	–500	mV
$V_{i(on)}$	input-on voltage	I_C = –10 mA; V_{CE} = –300 mV	–3	–	–	V
R1	input resistor		7	10	13	kΩ
$\frac{R2}{R1}$	resistor ratio		0.8	1	1.2	
C_c	collector capacitance	$I_E = i_e$ = 0; V_{CB} = –10 V; f = 1 MHz	–	–	9	pF

Note

1. Pulse test: $t_p \leq 300$ µs; $\delta \leq 0.02$.