

PDT C113ET

NPN resistor-equipped transistor; R1 = 1 k Ω , R2 = 1 k Ω

Rev. 02 — 8 April 2004

Objective data sheet

1. Product profile

1.1 General description

NPN resistor-equipped transistors. PNP complement: PDT A113ET.

1.2 Features

- Built-in bias resistors
- Simplifies circuit design
- Reduces component count
- Reduces pick and place costs.

1.3 Applications

- General purpose switching and amplification
- Inverter and interface circuits
- Circuit driver.

1.4 Quick reference data

Table 1: Quick reference data

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
V_{CEO}	collector-emitter voltage		-	-	50	V
I_O	output current (DC)		-	-	100	mA
R1	bias resistor		-	1	-	k Ω
R2	bias resistor		-	1	-	k Ω

2. Pinning information

Table 2: Discrete pinning

Pin	Description	Simplified outline	Symbol
1	base	<p>Top view</p>	<p>sym007</p>
2	emitter		
3	collector		

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3. Ordering information

Table 3: Ordering information

Type number	Package		
	Name	Description	Version
PDTC113ET	-	plastic surface mounted package; 3 leads	SOT23

4. Marking

Table 4: Marking

Type number	Marking code ^[1]
PDTC113ET	*14

- [1] * = p: made in Hong Kong.
 * = t: made in Malaysia.
 * = W: made in China.

5. Limiting values

Table 5: Limiting values

In accordance with the Absolute Maximum Rating System (IEC 60134).

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		-	-10	V
I_O	output current (DC)		-	100	mA
I_{CM}	peak collector current		-	100	mA
P_{tot}	total power dissipation	$T_{amb} \leq 25\text{ }^\circ\text{C}$ ^[1]	-	250	mW
T_{stg}	storage temperature		-65	+150	$^\circ\text{C}$
T_j	junction temperature		-	150	$^\circ\text{C}$
T_{amb}	operating ambient temperature		-65	+150	$^\circ\text{C}$

- [1] Refer to standard mounting conditions.

6. Thermal characteristics

Table 6: Thermal characteristics

Symbol	Parameter	Conditions	Typ	Unit
$R_{th(j-a)}$	thermal resistance from junction to ambient	in free air	^[1] 500	K/W

- [1] Refer to standard mounting conditions.

7. Characteristics

Table 7: Characteristics

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

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
I_{CBO}	collector-base cut-off current	$V_{CB} = 50\text{ V}; I_E = 0\text{ A}$	-	-	100	nA
I_{CEO}	collector-emitter cut-off current	$V_{CE} = 30\text{ V}; I_B = 0\text{ A}$	-	-	1	μA
		$V_{CE} = 30\text{ V}; I_B = 0\text{ A}; T_j = 150\text{ }^{\circ}\text{C}$	-	-	50	μA
I_{EBO}	emitter-base cut-off current	$V_{EB} = 5\text{ V}; I_C = 0\text{ A}$	-	-	4	mA
h_{FE}	DC current gain	$V_{CE} = 5\text{ V}; I_C = 40\text{ mA}$	30	-	-	
V_{CEsat}	collector-emitter saturation voltage	$I_C = 30\text{ mA}; I_B = 1.5\text{ mA}$	-	-	150	mV
$V_{i(off)}$	input-off voltage	$I_C = 100\text{ }\mu\text{A}; V_{CE} = 5\text{ V}$	-	<tbid>	500	mV
$V_{i(on)}$	input-on voltage	$I_C = 20\text{ mA}; V_{CE} = 300\text{ mV}$	2	<tbid>	-	V
R1	input resistor		0.7	1	1.3	k Ω
R2/R1	resistor ratio		0.8	1	1.2	
C_c	collector capacitance	$V_{CB} = 10\text{ V}; I_E = I_e = 0\text{ A}; f = 1\text{ MHz}$	-	-	<tbid>	pF

8. Package outline

Plastic surface mounted package; 3 leads

SOT23

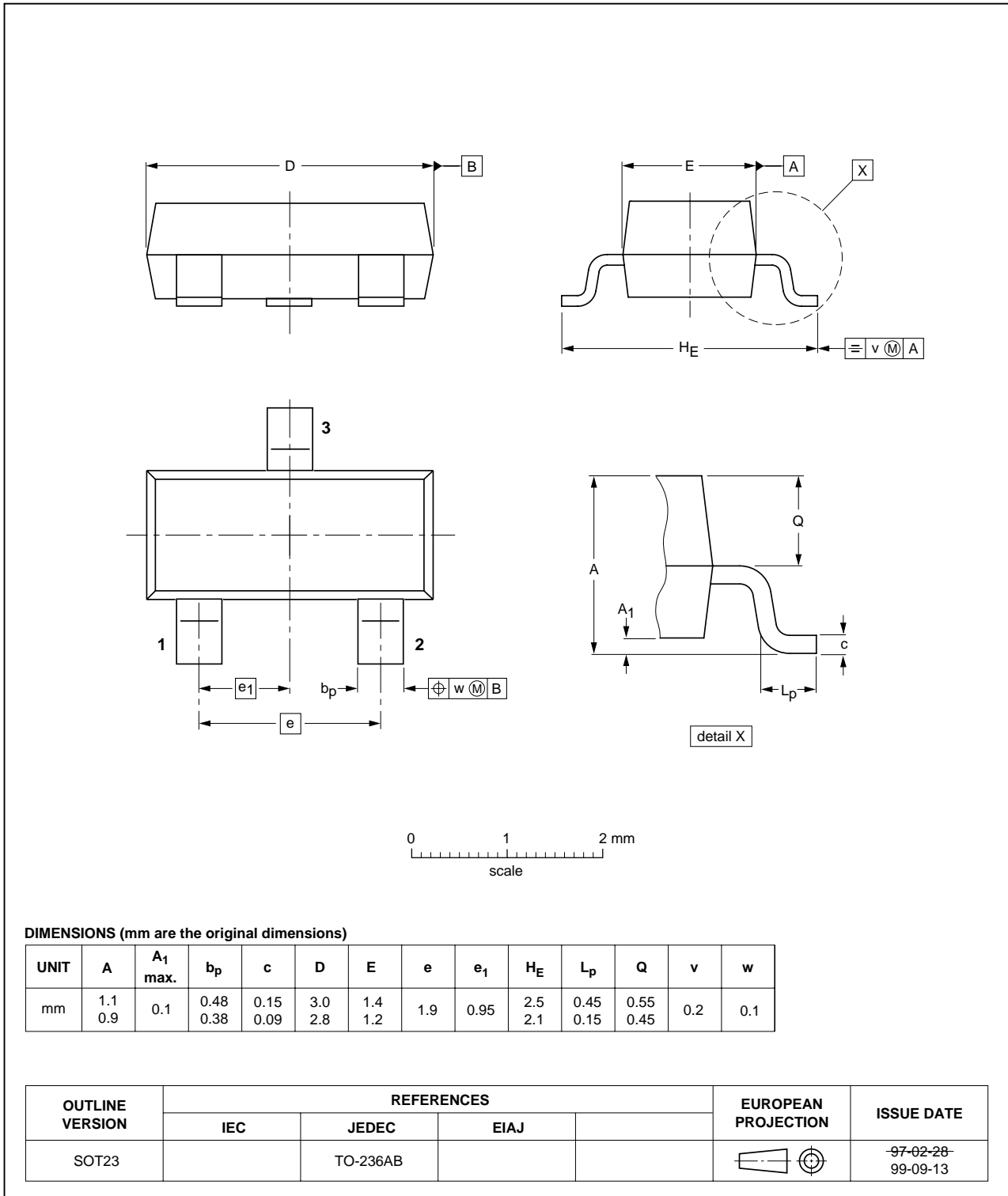


Fig 1. Package outline.

9. Revision history

Table 8: Revision history

Document ID	Release date	Data sheet status	Change notice	Order number	Supersedes
PDTC113ET_2	20040408	Objective specification	-	9397 750 13066	PDTC113ET_1
Modifications:	<ul style="list-style-type: none"> • Table 5: changed I_O and I_{CM} minimum values to maximum values. 				
PDTC113ET_1	20040316	Objective specification	-	9397 750 12552	-

10. Data sheet status

Level	Data sheet status ^[1]	Product status ^[2] ^[3]	Definition
I	Objective data	Development	This data sheet contains data from the objective specification for product development. Philips Semiconductors reserves the right to change the specification in any manner without notice.
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[3] For data sheets describing multiple type numbers, the highest-level product status determines the data sheet status.

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Short-form specification — The data in a short-form specification is extracted from a full data sheet with the same type number and title. For detailed information see the relevant data sheet or data handbook.

Limiting values definition — Limiting values given are in accordance with the Absolute Maximum Rating System (IEC 60134). 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.

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