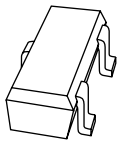

PDTA323TK

PNP 500 mA, 15 V resistor-equipped transistor; R1 = 2.2 kΩ, R2 = open

Rev. 01 — 16 June 2005 Product data sheet

1. Product profile

1.1 General description

500 mA PNP Resistor-Equipped Transistors (RET) in a small SOT346 (SC-59A) SMD plastic package.

NPN complement: PDTC323TK

1.2 Features

- Built-in bias resistors
- Simplifies circuit design
- 500 mA output current capability
- Reduces component count
- Reduces pick and place costs

1.3 Applications

- Digital application in automotive and industrial segments
- Controlling IC inputs
- Cost-saving alternative for BC807 series in digital applications
- Switching loads

1.4 Quick reference data

Table 1: Quick reference data

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
V_{CEO}	collector-emitter voltage	open base	-	-	–15	V
I_O	output current (DC)		-	-	–500	mA
R1	bias resistor 1 (input)		1.54	2.2	2.86	kΩ

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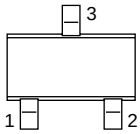
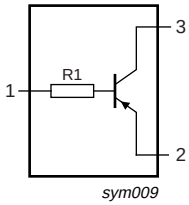
2. Pinning information

Table 2: Pinning

Pin	Description	Simplified outline	Symbol
1	input (base)		
2	GND (emitter)		
3	output (collector)		

sym009

3. Ordering information

Table 3: Ordering information

Type number	Package		
	Name	Description	Version
PDTA323TK	SC-59A	plastic surface mounted package; 3 leads	SOT346

4. Marking

Table 4: Marking codes

Type number	Marking code
PDTA323TK	60

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		-	–30	V
V_{CEO}	collector-emitter voltage	open base		-	–15	V
V_{EBO}	emitter-base voltage	open collector		-	–5	V
V_I	input voltage					
	positive			-	+5	V
	negative			-	–12	V
I_O	output current (DC)			-	–500	mA
P_{tot}	total power dissipation	$T_{amb} \leq 25$ °C	[1]	-	250	mW
T_{stg}	storage temperature			–65	+150	°C
T_j	junction temperature			-	150	°C
T_{amb}	ambient temperature			–65	+150	°C

[1] Device mounted on an FR4 Printed-Circuit Board (PCB), single-sided copper, tin-plated and standard footprint.

6. Thermal characteristics

Table 6: Thermal characteristics

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

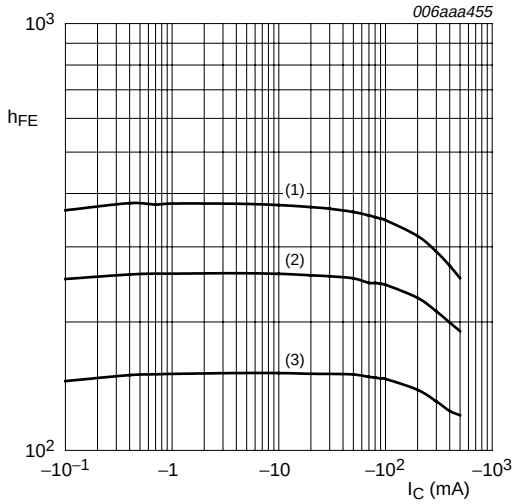
[1] Device mounted on an FR4 PCB, single-sided copper, tin-plated and standard footprint.

7. Characteristics

Table 7: Characteristics

T_{amb} = 25 °C unless otherwise specified.

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
I_{CBO}	collector-base cut-off current	V_{CB} = –30 V; I_E = 0 A	-	-	–100	nA
I_{CEO}	collector-emitter cut-off current	V_{CE} = –15 V; I_B = 0 A	-	-	–0.5	µA
I_{EBO}	emitter-base cut-off current	V_{EB} = –5 V; I_C = 0 A	-	-	–100	nA
h_{FE}	DC current gain	V_{CE} = –5 V; I_C = –50 mA	100	250	-	
V_{CEsat}	collector-emitter saturation voltage	I_C = –50 mA; I_B = –2.5 mA	-	–35	–80	mV
R1	bias resistor 1 (input)		1.54	2.2	2.86	kΩ
C_c	collector capacitance	V_{CB} = –10 V; I_E = i_e = 0 A; f = 100 MHz	-	11	-	pF



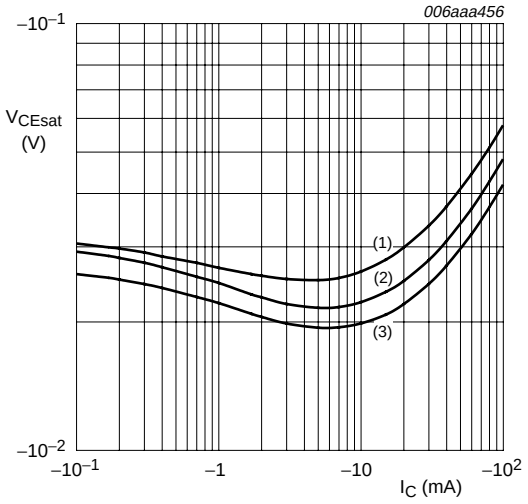
V_{CE} = −5 V

(1) T_{amb} = 100 °C

(2) T_{amb} = 25 °C

(3) T_{amb} = −40 °C

Fig 1. DC current gain as a function of collector current; typical values



I_C/I_B = 20

(1) T_{amb} = 100 °C

(2) T_{amb} = 25 °C

(3) T_{amb} = −40 °C

Fig 2. Collector-emitter saturation voltage as a function of collector current; typical values

8. Package outline

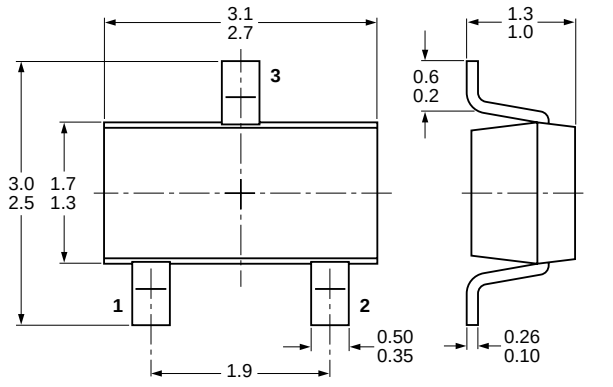


Fig 3. Package outline SOT346 (SC-59A/TO-236)

9. Packing information

Table 8: Packing methods

The indicated -xxx are the last three digits of the 12NC ordering code. [1]

Type number	Package	Description	Packing quantity		
			3000	5000	10000
PDTA323TK	SOT346	4 mm pitch, 8 mm tape and reel	-115	-	-135

[1] For further information and the availability of packing methods, see Section 15.

10. Revision history

Table 9: Revision history

Document ID	Release date	Data sheet status	Change notice	Doc. number	Supersedes
PDTA323TK_1	20050616	Product data sheet	-	9397 750 15076	-

11. 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.
II	Preliminary data	Qualification	This data sheet contains data from the preliminary specification. Supplementary data will be published at a later date. Philips Semiconductors reserves the right to change the specification without notice, in order to improve the design and supply the best possible product.
III	Product data	Production	This data sheet contains data from the product specification. Philips Semiconductors reserves the right to make changes at any time in order to improve the design, manufacturing and supply. Relevant changes will be communicated via a Customer Product/Process Change Notification (CPCN).

[1] Please consult the most recently issued data sheet before initiating or completing a design.

[2] The product status of the device(s) described in this data sheet may have changed since this data sheet was published. The latest information is available on the Internet at URL http://www.semiconductors.philips.com.

[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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16. Contents

1	**Product profile**	**1**
1.1	General description	1
1.2	Features	1
1.3	Applications	1
1.4	Quick reference data	1
2	**Pinning information**	**2**
3	**Ordering information**	**2**
4	**Marking**	**2**
5	**Limiting values**	**2**
6	**Thermal characteristics**	**3**
7	**Characteristics**	**3**
8	**Package outline**	**5**
9	**Packing information**	**5**
10	**Revision history**	**6**
11	**Data sheet status**	**7**
12	**Definitions**	**7**
13	**Disclaimers**	**7**
14	**Trademarks**	**7**
15	**Contact information**	**7**

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