

# DATA SHEET



## **PDTTC143XT** NPN resistor-equipped transistor

Product specification

1999 Apr 20

# NPN resistor-equipped transistor

# PDTC143XT

### FEATURES

- Built-in bias resistors R1 and R2 (typ. 4.7 kΩ and 10 kΩ respectively)
- Simplification of circuit design
- Reduces number of components and board space.

### APPLICATIONS

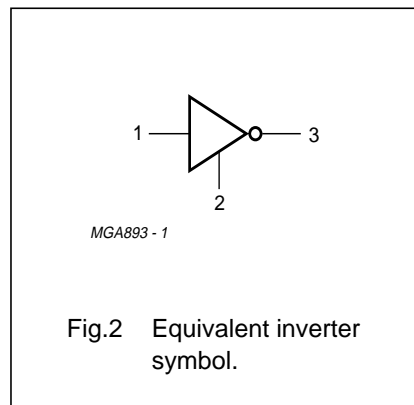
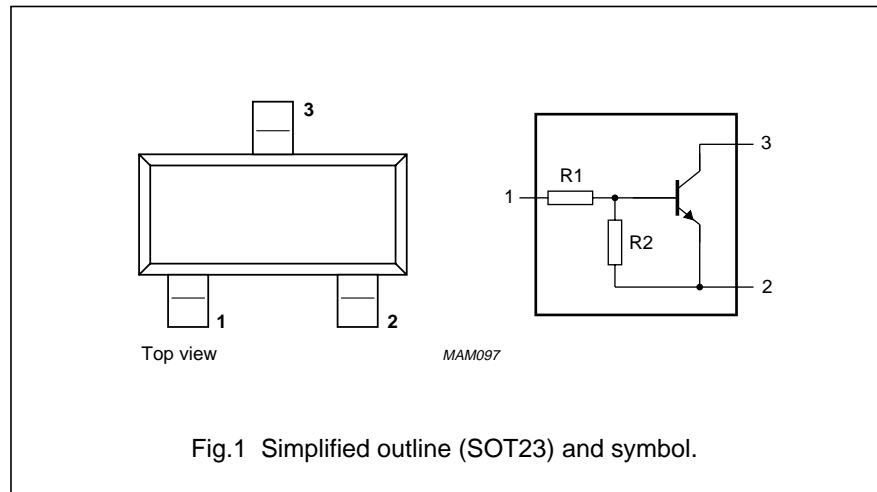
- Especially suitable for space reduction in interface and driver circuits
- Inverter circuit configurations without use of external resistors.

### DESCRIPTION

NPN resistor-equipped transistor in a SOT23 plastic package.

### PINNING

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



### MARKING

TYPE NUMBER	MARKING CODE <sup>(1)</sup>
PDTC143XT	*32

### Note

- \* = p: Made in Hong Kong.  
\* = t: Made in Malaysia.

### LIMITING VALUES

In accordance with the Absolute Maximum Rating System (IEC 134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V <sub>CBO</sub>	collector-base voltage	open emitter	–	50	V
V <sub>CEO</sub>	collector-emitter voltage	open base	–	50	V
V <sub>EBO</sub>	emitter-base voltage	open collector	–	10	V
V <sub>I</sub>	input voltage				
	positive		–	20	V
	negative		–	–7	V
I <sub>O</sub>	output current (DC)		–	100	mA
I <sub>CM</sub>	peak collector current		–	100	mA
P <sub>tot</sub>	total power dissipation	T <sub>amb</sub> ≤ 25 °C; note 1	–	250	mW
T <sub>stg</sub>	storage temperature		–65	+150	°C
T <sub>j</sub>	junction temperature		–	150	°C
T <sub>amb</sub>	operating ambient temperature		–65	+150	°C

### Note

1. Refer to SOT23 standard mounting conditions.

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## THERMAL CHARACTERISTICS

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

## Note

1. Refer to SOT23 standard mounting conditions.

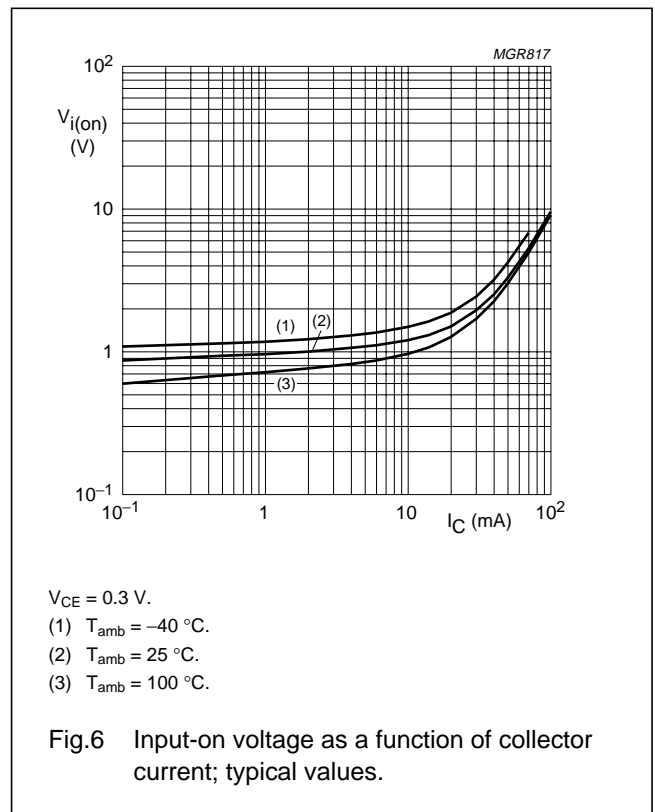
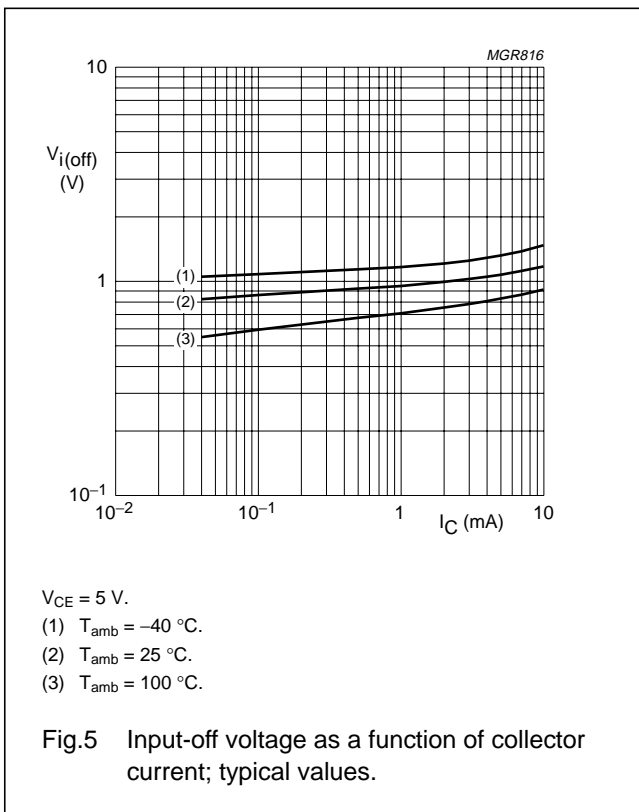
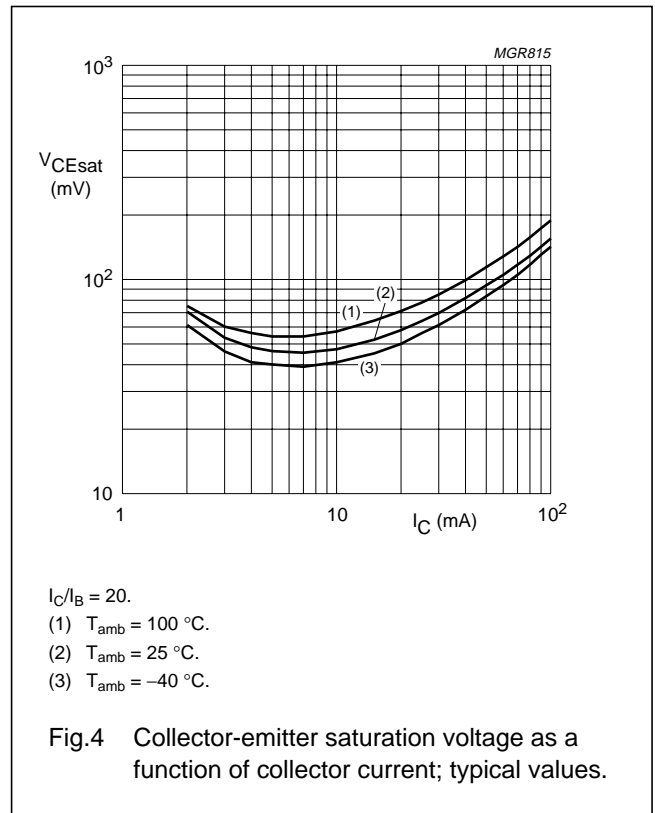
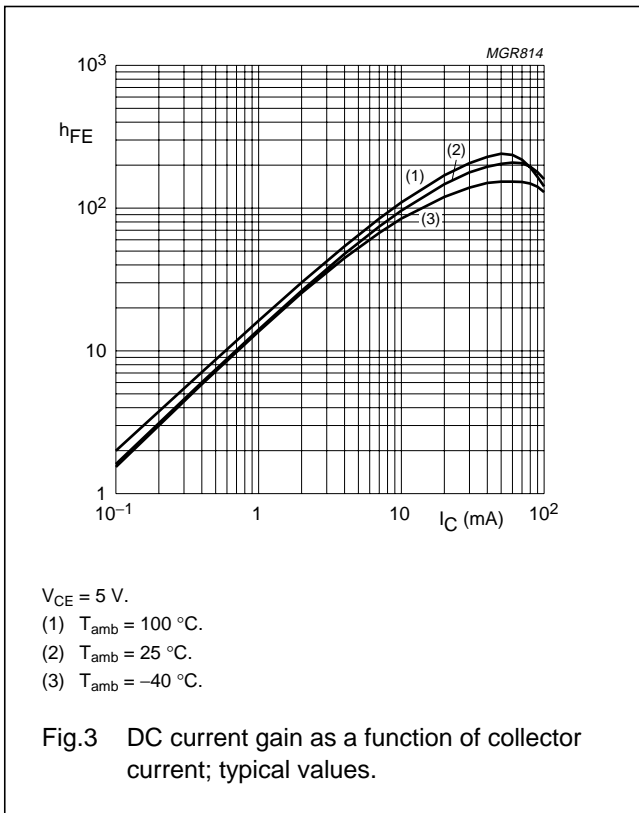
## CHARACTERISTICS

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$I_{CBO}$	collector cut-off current	$I_E = 0; V_{CB} = 50\text{ V}$	–	–	100	nA
$I_{CEO}$	collector cut-off current	$I_B = 0; V_{CE} = 30\text{ V}$	–	–	1	$\mu\text{A}$
		$I_B = 0; V_{CE} = 30\text{ V}; T_j = 150\text{ °C}$	–	–	50	$\mu\text{A}$
$I_{EBO}$	emitter cut-off current	$I_C = 0; V_{EB} = 5\text{ V}$	–	–	600	$\mu\text{A}$
$h_{FE}$	DC current gain	$I_C = 10\text{ mA}; V_{CE} = 5\text{ V}$	50	–	–	
$V_{CEsat}$	collector-emitter saturation voltage	$I_C = 10\text{ mA}; I_B = 0.5\text{ mA}$	–	–	100	mV
$V_{i(off)}$	input-off voltage	$I_C = 100\text{ }\mu\text{A}; V_{CE} = 5\text{ V}$	–	–	0.3	V
$V_{i(on)}$	input-on voltage	$I_C = 20\text{ mA}; V_{CE} = 0.3\text{ V}$	2.5	–	–	V
R1	input resistor		3.3	4.7	6.1	$k\Omega$
$\frac{R2}{R1}$	resistor ratio		1.7	2.1	2.6	
$C_c$	collector capacitance	$I_E = I_e = 0; V_{CB} = 10\text{ V}; f = 1\text{ MHz}$	–	–	2.5	pF

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PDTC143XT



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PACKAGE OUTLINE

Plastic surface mounted package; 3 leads

SOT23



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**DEFINITIONS**

<b>Data Sheet Status</b>	
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.
<b>Limiting values</b>	
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.	
<b>Application information</b>	
Where application information is given, it is advisory and does not form part of the specification.	

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NPN resistor-equipped transistor

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