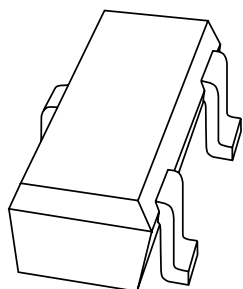


DATA SHEET



PDTTC143XK

NPN resistor-equipped transistor;

$R1 = 4.7 \text{ k}\Omega$, $R2 = 10 \text{ k}\Omega$

Product specification

2002 Jan 15

NPN resistor-equipped transistor;
R1 = 4.7 kΩ, R2 = 10 kΩ

PDTC143XK

FEATURES

- Built-in bias resistors
- 250 mW total power dissipation
- Package size 2.9 × 1.5 × 1.15 mm
- Simplification of circuit design
- Reduces number of components and required PCB area.

APPLICATIONS

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

DESCRIPTION

NPN resistor equipped transistor in a SOT346 (SC-59) plastic package.

MARKING

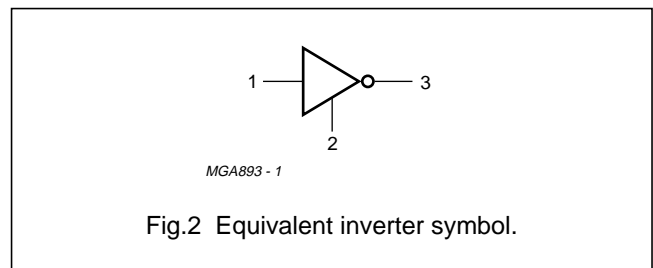
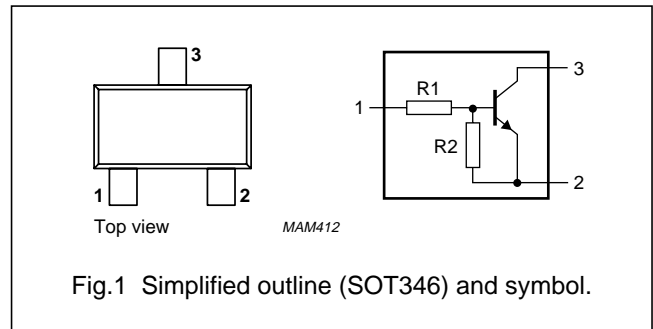
| TYPE NUMBER | MARKING CODE |
|-------------|--------------|
| PDTC143XK | 26 |

QUICK REFERENCE DATA

| SYMBOL | PARAMETER | MAX. | UNIT |
|------------------|---------------------------|------|------|
| V _{CEO} | collector-emitter voltage | 50 | V |
| I _O | output current (DC) | 100 | mA |
| R1 | bias resistor | 4.7 | kΩ |
| R2 | bias resistor | 10 | kΩ |

PINNING

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



NPN resistor-equipped transistor;
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PDTC143XK

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 | | – | +20 | V |
| | negative | | – | –7 | V |
| I_o | output current (DC) | | – | 100 | mA |
| I_{CM} | peak collector current | | – | 100 | mA |
| P_{tot} | total power dissipation | $T_{amb} \leq 25 \text{ }^\circ\text{C}$; note 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 | $^\circ\text{C}$ |

Note

- For mounting conditions, see “*Thermal considerations and footprint design for SOT346 in the SC18 Data Handbook*”.

THERMAL CHARACTERISTICS

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

Note

- For mounting conditions, see “*Thermal considerations and footprint design for SOT346 in the SC18 Data Handbook*”.

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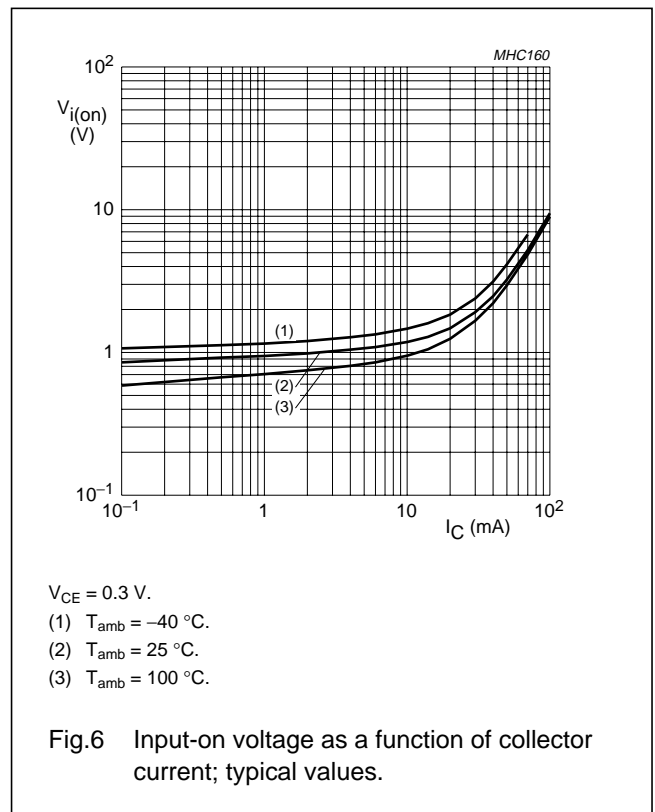
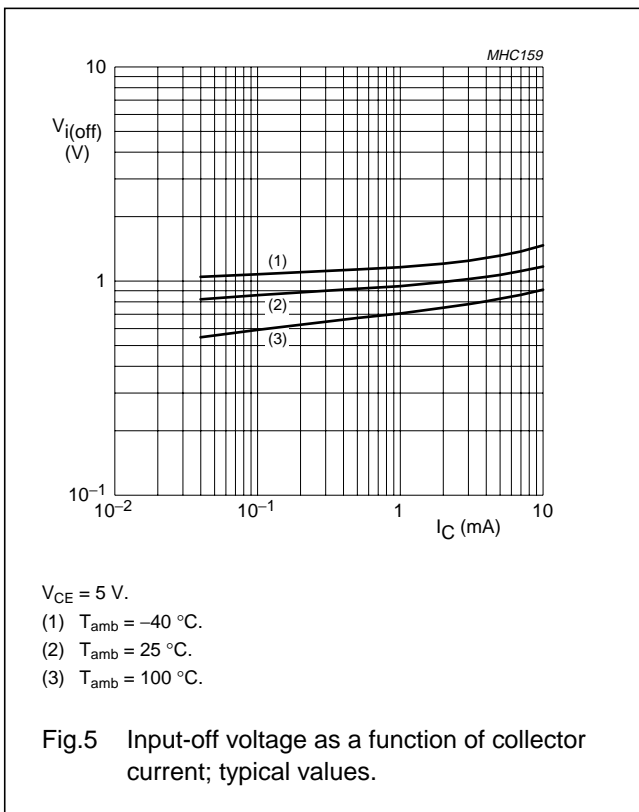
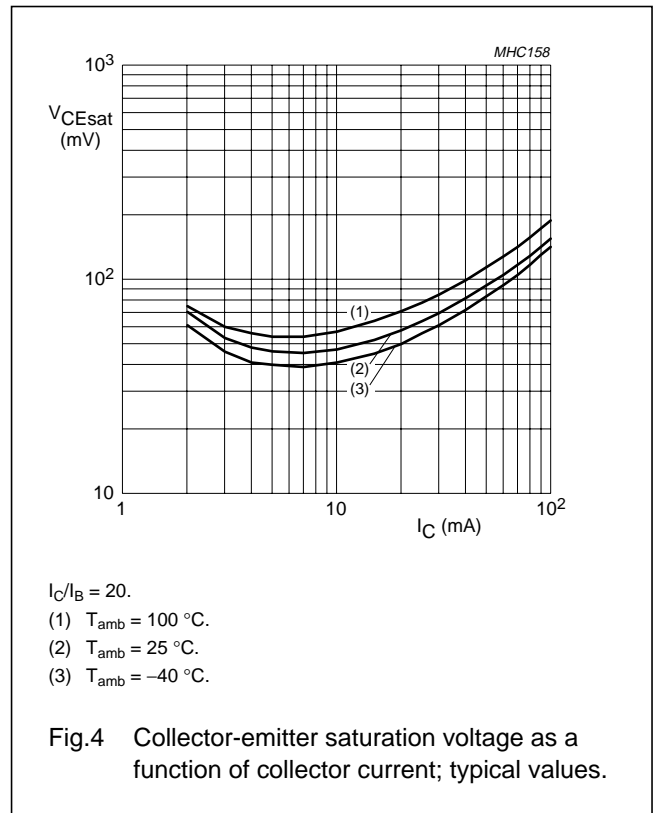
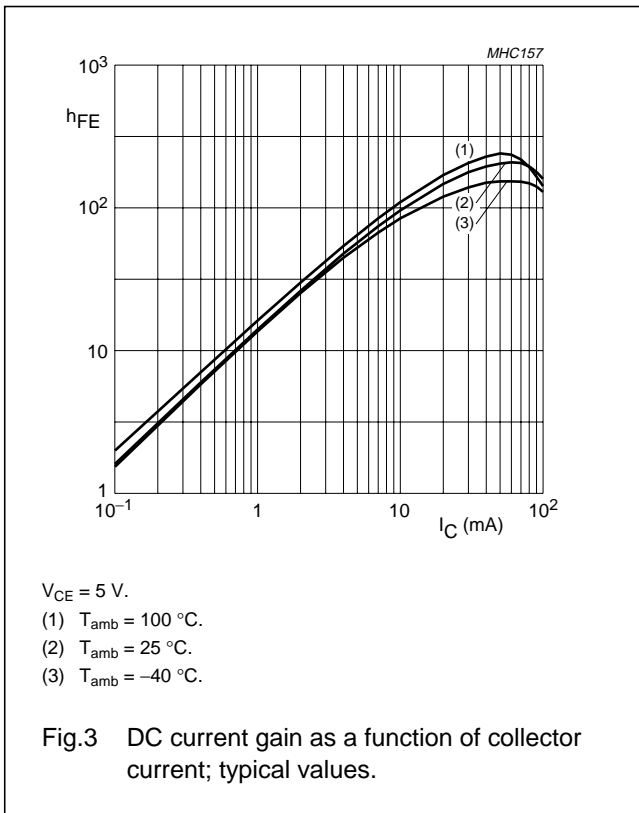
CHARACTERISTICS

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

| SYMBOL | PARAMETER | CONDITIONS | MIN. | TYP. | MAX. | UNIT |
|---------------------|--------------------------------------|-----------------------------------------------------------------------------------------------------|------|------|------|------------------|
| I_{CBO} | collector-base cut-off current | $V_{\text{CB}} = 50 \text{ V}$; $I_{\text{E}} = 0$ | – | – | 100 | nA |
| I_{CEO} | collector-emitter cut-off current | $V_{\text{CE}} = 30 \text{ V}$; $I_{\text{B}} = 0$ | – | – | 1 | μA |
| | | $V_{\text{CE}} = 30 \text{ V}$; $I_{\text{B}} = 0$; $T_{\text{j}} = 150 \text{ }^{\circ}\text{C}$ | – | – | 50 | μA |
| I_{EBO} | emitter-base cut-off current | $V_{\text{EB}} = 5 \text{ V}$; $I_{\text{C}} = 0$ | – | – | 0.6 | mA |
| h_{FE} | DC current gain | $V_{\text{CE}} = 5 \text{ V}$; $I_{\text{C}} = 10 \text{ mA}$ | 50 | – | – | |
| V_{CEsat} | collector-emitter saturation voltage | $I_{\text{C}} = 10 \text{ mA}$; $I_{\text{B}} = 0.5 \text{ mA}$ | – | – | 100 | mV |
| $V_{\text{i(off)}}$ | input off voltage | $V_{\text{CE}} = 5 \text{ V}$; $I_{\text{C}} = 100 \mu\text{A}$ | – | – | 0.3 | V |
| $V_{\text{i(on)}}$ | input on voltage | $V_{\text{CE}} = 0.3 \text{ V}$; $I_{\text{C}} = 20 \text{ mA}$ | 2.5 | – | – | V |
| R1 | input resistor | | 3.3 | 4.7 | 6.1 | $\text{k}\Omega$ |
| $\frac{R2}{R1}$ | resistor ratio | | 1.7 | 2.1 | 2.6 | |
| C_{c} | collector capacitance | $I_{\text{E}} = i_{\text{e}} = 0$; $V_{\text{CB}} = 10 \text{ V}$; $f = 1 \text{ MHz}$ | – | – | 3 | pF |

NPN resistor-equipped transistor;
 R1 = 4.7 kΩ, R2 = 10 kΩ

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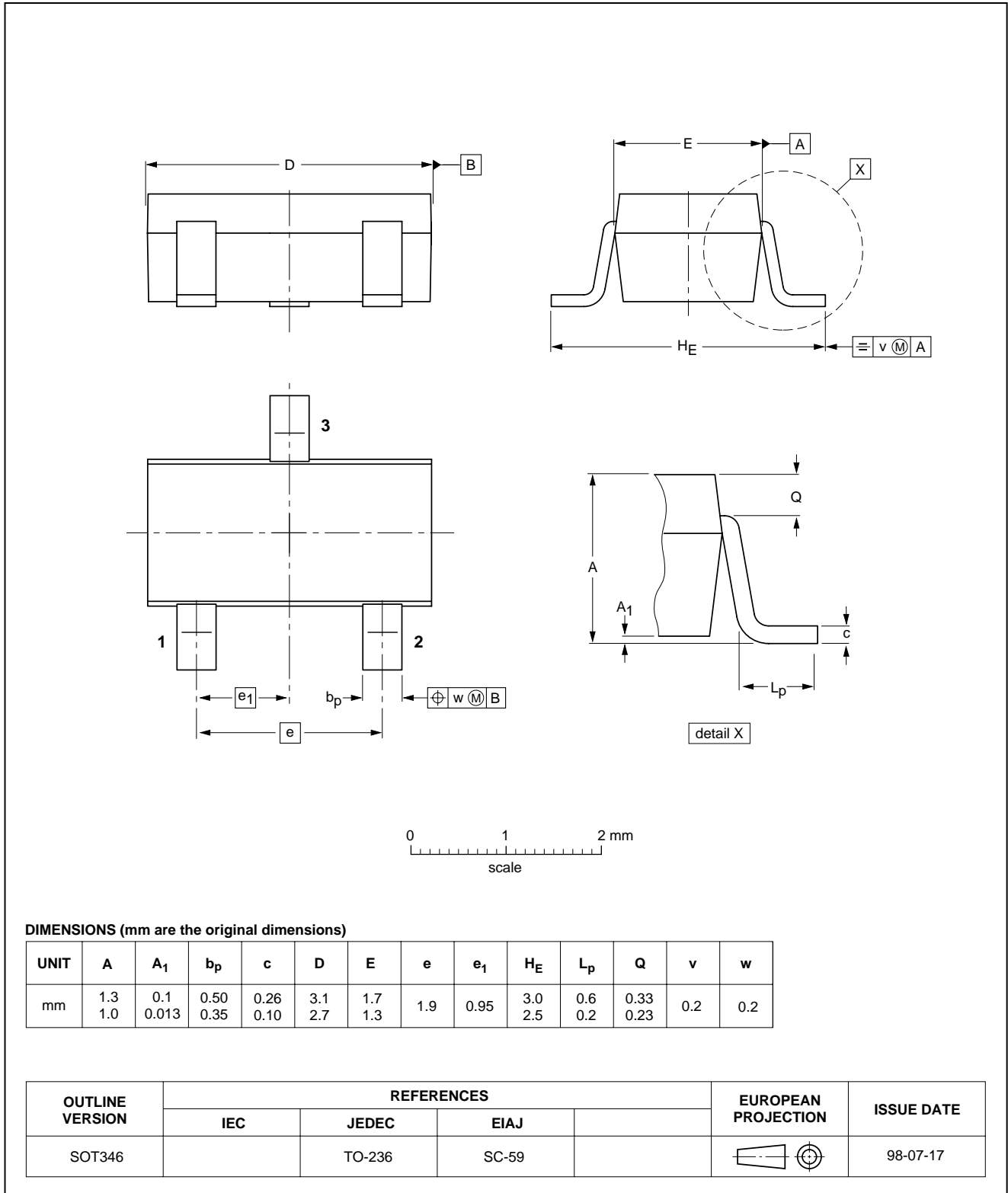
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 R1 = 4.7 kΩ, R2 = 10 kΩ

PDTC143XK

PACKAGE OUTLINE

Plastic surface mounted package; 3 leads

SOT346



NPN resistor-equipped transistor;
R1 = 4.7 kΩ, R2 = 10 kΩ

PDTC143XK

DATA SHEET STATUS

| DATA SHEET STATUS ⁽¹⁾ | PRODUCT STATUS ⁽²⁾ | DEFINITIONS |
|----------------------------------|-------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
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