

DATA SHEET

PDTA143T series

PNP resistor-equipped transistors;

R1 = 4.7 k Ω , R2 = open

Product data sheet
Supersedes data of 2003 Sep 08

2004 Aug 04

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PDTA143T series

FEATURES

- Built-in bias resistors
- Simplified circuit design
- Reduction of component count
- Reduced pick and place costs.

APPLICATIONS

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

QUICK REFERENCE DATA

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

DESCRIPTION

PNP resistor-equipped transistor (see “Simplified outline, symbol and pinning” for package details).

PRODUCT OVERVIEW

| TYPE NUMBER | PACKAGE | | MARKING CODE | NPN COMPLEMENT |
|-------------|---------------|--------|--------------------|----------------|
| | PHILIPS | EIAJ | | |
| PDTA143TE | SOT416 | SC-75 | 39 | PDTC143TE |
| PDTA143TEF | SOT490 | SC-89 | 10 | PDTC143TEF |
| PDTA143TK | SOT346 | SC-59 | 45 | PDTC143TK |
| PDTA143TM | SOT883 | SC-101 | E6 | PDTC143TM |
| PDTA143TS | SOT54 (TO-92) | SC-43 | TA143T | PDTC143TS |
| PDTA143TT | SOT23 | – | *42 ⁽¹⁾ | PDTC143TT |
| PDTA143TU | SOT323 | SC-70 | *45 ⁽¹⁾ | PDTC143TU |

Note

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

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SIMPLIFIED OUTLINE, SYMBOL AND PINNING

| TYPE NUMBER | SIMPLIFIED OUTLINE AND SYMBOL | PINNING | |
|--|-------------------------------|-------------|------------------------------|
| | | PIN | DESCRIPTION |
| PDTA143TS | | 1 2 3 | base collector emitter |
| PDTA143TE PDTA143TEF PDTA143TK PDTA143TT PDTA143TU | | 1 2 3 | base emitter collector |
| PDTA143TM | | 1 2 3 | base emitter collector |

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LIMITING VALUES

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

| SYMBOL | PARAMETER | CONDITIONS | MIN. | MAX. | UNIT |
|------------------|-------------------------------|--------------------------|------|------|------|
| V _{CB0} | collector-base voltage | open emitter | – | –50 | V |
| V _{CEO} | collector-emitter voltage | open base | – | –50 | V |
| V _{EBO} | emitter-base voltage | open collector | – | –5 | V |
| I _O | output current (DC) | | – | –100 | mA |
| I _{CM} | peak collector current | | – | –100 | mA |
| P _{tot} | total power dissipation | T _{amb} ≤ 25 °C | | | |
| | SOT23 | note 1 | – | 250 | mW |
| | SOT54 | note 1 | – | 500 | mW |
| | SOT323 | note 1 | – | 200 | mW |
| | SOT346 | note 1 | – | 250 | mW |
| | SOT416 | note 1 | – | 150 | mW |
| | SOT490 | notes 1 and 2 | – | 250 | mW |
| | SOT883 | notes 2 and 3 | – | 250 | mW |
| T _{stg} | storage temperature | | –65 | +150 | °C |
| T _j | junction temperature | | – | 150 | °C |
| T _{amb} | operating ambient temperature | | –65 | +150 | °C |

Notes

1. Refer to standard mounting conditions.
2. Reflow soldering is the only recommended soldering method.
3. Refer to SOT883 standard mounting conditions; FR4 with 60 μ m copper strip line.

THERMAL CHARACTERISTICS

| SYMBOL | PARAMETER | CONDITIONS | VALUE | UNIT |
|---------------------|---|---------------|-------|------|
| R _{th j-a} | thermal resistance from junction to ambient | in free air | | |
| | SOT23 | note 1 | 500 | K/W |
| | SOT54 | note 1 | 250 | K/W |
| | SOT323 | note 1 | 625 | K/W |
| | SOT346 | note 1 | 500 | K/W |
| | SOT416 | note 1 | 833 | K/W |
| | SOT490 | note 1 | 500 | K/W |
| | SOT883 | notes 2 and 3 | 500 | K/W |

Notes

1. Refer to standard mounting conditions.
2. Reflow soldering is the only recommended soldering method.
3. Refer to SOT883 standard mounting conditions; FR4 with 60 μ m copper strip line.

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CHARACTERISTICS

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

| SYMBOL | PARAMETER | CONDITIONS | MIN. | TYP. | MAX. | UNIT |
|--------------------|--------------------------------------|---|------|------|------|------------|
| I _{CBO} | collector-base cut-off current | V _{CB} = -50 V; I _E = 0 | - | - | -100 | nA |
| I _{CEO} | collector-emitter cut-off current | V _{CE} = -30 V; I _B = 0 | - | - | -1 | μ A |
| | | V _{CE} = -30 V; I _B = 0; T _j = 150 °C | - | - | -50 | μ A |
| I _{EBO} | emitter-base cut-off current | V _{EB} = -5 V; I _C = 0 | - | - | -100 | nA |
| h _{FE} | DC current gain | V _{CE} = -5 V; I _C = -1 mA | 200 | - | - | |
| V _{CEsat} | collector-emitter saturation voltage | I _C = -5 mA; I _B = -0.25 mA | - | - | -150 | mV |
| R1 | input resistor | | 3.3 | 4.7 | 6.1 | k Ω |
| C _c | collector capacitance | I _E = i _e = 0; V _{CB} = -10 V; f = 1 MHz | - | - | 3 | pF |

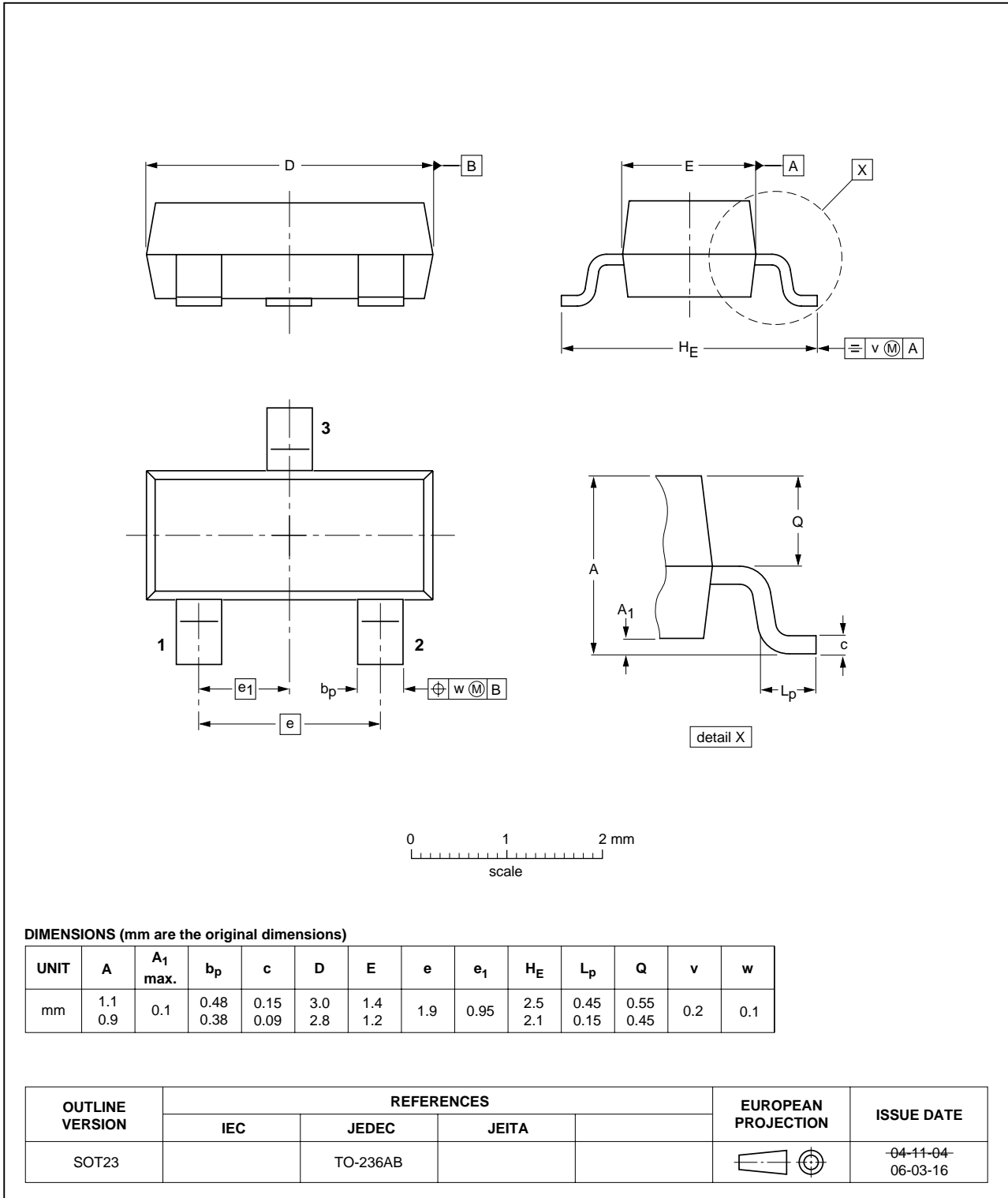
PNP resistor-equipped transistors;
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PACKAGE OUTLINES

Plastic surface-mounted package; 3 leads

SOT23

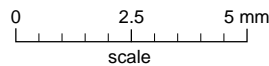
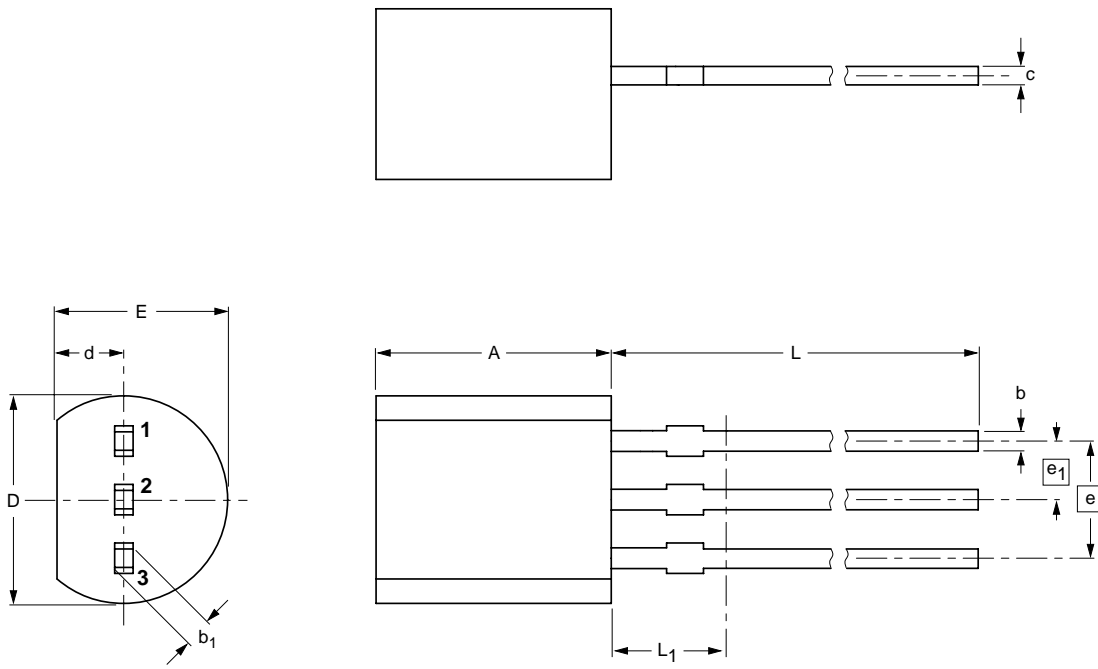


PNP resistor-equipped transistors;
R1 = 4.7 kΩ, R2 = open

PDTA143T series

Plastic single-ended leaded (through hole) package; 3 leads

SOT54



DIMENSIONS (mm are the original dimensions)

| UNIT | A | b | b ₁ | c | D | d | E | e | e ₁ | L | L ₁ ⁽¹⁾ max. |
|------|------------|--------------|----------------|--------------|------------|------------|------------|------|----------------|--------------|---------------------------------------|
| mm | 5.2 5.0 | 0.48 0.40 | 0.66 0.55 | 0.45 0.38 | 4.8 4.4 | 1.7 1.4 | 4.2 3.6 | 2.54 | 1.27 | 14.5 12.7 | 2.5 |

Note

1. Terminal dimensions within this zone are uncontrolled to allow for flow of plastic and terminal irregularities.

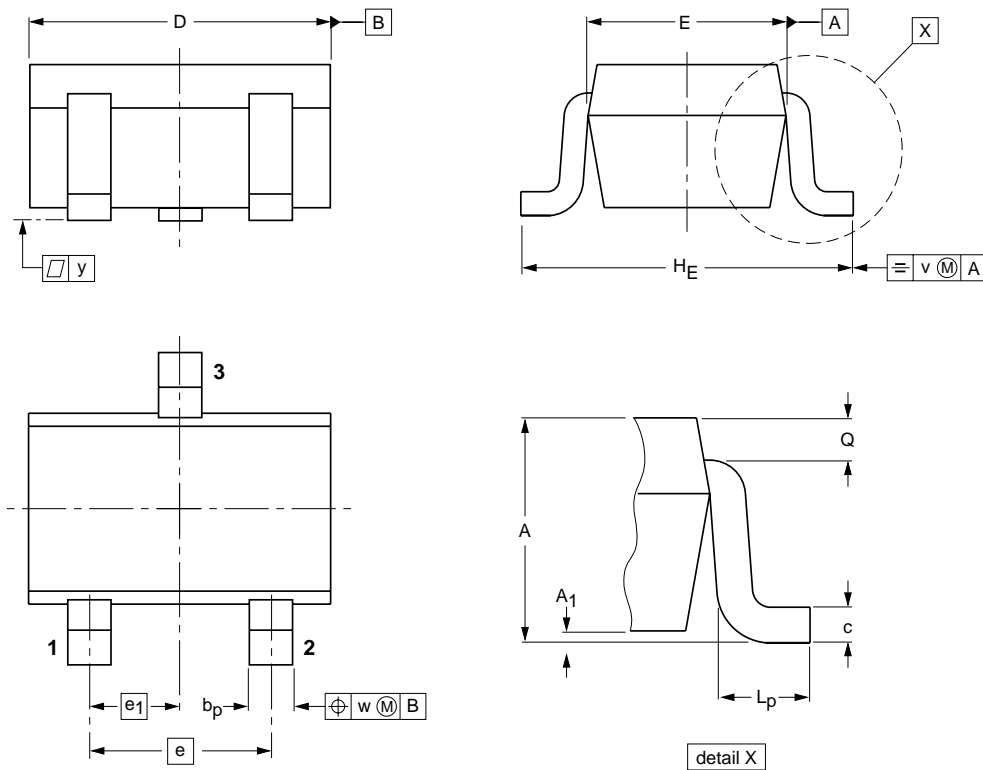
| OUTLINE VERSION | REFERENCES | | | EUROPEAN PROJECTION | ISSUE DATE |
|--------------------|------------|-------|--------|------------------------|----------------------|
| | IEC | JEDEC | JEITA | | |
| SOT54 | | TO-92 | SC-43A | | 04-06-28 04-11-16 |

PNP resistor-equipped transistors;
R1 = 4.7 kΩ, R2 = open

PDTA143T series

Plastic surface-mounted package; 3 leads

SOT323



DIMENSIONS (mm are the original dimensions)

| UNIT | A | A ₁ max | b _p | c | D | E | e | e ₁ | H _E | L _p | Q | v | w |
|------|------------|-----------------------|----------------|--------------|------------|--------------|-----|----------------|----------------|----------------|--------------|-----|-----|
| mm | 1.1 0.8 | 0.1 | 0.4 0.3 | 0.25 0.10 | 2.2 1.8 | 1.35 1.15 | 1.3 | 0.65 | 2.2 2.0 | 0.45 0.15 | 0.23 0.13 | 0.2 | 0.2 |

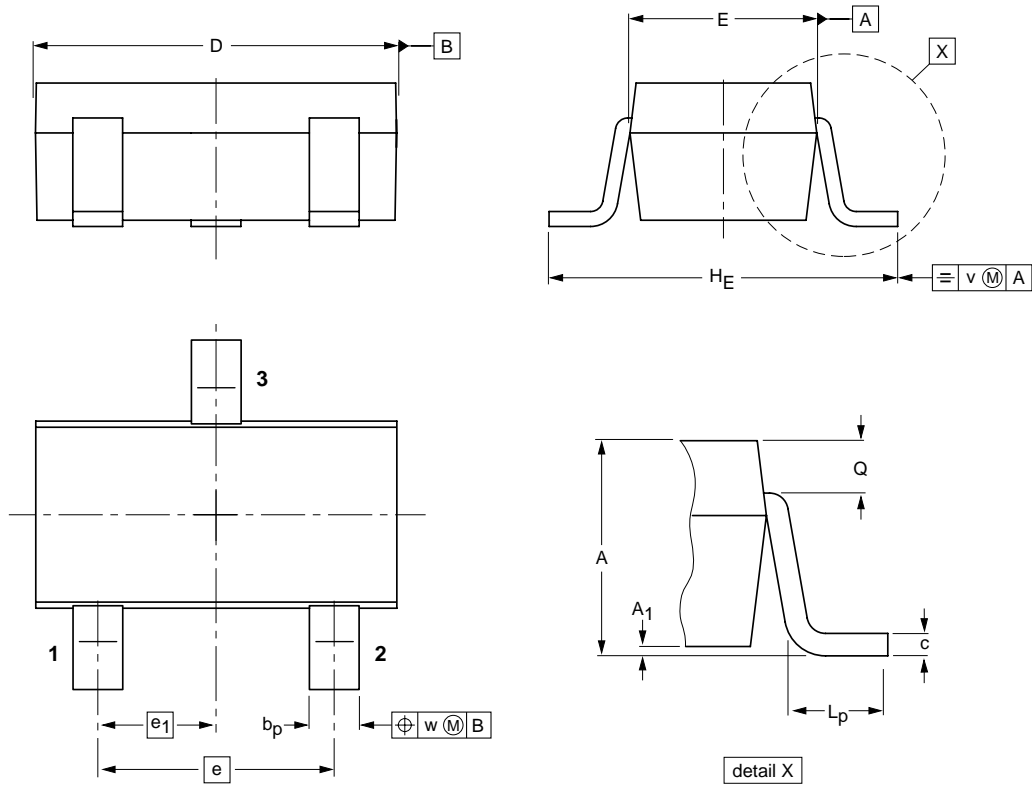
| OUTLINE VERSION | REFERENCES | | | | EUROPEAN PROJECTION | ISSUE DATE |
|--------------------|------------|-------|-------|--|------------------------|---------------------------------|
| | IEC | JEDEC | JEITA | | | |
| SOT323 | | | SC-70 | | | 04-11-04 06-03-16 |

PNP resistor-equipped transistors;
R1 = 4.7 kΩ, R2 = open

PDTA143T series

Plastic surface-mounted package; 3 leads

SOT346



DIMENSIONS (mm are the original dimensions)

| UNIT | A | A ₁ | b _p | c | D | E | e | e ₁ | H _E | L _p | Q | v | w |
|------|------------|----------------|----------------|--------------|------------|------------|-----|----------------|----------------|----------------|--------------|-----|-----|
| mm | 1.3 1.0 | 0.1 0.013 | 0.50 0.35 | 0.26 0.10 | 3.1 2.7 | 1.7 1.3 | 1.9 | 0.95 | 3.0 2.5 | 0.6 0.2 | 0.33 0.23 | 0.2 | 0.2 |

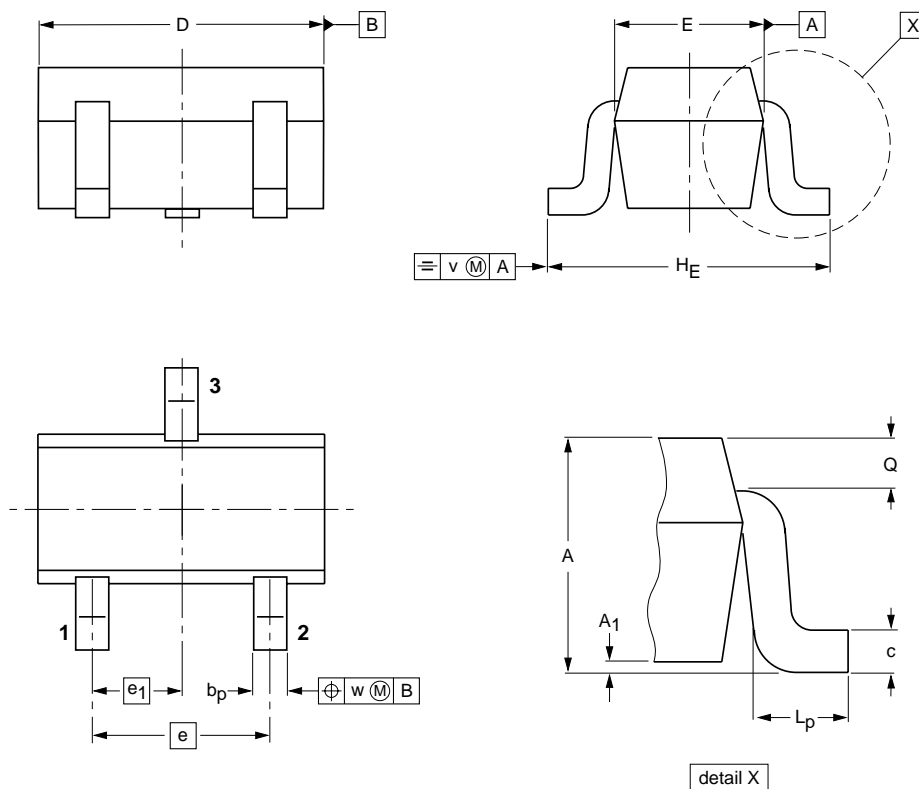
| OUTLINE VERSION | REFERENCES | | | EUROPEAN PROJECTION | ISSUE DATE |
|-----------------|------------|--------|--------|---------------------|----------------------|
| | IEC | JEDEC | JEITA | | |
| SOT346 | | TO-236 | SC-59A | | 04-11-11 06-03-16 |

PNP resistor-equipped transistors;
R1 = 4.7 kΩ, R2 = open

PDTA143T series

Plastic surface-mounted package; 3 leads

SOT416



DIMENSIONS (mm are the original dimensions)

| UNIT | A | A1 max | bp | c | D | E | e | e1 | HE | Lp | Q | v | w |
|------|--------------|-----------|--------------|--------------|------------|------------|---|-----|--------------|--------------|--------------|-----|-----|
| mm | 0.95 0.60 | 0.1 | 0.30 0.15 | 0.25 0.10 | 1.8 1.4 | 0.9 0.7 | 1 | 0.5 | 1.75 1.45 | 0.45 0.15 | 0.23 0.13 | 0.2 | 0.2 |

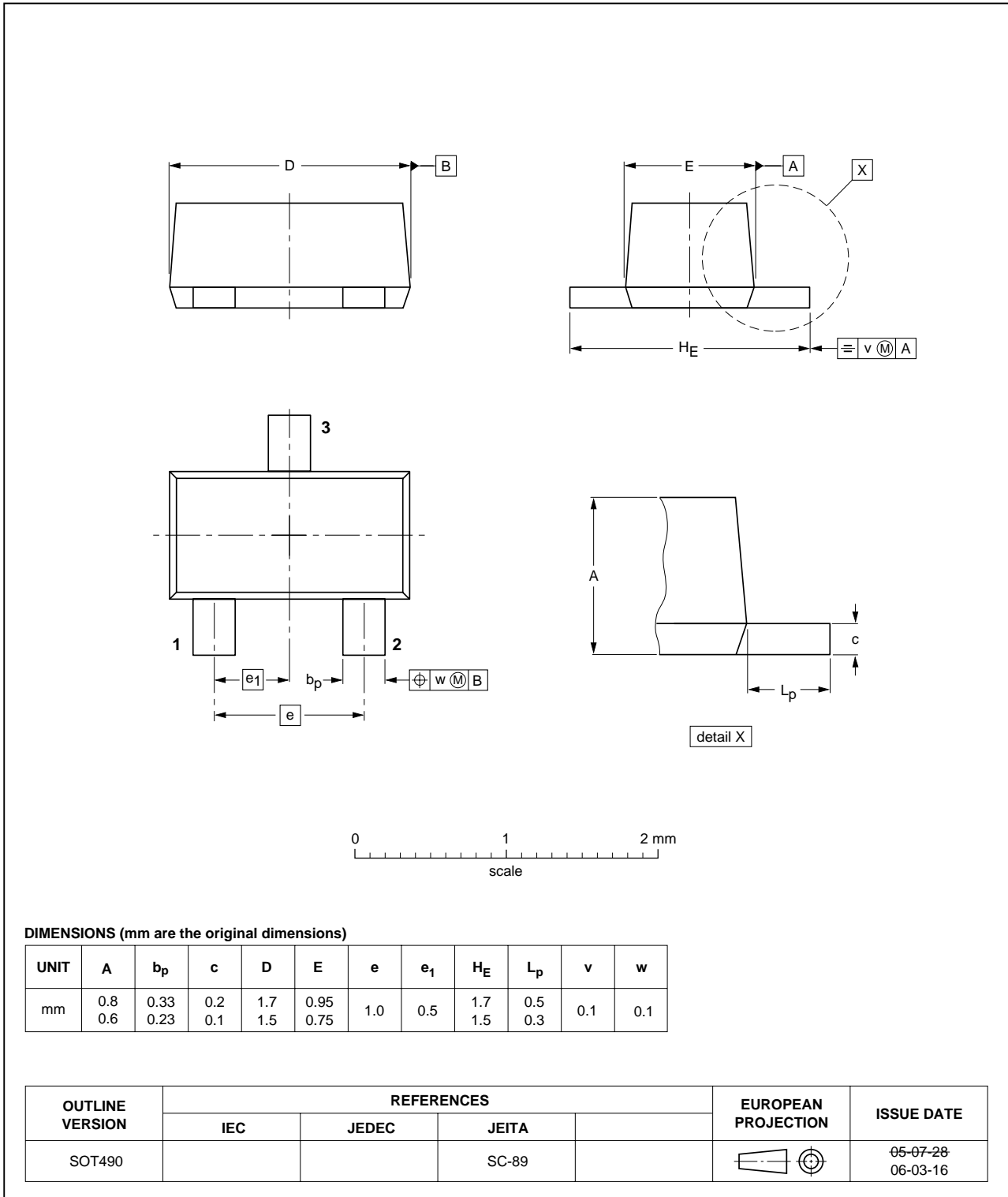
| OUTLINE VERSION | REFERENCES | | | EUROPEAN PROJECTION | ISSUE DATE |
|--------------------|------------|-------|-------|------------------------|----------------------|
| | IEC | JEDEC | JEITA | | |
| SOT416 | | | SC-75 | | 04-11-04 06-03-16 |

PNP resistor-equipped transistors;
R1 = 4.7 kΩ, R2 = open

PDTA143T series

Plastic surface-mounted package; 3 leads

SOT490

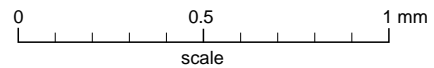
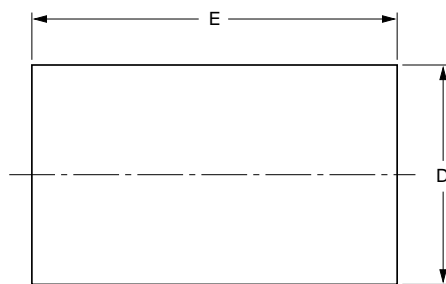
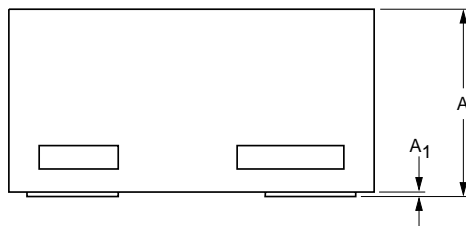
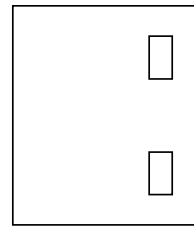
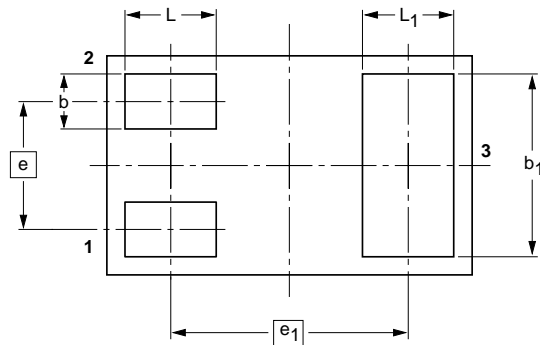


PNP resistor-equipped transistors;
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Leadless ultra small plastic package; 3 solder lands; body 1.0 x 0.6 x 0.5 mm

SOT883



DIMENSIONS (mm are the original dimensions)

| UNIT | A ⁽¹⁾ | A ₁ max. | b | b ₁ | D | E | e | e ₁ | L | L ₁ |
|------|------------------|------------------------|--------------|----------------|--------------|--------------|------|----------------|--------------|----------------|
| mm | 0.50 0.46 | 0.03 | 0.20 0.12 | 0.55 0.47 | 0.62 0.55 | 1.02 0.95 | 0.35 | 0.65 | 0.30 0.22 | 0.30 0.22 |

Note

1. Including plating thickness

| OUTLINE VERSION | REFERENCES | | | EUROPEAN PROJECTION | ISSUE DATE |
|--------------------|------------|-------|--------|------------------------|----------------------|
| | IEC | JEDEC | JEITA | | |
| SOT883 | | | SC-101 | | 03-02-05 03-04-03 |

PNP resistor-equipped transistors;
R1 = 4.7 k Ω , R2 = open

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DATA SHEET STATUS

| DOCUMENT STATUS ⁽¹⁾ | PRODUCT STATUS ⁽²⁾ | DEFINITION |
|--------------------------------|-------------------------------|---|
| Objective data sheet | Development | This document contains data from the objective specification for product development. |
| Preliminary data sheet | Qualification | This document contains data from the preliminary specification. |
| Product data sheet | Production | This document contains the product specification. |

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