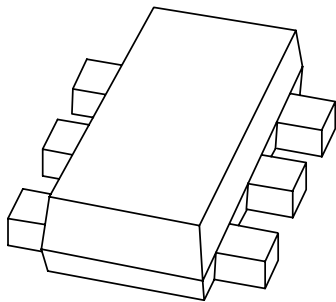


DATA SHEET



PMEG2005AEV; PMEG3005AEV; PMEG4005AEV

Very low V_F MEGA Schottky barrier
rectifiers

Product specification

2003 Aug 20

**Very low V_F MEGA
Schottky barrier rectifiers**

**PMEG2005AEV; PMEG3005AEV;
PMEG4005AEV**

FEATURES

- Very low forward voltage
- High surge current
- Ultra small plastic SMD package.

APPLICATIONS

- Low voltage rectification
- High efficiency DC/DC conversion
- Voltage clamping
- Inverse polarity protection
- Low power consumption applications.

DESCRIPTION

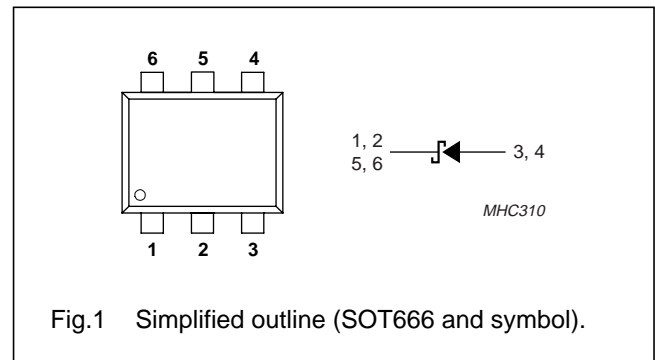
Planar Maximum Efficiency General Application (MEGA) Schottky barrier rectifier with an integrated guard ring for stress protection, encapsulated in a SOT666 ultra small SMD plastic package.

QUICK REFERENCE DATA

| SYMBOL | PARAMETER | MAX. | UNIT |
|--------|-----------------|------|------|
| I_F | forward current | 0.5 | A |
| V_R | reverse voltage | | |
| | PMEG2005AEV | 20 | V |
| | PMEG3005AEV | 30 | V |
| | PMEG4005AEV | 40 | V |

PINNING

| PIN | DESCRIPTION |
|-----|-------------|
| 1 | cathode |
| 2 | cathode |
| 3 | anode |
| 4 | anode |
| 5 | cathode |
| 6 | cathode |



MARKING

| TYPE NUMBER | MARKING CODE |
|-------------|--------------|
| PMEG2005AEV | G1 |
| PMEG3005AEV | G2 |
| PMEG4005AEV | G3 |

RELATED PRODUCTS

| TYPE NUMBER | DESCRIPTION | FEATURE |
|-------------|--|------------------------|
| PMEGxx05AEA | 0.5 A; 20/30/40 V very low V_F MEGA Schottky rectifier | SOD323 (SC-76) package |
| PMEG2005EB | 0.5 A; 20 V very low V_F MEGA Schottky rectifier | SOD523 (SC-79) package |
| PMEG2010EA | 1 A; 20 V very low V_F MEGA Schottky rectifier | higher forward current |

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PMEG4005AEV

LIMITING VALUES

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

| SYMBOL | PARAMETER | CONDITIONS | MIN. | MAX. | UNIT |
|-----------|-------------------------------------|---|------|------|------|
| V_R | continuous reverse voltage | | | | |
| | PMEG2005AEV | | – | 20 | V |
| | PMEG3005AEV | | – | 30 | V |
| | PMEG4005AEV | | – | 40 | V |
| I_F | continuous forward current | note 1 | – | 0.5 | A |
| I_{FRM} | repetitive peak forward current | $t_p \leq 1$ ms; $\delta \leq 0.5$; note 2 | – | 3.5 | A |
| I_{FSM} | non-repetitive peak forward current | $t_p = 8$ ms; square wave; note 2 | – | 10 | A |
| T_j | junction temperature | note 3 | – | 150 | °C |
| T_{amb} | operating ambient temperature | note 3 | –65 | +150 | °C |
| T_{stg} | storage temperature | | –65 | +150 | °C |

Notes

1. Refer to SOT666 standard mounting conditions.
2. Only valid if pins 3 and 4 are connected in parallel.
3. For Schottky barrier diodes thermal runaway has to be considered, as in some applications, the reverse power losses (P_R) are a significant part of the total power losses. Nomograms for determination of the reverse power losses P_R and $I_{F(AV)}$ rating will be available on request.

THERMAL CHARACTERISTICS

| SYMBOL | PARAMETER | CONDITIONS | VALUE | UNIT |
|---------------|---|----------------------------|-------|------|
| $R_{th\ j-a}$ | thermal resistance from junction to ambient | in free air; notes 1 and 2 | 405 | K/W |
| | | in free air; notes 2 and 3 | 215 | K/W |
| $R_{th\ j-s}$ | thermal resistance from junction to soldering point | note 4 | 80 | K/W |

Notes

1. Refer to SOT666 standard mounting conditions.
2. For Schottky barrier diodes thermal runaway has to be considered, as in some applications the reverse power losses P_R are a significant part of the total power losses. Nomograms for determination of the reverse power losses P_R and $I_{F(AV)}$ rating will be available on request.
3. Device mounted on an FR4 printed-circuit board with copper clad 10×10 mm.
4. Solder point of cathode tab.

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PMEG4005AEV

ELECTRICAL CHARACTERISTICS

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

| SYMBOL | PARAMETER | CONDITIONS | PMEG2005AEV | | PMEG3005AEV | | PMEG4005AEV | | UNIT |
|--------|----------------------------|---|-------------|------|-------------|------|-------------|------|---------------|
| | | | TYP. | MAX. | TYP. | MAX. | TYP. | MAX. | |
| V_F | forward voltage | $I_F = 0.1\text{ mA}$ | 90 | 130 | 90 | 130 | 95 | 130 | mV |
| | | $I_F = 1\text{ mA}$ | 150 | 190 | 150 | 200 | 155 | 210 | mV |
| | | $I_F = 10\text{ mA}$ | 210 | 240 | 215 | 250 | 220 | 270 | mV |
| | | $I_F = 100\text{ mA}$ | 280 | 330 | 285 | 340 | 295 | 350 | mV |
| | | $I_F = 500\text{ mA}$ | 355 | 390 | 380 | 430 | 420 | 470 | mV |
| I_R | continuous reverse current | $V_R = 10\text{ V}$; note 1 | 15 | 40 | 12 | 30 | 7 | 20 | μA |
| | | $V_R = 20\text{ V}$; note 1 | 40 | 200 | – | – | – | – | μA |
| | | $V_R = 30\text{ V}$; note 1 | – | – | 40 | 150 | – | – | μA |
| | | $V_R = 40\text{ V}$; note 1 | – | – | – | – | 30 | 100 | μA |
| C_d | diode capacitance | $V_R = 1\text{ V}$; $f = 1\text{ MHz}$ | 66 | 80 | 55 | 70 | 43 | 50 | pF |

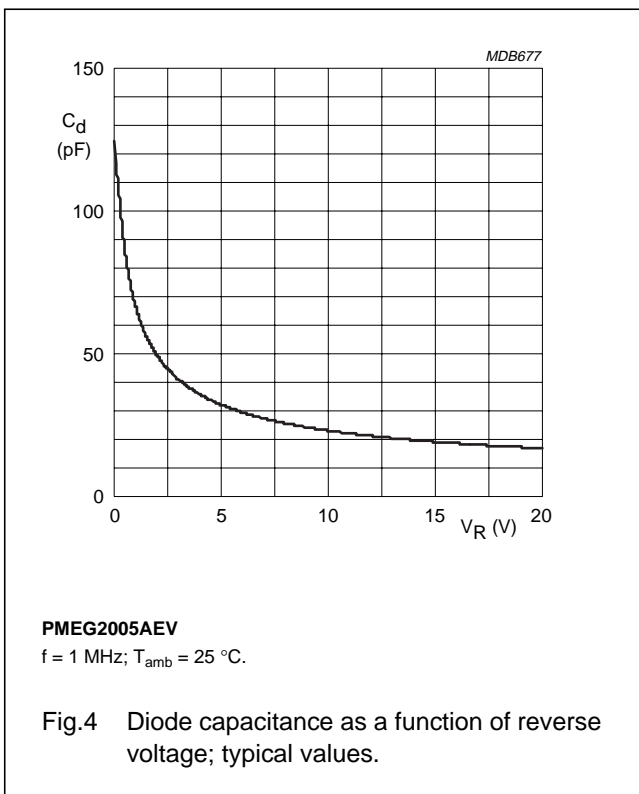
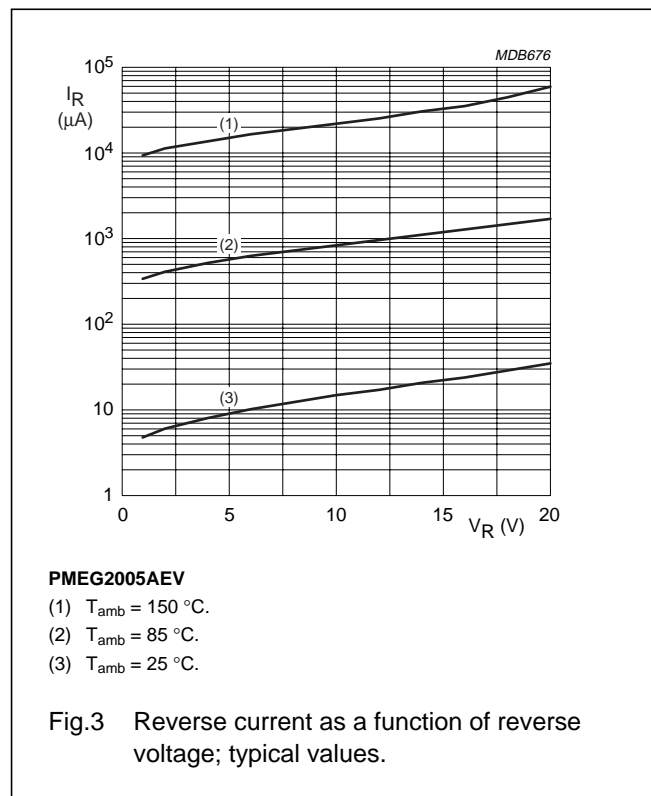
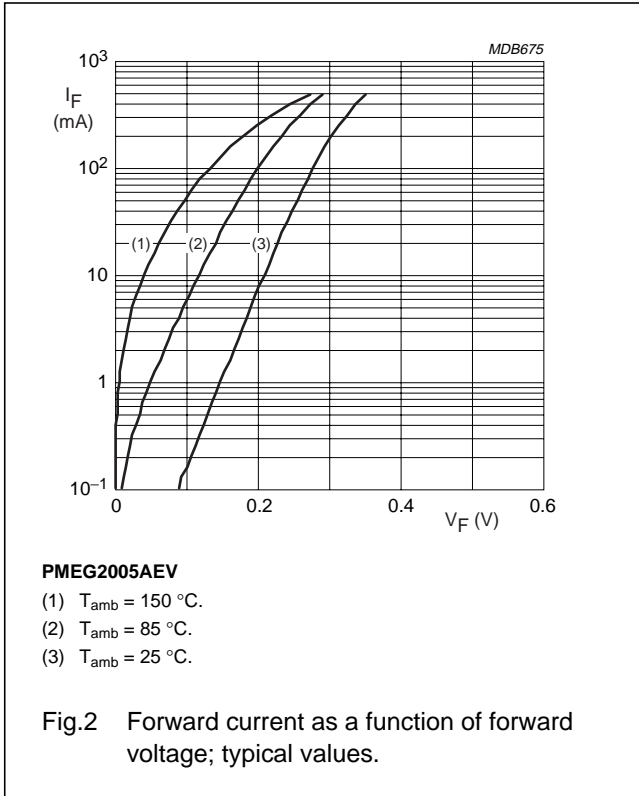
Note

1. Pulse test: $t_p \leq 300\text{ }\mu\text{s}$; $\delta \leq 0.02$.

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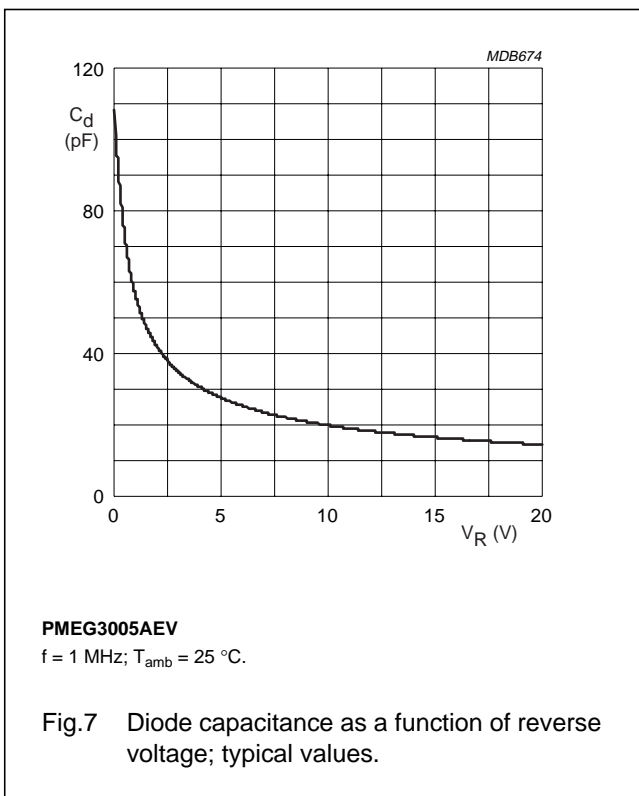
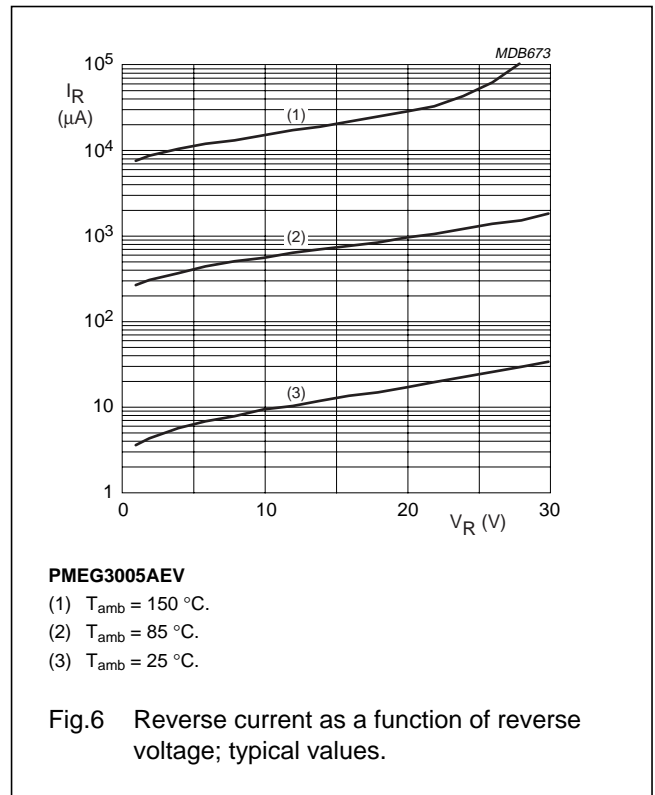
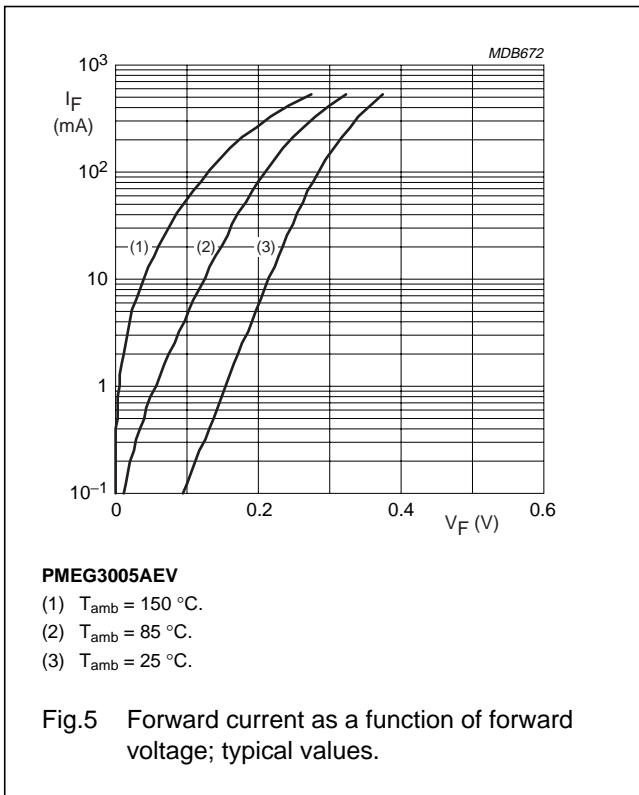
PMEG2005AEV; PMEG3005AEV;
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GRAPHICAL DATA



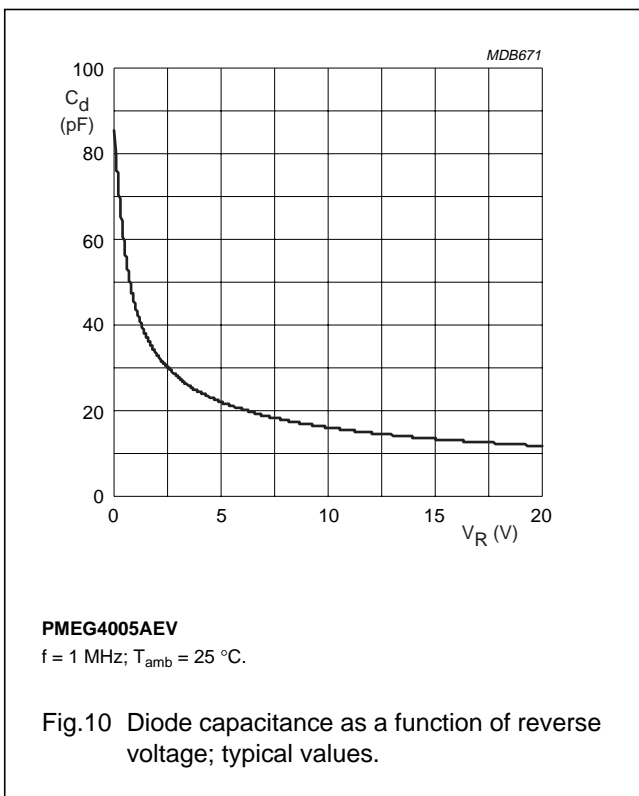
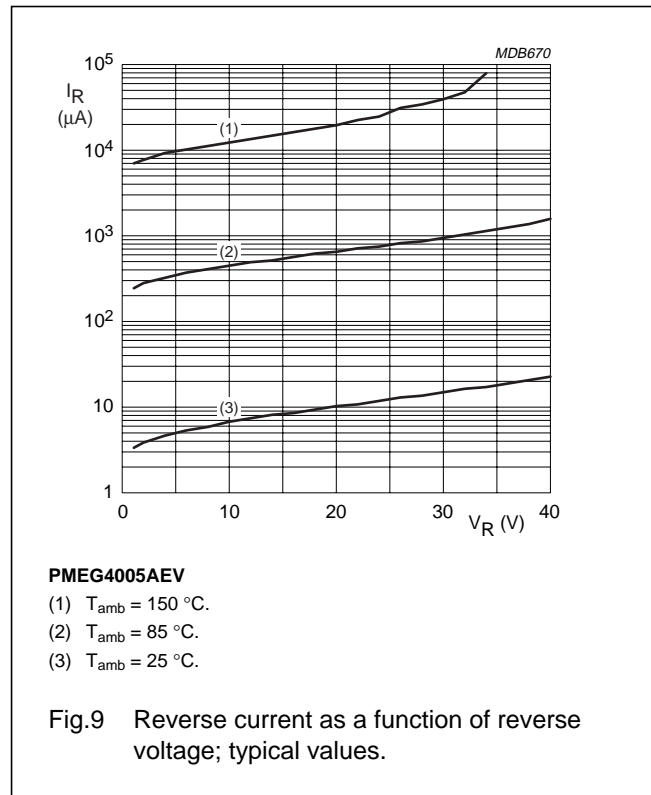
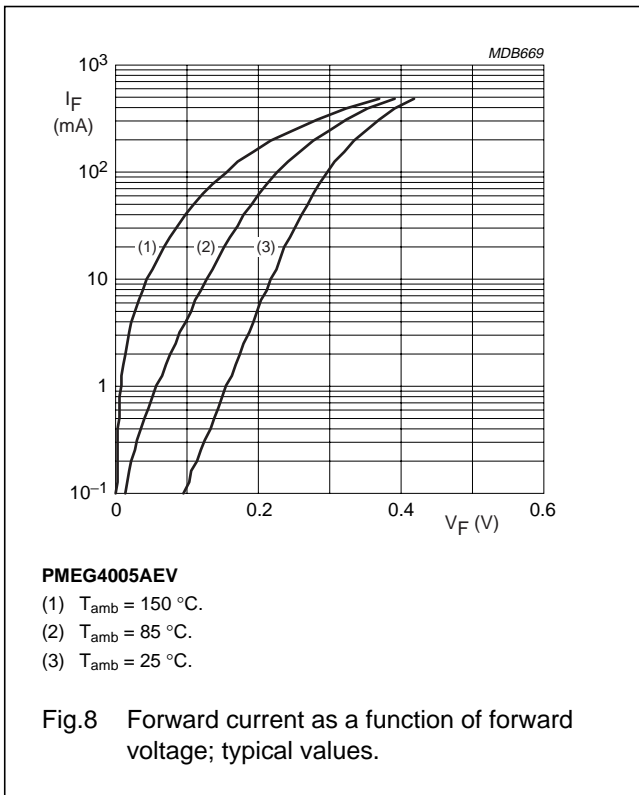
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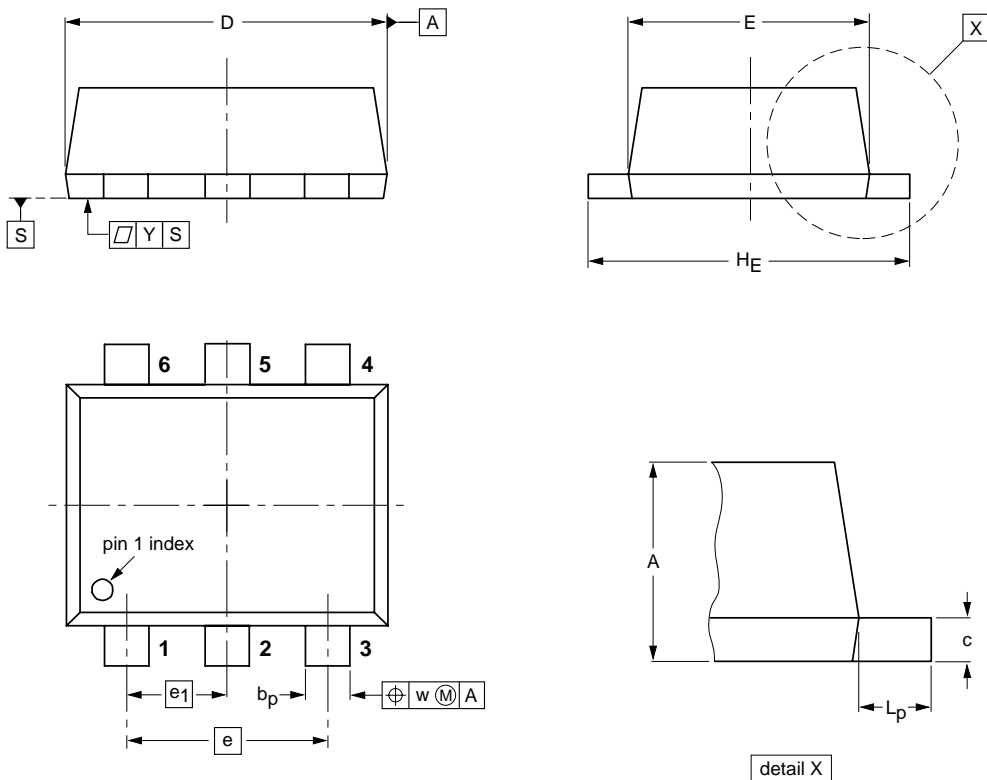
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PMEG4005AEV

PACKAGE OUTLINE

Plastic surface mounted package; 6 leads

SOT666



DIMENSIONS (mm are the original dimensions)

| UNIT | A | b_p | c | D | E | e | e_1 | H_E | L_p | w | y |
|------|------------|--------------|--------------|------------|------------|-----|-------|------------|------------|-----|-----|
| mm | 0.6 0.5 | 0.27 0.17 | 0.18 0.08 | 1.7 1.5 | 1.3 1.1 | 1.0 | 0.5 | 1.7 1.5 | 0.3 0.1 | 0.1 | 0.1 |

| OUTLINE VERSION | REFERENCES | | | | EUROPEAN PROJECTION | ISSUE DATE |
|-----------------|------------|-------|------|--|---------------------|----------------------|
| | IEC | JEDEC | EIAJ | | | |
| SOT666 | | | | | | 01-01-04 01-08-27 |

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PMEG4005AEV

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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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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