

# DATA SHEET

**PMEGX10BEA;  
PMEGX10BEV**

1 A very low  $V_F$  MEGA Schottky  
barrier rectifier

Product data sheet  
Supersedes data of 2004 Apr 02

2004 Jun 14

# 1 A very low $V_F$ MEGA Schottky barrier rectifier

# PMEGXX10BEA; PMEGXX10BEV

### FEATURES

- Forward current: 1 A
- Reverse voltages: 20 V, 30 V, 40 V
- Very low forward voltage
- Ultra small and very small plastic SMD package
- Power dissipation comparable to SOT23.

### APPLICATIONS

- High efficiency DC-to-DC conversion
- Voltage clamping
- Protection circuits
- Low voltage rectification
- Blocking diodes
- 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 very small SOD323 (SC-76) and ultra small SOT666 SMD plastic package.

### MARKING

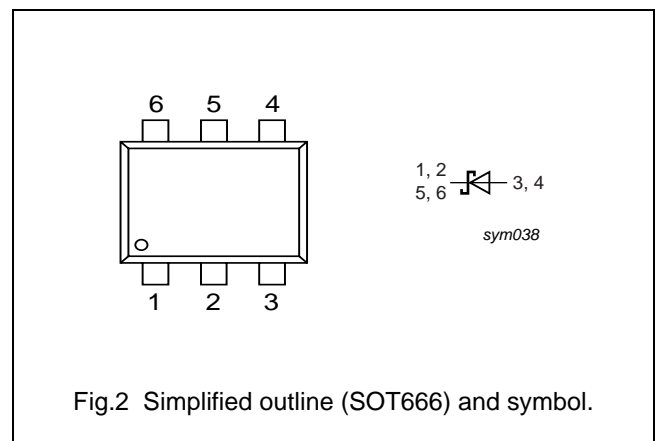
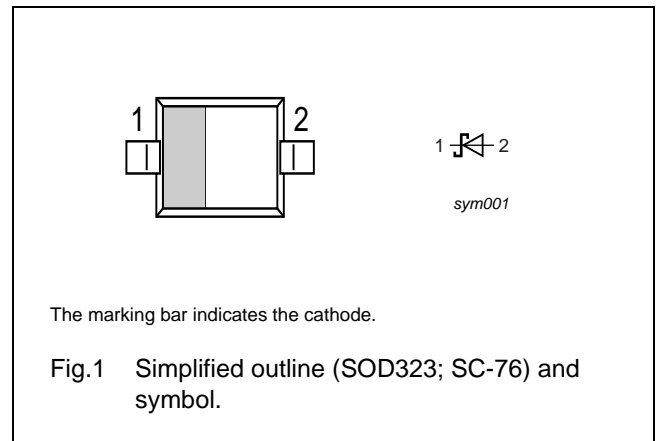
| TYPE NUMBER | MARKING CODE |
|-------------|--------------|
| PMEG2010BEA | V1           |
| PMEG3010BEA | V2           |
| PMEG4010BEA | V3           |
| PMEG2010BEV | G6           |
| PMEG3010BEV | G5           |
| PMEG4010BEV | G4           |

### QUICK REFERENCE DATA

| SYMBOL | PARAMETER       | MAX.       | UNIT |
|--------|-----------------|------------|------|
| $I_F$  | forward current | 1          | A    |
| $V_R$  | reverse voltage | 20; 30; 40 | V    |

### PINNING

| PIN                            | DESCRIPTION |
|--------------------------------|-------------|
| <b>PMEGXX10BEA</b> (see Fig.1) |             |
| 1                              | cathode     |
| 2                              | anode       |
| <b>PMEGXX10BEV</b> (see Fig.2) |             |
| 1, 2, 5, 6                     | cathode     |
| 3, 4                           | anode       |



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## ORDERING INFORMATION

| TYPE NUMBER | PACKAGE |  |         |
|-------------|---------|--|---------|
|             | NAME    | DESCRIPTION                              | VERSION |
| PMEGXX10BEA | –       | plastic surface mounted package; 2 leads | SOD323  |
| PMEGXX10BEV |         | plastic surface mounted package; 6 leads | SOT666  |

## LIMITING VALUES

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

| SYMBOL    | PARAMETER   | CONDITIONS  | MIN. | MAX.           | UNIT             |
|-----------|---|---|------|----------------|------------------|
| $V_R$     | continuous reverse voltage<br>PMEG2010BEA/PMEG2010BEV<br>PMEG3010BEA/PMEG3010BEV<br>PMEG4010BEA/PMEG4010BEV |   | –    | 20<br>30<br>40 | V<br>V<br>V      |
| $I_F$     | continuous forward current  | $T_s \leq 55^\circ\text{C}$ ; note 1                | –    | 1              | A                |
| $I_{FRM}$ | repetitive peak forward current   | $t_p \leq 1\text{ ms}$ ; $\delta \leq 0.5$ ; note 2 | –    | 3.5            | A                |
| $I_{FSM}$ | non-repetitive peak forward current   | $t_p = 8\text{ ms}$ ; square wave;<br>note 2        | –    | 10             | A                |
| $T_j$     | junction temperature  | note 3  | –    | 150            | $^\circ\text{C}$ |
| $T_{amb}$ | operating ambient temperature   | note 3  | –65  | +150           | $^\circ\text{C}$ |
| $T_{stg}$ | storage temperature   |   | –65  | +150           | $^\circ\text{C}$ |

## Notes

1. Refer to SOD323 (SC-76) and SOT666 standard mounting conditions.
2. Only valid if pins 3 and 4 are connected in parallel (SOT666 package).
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 determining the reverse power losses  $P_R$  and  $I_{F(AV)}$  rating will be available on request.

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**THERMAL CHARACTERISTICS**

| SYMBOL                      | PARAMETER   | CONDITIONS                 | VALUE | UNIT |
|-----------------------------|---|----------------------------|-------|------|
| <b>PMEGXX10BEA (SOD323)</b> |   |                            |       |      |
| $R_{th(j-a)}$               | thermal resistance from junction to ambient         | in free air; notes 1 and 2 | 450   | K/W  |
|                             |   | in free air; notes 2 and 3 | 210   | K/W  |
| $R_{th(j-s)}$               | thermal resistance from junction to soldering point | note 4                     | 90    | K/W  |
| <b>PMEGXX10BEV (SOT666)</b> |   |                            |       |      |
| $R_{th(j-a)}$               | thermal resistance from junction to ambient         | in free air; notes 2 and 5 | 405   | K/W  |
|                             |   | in free air; notes 2 and 6 | 215   | K/W  |
| $R_{th(j-s)}$               | thermal resistance from junction to soldering point | note 4                     | 80    | K/W  |

**Notes**

1. Refer to SOD323 (SC-76) 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 determining 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.
5. Refer to SOT666 standard mounting conditions.
6. Only valid if pins 3 and 4 are connected in parallel (SOT666 package).

**CHARACTERISTICS**

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

| SYMBOL | PARAMETER                  | CONDITIONS                              | PMEG2010BEA/<br>PMEG2010BEV |      | PMEG3010BEA/<br>PMEG3010BEV |      | PMEG4010BEA/<br>PMEG4010BEV |      | 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            |
|        |                            | $I_F = 1000\text{ mA}$                  | 420                         | 500  | 450                         | 560  | 540                         | 640  | mV            |
| $I_R$  | continuous reverse current | $V_R = 10\text{ V}$ ; note 1            | 15                          | 40   | 12                          | 30   | 7                           | 20   | $\mu\text{A}$ |
|        |                            | $V_R = 20\text{ V}$ ; note 1            | 40                          | 200  | –                           | –    | –                           | –    | $\mu\text{A}$ |
|        |                            | $V_R = 30\text{ V}$ ; note 1            | –                           | –    | 40                          | 150  | –                           | –    | $\mu\text{A}$ |
|        |                            | $V_R = 40\text{ V}$ ; note 1            | –                           | –    | –                           | –    | 30                          | 100  | $\mu\text{A}$ |
| $C_d$  | diode capacitance          | $V_R = 1\text{ V}$ ; $f = 1\text{ MHz}$ | 66                          | 80   | 55                          | 70   | 43                          | 50   | pF            |

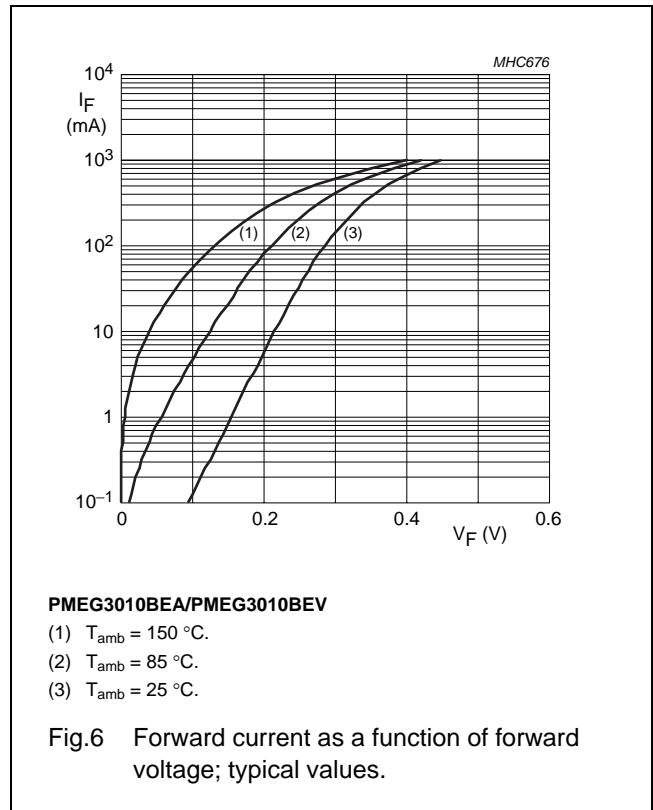
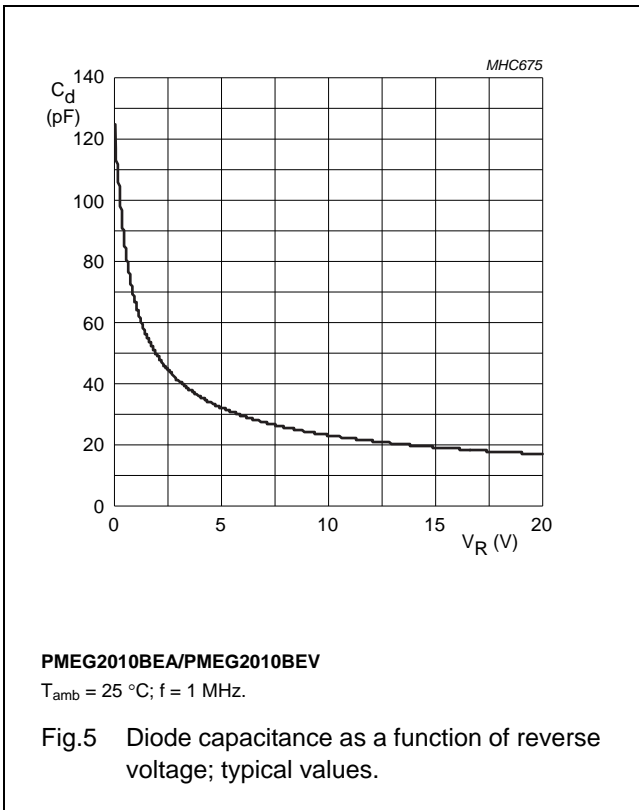
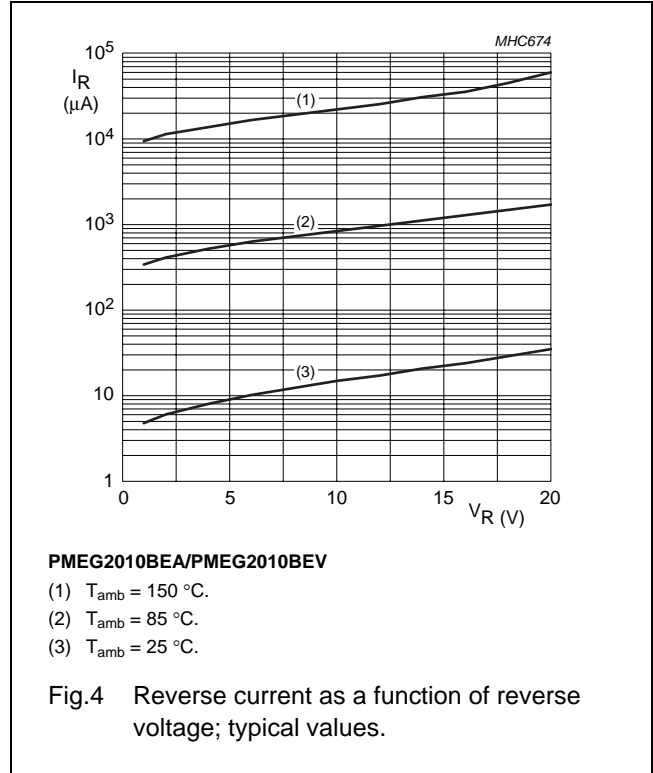
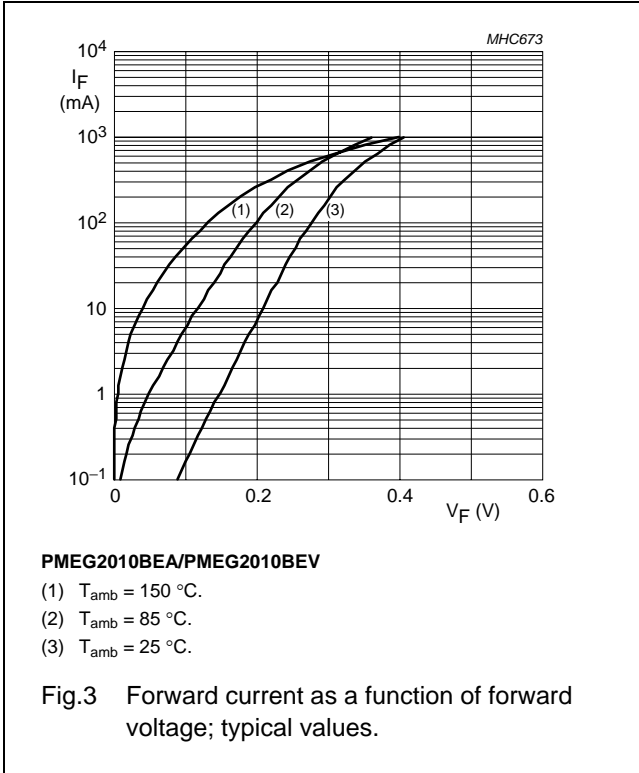
**Note**

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

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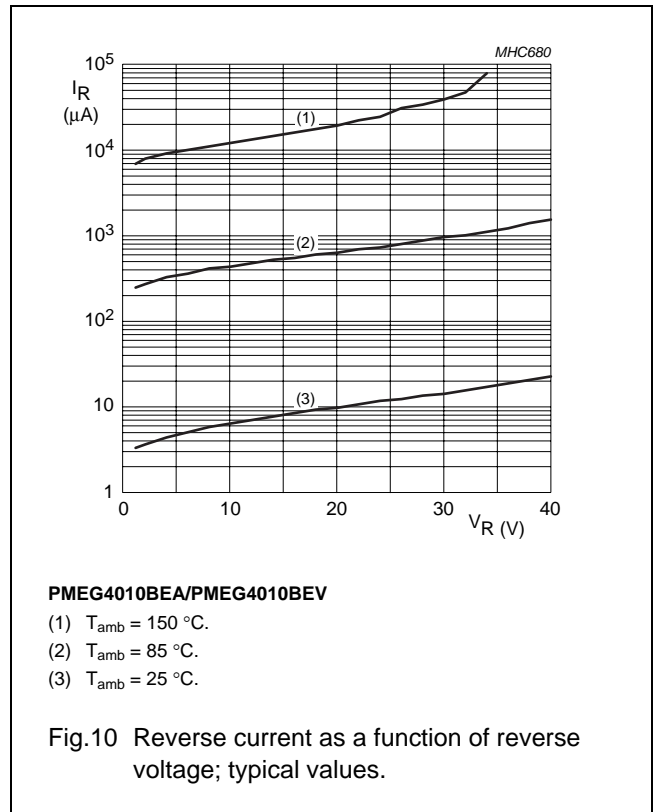
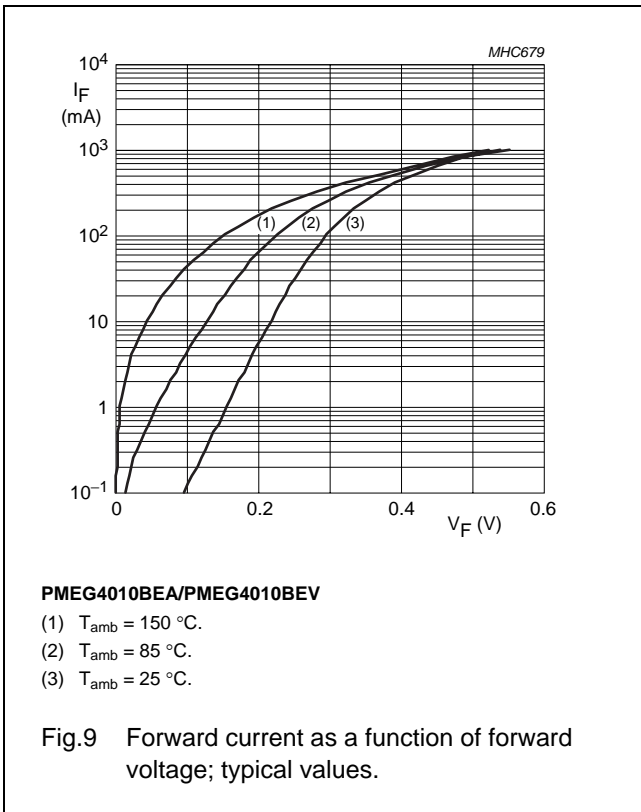
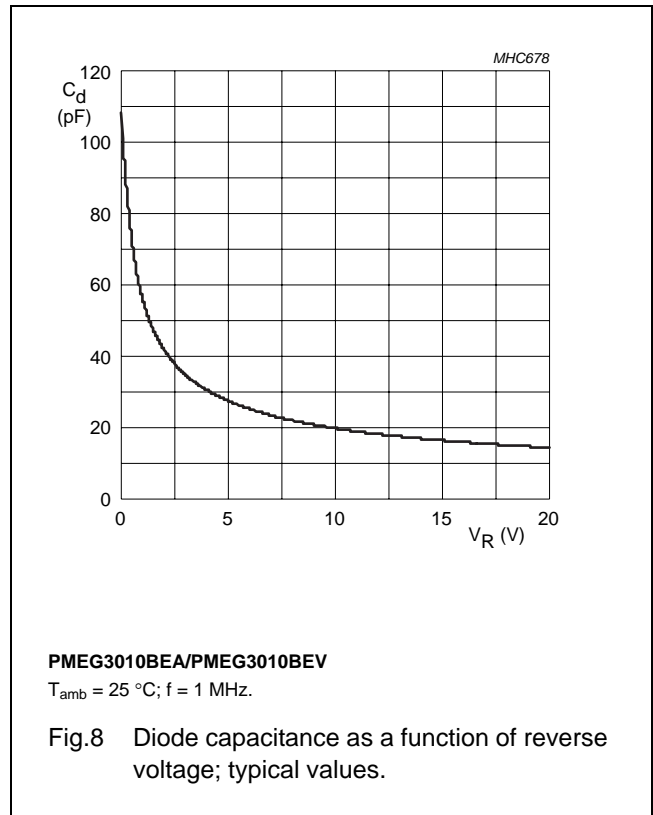
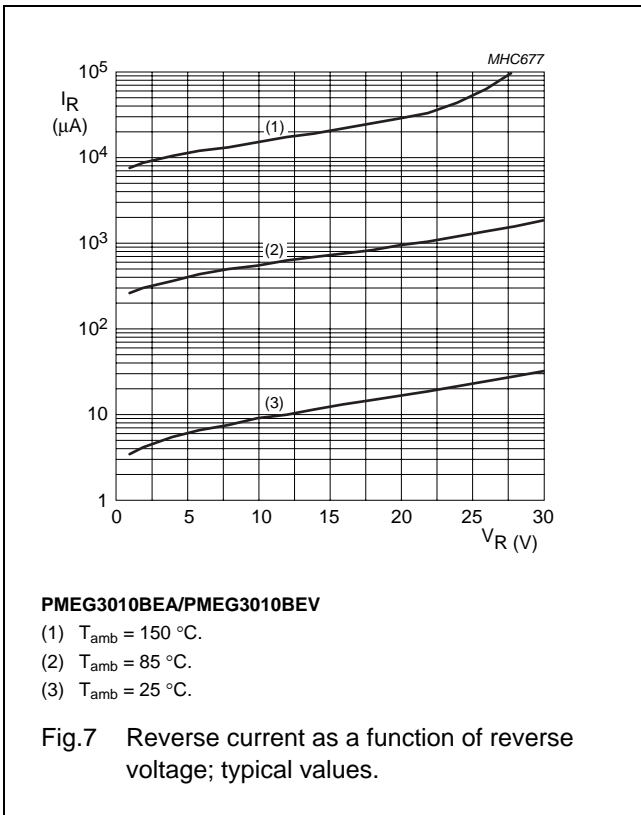
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GRAPHICAL DATA



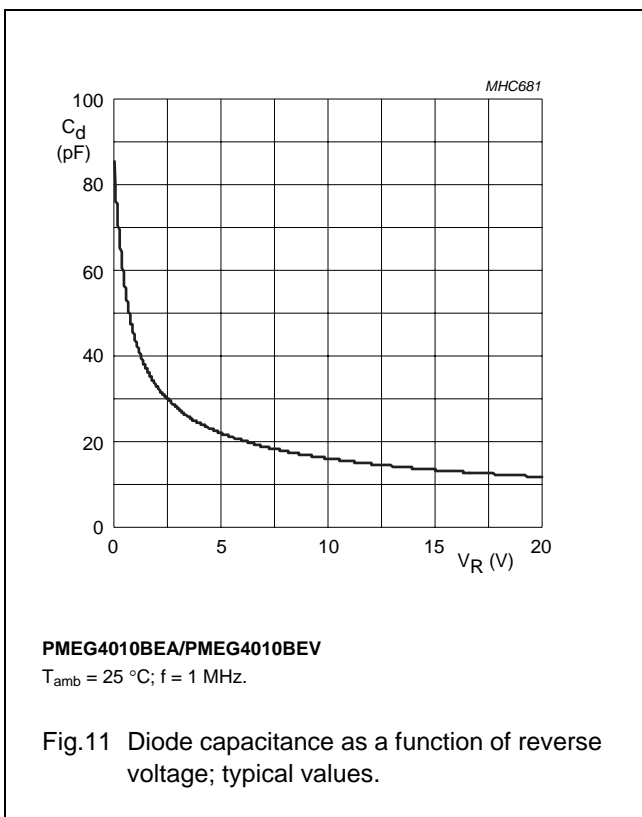
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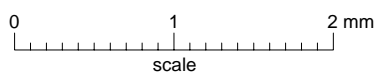
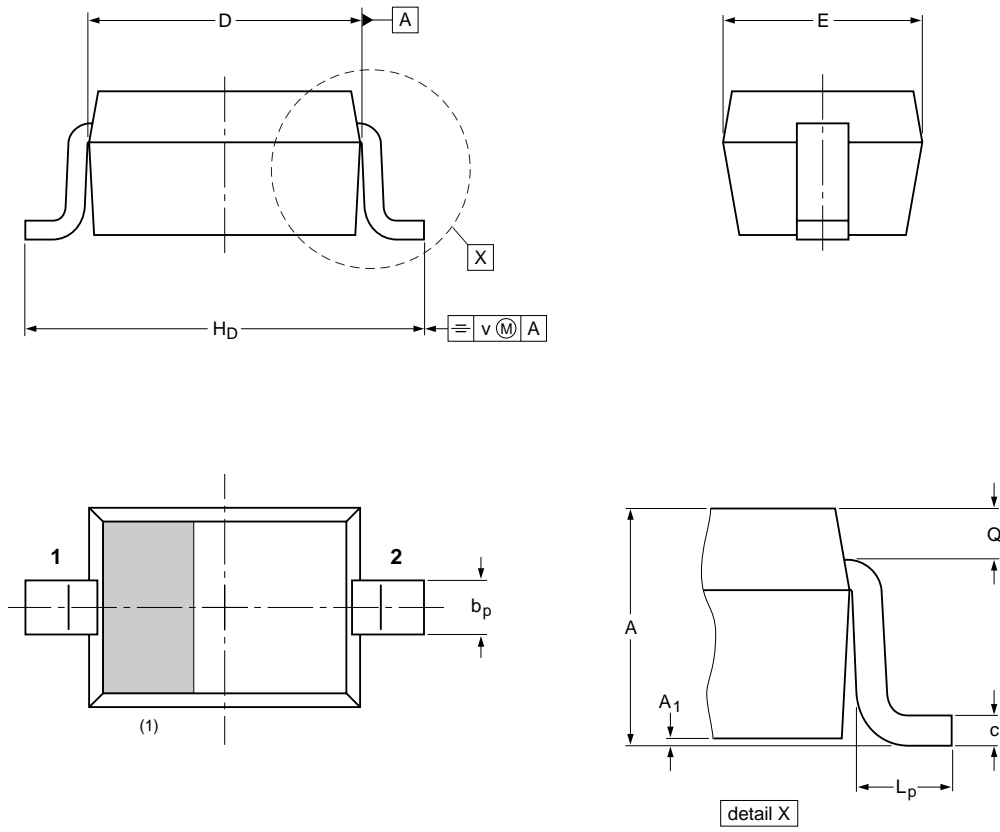
1 A very low  $V_F$  MEGA Schottky barrier rectifier

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PACKAGE OUTLINES

Plastic surface-mounted package; 2 leads

SOD323



DIMENSIONS (mm are the original dimensions)

| UNIT | A          | A <sub>1</sub><br>max | b <sub>p</sub> | c            | D          | E            | H <sub>D</sub> | L <sub>p</sub> | Q            | v   |
|------|------------|-----------------------|----------------|--------------|------------|--------------|----------------|----------------|--------------|-----|
| mm   | 1.1<br>0.8 | 0.05                  | 0.40<br>0.25   | 0.25<br>0.10 | 1.8<br>1.6 | 1.35<br>1.15 | 2.7<br>2.3     | 0.45<br>0.15   | 0.25<br>0.15 | 0.2 |

Note  
1. The marking bar indicates the cathode

| OUTLINE<br>VERSION | REFERENCES |       |       |  | EUROPEAN<br>PROJECTION | ISSUE DATE             |
|--------------------|------------|-------|-------|--|------------------------|------------------------|
|                    | IEC        | JEDEC | JEITA |  |                        |                        |
| SOD323             |            |       | SC-76 |  |                        | -03-12-17-<br>06-03-16 |

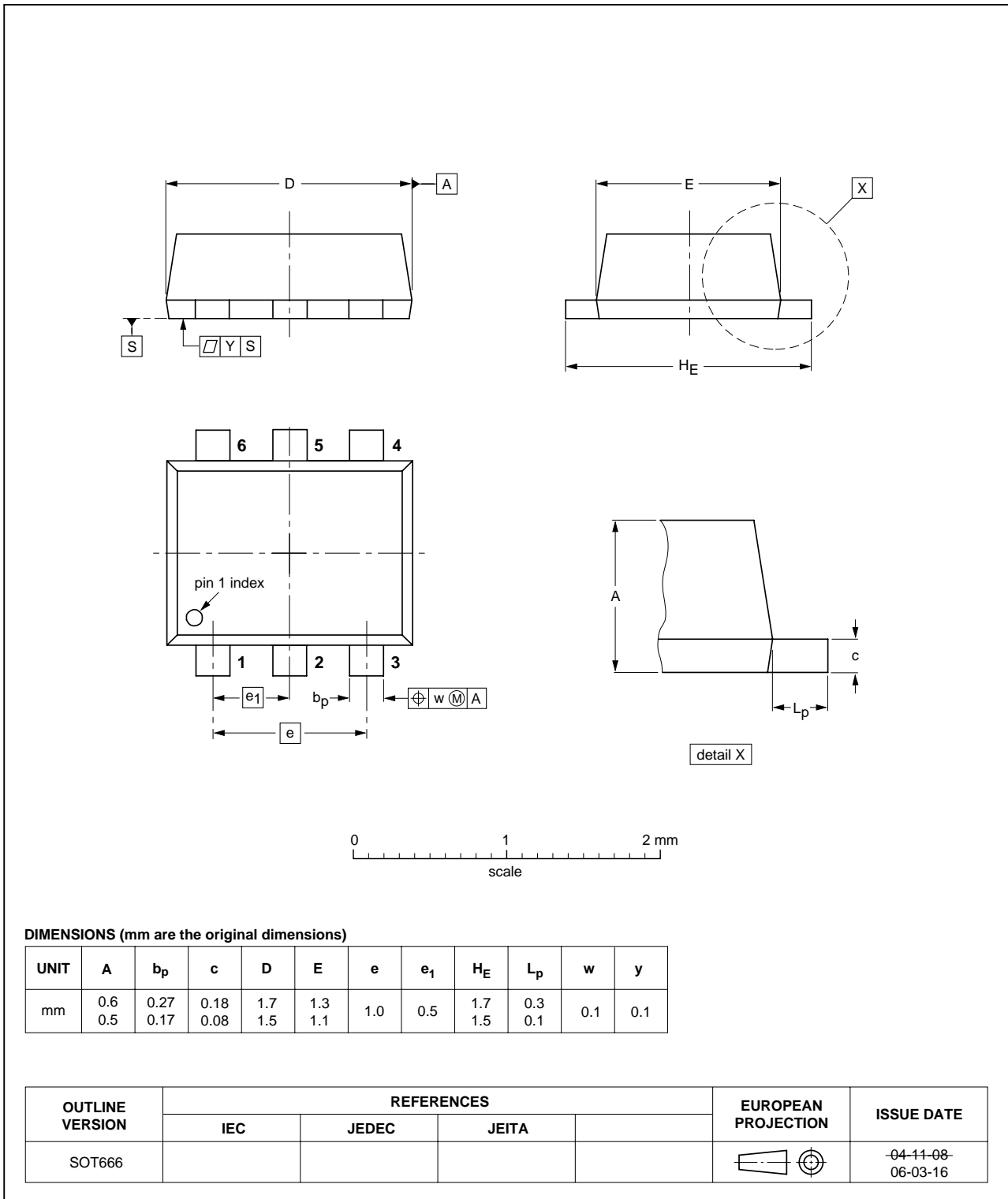


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Plastic surface-mounted package; 6 leads

SOT666



# 1 A very low $V_F$ MEGA Schottky barrier rectifier

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PMEGXX10BEV

## DATA SHEET STATUS

| DOCUMENT STATUS <sup>(1)</sup> | PRODUCT STATUS <sup>(2)</sup> | 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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