

# DATA SHEET

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**PMEGX10BEA;  
PMEGX10BEV**  
1 A very low  $V_F$  MEGA Schottky  
barrier rectifier

Product specification  
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.

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### 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

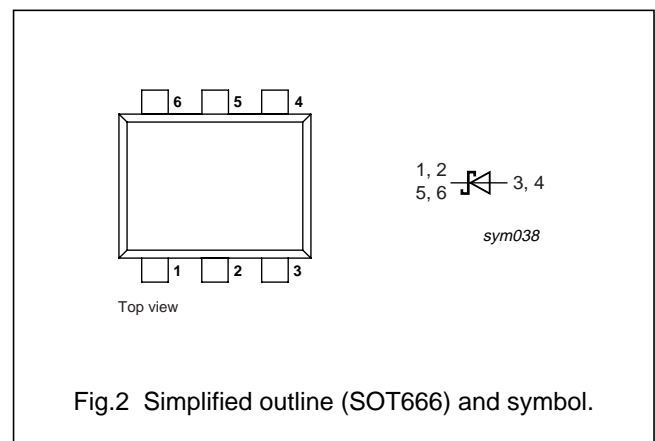
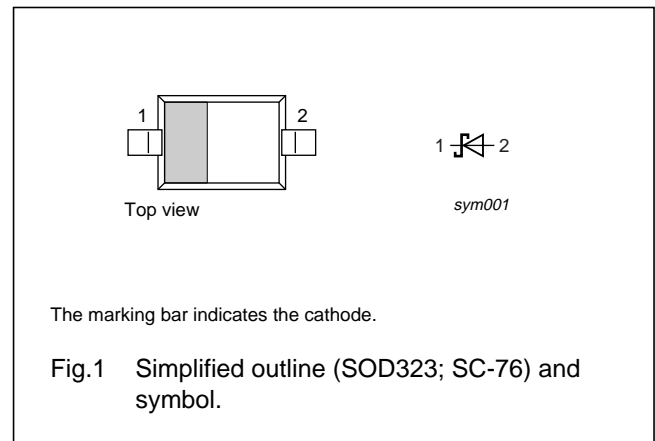
TYPE NUMBER	MARKING CODE
PMEG2010BEA	V1
PMEG3010BEA	V2
PMEG4010BEA	V3
PMEG2010BEV	G6
PMEG3010BEV	G5
PMEG4010BEV	G4

### 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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PMEGXX10BEV

## ORDERING INFORMATION

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

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## LIMITING VALUES

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
$V_R$	continuous reverse voltage PMEG2010BEA/PMEG2010BEV PMEG3010BEA/PMEG3010BEV PMEG4010BEA/PMEG4010BEV		–	20 30 40	V V V
$I_F$	continuous forward current	$T_s \leq 55\text{ °C}$ ; 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; 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 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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## PMEGXX10BEA; PMEGXX10BEV

### 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  $10 \times 10$  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

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

SYMBOL	PARAMETER	CONDITIONS	PMEG2010BEA/ PMEG2010BEV		PMEG3010BEA/ PMEG3010BEV		PMEG4010BEA/ PMEG4010BEV		UNIT
			TYP.	MAX.	TYP.	MAX.	TYP.	MAX.	
$V_F$	forward voltage	$I_F = 0.1$ mA	90	130	90	130	95	130	mV
		$I_F = 1$ mA	150	190	150	200	155	210	mV
		$I_F = 10$ mA	210	240	215	250	220	270	mV
		$I_F = 100$ mA	280	330	285	340	295	350	mV
		$I_F = 500$ mA	355	390	380	430	420	470	mV
		$I_F = 1000$ mA	420	500	450	560	540	640	mV
$I_R$	continuous reverse current	$V_R = 10$ V; note 1	15	40	12	30	7	20	$\mu$ A
		$V_R = 20$ V; note 1	40	200	–	–	–	–	$\mu$ A
		$V_R = 30$ V; note 1	–	–	40	150	–	–	$\mu$ A
		$V_R = 40$ V; note 1	–	–	–	–	30	100	$\mu$ A
$C_d$	diode capacitance	$V_R = 1$ V; $f = 1$ MHz	66	80	55	70	43	50	pF

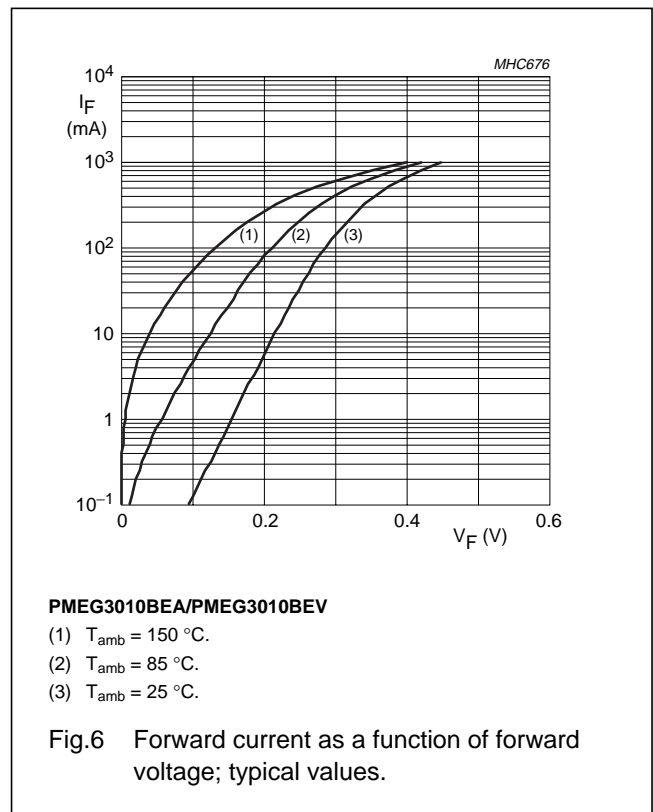
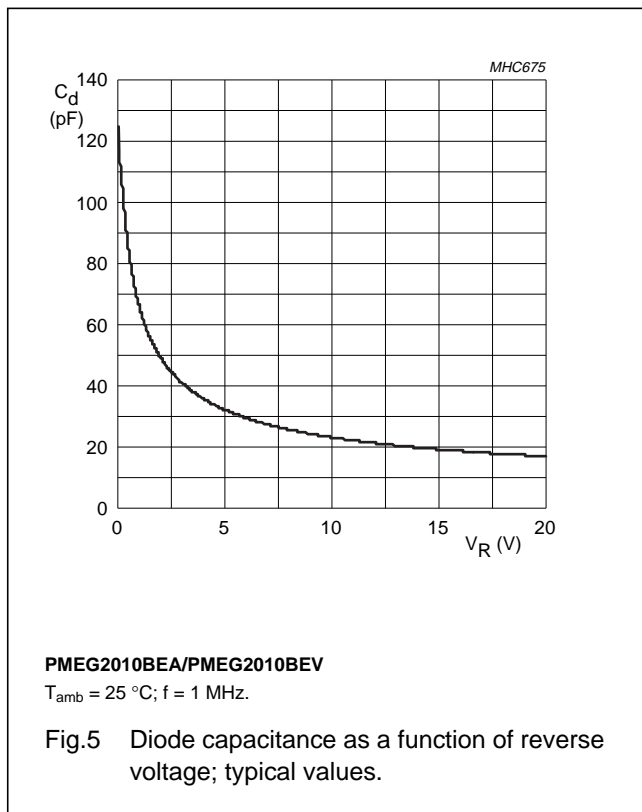
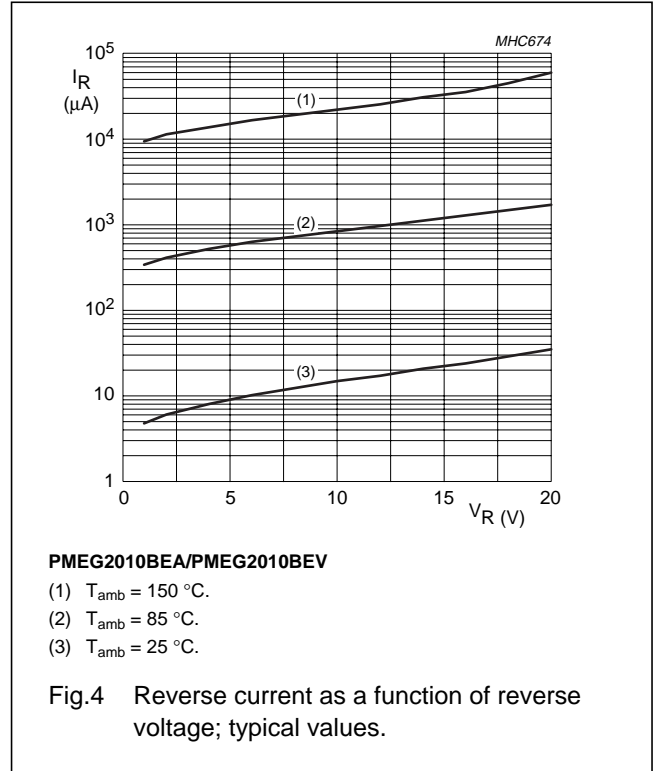
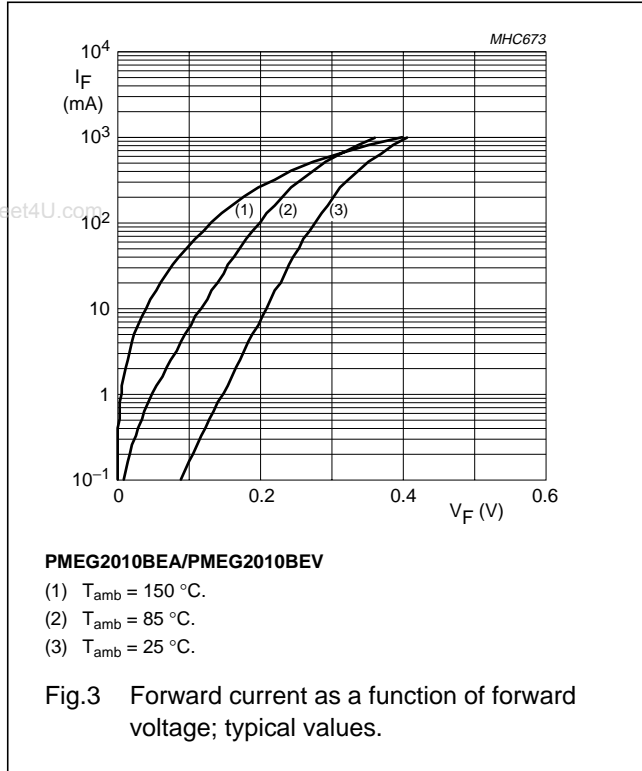
### Note

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

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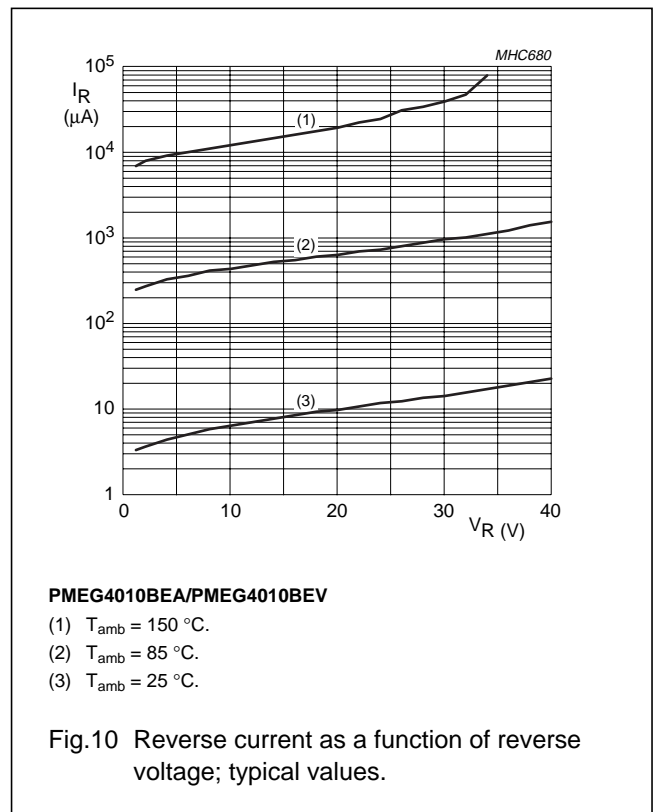
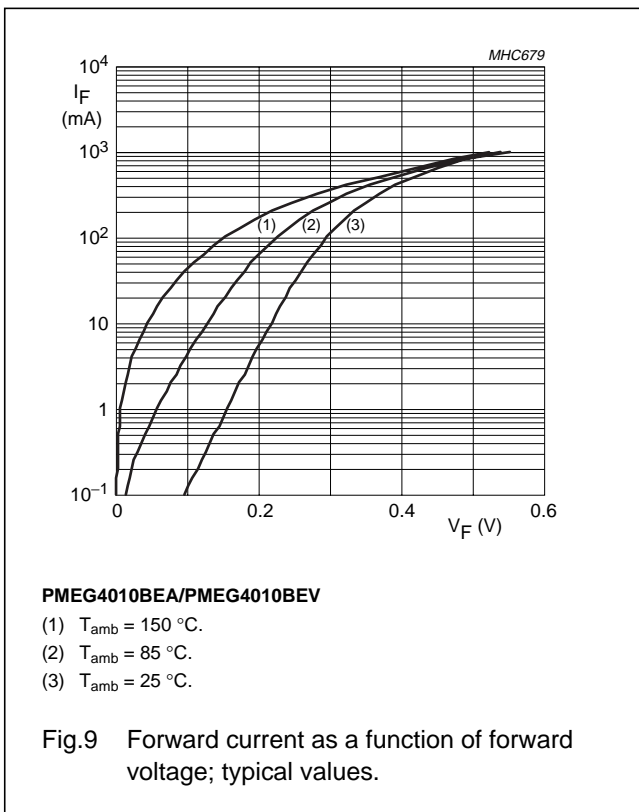
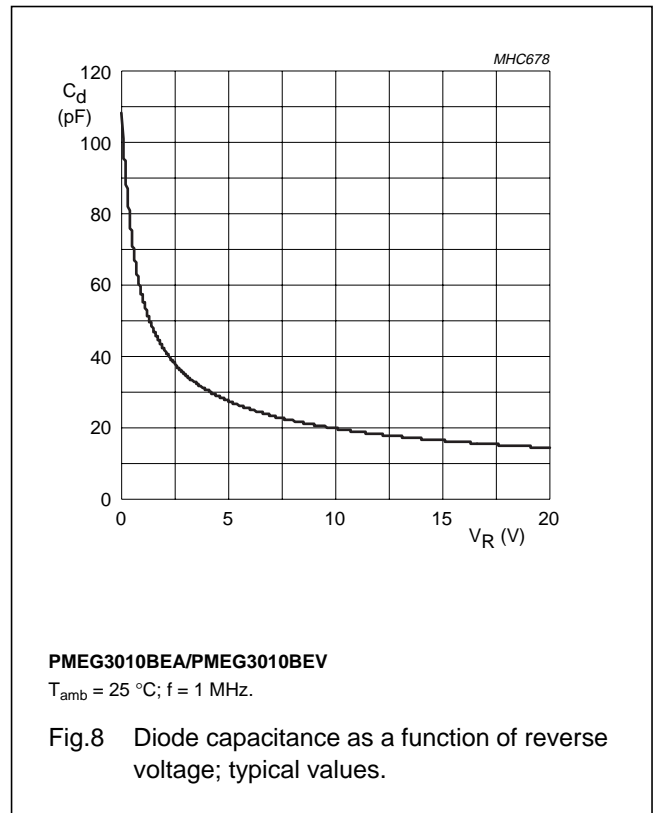
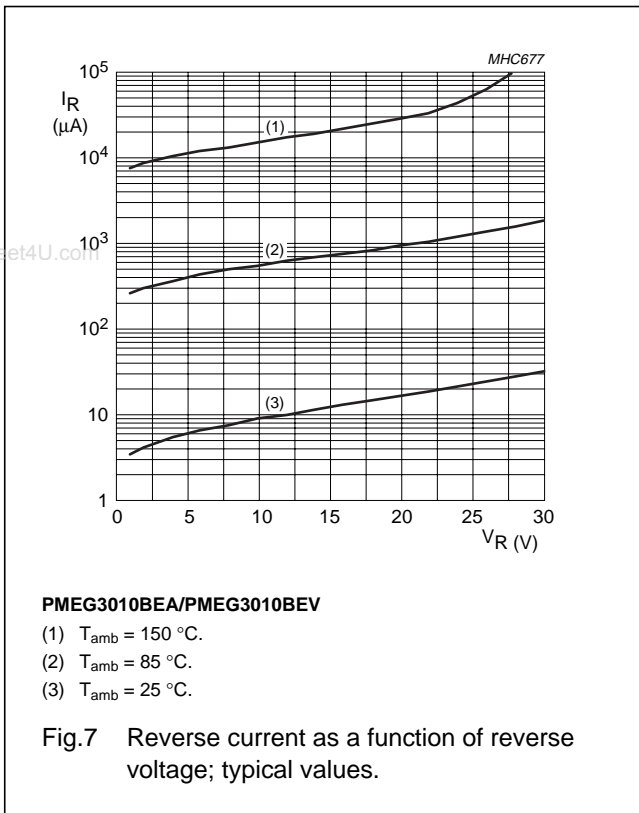
PMEGXX10BEA;  
PMEGXX10BEV

GRAPHICAL DATA



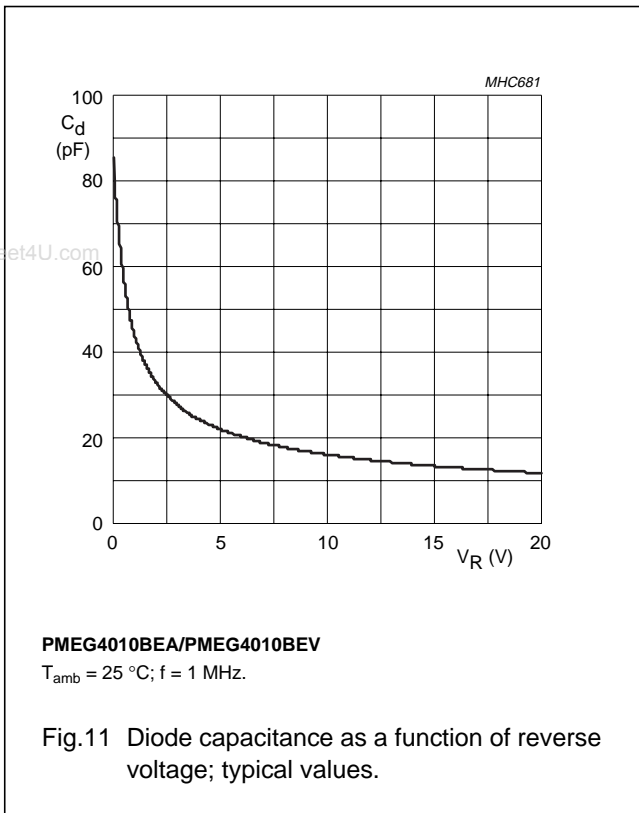
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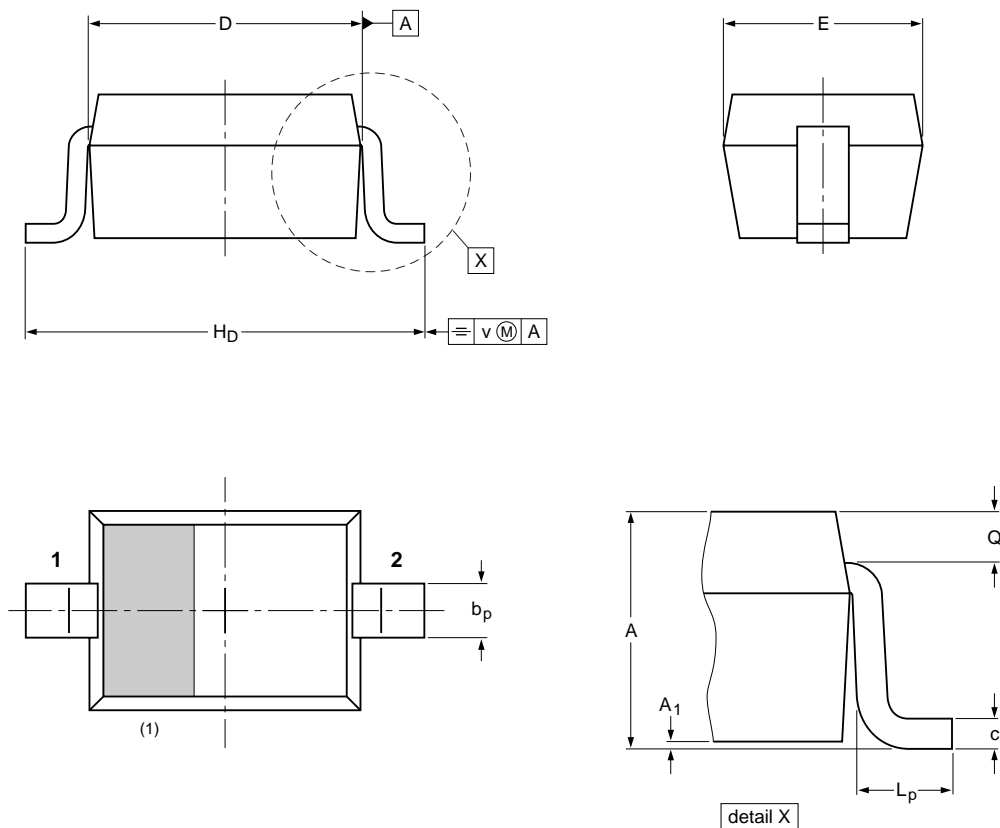
1 A very low  $V_F$  MEGA Schottky barrier rectifier

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PMEGXX10BEV

PACKAGE OUTLINES

Plastic surface mounted package; 2 leads

SOD323



DIMENSIONS (mm are the original dimensions)

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

Note

1. The marking bar indicates the cathode

OUTLINE VERSION	REFERENCES				EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	JEITA			
SOD323			SC-76			-99-09-13- 03-12-17



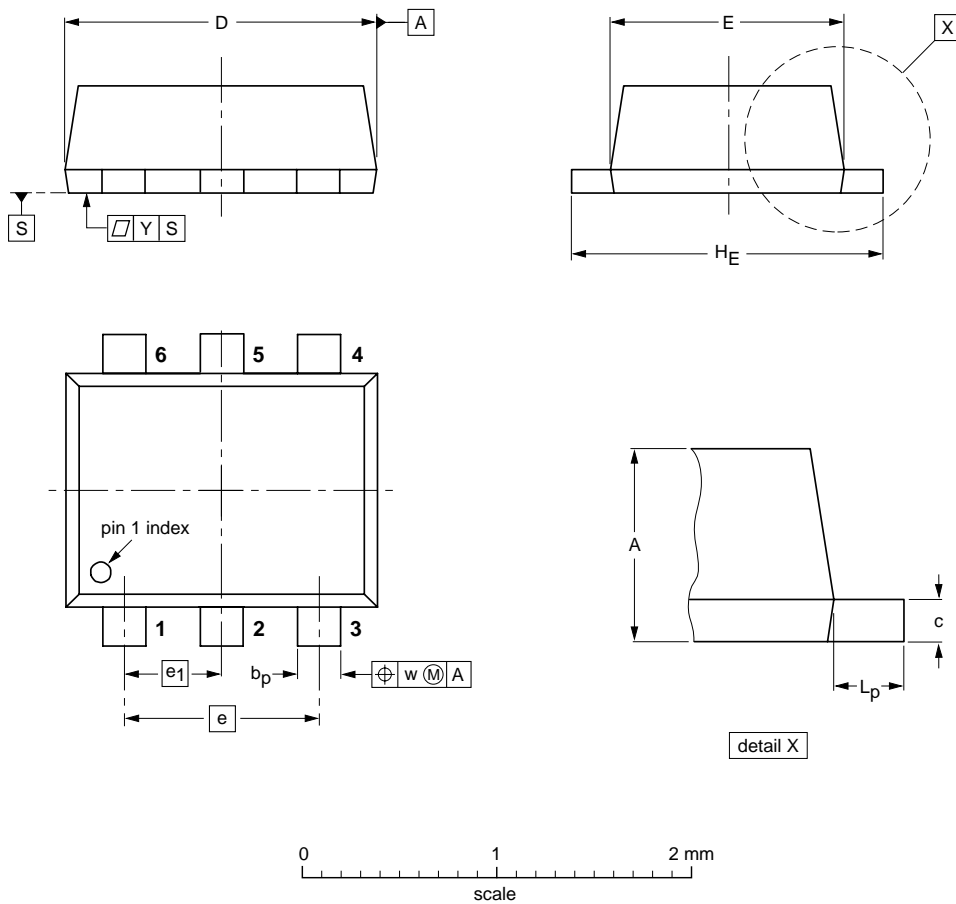
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Plastic surface mounted package; 6 leads

SOT666

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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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## DATA SHEET STATUS

LEVEL	DATA SHEET STATUS <sup>(1)</sup>	PRODUCT STATUS <sup>(2)(3)</sup>	DEFINITION
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