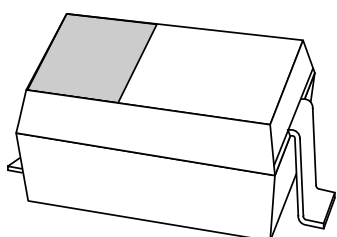


# DATA SHEET



## **PMEG2005AEA; PMEG3005AEA; PMEG4005AEA**

Very low  $V_F$  MEGA Schottky barrier  
rectifiers

Product specification

2003 Aug 20

## Very low $V_F$ MEGA Schottky barrier rectifiers

## PMEG2005AEA; PMEG3005AEA; PMEG4005AEA

### FEATURES

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

### APPLICATIONS

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

### DESCRIPTION

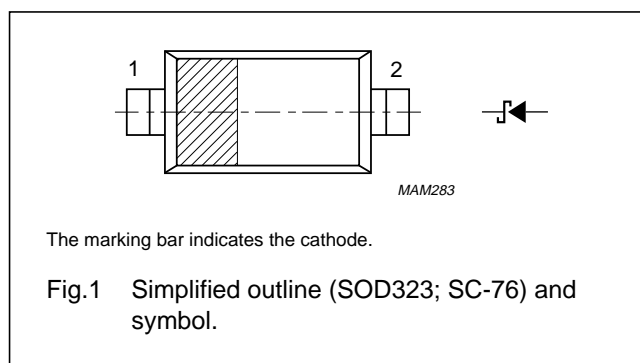
Planar Maximum Efficiency General Application (MEGA) Schottky barrier rectifier with an integrated guard ring for stress protection, encapsulated in a SOD323 (SC-76) very small SMD plastic package.

### QUICK REFERENCE DATA

SYMBOL	PARAMETER	MAX.	UNIT
$I_F$	forward current	0.5	A
$V_R$	reverse voltage		
	PMEG2005AEA	20	V
	PMEG3005AEA	30	V
	PMEG4005AEA	40	V

### PINNING

PIN	DESCRIPTION
1	cathode
2	anode



### MARKING

TYPE NUMBER	MARKING CODE
PMEG2005AEA	E5
PMEG3005AEA	E4
PMEG4005AEA	E3

### RELATED PRODUCTS

TYPE NUMBER	DESCRIPTION	FEATURE
PMEGxx05AEV	0.5 A; 20/30/40 V very low $V_F$ MEGA Schottky rectifier	SOT666 package
PMEG2005EB	0.5 A; 20 V very low $V_F$ MEGA Schottky rectifier	smaller SOD523 (SC-79) package
PMEG2010EA	1 A; 20 V very low $V_F$ MEGA Schottky rectifier	higher forward current

# Very low $V_F$ MEGA Schottky barrier rectifiers

PMEG2005AEA; PMEG3005AEA;  
PMEG4005AEA

## LIMITING VALUES

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
$V_R$	continuous reverse voltage				
	PMEG2005AEA		–	20	V
	PMEG3005AEA		–	30	V
	PMEG4005AEA		–	40	V
$I_F$	continuous forward current	note 1	–	0.5	A
$I_{FRM}$	repetitive peak forward current	$t_p \leq 1$ ms; $\delta \leq 0.5$	–	3.5	A
$I_{FSM}$	non-repetitive peak forward current	$t_p = 8$ ms; square wave	–	10	A
$T_j$	junction temperature	note 2	–	150	°C
$T_{amb}$	operating ambient temperature	note 2	–65	+150	°C
$T_{stg}$	storage temperature		–65	+150	°C

## 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 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	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

## 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 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  $10 \times 10$  mm.
4. Solder point of cathode tab.

Very low  $V_F$  MEGA  
Schottky barrier rectifiers

PMEG2005AEA; PMEG3005AEA;  
PMEG4005AEA

# ELECTRICAL CHARACTERISTICS

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

SYMBOL	PARAMETER	CONDITIONS	PMEG2005AEA		PMEG3005AEA		PMEG4005AEA		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	$\mu\text{A}$
		$V_R = 20\text{ V}$ ; 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

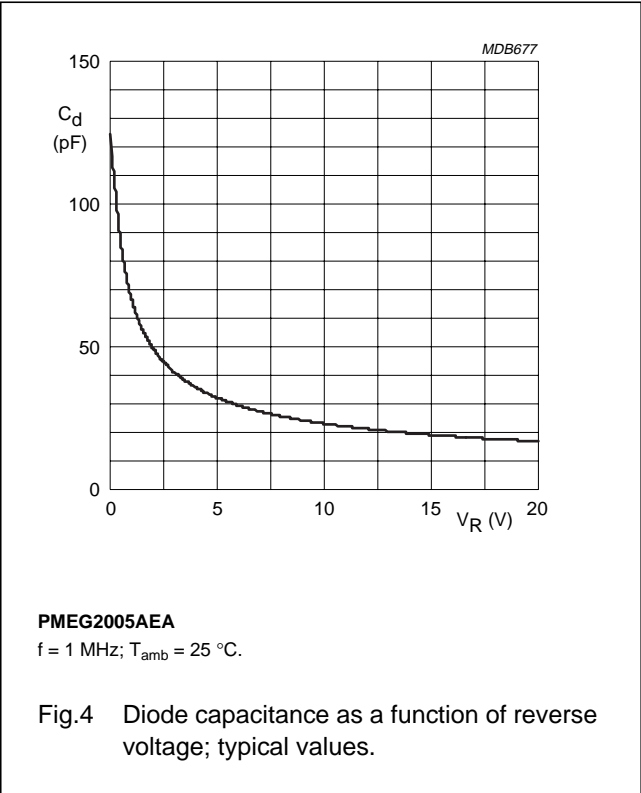
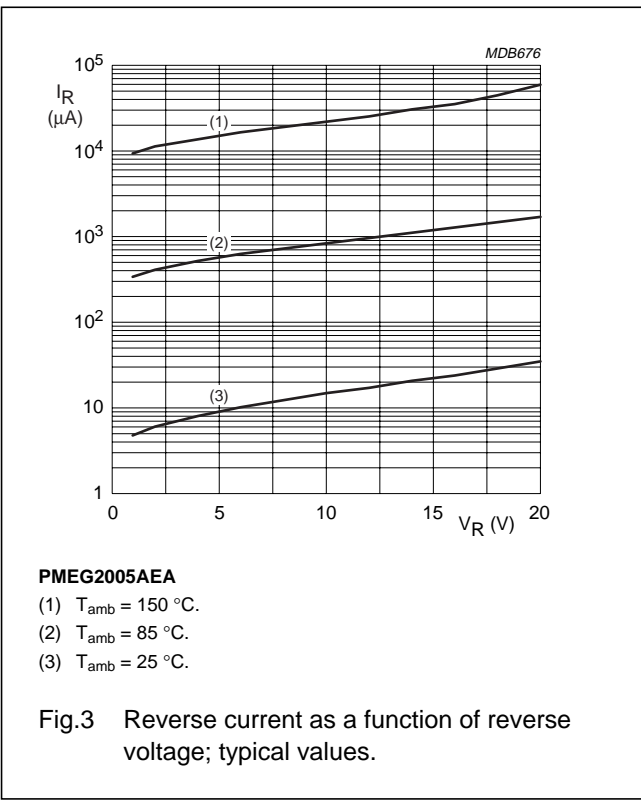
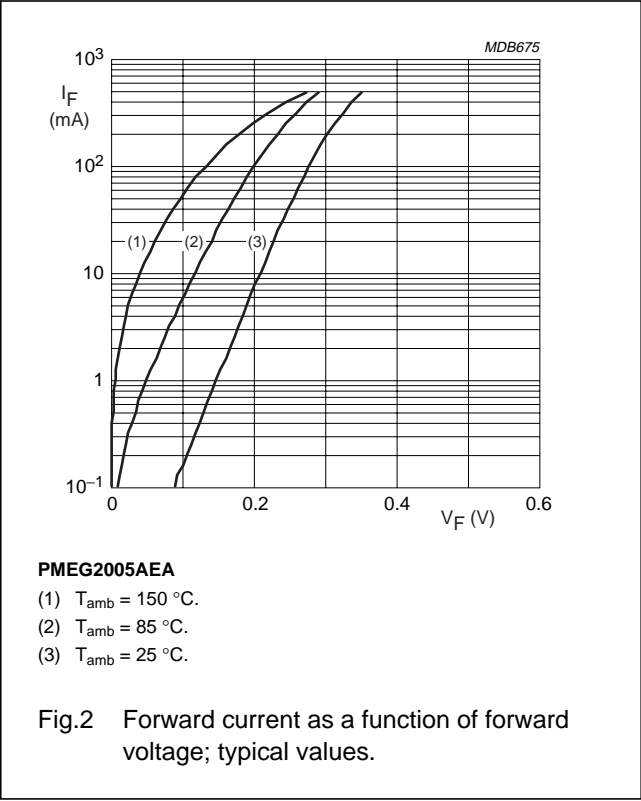
## Note

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

Very low  $V_F$  MEGA  
Schottky barrier rectifiers

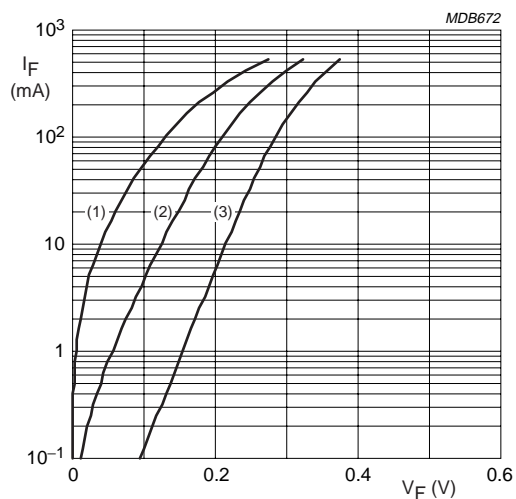
PMEG2005AEA; PMEG3005AEA;  
PMEG4005AEA

GRAPHICAL DATA



## Very low $V_F$ MEGA Schottky barrier rectifiers

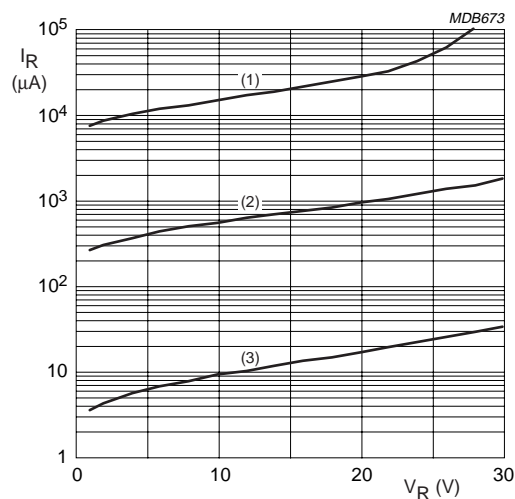
## PMEG2005AEA; PMEG3005AEA; PMEG4005AEA



### PMEG3005AEA

- (1)  $T_{amb} = 150^\circ\text{C}$ .
- (2)  $T_{amb} = 85^\circ\text{C}$ .
- (3)  $T_{amb} = 25^\circ\text{C}$ .

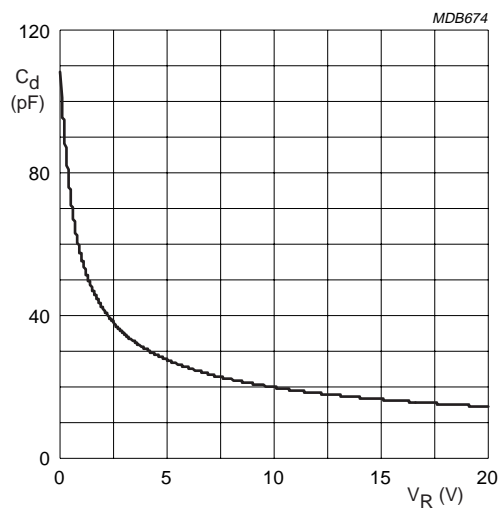
Fig.5 Forward current as a function of forward voltage; typical values.



### PMEG3005AEA

- (1)  $T_{amb} = 150^\circ\text{C}$ .
- (2)  $T_{amb} = 85^\circ\text{C}$ .
- (3)  $T_{amb} = 25^\circ\text{C}$ .

Fig.6 Reverse current as a function of reverse voltage; typical values.



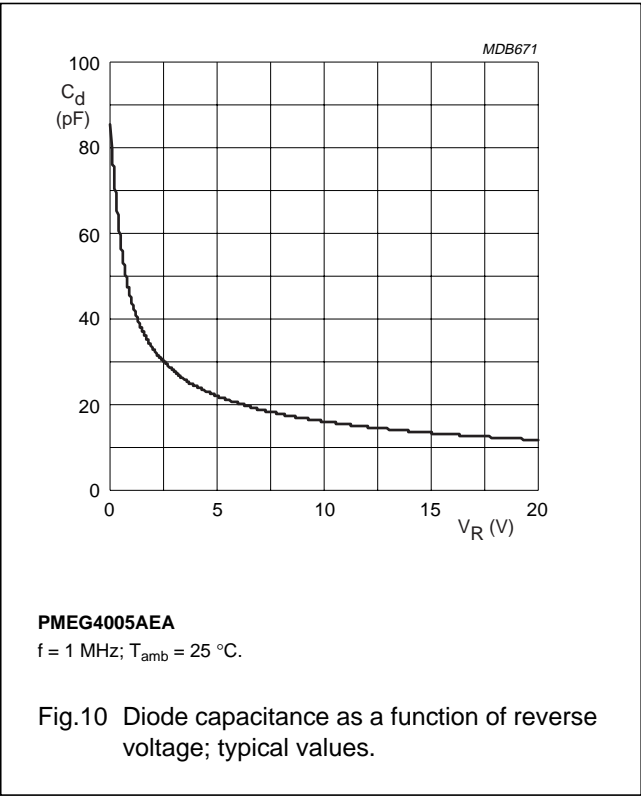
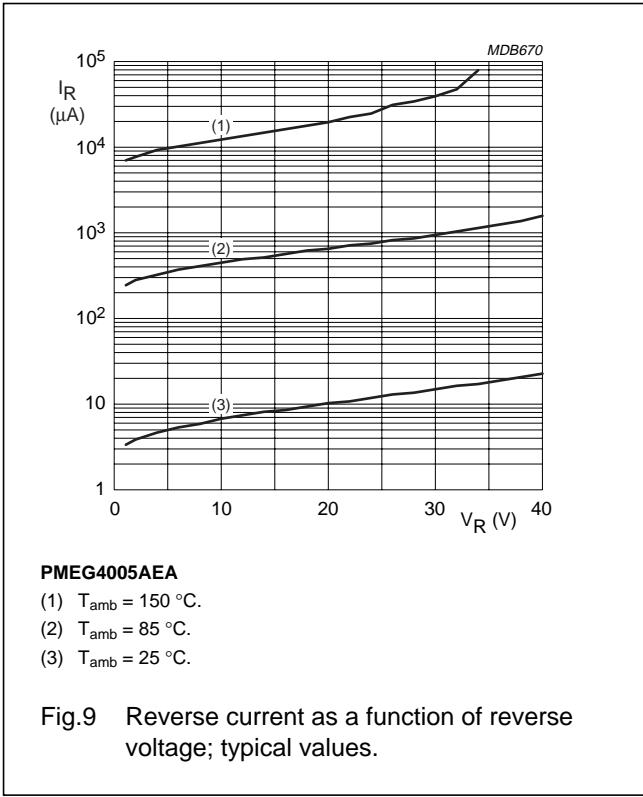
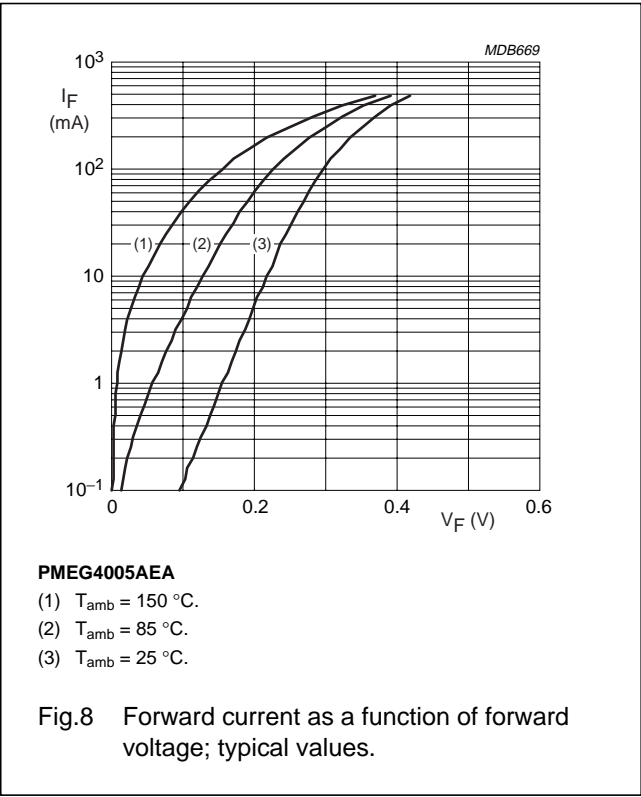
### PMEG3005AEA

$f = 1\text{ MHz}$ ;  $T_{amb} = 25^\circ\text{C}$ .

Fig.7 Diode capacitance as a function of reverse voltage; typical values.

Very low  $V_F$  MEGA  
Schottky barrier rectifiers

PMEG2005AEA; PMEG3005AEA;  
PMEG4005AEA



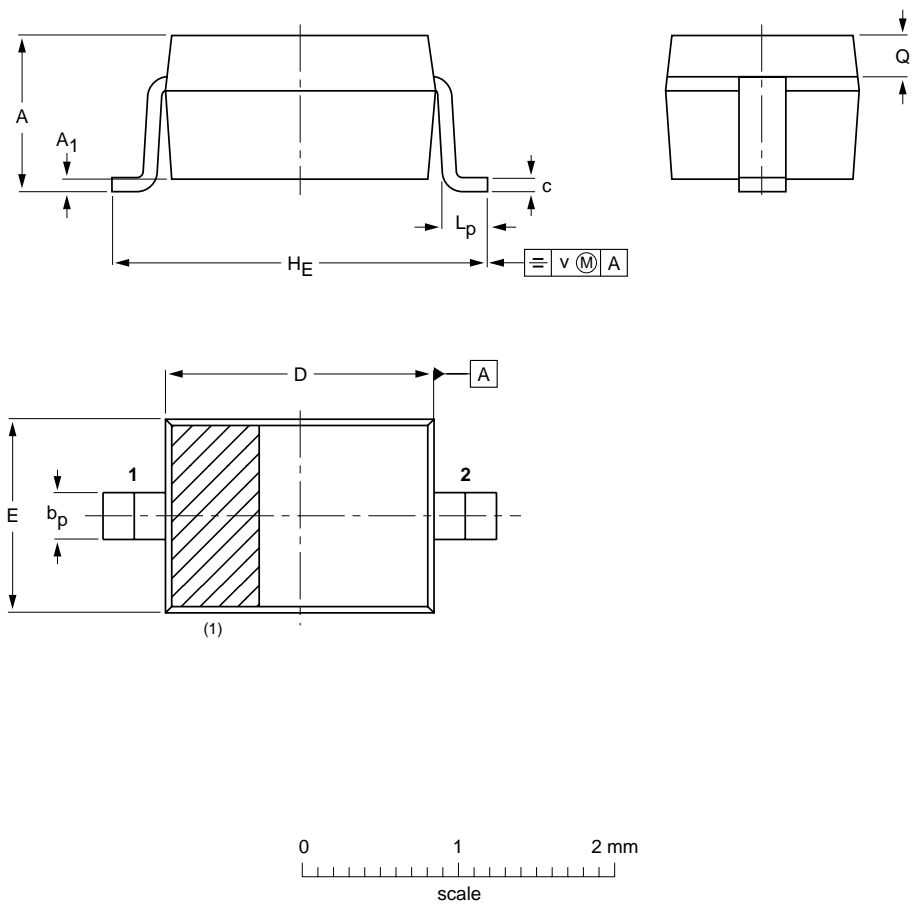
Very low  $V_F$  MEGA  
Schottky barrier rectifiers

PMEG2005AEA; PMEG3005AEA;  
PMEG4005AEA

PACKAGE OUTLINE

Plastic surface mounted package; 2 leads

SOD323



DIMENSIONS (mm are the original dimensions)

UNIT	A	A <sub>1</sub> max.	b <sub>p</sub>	c	D	E	H <sub>E</sub>	L <sub>p</sub>	Q	v
mm	1.1 0.8	+ 0.05 - 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	EIAJ			
SOD323			SC-76			<del>98-09-14</del> 99-09-13



# Very low $V_F$ MEGA Schottky barrier rectifiers

PMEG2005AEA; PMEG3005AEA;  
PMEG4005AEA

## DATA SHEET STATUS

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Printed in The Netherlands

613514/01/pp10

Date of release: 2003 Aug 20

Document order number: 9397 750 11615

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