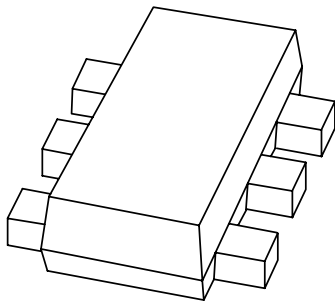


DATA SHEET



PMEG2005AEV; PMEG3005AEV; PMEG4005AEV

Very low V_F MEGA Schottky barrier
rectifiers

Product data sheet

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

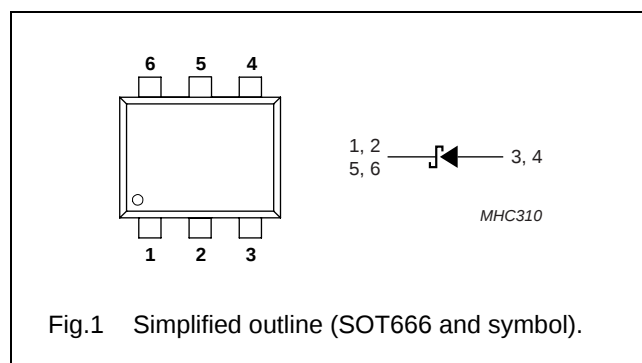
Planar Maximum Efficiency General Application (MEGA) Schottky barrier rectifier with an integrated guard ring for stress protection, encapsulated in a SOT666 ultra small SMD plastic package.

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

Very low V_F MEGA Schottky barrier rectifiers

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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.

Very low V_F MEGA
Schottky barrier rectifiers

PMEG2005AEV; PMEG3005AEV;
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

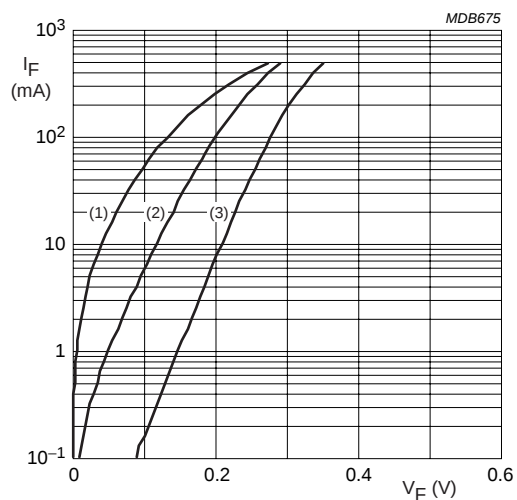
Note

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

Very low V_F MEGA Schottky barrier rectifiers

PMEG2005AEV; PMEG3005AEV;
PMEG4005AEV

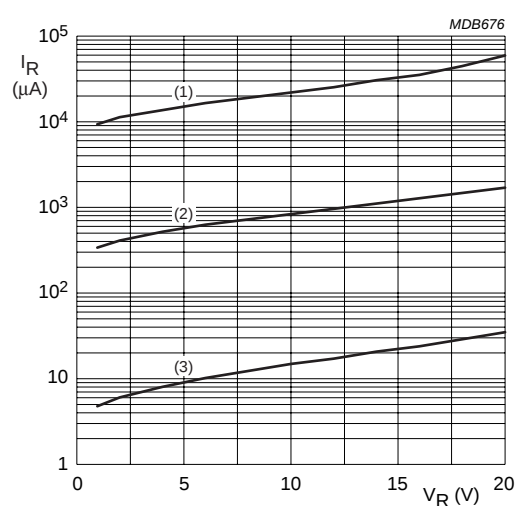
GRAPHICAL DATA



PMEG2005AEV

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

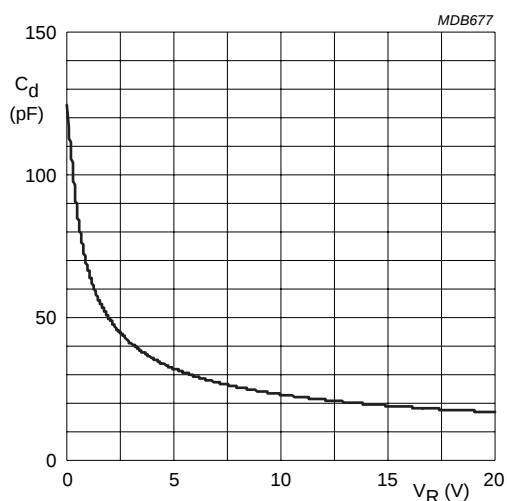
Fig.2 Forward current as a function of forward voltage; typical values.



PMEG2005AEV

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

Fig.3 Reverse current as a function of reverse voltage; typical values.



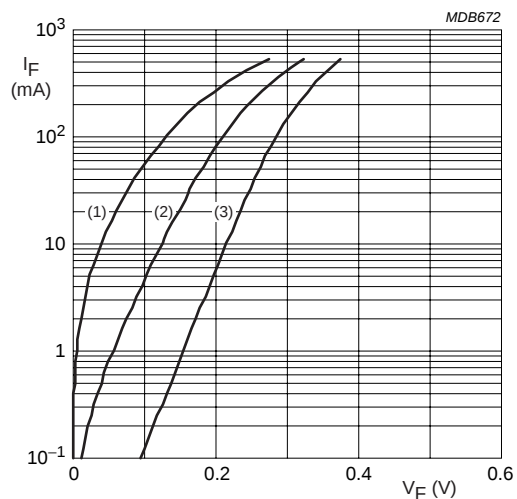
PMEG2005AEV

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

Fig.4 Diode capacitance as a function of reverse voltage; typical values.

Very low V_F MEGA Schottky barrier rectifiers

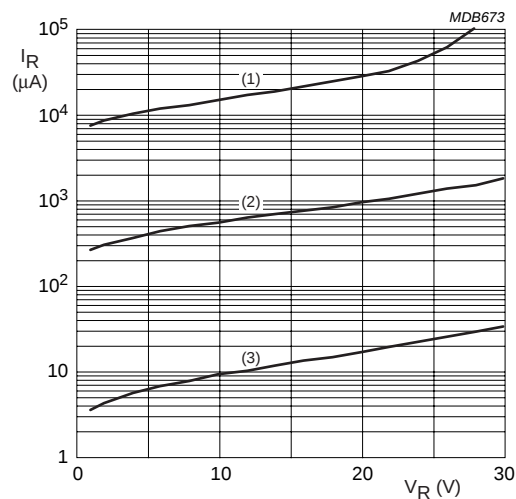
PMEG2005AEV; PMEG3005AEV; PMEG4005AEV



PMEG3005AEV

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

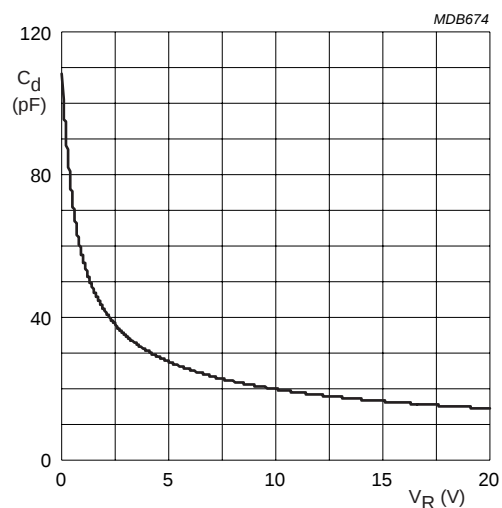
Fig.5 Forward current as a function of forward voltage; typical values.



PMEG3005AEV

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

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



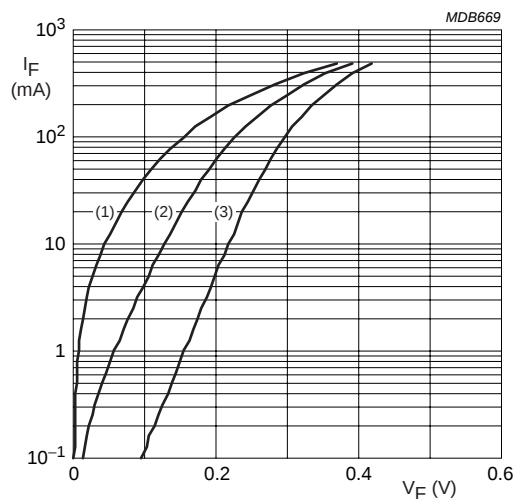
PMEG3005AEV

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

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

Very low V_F MEGA Schottky barrier rectifiers

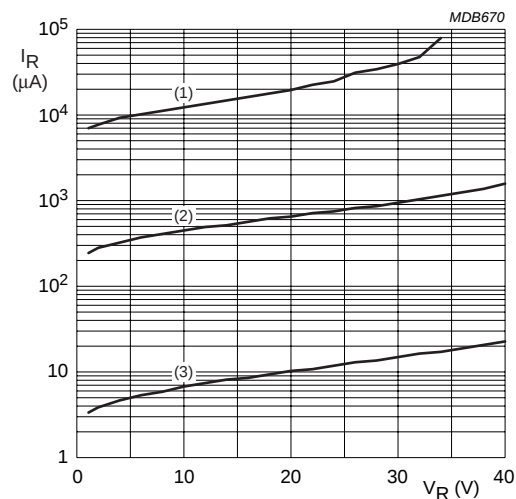
PMEG2005AEV; PMEG3005AEV; PMEG4005AEV



PMEG4005AEV

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

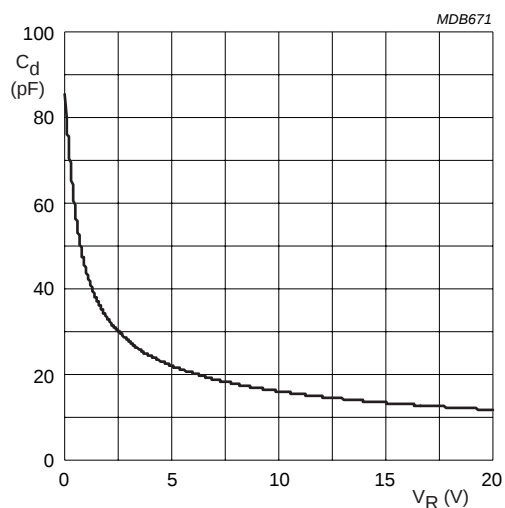
Fig.8 Forward current as a function of forward voltage; typical values.



PMEG4005AEV

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

Fig.9 Reverse current as a function of reverse voltage; typical values.



PMEG4005AEV

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

Fig.10 Diode capacitance as a function of reverse voltage; typical values.

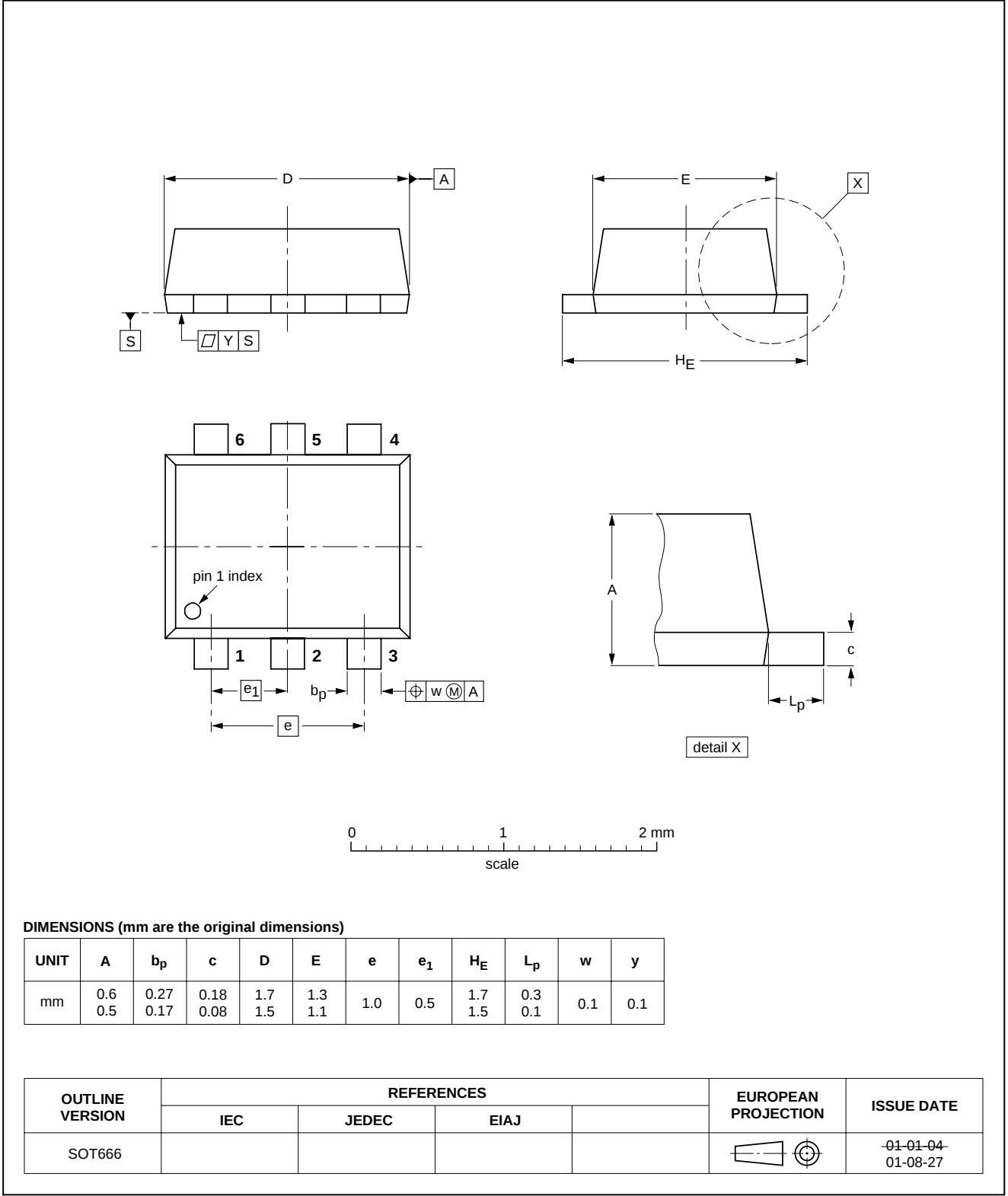
Very low V_F MEGA
Schottky barrier rectifiers

PMEG2005AEV; PMEG3005AEV;
PMEG4005AEV

PACKAGE OUTLINE

Plastic surface mounted package; 6 leads

SOT666



Very low V_F MEGA Schottky barrier rectifiers

PMEG2005AEV; PMEG3005AEV;
PMEG4005AEV

DATA SHEET STATUS

DOCUMENT STATUS ⁽¹⁾	PRODUCT STATUS ⁽²⁾	DEFINITION
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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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