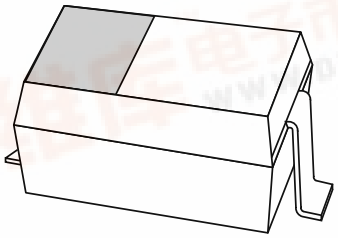
DATA SHEET



PMEG2005AEA; PMEG3005AEA; PMEG4005AEA

Very low V_F MEGA Schottky barrier rectifiers

Product data sheet

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

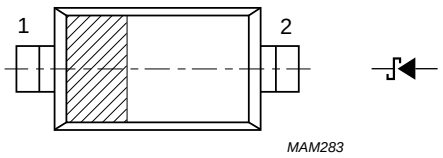
Planar Maximum Efficiency General Application (MEGA) Schottky barrier rectifier with an integrated guard ring for stress protection, encapsulated in a SOD323 (SC-76) very small SMD plastic package.

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



The marking bar indicates the cathode.

Fig.1 Simplified outline (SOD323; SC-76) and symbol.

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

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
$R_{th\ j\text{-}a}$	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
$R_{th\ j\text{-}s}$	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 × 10 mm.
4. Solder point of cathode tab.

ELECTRICAL CHARACTERISTICS

T_{amb} = 25 °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 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_R	continuous reverse current	V_R = 10 V; note 1	15	40	12	30	7	20	µA
		V_R = 20 V; note 1	40	200	–	–	–	–	µA
		V_R = 30 V; note 1	–	–	40	150	–	–	µA
		V_R = 40 V; note 1	–	–	–	–	30	100	µA
C_d	diode capacitance	V_R = 1 V; f = 1 MHz	66	80	55	70	43	50	pF

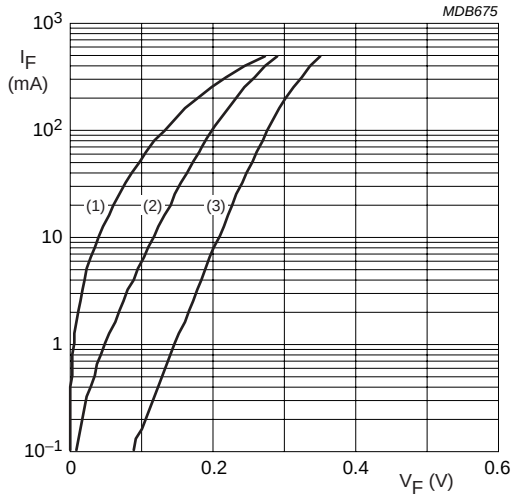
Note

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

Very low V_F MEGA Schottky barrier rectifiers

PMEG2005AEA; PMEG3005AEA; PMEG4005AEA

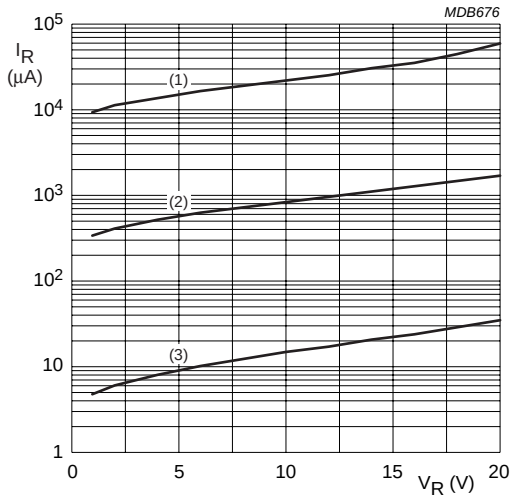
GRAPHICAL DATA



PMEG2005AEA

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

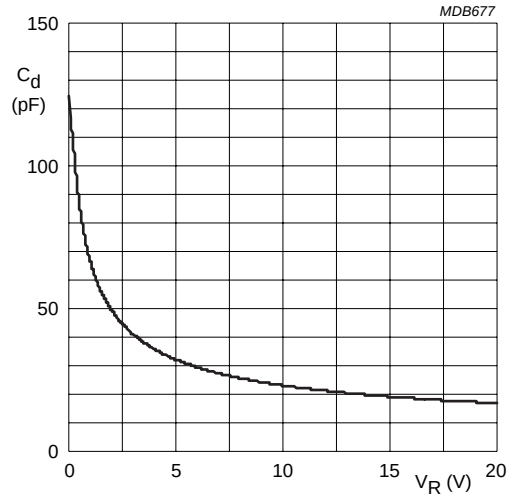
Fig.2 Forward current as a function of forward voltage; typical values.



PMEG2005AEA

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

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



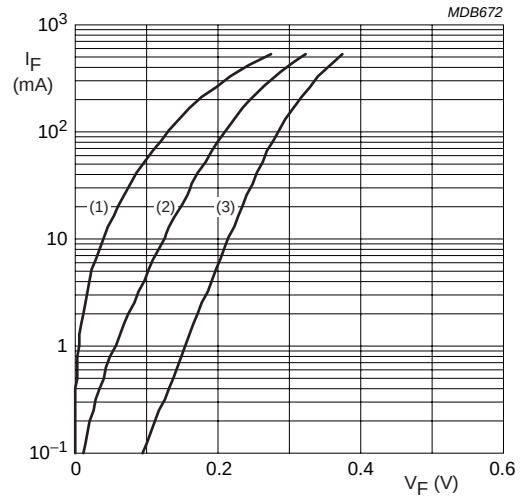
PMEG2005AEA

f = 1 MHz; T_{amb} = 25 °C.

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

Very low V_F MEGA Schottky barrier rectifiers

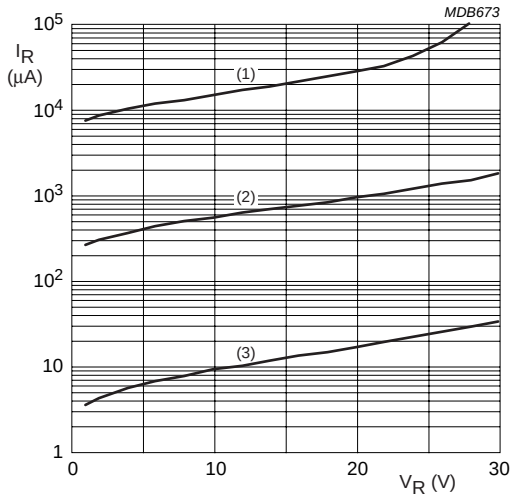
PMEG2005AEA; PMEG3005AEA; PMEG4005AEA



PMEG3005AEA

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

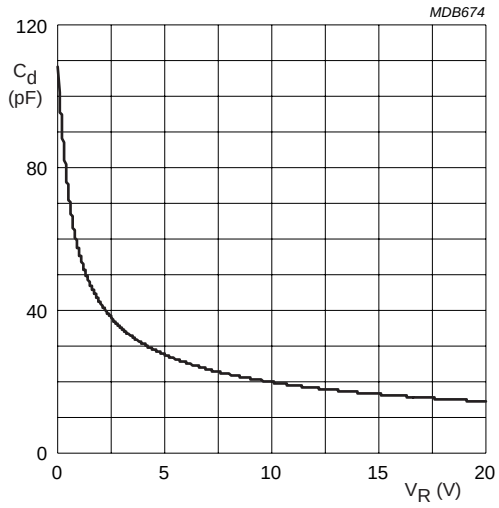
Fig.5 Forward current as a function of forward voltage; typical values.



PMEG3005AEA

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

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



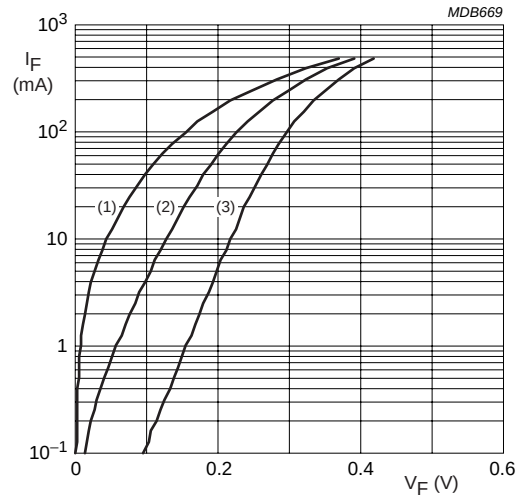
PMEG3005AEA

f = 1 MHz; T_{amb} = 25 °C.

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

Very low V_F MEGA Schottky barrier rectifiers

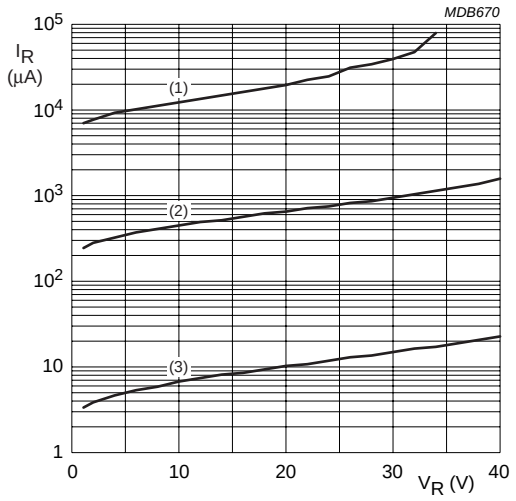
PMEG2005AEA; PMEG3005AEA; PMEG4005AEA



PMEG4005AEA

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

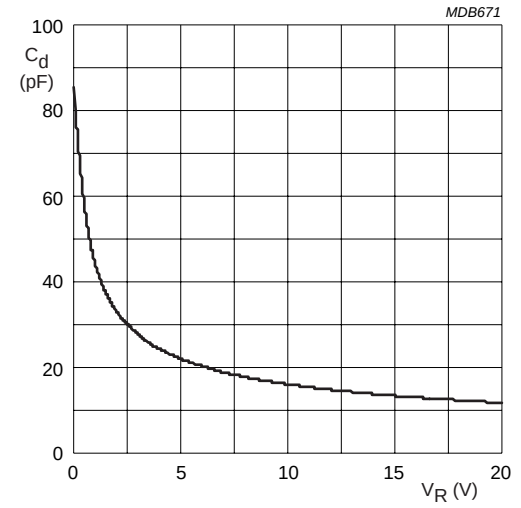
Fig.8 Forward current as a function of forward voltage; typical values.



PMEG4005AEA

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

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



PMEG4005AEA

f = 1 MHz; T_{amb} = 25 °C.

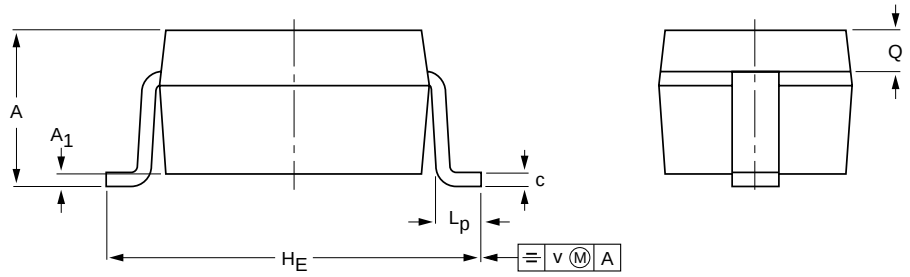
Fig.10 Diode capacitance as a function of reverse voltage; typical values.

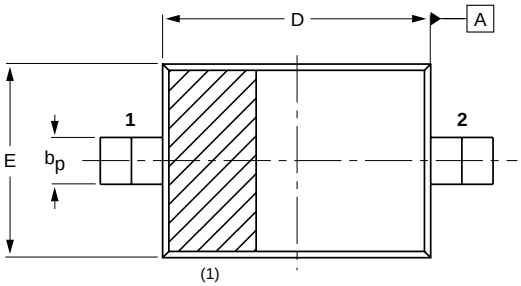
Very low V_F MEGA Schottky barrier rectifiers

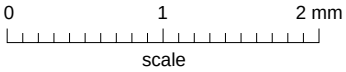
PMEG2005AEA; PMEG3005AEA; PMEG4005AEA

PACKAGE OUTLINE

Plastic surface mounted package; 2 leads **SOD323**







DIMENSIONS (mm are the original dimensions)

UNIT	A	A_1 max.	b_p	c	D	E	H_E	L_p	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			~~98-09-14~~ 99-09-13

DATA SHEET STATUS

DOCUMENT STATUS[1]	PRODUCT STATUS[2]	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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Printed in The Netherlands 613514/01/pp10 Date of release: 2003 Aug 20 Document order number: 9397 750 11615