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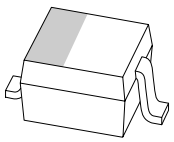


PMEG1020EA

2 A ultra low V_F MEGA Schottky barrier rectifier

Rev. 04 — 30 December 2008 Product data sheet

1. Product profile

1.1 General description

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

1.2 Features

- Forward current: $I_F \leq 2$ A
- Reverse voltage: $V_R \leq 10$ V
- Ultra low forward voltage
- Very small SMD plastic package

1.3 Applications

- Low voltage rectification
- High efficiency DC-to-DC conversion
- Switch Mode Power Supply (SMPS)
- Reverse polarity protection
- Low power consumption applications

1.4 Quick reference data

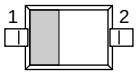
Table 1. Quick reference data

Symbol	Parameter	Conditions		Min	Typ	Max	Unit
I_F	forward current	$T_{sp} \leq 55$ °C		-	-	2	A
V_R	reverse voltage			-	-	10	V
V_F	forward voltage	$I_F = 1$ A	[1]	-	280	350	mV

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

2. Pinning information

Table 2. Pinning

Pin	Description	Simplified outline	Graphic symbol
1	cathode [1]		
2	anode		

sym001

[1] The marking bar indicates the cathode.

3. Ordering information

Table 3. Ordering information

Type number	Package		
	Name	Description	Version
PMEG1020EA	SC-76	plastic surface-mounted package; 2 leads	SOD323

4. Marking

Table 4. Marking codes

Type number	Marking code
PMEG1020EA	E2

5. Limiting values

Table 5. Limiting values

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

Symbol	Parameter	Conditions	Min	Max	Unit
V_R	reverse voltage		-	10	V
I_F	forward current	$T_{sp} \leq 55$ °C	-	2	A
I_{FRM}	repetitive peak forward current	$t_p \leq 1$ ms; $\delta \leq 0.5$	-	3.2	A
I_{FSM}	non-repetitive peak forward current	square wave; $t_p = 8$ ms	-	9	A
T_j	junction temperature		-	150	°C
T_{amb}	ambient temperature		–65	+150	°C
T_{stg}	storage temperature		–65	+150	°C

6. Thermal characteristics

Table 6. Thermal characteristics

Symbol	Parameter	Conditions		Min	Typ	Max	Unit
$R_{th(j-a)}$	thermal resistance from junction to ambient	in free air	[1]	-	-	450	K/W
			[2]	-	-	210	K/W
$R_{th(j-sp)}$	thermal resistance from junction to solder point		[3]	-	-	90	K/W

[1] Device mounted on an FR4 Printed-Circuit Board (PCB), single-sided copper, tin-plated and standard footprint.

[2] Device mounted on an FR4 PCB with copper clad 10 × 10 mm.

[3] Soldering point of cathode tab.

7. Characteristics

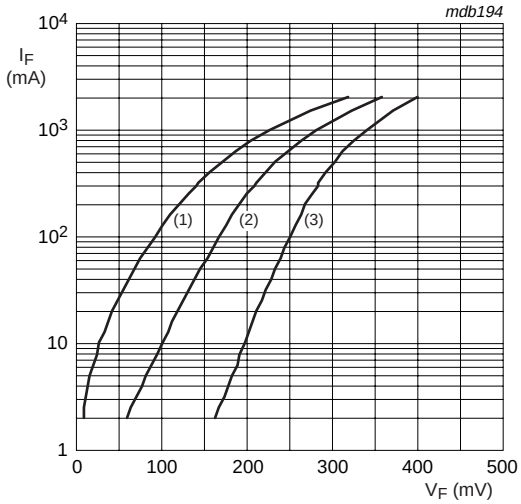
Table 7. Characteristics

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

Symbol	Parameter	Conditions		Min	Typ	Max	Unit
V_F	forward voltage		[1]				
		I_F = 0.01 A		-	100	130	mV
		I_F = 0.1 A		-	170	200	mV
		I_F = 1 A		-	280	350	mV
		I_F = 2 A		-	350	460	mV
I_R	reverse current		[2]				
		V_R = 5 V		-	0.7	2	mA
		V_R = 8 V		-	1	2.5	mA
		V_R = 10 V		-	1.2	3	mA
C_d	diode capacitance	V_R = 5 V; f = 1 MHz		-	37	45	pF

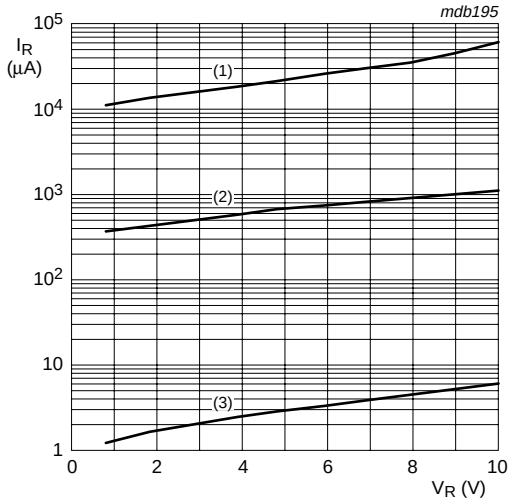
[1] Pulse test: $t_p \leq 300\ \mu s$; $\delta \leq 0.02$.

[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.



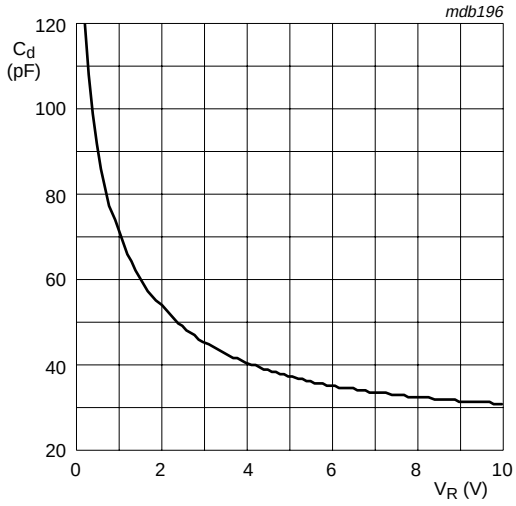
(1) T_{amb} = 85 °C
(2) T_{amb} = 25 °C
(3) T_{amb} = −40 °C

Fig 1. Forward current as a function of forward voltage; typical values



(1) T_{amb} = 85 °C
(2) T_{amb} = 25 °C
(3) T_{amb} = −40 °C

Fig 2. Reverse current as a function of reverse voltage; typical values



f = 1 MHz; T_{amb} = 25 °C

Fig 3. Diode capacitance as a function of reverse voltage; typical values

8. Test information

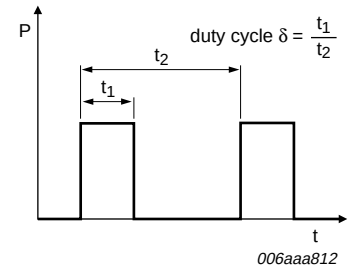


Fig 4. Duty cycle definition

9. Package outline

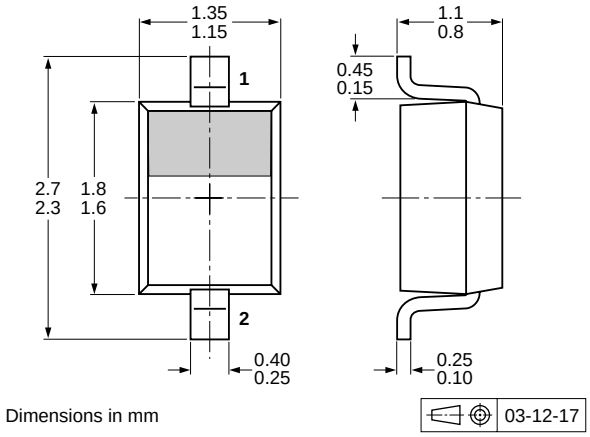


Fig 5. Package outline SOD323 (SC-76)

10. Packing information

Table 8. Packing methods

The indicated -xxx are the last three digits of the 12NC ordering code.[1]

Type number	Package	Description	Packing quantity	
			3000	10000
PMEG1020EA	SOD323	4 mm pitch, 8 mm tape and reel	-115	-135

[1] For further information and the availability of packing methods, see Section 14.

11. Soldering

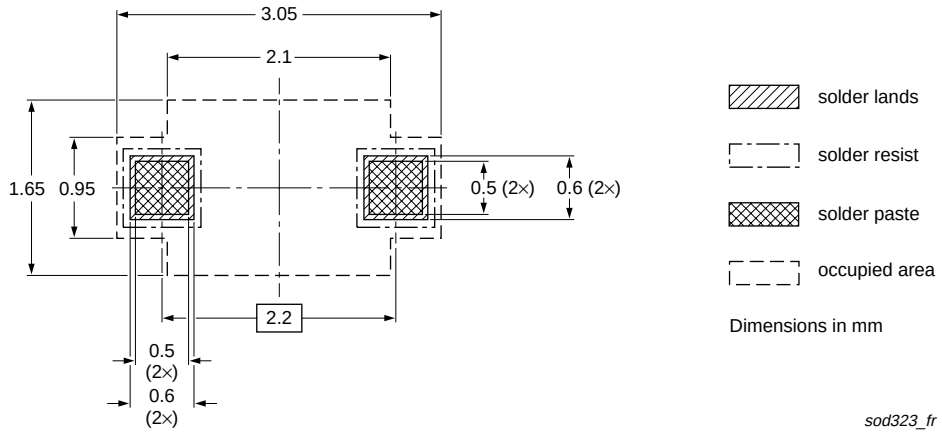


Fig 6. Reflow soldering footprint SOD323 (SC-76)

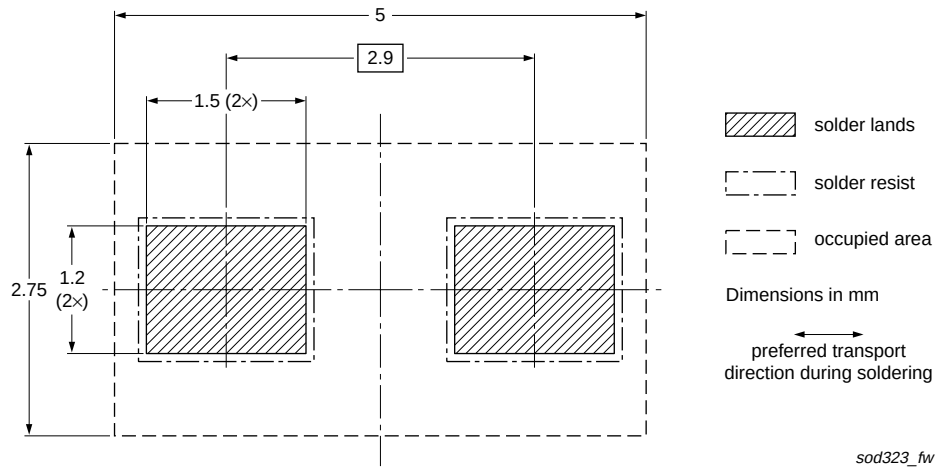


Fig 7. Wave soldering footprint SOD323 (SC-76)

12. Revision history

Table 9. Revision history

Document ID	Release date	Data sheet status	Change notice	Supersedes
PMEG1020EA_4	20081230	Product data sheet	-	PMEG1020EA_3
Modifications:	• The format of this data sheet has been redesigned to comply with the new identity guidelines of NXP Semiconductors. • Legal texts have been adapted to the new company name where appropriate. • Section 13 “Legal information”: updated			
PMEG1020EA_3	20040206	Product specification	-	PMEG1020EA_2
PMEG1020EA_2	20030715	Product specification	-	PMEG1020EA_1
PMEG1020EA_1	20030307	Preliminary specification	-	-

13. Legal information

13.1 Data sheet status

Document status[1][2]	Product status[3]	Definition
Objective [short] data sheet	Development	This document contains data from the objective specification for product development.
Preliminary [short] data sheet	Qualification	This document contains data from the preliminary specification.
Product [short] data sheet	Production	This document contains the product specification.

[1] Please consult the most recently issued document before initiating or completing a design.

[2] The term 'short data sheet' is explained in section "Definitions".

[3] The product status of device(s) described in this document may have changed since this document was published and may differ in case of multiple devices. The latest product status information is available on the Internet at URL http://www.nxp.com.

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15. Contents

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