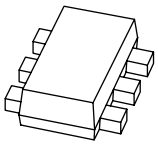

PMEG3002TV

0.2 A very low V_F MEGA Schottky barrier dual rectifier in SOT666 package

Rev. 01 — 21 October 2005 Product data sheet

1. Product profile

1.1 General description

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

Table 1: Product overview

Type number	Package		Configuration
	Philips	JEITA	
PMEG3002TV	SOT666	-	dual isolated

1.2 Features

- Forward current: ≤ 0.2 A
- Reverse voltage: ≤ 30 V
- Very low forward voltage
- Ultra small and flat lead SMD plastic package

1.3 Applications

- Low voltage rectification
- High efficiency DC-to-DC conversion
- Switch mode power supply
- Inverse polarity protection
- Low power consumption applications

1.4 Quick reference data

Table 2: Quick reference data

Symbol	Parameter	Conditions		Min	Typ	Max	Unit
Per diode							
I_F	forward current	$T_{amb} \leq 25$ °C	[1]	-	-	0.2	A
V_R	reverse voltage			-	-	30	V
V_F	forward voltage	$I_F = 200$ mA	[2]	-	420	480	mV

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

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

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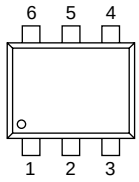
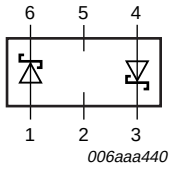
2. Pinning information

Table 3: Pinning

Pin	Description	Simplified outline	Symbol
1	anode (diode 1)		
2	not connected		
3	cathode (diode 2)		
4	anode (diode 2)		
5	not connected		
6	cathode (diode 1)		

3. Ordering information

Table 4: Ordering information

Type number	Package		
	Name	Description	Version
PMEG3002TV	-	plastic surface mounted package; 6 leads	SOT666

4. Marking

Table 5: Marking codes

Type number	Marking code
PMEG3002TV	2M

5. Limiting values

Table 6: Limiting values

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

Symbol	Parameter	Conditions		Min	Max	Unit
Per diode						
V_R	reverse voltage			-	30	V
I_F	forward current	$T_{amb} \leq 25$ °C	[1]	-	0.2	A
I_{FRM}	repetitive peak forward current	$t_p \leq 1$ ms; $\delta \leq 0.25$		-	1	A
I_{FSM}	non-repetitive peak forward current	square wave; $t_p = 8$ ms	[1]	-	2.5	A
P_{tot}	total power dissipation	$T_{amb} \leq 25$ °C	[1]	-	200	mW
			[2]	-	300	mW
Per device						
P_{tot}	total power dissipation	$T_{amb} \leq 25$ °C	[1]	-	300	mW
			[2]	-	400	mW
T_j	junction temperature			-	150	°C
T_{amb}	ambient temperature			–65	+150	°C
T_{stg}	storage temperature			–65	+150	°C

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

[2] Device mounted on an FR4 PCB, single-sided copper, tin-plated, mounting pad for cathode 1 cm^2.

6. Thermal characteristics

Table 7: Thermal characteristics

Symbol	Parameter	Conditions		Min	Typ	Max	Unit
Per device							
$R_{th(j-a)}$	thermal resistance from junction to ambient	in free air	[1] [2]	-	-	416	K/W
			[1] [3]	-	-	318	K/W
$R_{th(j-sp)}$	thermal resistance from junction to solder point		[4]	-	-	195	K/W

[1] 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 are available on request.

[2] Device mounted on an FR4 PCB, single-sided copper, tin-plated and standard footprint.

[3] Device mounted on an FR4 PCB, single-sided copper, tin-plated, mounting pad for cathode 1 cm^2.

[4] Soldering point of cathode tab.

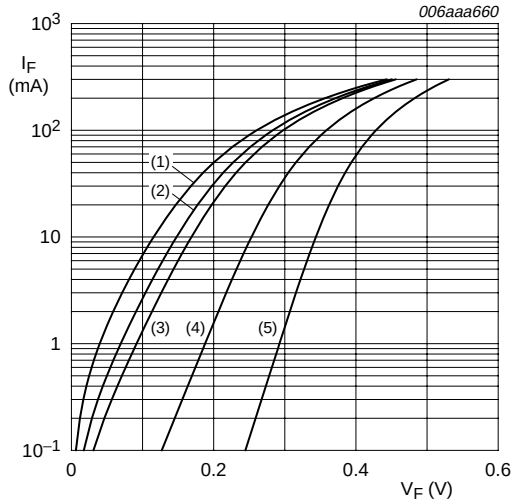
7. Characteristics

Table 8: Characteristics

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

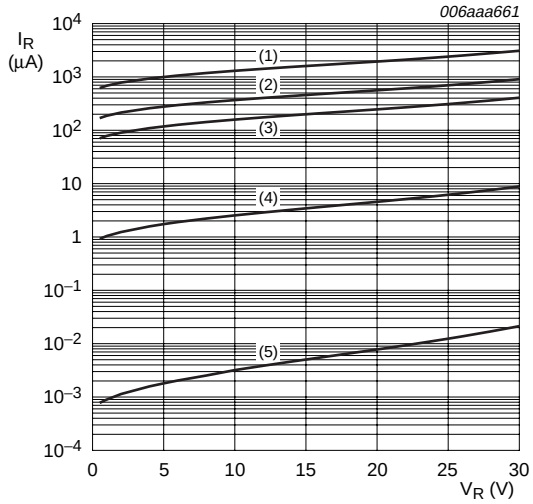
Symbol	Parameter	Conditions		Min	Typ	Max	Unit
Per diode							
V_F	forward voltage		[1]				
		I_F = 0.1 mA		-	130	190	mV
		I_F = 1 mA		-	190	250	mV
		I_F = 10 mA		-	255	300	mV
		I_F = 100 mA		-	355	400	mV
		I_F = 200 mA		-	420	480	mV
I_R	reverse current	V_R = 10 V		-	3	10	µA
		V_R = 30 V		-	10	30	µA
		V_R = 10 V; T_{amb} = 100 °C		-	400	-	µA
C_d	diode capacitance	V_R = 1 V; f = 1 MHz		-	20	25	pF

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



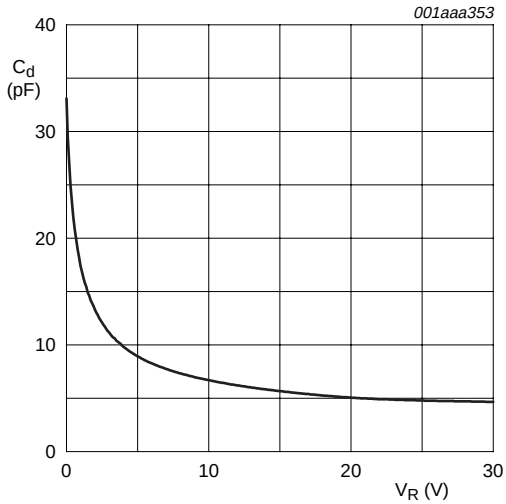
(1) T_{amb} = 125 °C
(2) T_{amb} = 100 °C
(3) T_{amb} = 85 °C
(4) T_{amb} = 25 °C
(5) T_{amb} = –40 °C

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



(1) T_{amb} = 125 °C
(2) T_{amb} = 100 °C
(3) T_{amb} = 85 °C
(4) T_{amb} = 25 °C
(5) T_{amb} = –40 °C

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



T_{amb} = 25 °C; f = 1 MHz

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

8. Package outline

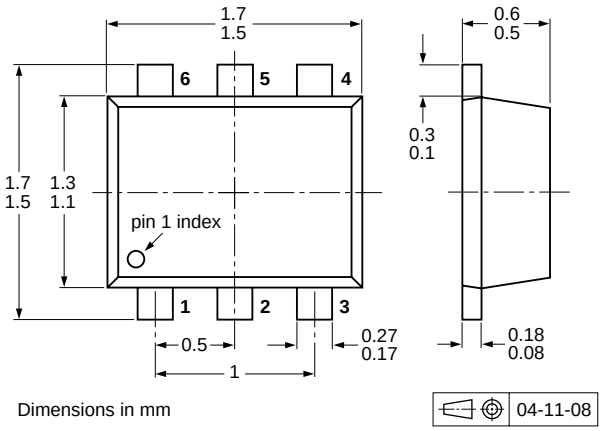


Fig 4. Package outline SOT666

9. Packing information

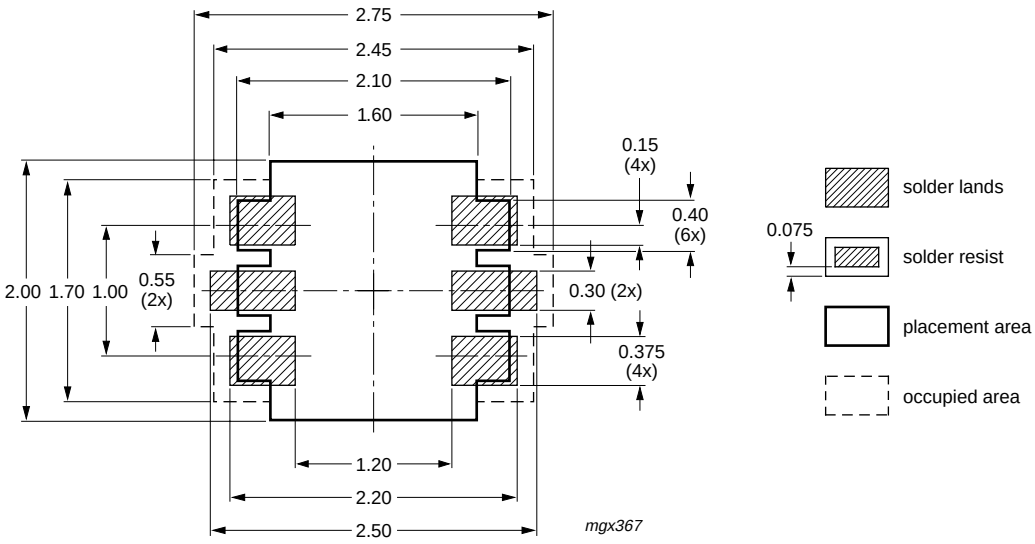
Table 9: Packing methods

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

Type number	Package	Description	Packing quantity	
			4000	8000
PMEG3002TV	SOT666	2 mm pitch, 8 mm tape and reel	-	-315
		4 mm pitch, 8 mm tape and reel	-115	-

[1] For further information and the availability of packing methods, see Section 16.

10. Soldering



Reflow soldering is the only recommended soldering method.

Dimensions in mm

Fig 5. Reflow soldering footprint SOT666

11. Revision history

Table 10: Revision history

Document ID	Release date	Data sheet status	Change notice	Doc. number	Supersedes
PMEG3002TV_1	20051021	Product data sheet	-	-	-

12. Data sheet status

Level	Data sheet status [1]	Product status [2] [3]	Definition
I	Objective data	Development	This data sheet contains data from the objective specification for product development. Philips Semiconductors reserves the right to change the specification in any manner without notice.
II	Preliminary data	Qualification	This data sheet contains data from the preliminary specification. Supplementary data will be published at a later date. Philips Semiconductors reserves the right to change the specification without notice, in order to improve the design and supply the best possible product.
III	Product data	Production	This data sheet contains data from the product specification. Philips Semiconductors reserves the right to make changes at any time in order to improve the design, manufacturing and supply. Relevant changes will be communicated via a Customer Product/Process Change Notification (CPCN).

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

[2] The product status of the device(s) described in this data sheet may have changed since this data sheet was published. The latest information is available on the Internet at URL http://www.semiconductors.philips.com.

[3] For data sheets describing multiple type numbers, the highest-level product status determines the data sheet status.

13. Definitions

Short-form specification — The data in a short-form specification is extracted from a full data sheet with the same type number and title. For detailed information see the relevant data sheet or data handbook.

Limiting values definition — Limiting values given are in accordance with the Absolute Maximum Rating System (IEC 60134). Stress above one or more of the limiting values may cause permanent damage to the device. These are stress ratings only and operation of the device at these or at any other conditions above those given in the Characteristics sections of the specification is not implied. Exposure to limiting values for extended periods may affect device reliability.

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17. Contents

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