



# PMEG4010BEV

1 A very low VF MEGA Schottky barrier rectifier

4 January 2023

Product data sheet

## 1. General description

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

## 2. Features and benefits

- Forward current:  $\leq 1$  A
- Reverse voltage:  $\leq 40$  V
- Very low forward voltage
- Ultra small plastic SMD package

## 3. Applications

- High efficiency DC-to-DC conversion
- Voltage clamping
- Protection circuits
- Low voltage rectification
- Blocking diode
- Low power consumption applications

## 4. Quick reference data

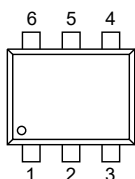
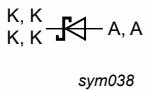
Table 1. Quick reference data

Symbol	Parameter	Conditions		Min	Typ	Max	Unit
$I_F$	forward current	$T_{sp} \leq 55$ °C	[1]	-	-	1	A
$V_R$	reverse voltage	$T_j = 25$ °C		-	-	40	V

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

## 5. Pinning information

Table 2. Pinning information

Pin	Symbol	Description	Simplified outline	Graphic symbol
1	K	cathode	 <b>SOT666</b>	 <i>sym038</i>
2	K	cathode		
3	A	anode		
4	A	anode		
5	K	cathode		
6	K	cathode		

6. Ordering information

Table 3. Ordering information

Type number	Package		
	Name	Description	Version
PMEG4010BEV	SOT666	plastic, surface-mounted package; 6 leads; 0.5 mm pitch; 1.6 mm x 1.2 mm x 0.55 mm body	<a href="#">SOT666</a>

7. Limiting values

Table 4. Limiting values

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

Symbol	Parameter	Conditions		Min	Max	Unit
V <sub>R</sub>	reverse voltage	T <sub>j</sub> = 25 °C		-	40	V
I <sub>F</sub>	forward current	T <sub>sp</sub> ≤ 55 °C	<a href="#">[1]</a>	-	1	A
I <sub>FRM</sub>	repetitive peak forward current	t <sub>p</sub> ≤ 1 ms; δ ≤ 0.5	<a href="#">[2]</a>	-	3.5	A
I <sub>FSM</sub>	non-repetitive peak forward current	t <sub>p</sub> = 8 ms; square wave	<a href="#">[2]</a>	-	10	A
T <sub>j</sub>	junction temperature		<a href="#">[3]</a>	-	150	°C
T <sub>amb</sub>	ambient temperature		<a href="#">[3]</a>	-65	150	°C
T <sub>stg</sub>	storage temperature			-65	150	°C

- [1] Device mounted on an FR4 Printed-Circuit Board (PCB), single-sided copper, tin-plated and standard footprint.
- [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<sub>R</sub> are a significant part of the total power losses. Nomograms for determining the reverse power losses P<sub>R</sub> and I<sub>F(AV)</sub> rating will be available on request.

8. Thermal characteristics

Table 5. Thermal characteristics

Symbol	Parameter	Conditions		Min	Typ	Max	Unit
R <sub>th(j-a)</sub>	thermal resistance from junction to ambient	in free air	<a href="#">[1]</a> <a href="#">[2]</a>	-	-	405	K/W
			<a href="#">[1]</a> <a href="#">[3]</a>	-	-	215	K/W
R <sub>th(j-sp)</sub>	thermal resistance from junction to solder point		<a href="#">[4]</a>	-	-	80	K/W

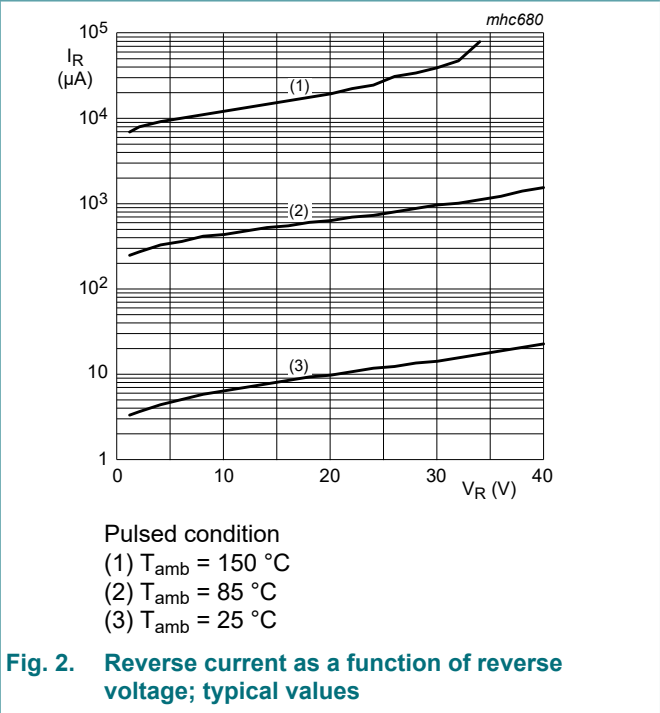
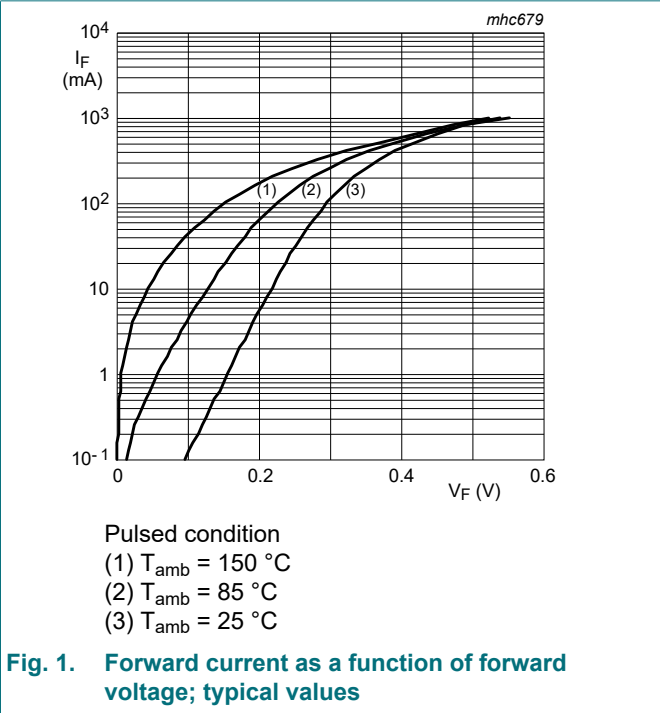
- [1] For Schottky barrier diodes thermal runaway has to be considered, as in some applications the reverse power losses P<sub>R</sub> are a significant part of the total power losses.
- [2] Device mounted on an FR4 PCB, single-sided copper, tin-plated and standard footprint.
- [3] Only valid if pins 3 and 4 are connected in parallel.
- [4] Soldering point of cathode tab.

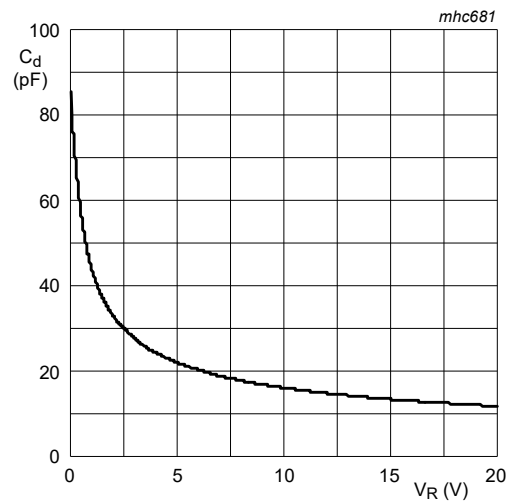
9. Characteristics

**Table 6. Characteristics**  
*T<sub>amb</sub> = 25 °C unless otherwise specified.*

Symbol	Parameter	Conditions		Min	Typ	Max	Unit
V <sub>F</sub>	forward voltage	I <sub>F</sub> = 0.1 mA	[1]	-	95	130	mV
		I <sub>F</sub> = 1 mA	[1]	-	155	210	mV
		I <sub>F</sub> = 10 mA	[1]	-	220	270	mV
		I <sub>F</sub> = 100 mA	[1]	-	295	350	mV
		I <sub>F</sub> = 500 mA	[1]	-	420	470	mV
		I <sub>F</sub> = 1000 mA	[1]	-	540	640	mV
I <sub>R</sub>	reverse current	V <sub>R</sub> = 10 V	[1]	-	7	20	µA
		V <sub>R</sub> = 40 V	[1]	-	30	100	µA
C <sub>d</sub>	diode capacitance	V <sub>R</sub> = 1 V; f = 1 MHz		-	43	50	pF

[1] Pulsed test: t<sub>p</sub> ≤ 300 µs; δ ≤ 0.02





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

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

10. Package outline

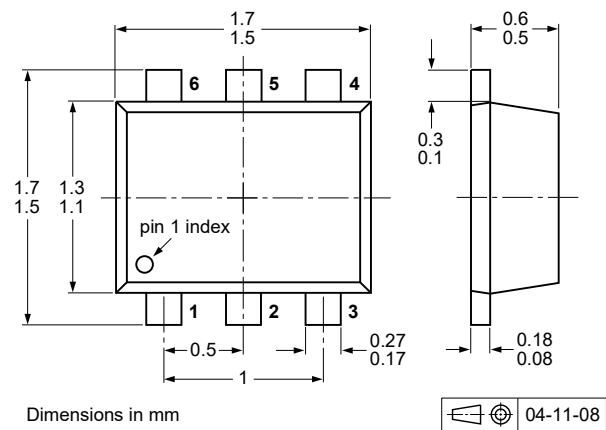


Fig. 4. Package outline SOT666

11. Soldering

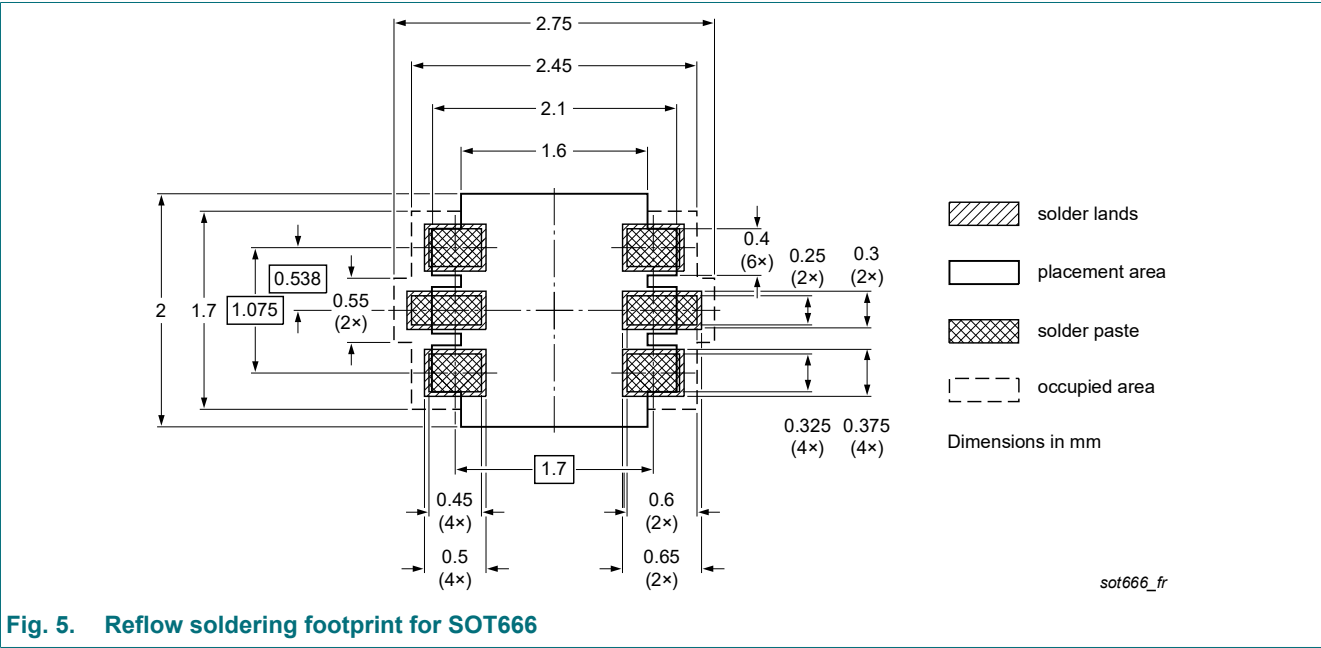


Fig. 5. Reflow soldering footprint for SOT666

## 12. Revision history

Table 7. Revision history

Data sheet ID	Release date	Data sheet status	Change notice	Supersedes
PMEG4010BEV v.4	20230104	Product data sheet	-	PMEG4010BEV v.3
Modifications:	• Product changed to non-automotive qualification.			
PMEG4010BEV v.3	20200902	Product data sheet	-	PMEGXX10BEA_ PMEGXX10BEV v.2
PMEGXX10BEA_ PMEGXX10BEV v.2	200406142	Product data sheet	-	PMEGXX10BEA_ PMEGXX10BEV v.1
PMEGXX10BEA_ PMEGXX10BEV v.1	20040402	Product data sheet	-	-

13. Legal information

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".
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