



PMEG4005AEV

40 V, 0.5 A very low VF Schottky barrier rectifier

13 February 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 a SOT666 ultra small SMD plastic package.

2. Features and benefits

- Very low forward voltage
- High surge current
- Ultra small plastic SMD package

3. Applications

- Low voltage rectification
- High efficiency DC/DC conversion
- Voltage clamping
- Inverse polarity protection
- Low power consumption applications.

4. Quick reference data

Table 1. Quick reference data

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
V_R	reverse voltage	$T_j = 25\text{ °C}$	-	-	40	V
V_F	forward voltage	$I_F = 500\text{ mA}$; $t_p \leq 300\text{ }\mu\text{s}$; $\delta \leq 0.02$; $T_{amb} = 25\text{ °C}$	-	420	470	mV
I_R	reverse current	$V_R = 40\text{ V}$; $t_p \leq 300\text{ }\mu\text{s}$; $\delta \leq 0.02$; pulsed	-	30	100	μA

5. Pinning information

Table 2. Pinning information

Pin	Symbol	Description	Simplified outline	Graphic symbol
1	K	cathode	<p>SOT666</p>	<p>sym038</p>
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
PMEG4005AEV	SOT666	plastic, surface-mounted package; 6 leads; 0.5 mm pitch; 1.6 mm x 1.2 mm x 0.55 mm body	SOT666

7. Marking

Table 4. Marking codes

Type number	Marking code
PMEG4005AEV	G3

8. Limiting values

Table 5. Limiting values

In accordance with the Absolute Maximum Rating System (IEC60134).

Symbol	Parameter	Conditions		Min	Max	Unit
V_R	reverse voltage	$T_j = 25\text{ °C}$		-	40	V
I_F	forward current		[1]	-	0.5	A
I_{FRM}	repetitive peak forward current	$t_p \leq 1\text{ ms}$; $\delta \leq 0.5$	[2]	-	3.5	A
I_{FSM}	non-repetitive peak forward current	$t_p = 8\text{ ms}$; square wave; $T_{j(\text{init})} = 25\text{ °C}$	[2]	-	10	A
T_j	junction temperature		[3]	-	150	°C
T_{amb}	ambient temperature		[3]	-65	150	°C
T_{stg}	storage temperature			-65	150	°C

[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.

9. Thermal characteristics

Table 6. Thermal characteristics

Symbol	Parameter	Conditions		Min	Typ	Max	Unit
$R_{\text{th}(j-a)}$	thermal resistance from junction to ambient	in free air	[1] [2]	-	-	405	K/W
			[2] [3]	-	-	215	K/W
$R_{\text{th}(j-sp)}$	thermal resistance from junction to solder point		[4]	-	-	80	K/W

[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.

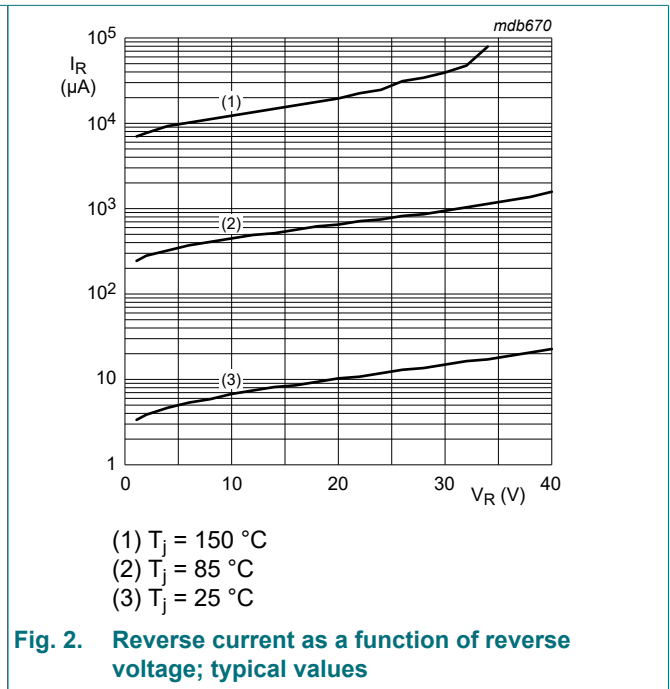
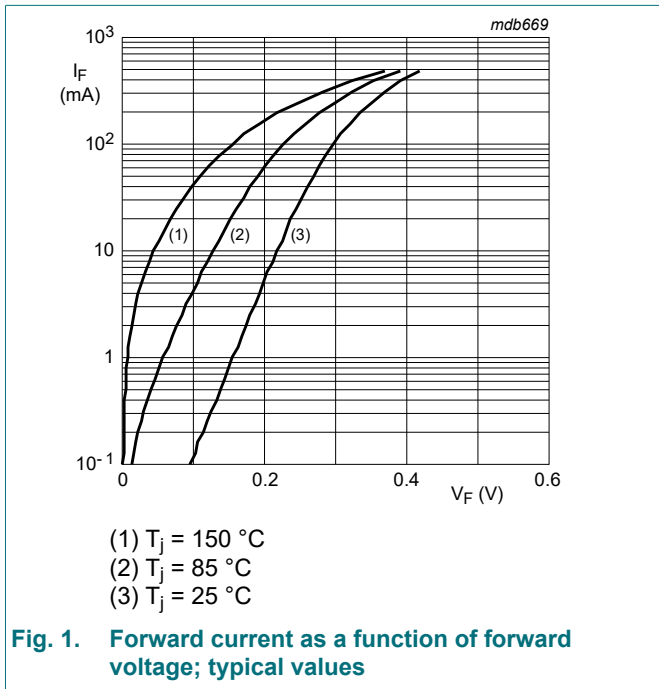
[3] Device mounted on an FR4 printed-circuit board with copper clad 10 × 10 mm.

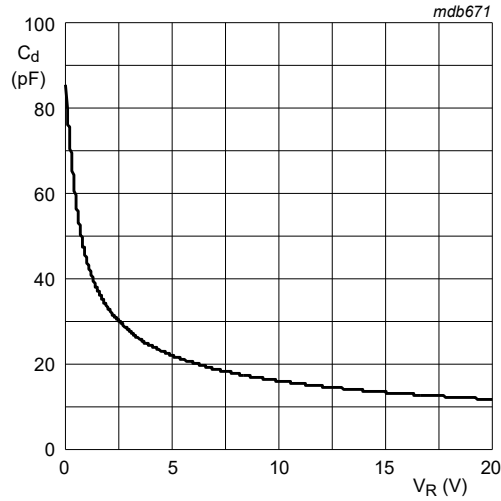
[4] Solder point of cathode tab.

10. Characteristics

Table 7. Characteristics

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
V _F	forward voltage	I _F = 0.1 mA; t _p ≤ 300 μs; δ ≤ 0.02; T _{amb} = 25 °C	-	95	130	mV
		I _F = 1 mA; t _p ≤ 300 μs; δ ≤ 0.02; T _{amb} = 25 °C	-	155	210	mV
		I _F = 10 mA; t _p ≤ 300 μs; δ ≤ 0.02; T _{amb} = 25 °C	-	220	270	mV
		I _F = 100 mA; t _p ≤ 300 μs; δ ≤ 0.02; T _{amb} = 25 °C	-	295	350	mV
		I _F = 500 mA; t _p ≤ 300 μs; δ ≤ 0.02; T _{amb} = 25 °C	-	420	470	mV
I _R	reverse current	V _R = 10 V; t _p ≤ 300 μs; δ ≤ 0.02; pulsed; T _{amb} = 25 °C	-	7	20	μA
		V _R = 40 V; t _p ≤ 300 μs; δ ≤ 0.02; pulsed	-	30	100	μA
C _d	diode capacitance	V _R = 1 V; f = 1 MHz; T _{amb} = 25 °C	-	43	50	pF





f = 1 MHz; T_{amb} = 25 °C

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

11. Package outline

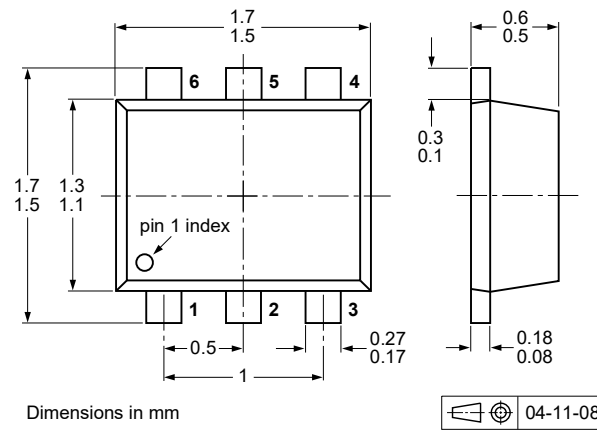


Fig. 4. Package outline SOT666

12. Soldering

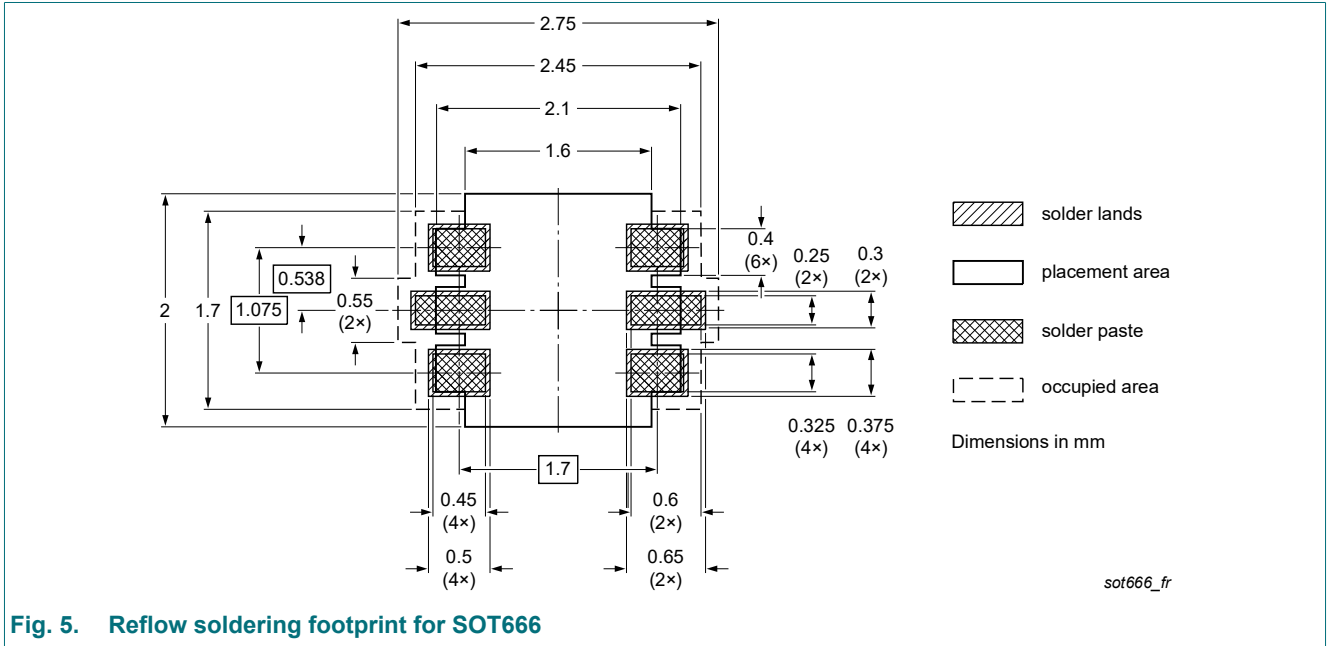


Fig. 5. Reflow soldering footprint for SOT666

13. Revision history

Table 8. Revision history

Data sheet ID	Release date	Data sheet status	Change notice	Supersedes
PMEG4005AEV v.3	20230213	Product data sheet	-	PMEG4005AEV v.2
Modifications:	• Characteristics: Graph in Fig. 2 corrected at unit of Y-axis			
PMEG4005AEV v.2	20221228	Product data sheet	-	PMEG3005AEV v.1
PMEG3005AEV v.1	20030820	Product data sheet	-	-

14. 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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