PMEG2005AEV

20 V, 0.5 A very low VF Schottky barrier rectifier

28 December 2022 Product data sheet

1. General description

Planar 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.

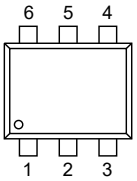
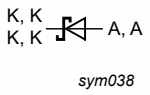
4. Quick reference data

Table 1. Quick reference data

Symbol	Parameter	Conditions		Min	Typ	Max	Unit
V_R	reverse voltage	T_j = 25 °C		-	-	20	V
V_F	forward voltage	I_F = 500 mA; $t_p \leq$ 300 µs; $\delta \leq$ 0.02; T_{amb} = 25 °C		-	355	390	mV
I_R	reverse current	V_R = 20 V; $t_p \leq$ 300 µs; $\delta \leq$ 0.02; pulsed		-	40	200	µA

5. Pinning information

Table 2. Pinning information

Pin	Symbol	Description	Simplified outline	Graphic symbol
1	K	cathode	 SOT666	
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
PMEG2005AEV	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. Limiting values

Table 4. Limiting values

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

Symbol	Parameter	Conditions		Min	Max	Unit
V_R	reverse voltage	T_j = 25 °C		-	20	V
I_F	forward current		[1]	-	0.5	A
I_{FRM}	repetitive peak forward current	$t_p \leq 1$ ms; $\delta \leq 0.5$	[2]	-	3.5	A
I_{FSM}	non-repetitive peak forward current	t_p = 8 ms; square wave; $T_{j(init)}$ = 25 °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.

8. Thermal characteristics

Table 5. Thermal characteristics

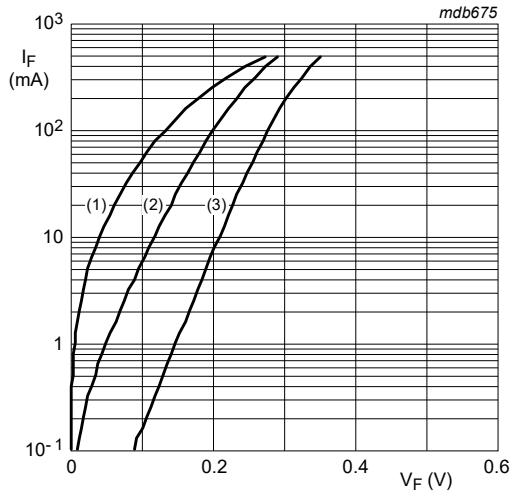
Symbol	Parameter	Conditions		Min	Typ	Max	Unit
$R_{th(j-a)}$	thermal resistance from junction to ambient	in free air	[1] [2]	-	-	405	K/W
			[2] [3]	-	-	215	K/W
$R_{th(j-sp)}$	thermal resistance from junction to solder point		[4]	-	-	80	K/W

[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.

9. Characteristics

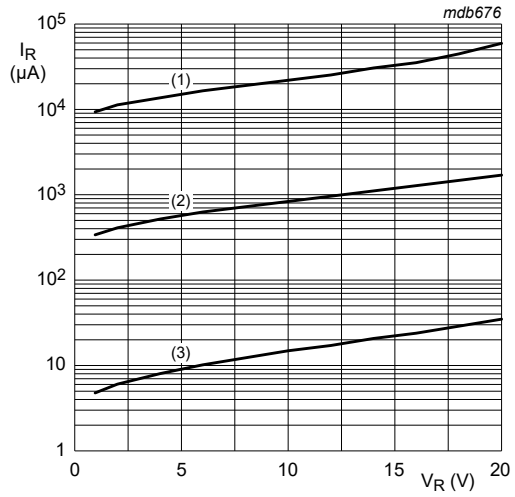
Table 6. Characteristics

Symbol	Parameter	Conditions		Min	Typ	Max	Unit
V_F	forward voltage	I_F = 0.1 mA; $t_p \leq$ 300 µs; $\delta \leq$ 0.02; T_{amb} = 25 °C		-	90	130	mV
		I_F = 1 mA; $t_p \leq$ 300 µs; $\delta \leq$ 0.02; T_{amb} = 25 °C		-	150	190	mV
		I_F = 10 mA; $t_p \leq$ 300 µs; $\delta \leq$ 0.02; T_{amb} = 25 °C		-	210	240	mV
		I_F = 100 mA; $t_p \leq$ 300 µs; $\delta \leq$ 0.02; T_{amb} = 25 °C		-	280	330	mV
		I_F = 500 mA; $t_p \leq$ 300 µs; $\delta \leq$ 0.02; T_{amb} = 25 °C		-	355	390	mV
I_R	reverse current	V_R = 10 V; $t_p \leq$ 300 µs; $\delta \leq$ 0.02; pulsed; T_{amb} = 25 °C		-	15	40	µA
		V_R = 20 V; $t_p \leq$ 300 µs; $\delta \leq$ 0.02; pulsed		-	40	200	µA
C_d	diode capacitance	V_R = 1 V; f = 1 MHz; T_{amb} = 25 °C		-	66	80	pF



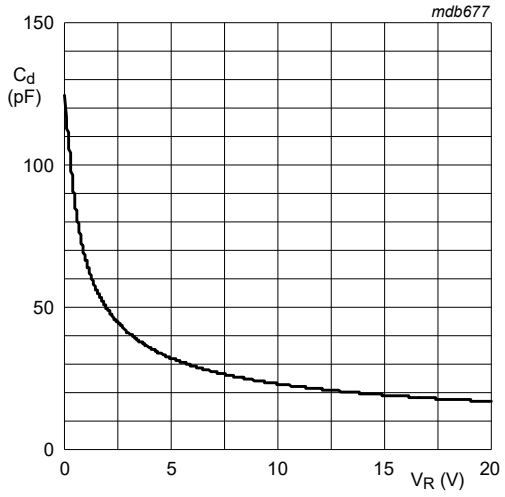
(1) T_{amb} = 150 °C
(2) T_{amb} = 85 °C
(3) T_{amb} = 25 °C

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



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

10. Package outline

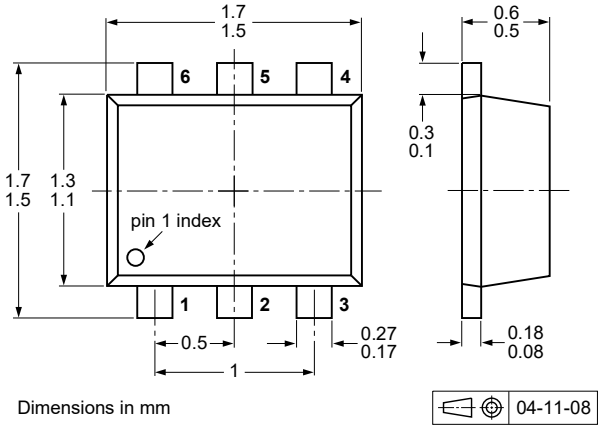


Fig. 4. Package outline SOT666

11. Soldering

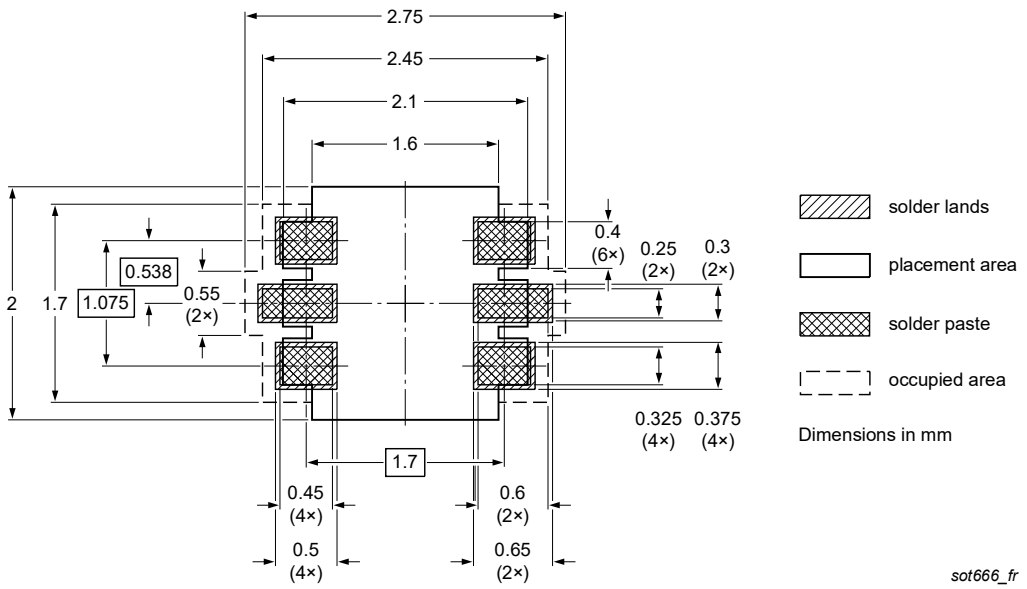


Fig. 5. Reflow soldering footprint for SOT666

12. Revision history

Table 7. Revision history

Data sheet ID	Release date	Data sheet status	Change notice	Supersedes
PMEG2005AEV v.2	20221228	Product data sheet	-	PMEG2005AEV_3005_4005 v.1
Modifications:	• The format of this data sheet has been redesigned to comply with the identity guidelines of Nexperia. • Legal texts have been adapted to the new company name where appropriate. • Product changed to non-automotive qualification.			
PMEG2005AEV_3005_4005 v.1	20030820	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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