



# PMEG3002TV

30 V, 0.2 A very low VF Schottky barrier dual rectifier

28 December 2022

Product data sheet

## 1. General description

Planar 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.

## 2. Features and benefits

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

## 3. Applications

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

## 4. Quick reference data

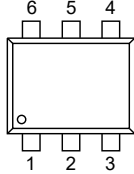
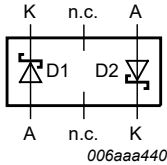
Table 1. Quick reference data

Symbol	Parameter	Conditions		Min	Typ	Max	Unit
<b>Per diode</b>							
$I_F$	forward current	$\delta = 1; T_{amb} \leq 25$ °C	[1]	-	-	0.2	A
$V_R$	reverse voltage	$T_j = 25$ °C		-	-	30	V
$V_F$	forward voltage	$I_F = 200$ mA; $t_p \leq 300$ $\mu$ s; $\delta \leq 0.02$ ; pulsed; $T_{amb} = 25$ °C		-	420	480	mV
$I_R$	reverse current	$V_R = 30$ V; $T_j = 25$ °C		-	10	30	$\mu$ A

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

## 5. Pinning information

Table 2. Pinning information

Pin	Symbol	Description	Simplified outline	Graphic symbol
1	A1	anode (diode 1)	 <p style="text-align: center;"><b>SOT666</b></p>	 <p style="text-align: center;">006aaa440</p>
2	n.c.	not connected		
3	K2	cathode (diode 2)		
4	A2	anode (diode 2)		
5	n.c.	not connected		
6	K1	cathode (diode 1)		

## 6. Ordering information

Table 3. Ordering information

Type number	Package		
	Name	Description	Version
<a href="#">PMEG3002TV</a>	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. Marking

Table 4. Marking codes

Type number	Marking code
PMEG3002TV	2M

## 8. Limiting values

Table 5. Limiting values

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

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

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Symbol	Parameter	Conditions	Min	Max	Unit
$T_{stg}$	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<sup>2</sup>.

## 9. 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] [2]	-	416	K/W
<b>Per device</b>						
$R_{th(j-a)}$	thermal resistance from junction to ambient	in free air	[1] [3]	-	318	K/W
$R_{th(j-sp)}$	thermal resistance from junction to solder point		[4]	-	195	K/W

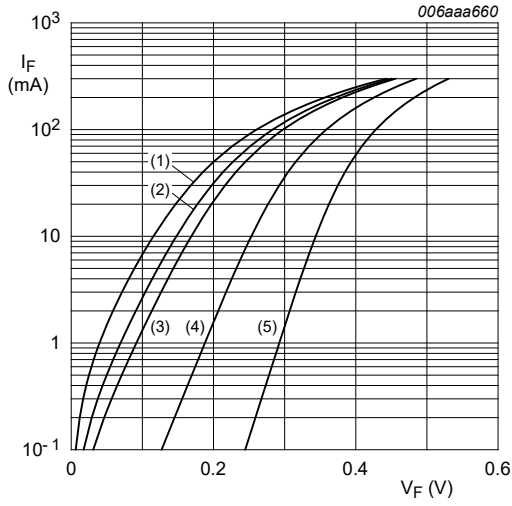
- [1] For Schottky barrier diodes thermal runaway has to be considered, as in some applications the reverse power losses  $P_R$  are a significant part of the total power losses.  
 [2] Device mounted on an FR4 PCB, single-sided copper, tin-plated and standard footprint.  
 [3] Device mounted on an FR4 PCB, single-sided copper, tin-plated, mounting pad for anode and cathode 1 cm<sup>2</sup> each.  
 [4] Soldering point of anode tab.

## 10. Characteristics

Table 7. Characteristics

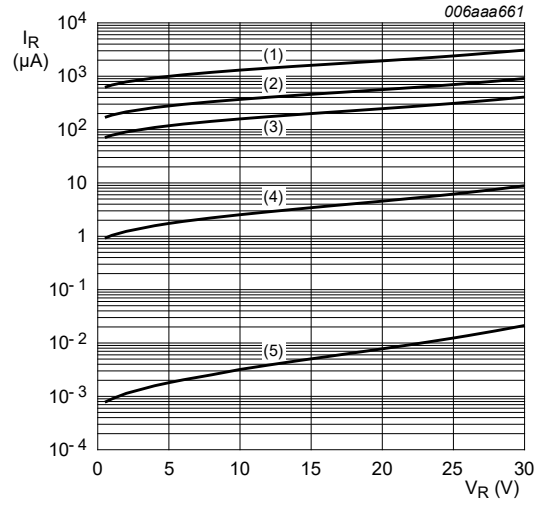
Symbol	Parameter	Conditions	Min	Typ	Max	Unit
<b>Per diode</b>						
$V_F$	forward voltage	$I_F = 0.1 \text{ mA}; t_p \leq 300 \mu\text{s}; \delta \leq 0.02;$ pulsed; $T_{amb} = 25 \text{ °C}$	-	130	190	mV
		$I_F = 1 \text{ mA}; t_p \leq 300 \mu\text{s}; \delta \leq 0.02;$ pulsed; $T_{amb} = 25 \text{ °C}$	-	190	250	mV
		$I_F = 10 \text{ mA}; t_p \leq 300 \mu\text{s}; \delta \leq 0.02;$ pulsed; $T_{amb} = 25 \text{ °C}$	-	255	300	mV
		$I_F = 100 \text{ mA}; t_p \leq 300 \mu\text{s}; \delta \leq 0.02;$ pulsed; $T_{amb} = 25 \text{ °C}$	-	355	400	mV
		$I_F = 200 \text{ mA}; t_p \leq 300 \mu\text{s}; \delta \leq 0.02;$ pulsed; $T_{amb} = 25 \text{ °C}$	-	420	480	mV
$I_R$	reverse current	$V_R = 10 \text{ V}; T_j = 25 \text{ °C}$	-	3	10	μA
		$V_R = 30 \text{ V}; T_j = 25 \text{ °C}$	-	10	30	μA
		$V_R = 10 \text{ V}; T_{amb} = 100 \text{ °C}$	-	400	-	μA
$C_d$	diode capacitance	$V_R = 1 \text{ V}; f = 1 \text{ MHz}; T_{amb} = 25 \text{ °C}$	-	20	25	pF

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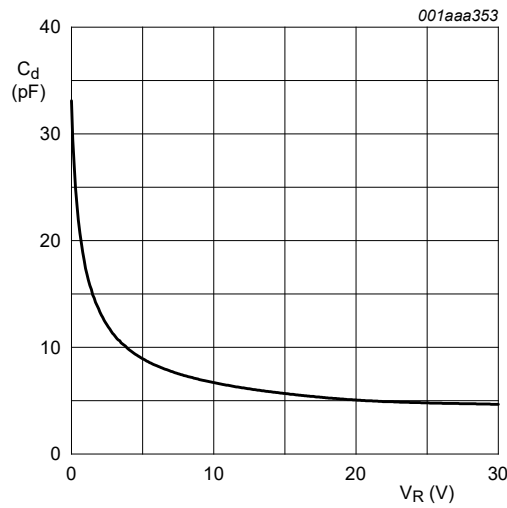
- (1)  $T_{amb} = 125^\circ\text{C}$
- (2)  $T_{amb} = 100^\circ\text{C}$
- (3)  $T_{amb} = 85^\circ\text{C}$
- (4)  $T_{amb} = 25^\circ\text{C}$
- (5)  $T_{amb} = -40^\circ\text{C}$

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



- (1)  $T_j = 125^\circ\text{C}$
- (2)  $T_j = 100^\circ\text{C}$
- (3)  $T_j = 85^\circ\text{C}$
- (4)  $T_j = 25^\circ\text{C}$
- (5)  $T_j = -40^\circ\text{C}$

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



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

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

### 11. Package outline

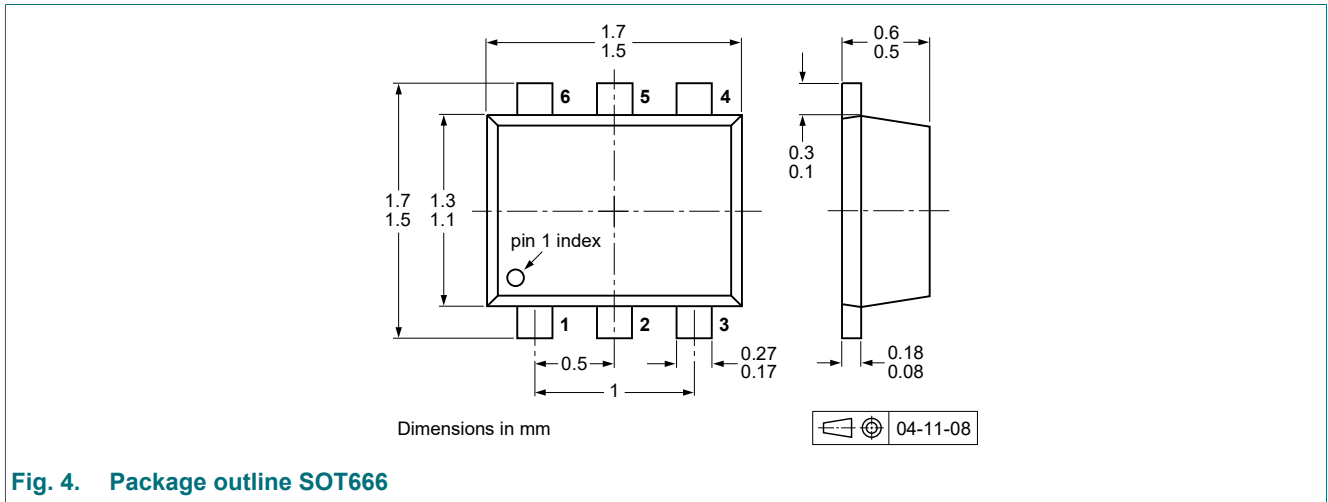


Fig. 4. Package outline SOT666

### 12. Soldering

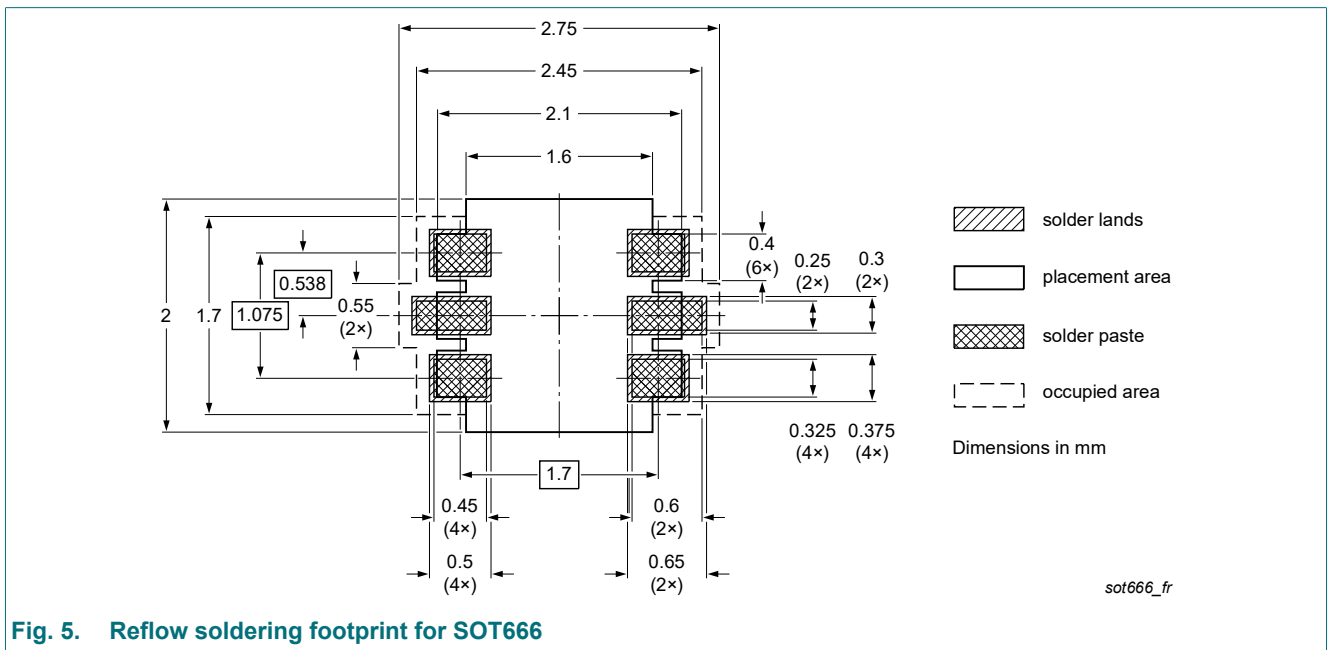


Fig. 5. Reflow soldering footprint for SOT666

## 13. Revision history

Table 8. Revision history

Data sheet ID	Release date	Data sheet status	Change notice	Supersedes
PMEG3002TV v.3	20221228	Product data sheet	-	PMEG3002TV_2
Modifications:	<ul style="list-style-type: none"><li>• The format of this data sheet has been redesigned to comply with the identity guidelines of Nexperia.</li><li>• Legal texts have been adapted to the new company name where appropriate.</li><li>• Packing information removed.</li><li>• Product(s) changed to non-automotive qualification.</li></ul>			
PMEG3002TV_2	20100115	Product data sheet	-	PMEG3002TV_1
PMEG3002TV_1	20051021	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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