PMEG6002TV

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

28 December 2022 Product data sheet

1. General description

Planar dual Schottky barrier rectifier with an integrated guard ring for stress protection, encapsulated in an ultra small SOT666 Surface-Mounted Device (SMD) flat lead plastic package.

2. Features and benefits

- Forward current: $I_F \leq 0.2$ A
- Reverse voltage: $V_R \leq 60$ 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
- Reverse polarity protection
- Low power consumption applications

4. Quick reference data

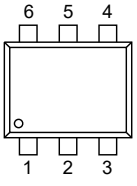
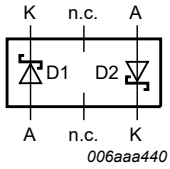
Table 1. Quick reference data

Symbol	Parameter	Conditions		Min	Typ	Max	Unit
Per diode							
I_F	forward current	$T_{amb} \leq 25$ °C		-	-	0.2	A
V_R	reverse voltage	$T_j = 25$ °C		-	-	60	V
V_F	forward voltage	$I_F = 200$ mA; $T_{amb} = 25$ °C	[1]	-	540	600	mV
I_R	reverse current	$V_R = 60$ V; $T_{amb} = 25$ °C		-	20	100	µA

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

5. Pinning information

Table 2. Pinning information

Pin	Symbol	Description	Simplified outline	Graphic symbol
1	A	anode (D1)	 SOT666	
2	n.c.	not connected		
3	K	cathode (D2)		
4	A	anode (D2)		
5	n.c.	not connected		
6	K	cathode (D1)		

6. Ordering information

Table 3. Ordering information

Type number	Package		
	Name	Description	Version
PMEG6002TV	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
PMEG6002TV	1B

8. Limiting values

Table 5. Limiting values

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

Symbol	Parameter	Conditions		Min	Max	Unit
Per diode						
V_R	reverse voltage	T_j = 25 °C		-	60	V
I_F	forward current	$T_{amb} \leq$ 25 °C		-	0.2	A
I_{FRM}	repetitive peak forward current	$t_p \leq$ 1 ms; $\delta \leq$ 0.25		-	2	A
I_{FSM}	non-repetitive peak forward current	t_p = 8 ms; square wave		-	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.

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9. Thermal characteristics

Table 6. 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.
[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.

10. Characteristics

Table 7. Characteristics

Symbol	Parameter	Conditions		Min	Typ	Max	Unit
Per diode							
V_F	forward voltage	I_F = 0.1 mA; T_{amb} = 25 °C	[1]	-	130	170	mV
		I_F = 1 mA; T_{amb} = 25 °C	[1]	-	190	230	mV
		I_F = 10 mA; T_{amb} = 25 °C	[1]	-	260	300	mV
		I_F = 100 mA; T_{amb} = 25 °C	[1]	-	420	470	mV
		I_F = 200 mA; T_{amb} = 25 °C	[1]	-	540	600	mV
I_R	reverse current	V_R = 10 V; T_{amb} = 25 °C		-	2	10	µA
		V_R = 60 V; T_{amb} = 25 °C		-	20	100	µA
		V_R = 10 V; T_{amb} = 100 °C		-	310	-	µA
C_d	diode capacitance	V_R = 1 V; f = 1 MHz; T_{amb} = 25 °C		-	14	20	pF

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

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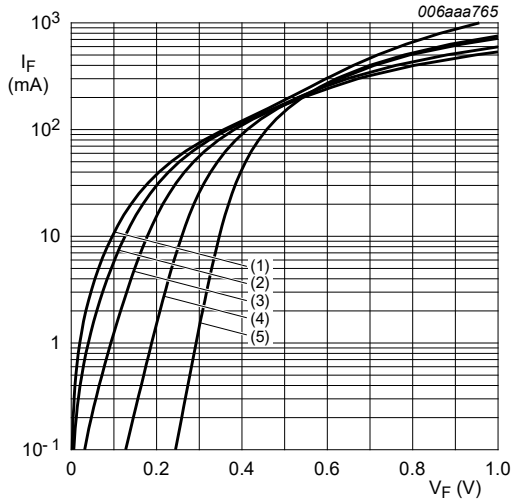
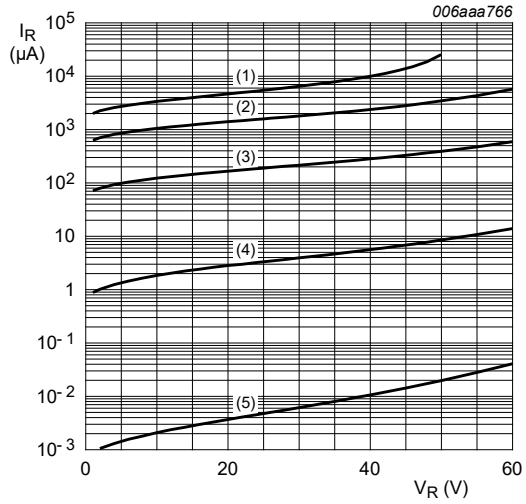


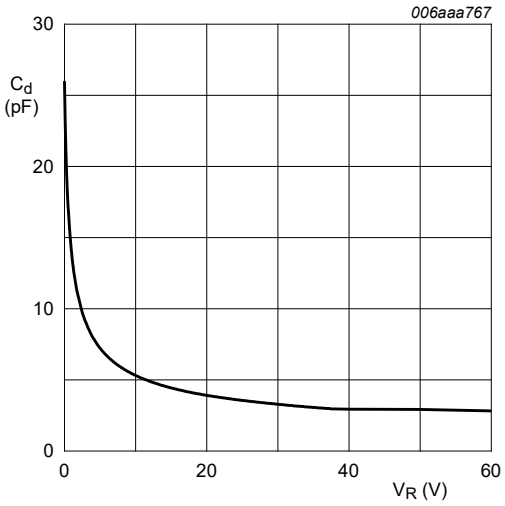
(1) T_j = 150 °C
(2) T_j = 125 °C
(3) T_j = 85 °C
(4) T_j = 25 °C
(5) T_j = −40 °C

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



(1) T_j = 150 °C
(2) T_j = 125 °C
(3) T_j = 85 °C
(4) T_j = 25 °C
(5) T_j = −40 °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

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11. Test information

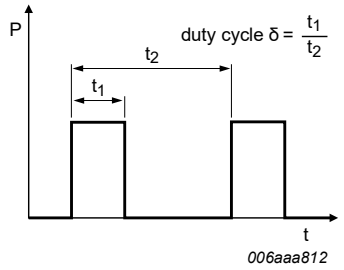

Fig. 4. Duty cycle definition

The current ratings for the typical waveforms are calculated according to the equations:

$I_{F(AV)}=I_M \times \delta$ with I_M defined as peak current

$I_{RMS}=I_{F(AV)}$ at DC

$I_{RMS}=I_M \times \sqrt{\delta}$ with I_{RMS} defined as RMS current

12. Package outline

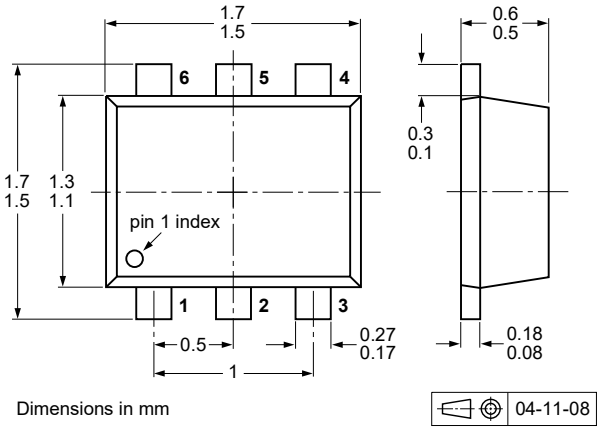

Fig. 5. Package outline SOT666

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13. Soldering

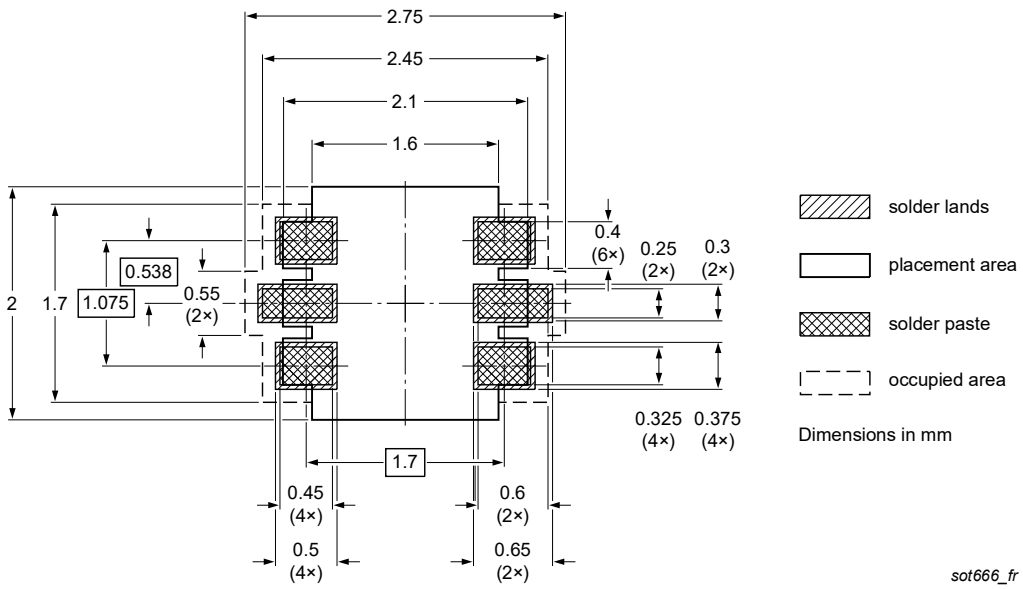

Fig. 6. Reflow soldering footprint for SOT666

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14. Revision history

Table 8. Revision history

Data sheet ID	Release date	Data sheet status	Change notice	Supersedes
PMEG6002TV v.3	20221228	Product data sheet	-	PMEG6002TV v.2
Modifications:	• Product changed to non-automotive qualification.			
PMEG6002TV v.2	20210407	Product data sheet	-	PMEG6002EB_PMEG6002TV v.1
PMEG6002EB_PMEG6002TV v.1	20061124	Product data sheet	-	-

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15. 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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