



# PMEG2005EPK

20 V, 0.5 A low VF Schottky barrier rectifier

30 September 2025

Product data sheet

## 1. General description

Planar Schottky barrier rectifier with an integrated guard ring for stress protection, encapsulated in a leadless ultra small SOD1608 (DFN1608D-2) Surface-Mounted Device (SMD) plastic package with visible and solderable side pads.

## 2. Features and benefits

- Average forward current:  $I_{F(AV)} \leq 0.5 \text{ A}$
- Reverse voltage:  $V_R \leq 20 \text{ V}$
- Low forward voltage  $V_F \leq 410 \text{ mV}$
- Low reverse current
- Solderable side pads
- Package height typ. 0.37 mm
- Ultra small and leadless SMD plastic package

## 3. Applications

- Low voltage rectification
- High efficiency DC-to-DC conversion
- Switch mode power supply
- LED backlight for mobile application
- Low power consumption applications
- Ultra high-speed switching
- Reverse polarity protection

## 4. Quick reference data

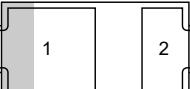
Table 1. Quick reference data

Symbol	Parameter	Conditions		Min	Typ	Max	Unit
$I_{F(AV)}$	average forward current	$\delta = 0.5; f = 20 \text{ kHz}; \text{square wave}; T_{\text{amb}} \leq 130 \text{ }^{\circ}\text{C}$	[1]	-	-	0.5	A
		$\delta = 0.5; f = 20 \text{ kHz}; \text{square wave}; T_{\text{sp}} \leq 140 \text{ }^{\circ}\text{C}$		-	-	0.5	A
$V_R$	reverse voltage	$T_j = 25 \text{ }^{\circ}\text{C}$		-	-	20	V
$V_F$	forward voltage	$I_F = 500 \text{ mA}; \text{pulsed}; t_p \leq 300 \text{ } \mu\text{s}; \delta \leq 0.02; T_j = 25 \text{ }^{\circ}\text{C}$		-	360	410	mV
$I_R$	reverse current	$V_R = 10 \text{ V}; T_j = 25 \text{ }^{\circ}\text{C}$		-	30	130	$\mu\text{A}$
$t_{rr}$	reverse recovery time	$I_F = 0.5 \text{ A}; I_R = 0.5 \text{ A}; I_{R(\text{meas})} = 0.1 \text{ A}; T_j = 25 \text{ }^{\circ}\text{C}$		-	3	-	ns

[1] Device mounted on a ceramic Printed-Circuit Board (PCB),  $\text{Al}_2\text{O}_3$ , standard footprint.

## 5. Pinning information

**Table 2. Pinning information**

Pin	Symbol	Description	Simplified outline	Graphic symbol
1	K	cathode[1]		
2	A	anode	 Transparent top view <b>DFN1608D-2 (SOD1608)</b>	

[1] The marking bar indicates the cathode.

## 6. Ordering information

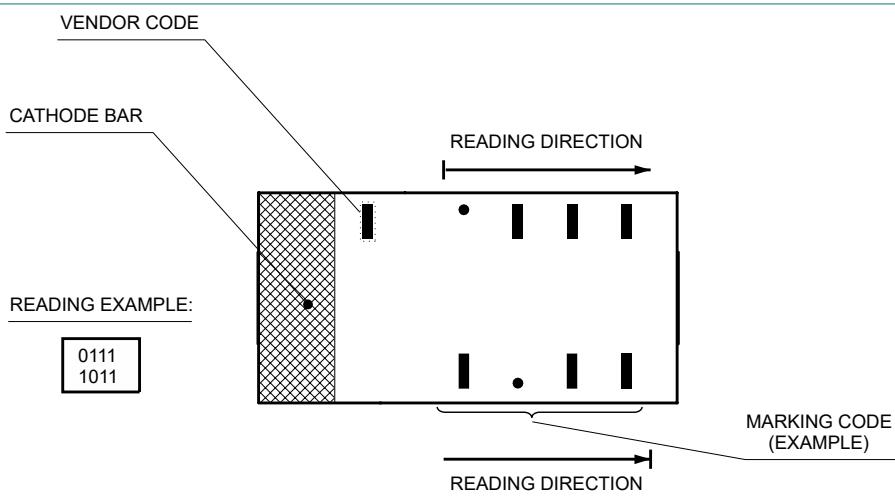
**Table 3. Ordering information**

Type number	Package		
	Name	Description	Version
<a href="#">PMEG2005EPK</a>	DFN1608D-2	plastic, leadless ultra small plastic package with side-wettable flanks (SWF); 2 terminals; 0.94 mm pitch; 1.6 mm x 0.8 mm x 0.37 mm body	<a href="#">SOD1608</a>

## 7. Marking

**Table 4. Marking codes**

Type number	Marking code
PMEG2005EPK	1000 0000



**Fig. 1. SOD1608 binary marking code description**

## 8. Limiting values

**Table 5. Limiting values**

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

Symbol	Parameter	Conditions		Min	Max	Unit
$V_R$	reverse voltage	$T_j = 25^\circ\text{C}$		-	20	V
$I_F$	forward current	$T_{sp} \leq 135^\circ\text{C}$		-	0.7	A
$I_{F(AV)}$	average forward current	$\delta = 0.5; f = 20 \text{ kHz}; \text{square wave}; T_{amb} \leq 130^\circ\text{C}$	[1]	-	0.5	A
		$\delta = 0.5; f = 20 \text{ kHz}; \text{square wave}; T_{sp} \leq 140^\circ\text{C}$		-	0.5	A
$I_{FRM}$	repetitive peak forward current	$t_p \leq 1 \text{ ms}; \delta \leq 0.5$		-	2	A
$I_{FSM}$	non-repetitive peak forward current	$t_p = 8 \text{ ms}; \text{square wave}; T_{j(init)} = 25^\circ\text{C}$		-	3	A
$P_{tot}$	total power dissipation	$T_{amb} \leq 25^\circ\text{C}$	[2]	-	390	mW
			[3]	-	830	mW
			[1]	-	1470	mW
$T_j$	junction temperature			-	150	°C
$T_{amb}$	ambient temperature			-55	150	°C
$T_{stg}$	storage temperature			-65	150	°C

[1] Device mounted on a ceramic Printed-Circuit Board (PCB),  $\text{Al}_2\text{O}_3$ , standard footprint.

[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  $1 \text{ cm}^2$ .

## 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]	-	-	320	K/W
			[1] [3]	-	-	150	K/W
			[1] [4]	-	-	85	K/W
$R_{th(j-sp)}$	thermal resistance from junction to solder point		[5]	-	-	20	K/W

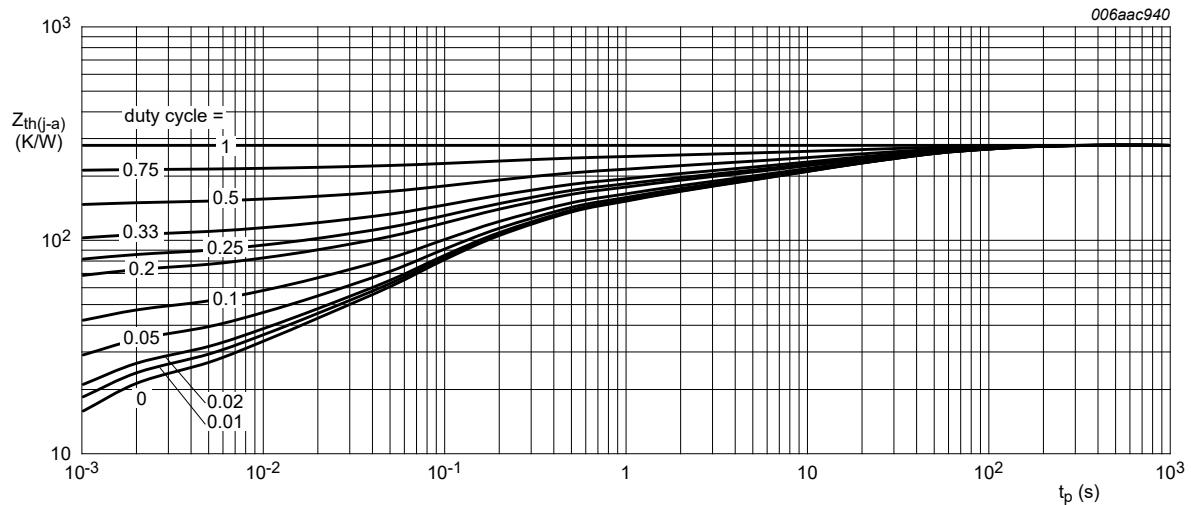
[1] For Schottky barrier diodes thermal runaway has to be considered, as in some applications the reverse power losses  $P_R$  are a significant part of the total power losses.

[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  $1 \text{ cm}^2$ .

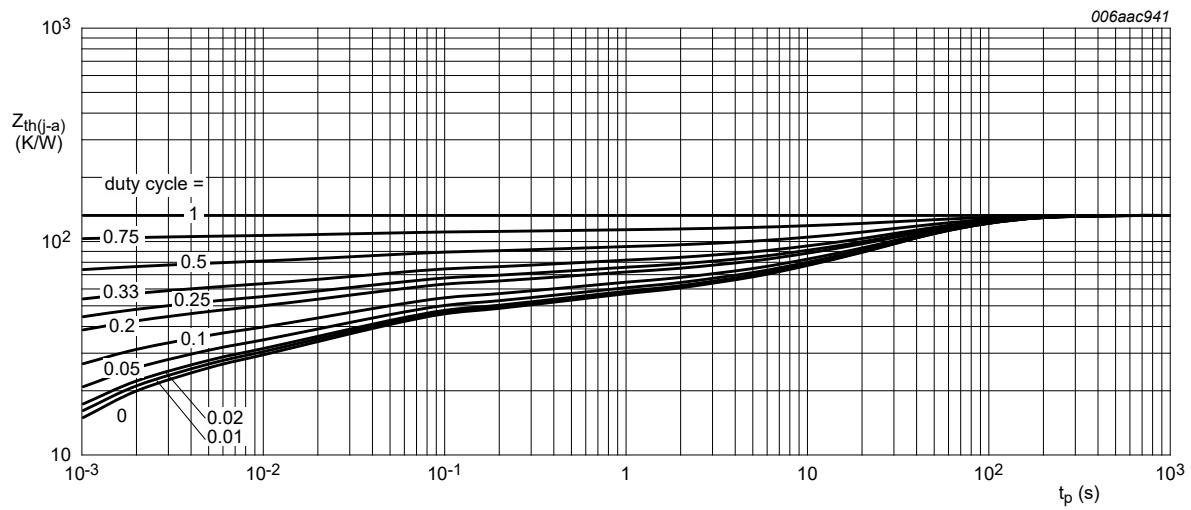
[4] Device mounted on a ceramic PCB,  $\text{Al}_2\text{O}_3$ , standard footprint.

[5] Soldering point of cathode tab.



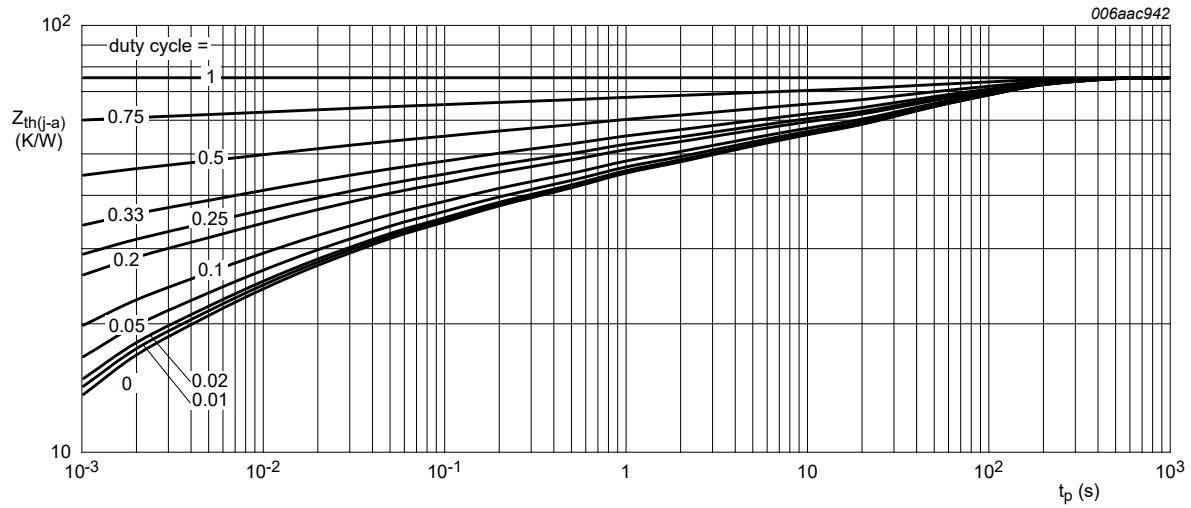
FR4 PCB, standard footprint

**Fig. 2. Transient thermal impedance from junction to ambient as a function of pulse duration; typical values**



FR4 PCB, mounting pad for cathode 1 cm<sup>2</sup>

**Fig. 3. Transient thermal impedance from junction to ambient as a function of pulse duration; typical values**



Ceramic PCB, Al<sub>2</sub>O<sub>3</sub>, standard footprint

**Fig. 4. Transient thermal impedance from junction to ambient as a function of pulse duration; typical values**

## 10. Characteristics

Table 7. Characteristics

Symbol	Parameter	Conditions		Min	Typ	Max	Unit
$V_F$	forward voltage	$I_F = 100 \text{ mA}$ ; pulsed; $t_p \leq 300 \mu\text{s}$ ; $\delta \leq 0.02$ ; $T_j = 25^\circ\text{C}$		-	270	300	mV
		$I_F = 500 \text{ mA}$ ; pulsed; $t_p \leq 300 \mu\text{s}$ ; $\delta \leq 0.02$ ; $T_j = 25^\circ\text{C}$		-	360	410	mV
$I_R$	reverse current	$V_R = 10 \text{ V}$ ; $T_j = 25^\circ\text{C}$		-	30	130	$\mu\text{A}$
		$V_R = 20 \text{ V}$ ; $T_j = 25^\circ\text{C}$		-	70	300	$\mu\text{A}$
$C_d$	diode capacitance	$V_R = 1 \text{ V}$ ; $f = 1 \text{ MHz}$ ; $T_j = 25^\circ\text{C}$		-	35	-	pF
		$V_R = 10 \text{ V}$ ; $f = 1 \text{ MHz}$ ; $T_j = 25^\circ\text{C}$		-	13	-	pF
$t_{rr}$	reverse recovery time	$I_F = 0.5 \text{ A}$ ; $I_R = 0.5 \text{ A}$ ; $I_{R(\text{meas})} = 0.1 \text{ A}$ ; $T_j = 25^\circ\text{C}$		-	3	-	ns
$V_{FRM}$	peak forward recovery voltage	$I_F = 0.5 \text{ A}$ ; $dI_F/dt = 20 \text{ mA}/\mu\text{s}$ ; $T_j = 25^\circ\text{C}$		-	380	-	mV

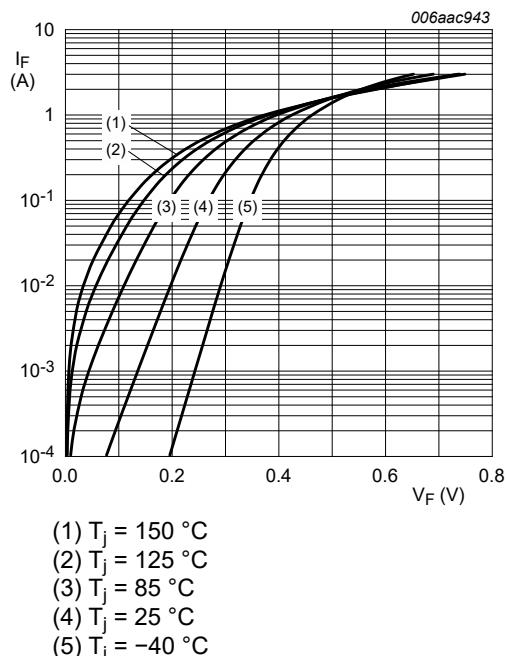


Fig. 5. Forward current as a function of forward voltage; typical values

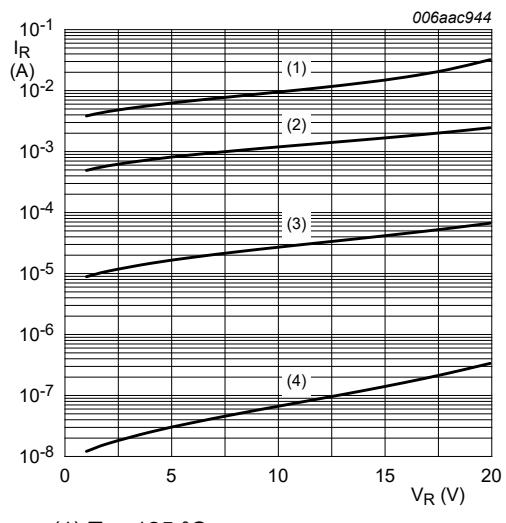
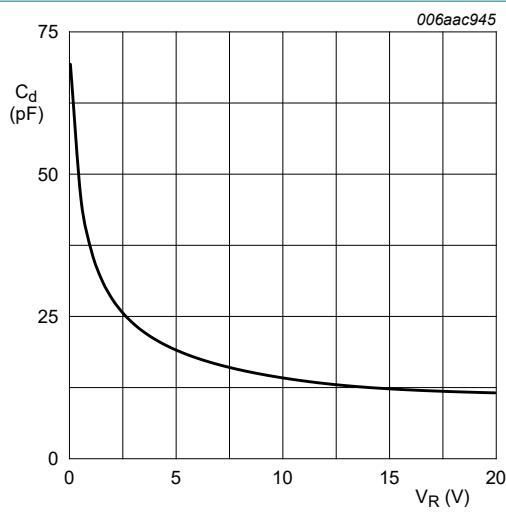
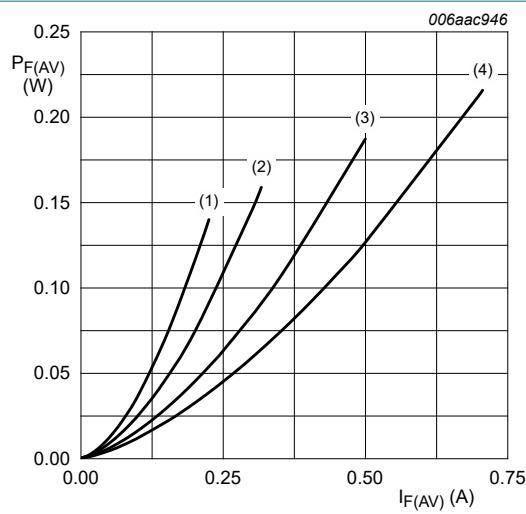


Fig. 6. Reverse current as a function of reverse voltage; typical values



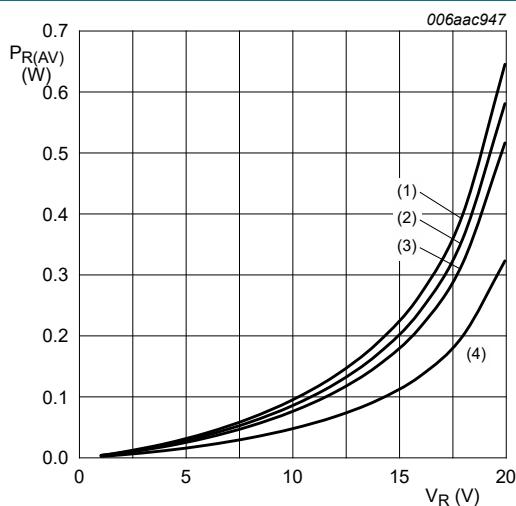
$f = 1$  MHz;  $T_{amb} = 25$  °C

**Fig. 7. Diode capacitance as a function of reverse voltage; typical values**



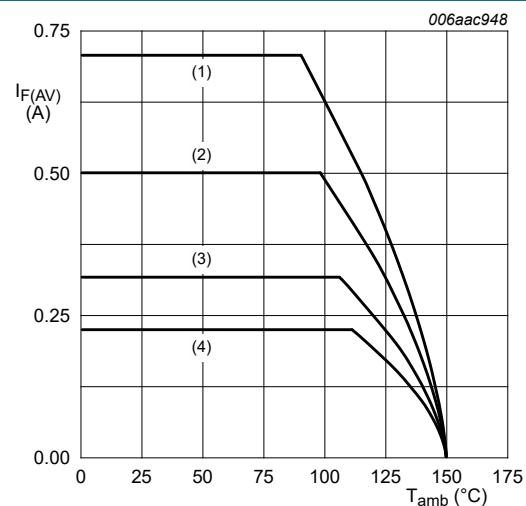
$T_j = 150$  °C  
 (1)  $\delta = 0.1$   
 (2)  $\delta = 0.2$   
 (3)  $\delta = 0.5$   
 (4)  $\delta = 1$

**Fig. 8. Average forward power dissipation as a function of average forward current; typical values**



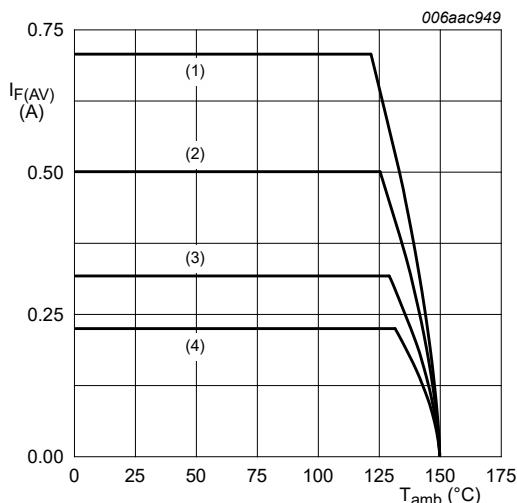
$T_j = 125$  °C  
 (1)  $\delta = 1$   
 (2)  $\delta = 0.9$   
 (3)  $\delta = 0.8$   
 (4)  $\delta = 0.5$

**Fig. 9. Average reverse power dissipation as a function of reverse voltage; typical values**



FR4 PCB, standard footprint  
 $T_j = 150$  °C  
 (1)  $\delta = 1$  (DC)  
 (2)  $\delta = 0.5$ ;  $f = 20$  kHz  
 (3)  $\delta = 0.2$ ;  $f = 20$  kHz  
 (4)  $\delta = 0.1$ ;  $f = 20$  kHz

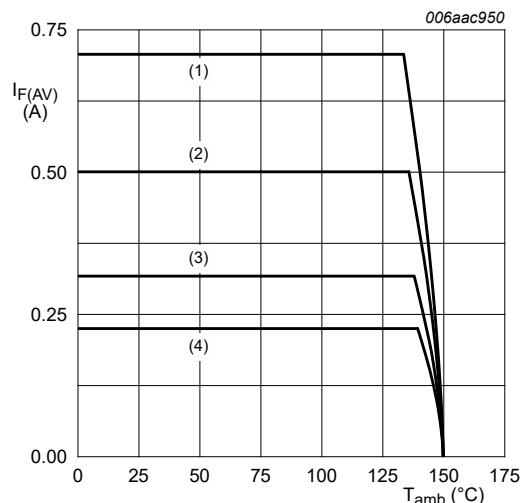
**Fig. 10. Average forward current as a function of ambient temperature; typical values**



FR4 PCB, mounting pad for cathode  $1 \text{ cm}^2$   
 $T_j = 150 \text{ }^\circ\text{C}$

- (1)  $\delta = 1$  (DC)
- (2)  $\delta = 0.5$ ;  $f = 20 \text{ kHz}$
- (3)  $\delta = 0.2$ ;  $f = 20 \text{ kHz}$
- (4)  $\delta = 0.1$ ;  $f = 20 \text{ kHz}$

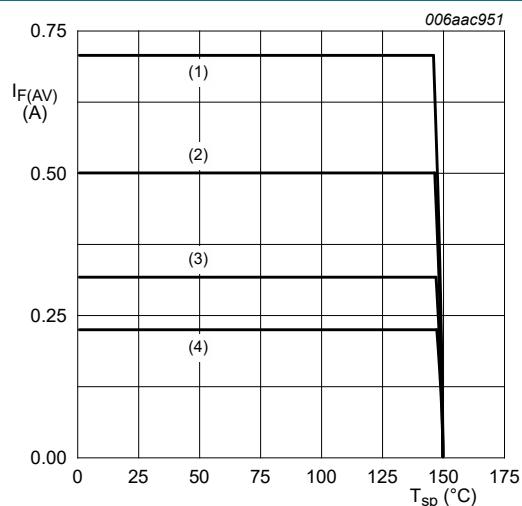
Fig. 11. Average forward current as a function of ambient temperature; typical values



Ceramic PCB,  $\text{Al}_2\text{O}_3$ , standard footprint  
 $T_j = 150 \text{ }^\circ\text{C}$

- (1)  $\delta = 1$  (DC)
- (2)  $\delta = 0.5$ ;  $f = 20 \text{ kHz}$
- (3)  $\delta = 0.2$ ;  $f = 20 \text{ kHz}$
- (4)  $\delta = 0.1$ ;  $f = 20 \text{ kHz}$

Fig. 12. Average forward current as a function of ambient temperature; typical values



$T_j = 150 \text{ }^\circ\text{C}$   
(1)  $\delta = 1$  (DC)  
(2)  $\delta = 0.5$ ;  $f = 20 \text{ kHz}$   
(3)  $\delta = 0.2$ ;  $f = 20 \text{ kHz}$   
(4)  $\delta = 0.1$ ;  $f = 20 \text{ kHz}$

Fig. 13. Average forward current as a function of solder point temperature; typical values

## 11. Test information

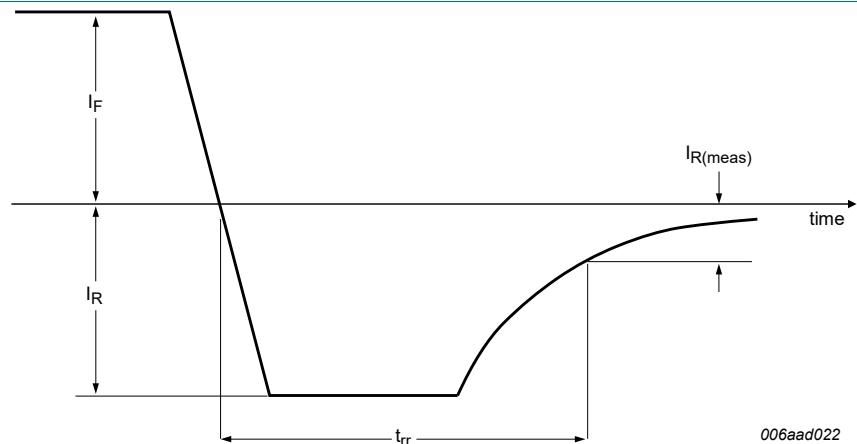


Fig. 14. Reverse recovery definition

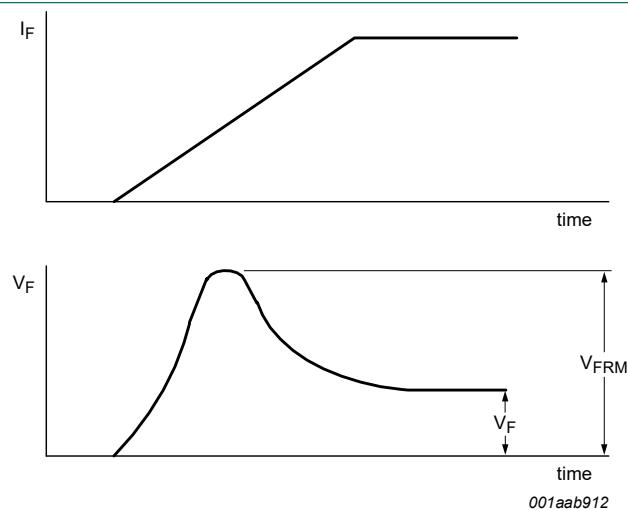


Fig. 15. Forward recovery definition

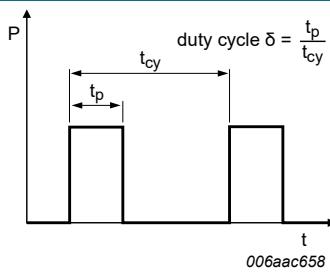


Fig. 16. Duty cycle definition

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

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

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

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

## 12. Package outline

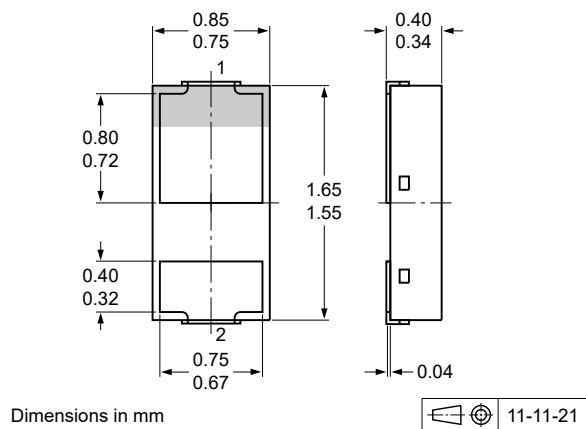


Fig. 17. Package outline DFN1608D-2 (SOD1608)

## 13. Soldering

Footprint information for reflow soldering of DFN1608D-2 package

SOD1608

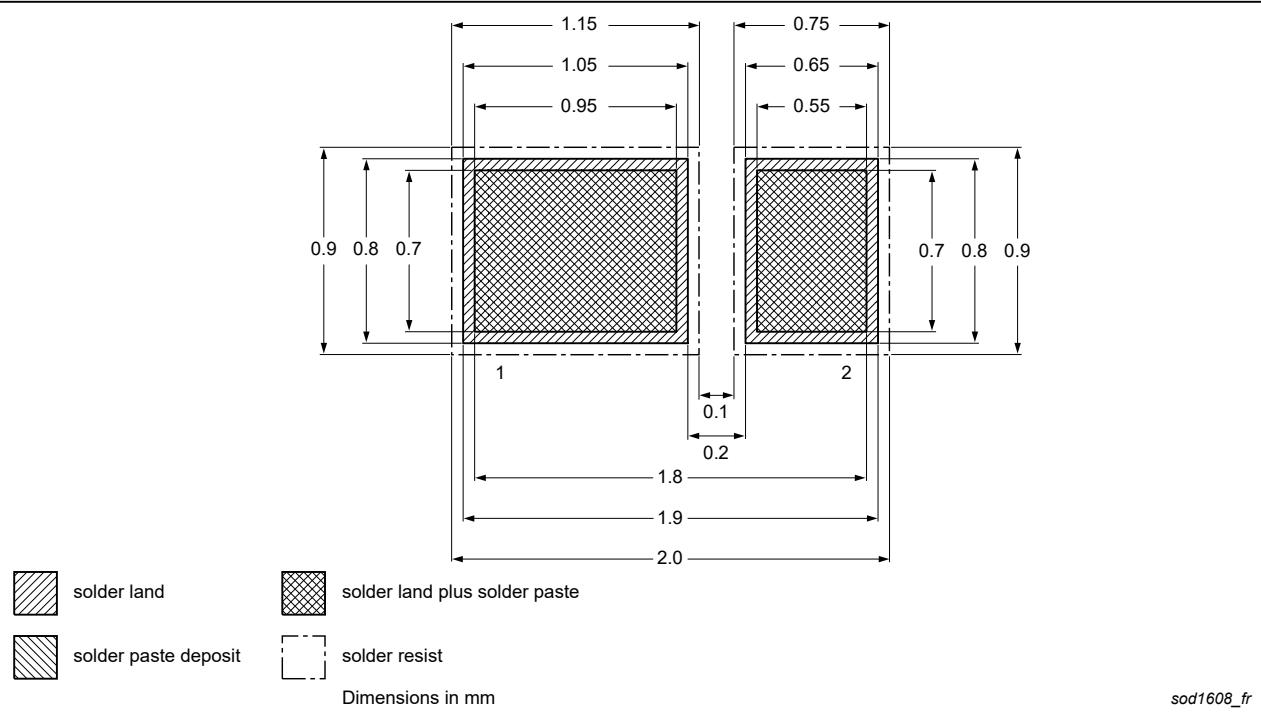


Fig. 18. Reflow soldering footprint for DFN1608D-2 (SOD1608)

## 14. Revision history

**Table 8. Revision history**

Data sheet ID	Release date	Data sheet status	Change notice	Supersedes
PMEG2005EPK v.4	20250930	Product data sheet	-	PMEG2005EPK v.3
Modifications:	<ul style="list-style-type: none"><li>Product(s) changed to non-automotive qualification. Please refer to <a href="http://nexperia.com">nexperia.com</a> for automotive (-Q) product alternative(s).</li></ul>			
PMEG2005EPK v.3	20230920	Product data sheet	-	PMEG2005EPK v.2
PMEG2005EPK v.2	20120314	Product data sheet	-	PMEG2005EPK v.1
PMEG2005EPK v.1	20120112	Product data sheet	-	-

## 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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