



PMEG4010ET-Q

1 A very low VF MEGA Schottky barrier rectifier

25 October 2021

Product data sheet

1. General description

Planar Maximum Efficiency General Application (MEGA) Schottky barrier rectifiers with an integrated guard ring for stress protection, encapsulated in a SOT23 (TO-236AB) small Surface-Mounted Device (SMD) plastic package.

2. Features and benefits

- Forward current: $I_F \leq 1$ A
- Reverse voltage: $V_R \leq 40$ V
- Very low forward voltage
- Small SMD plastic packages
- Qualified according to AEC-Q101 and recommended for use in automotive applications

3. Applications

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

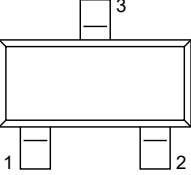
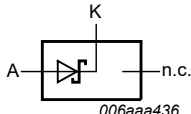
4. Quick reference data

Table 1. Quick reference data

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
I_F	forward current	$T_{sp} \leq 55$ °C	-	-	1	A
V_R	reverse voltage		-	-	40	V
V_F	forward voltage	$I_F = 1$ A; $t_p \leq 300$ μ s; $\delta \leq 0.02$; $T_{amb} = 25$ °C	-	540	640	mV
I_R	reverse current	$V_R = 40$ V; $T_{amb} = 25$ °C	-	30	100	μ A

5. Pinning information

Table 2. Pinning information

Pin	Symbol	Description	Simplified outline	Graphic symbol
1	A	anode	 <p style="text-align: center;">SOT23</p>	
2	n.c.	not connected		
3	K	cathode		

6. Ordering information

Table 3. Ordering information

Type number	Package		
	Name	Description	Version
PMEG4010ET-Q	SOT23	plastic, surface-mounted package; 3 terminals; 1.9 mm pitch; 2.9 mm x 1.3 mm x 1 mm body	SOT23

7. Marking

Table 4. Marking codes

Type number	Marking code ^[1]
PMEG4010ET-Q	%AW

[1] % = placeholder for manufacturing site code

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			-	40	V
I_F	forward current	$T_{sp} \leq 55\text{ °C}$		-	1	A
I_{FRM}	repetitive peak forward current	$t_p \leq 1\text{ ms}$; $\delta \leq 0.25$		-	5	A
I_{FSM}	non-repetitive peak forward current	$t_p = 8\text{ ms}$; square wave		-	9	A
P_{tot}	total power dissipation	$T_{amb} \leq 25\text{ °C}$	[1]	-	280	mW
			[2]	-	420	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 Printed-Circuit Board (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 cm².

9. Thermal characteristics

Table 6. Thermal characteristics

Symbol	Parameter	Conditions		Min	Typ	Max	Unit
$R_{th(j-a)}$	thermal resistance from junction to ambient		[1]	-	-	440	K/W
			[2]	-	-	300	K/W
$R_{th(j-sp)}$	thermal resistance from junction to solder point			-	-	120	K/W

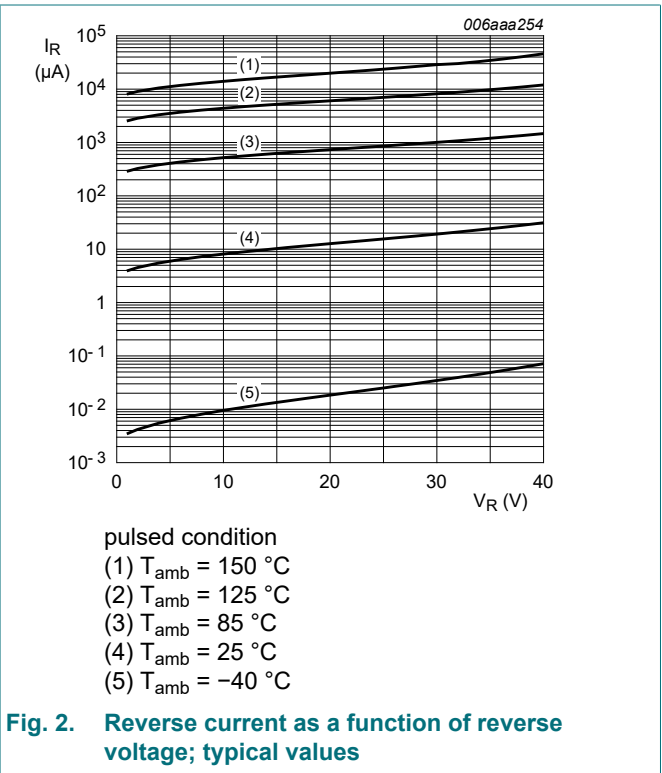
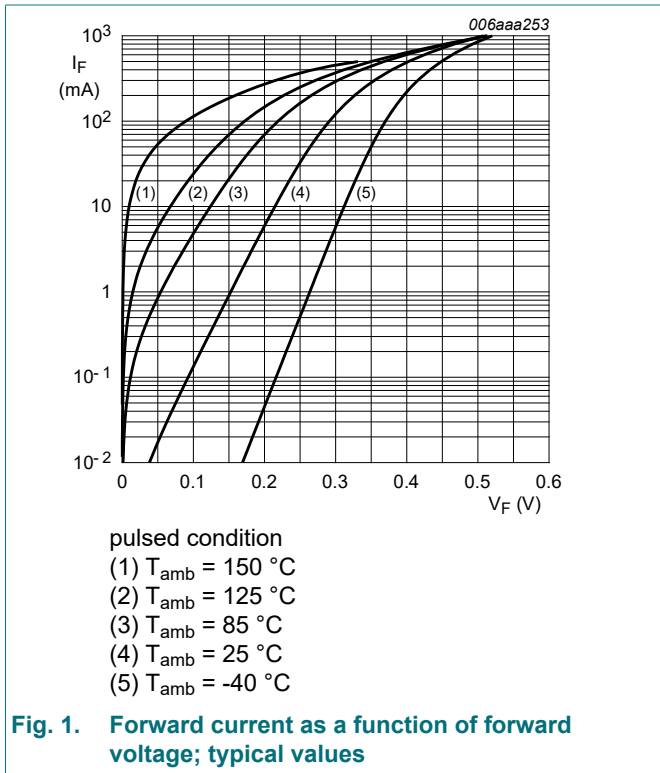
[1] Device mounted on an FR4 PCB, single-sided copper, tin-plated and standard footprint.

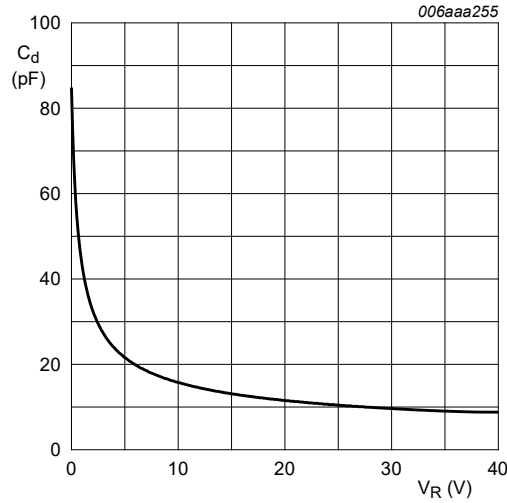
[2] Device mounted on an FR4 PCB, single-sided copper, tin-plated, mounting pad for cathode 1 cm².

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 _F = 1 A; t _p ≤ 300 μs; δ ≤ 0.02; T _{amb} = 25 °C	-	540	640	mV
I _R	reverse current	V _R = 10 V; T _{amb} = 25 °C	-	7	20	μA
		V _R = 40 V; T _{amb} = 25 °C	-	30	100	μA
C _d	diode capacitance	V _R = 1 V; f = 1 MHz; T _{amb} = 25 °C	-	43	50	pF





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

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

11. Test information

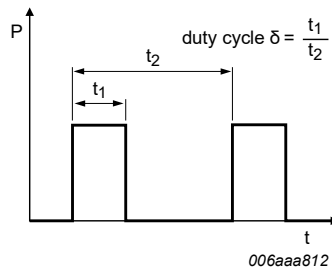


Fig. 4. Duty cycle definition

Quality information

This product has been qualified in accordance with the Automotive Electronics Council (AEC) standard Q101 - Stress test qualification for discrete semiconductors, and is suitable for use in automotive applications.

12. Package outline

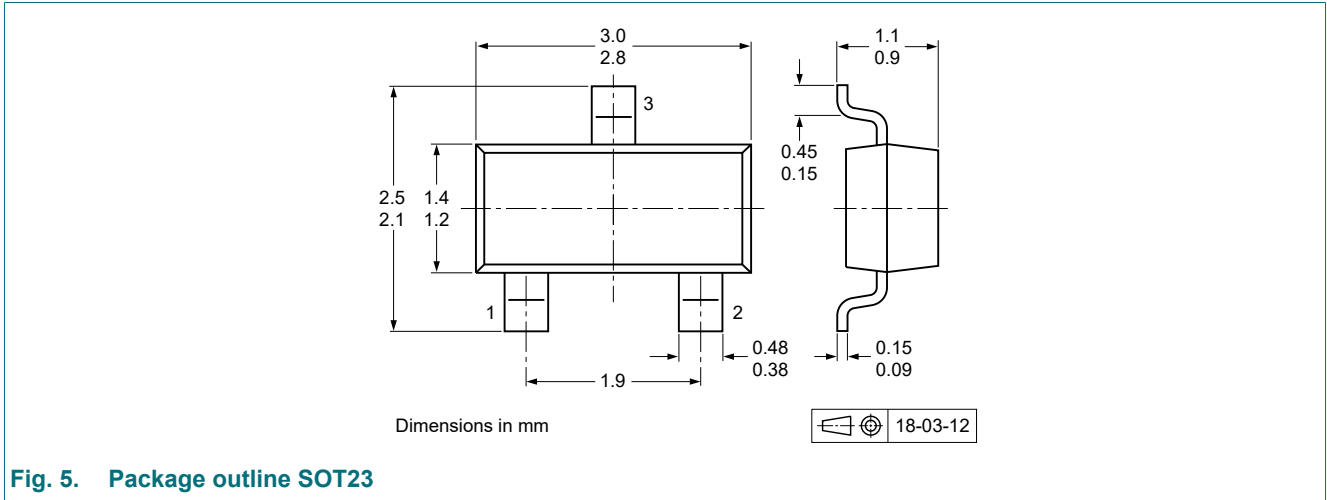


Fig. 5. Package outline SOT23

13. Soldering

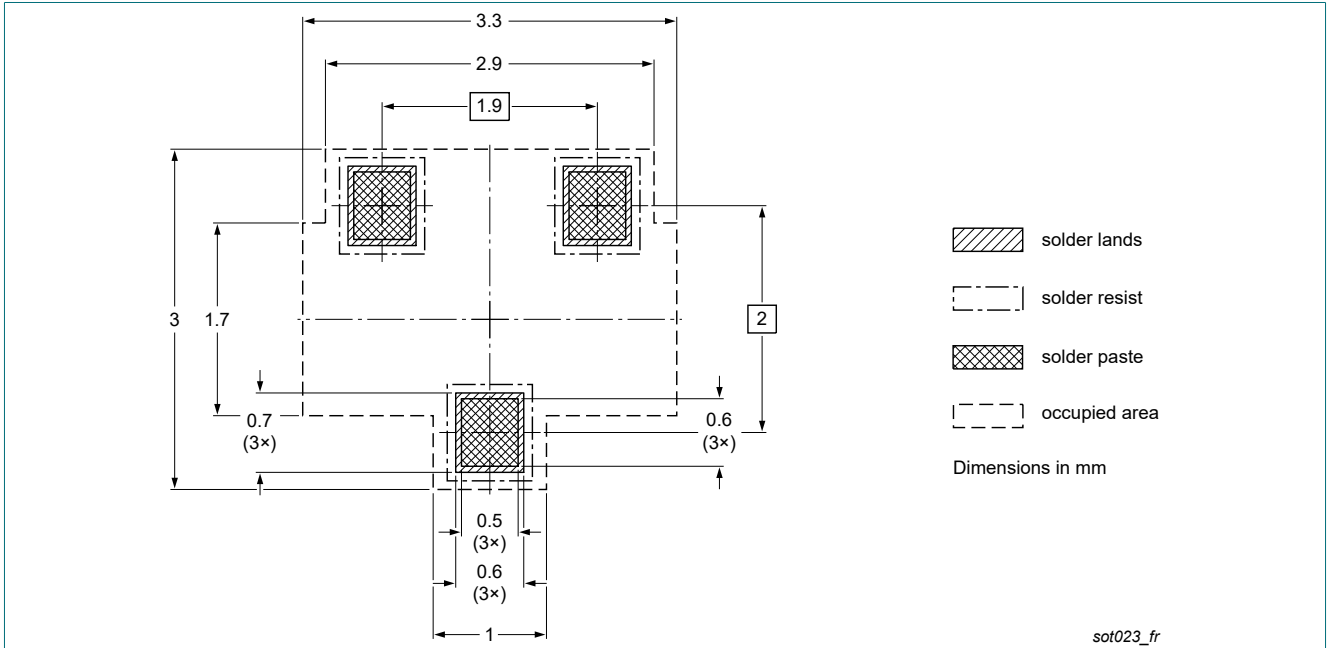


Fig. 6. Reflow soldering footprint for SOT23

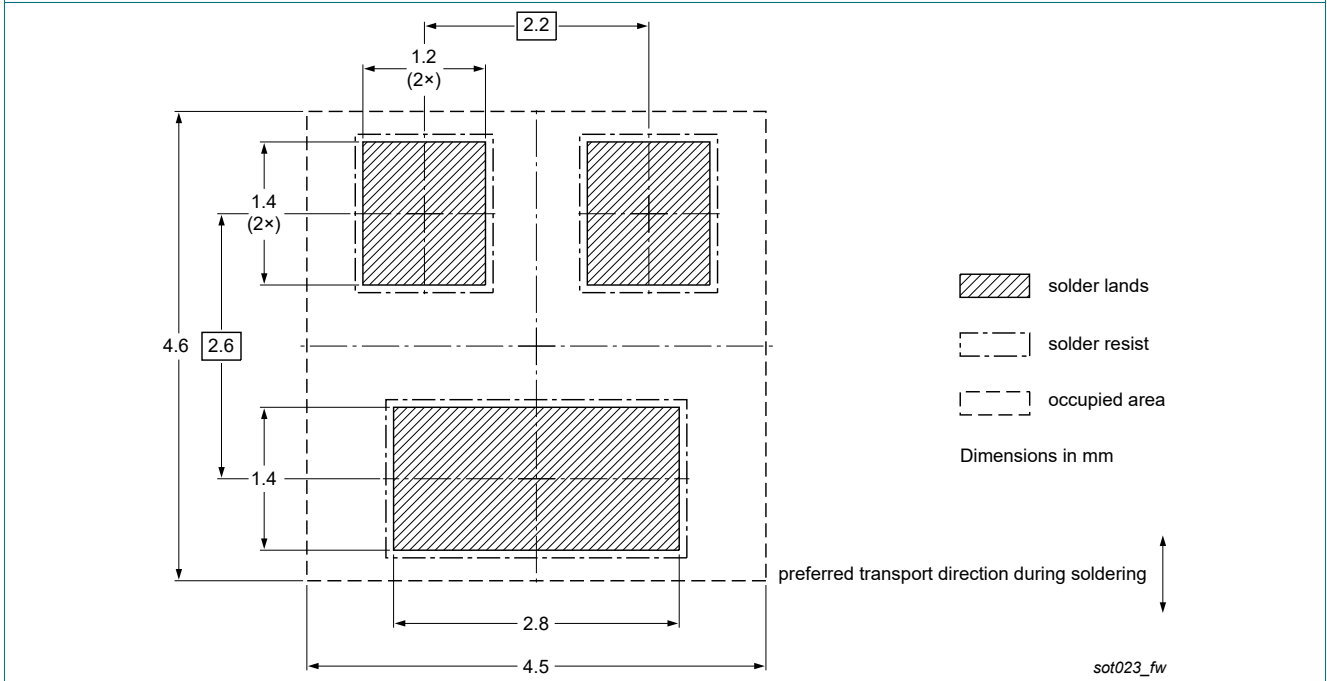


Fig. 7. Wave soldering footprint for SOT23

14. Revision history

Table 8. Revision history

Data sheet ID	Release date	Data sheet status	Change notice	Supersedes
PMEG4010ET-Q v.1	20211025	Product data sheet	-	-

1 A very low VF MEGA Schottky barrier rectifier

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.

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Contents

1. General description.....	1
2. Features and benefits.....	1
3. Applications.....	1
4. Quick reference data.....	1
5. Pinning information.....	2
6. Ordering information.....	2
7. Marking.....	2
8. Limiting values.....	3
9. Thermal characteristics.....	3
10. Characteristics.....	4
11. Test information.....	5
12. Package outline.....	6
13. Soldering.....	7
14. Revision history.....	8
15. Legal information.....	9

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