

1. Product profile

1.1 General description

Planar Maximum Efficiency General Application (MEGA) Schottky barrier rectifiers with an integrated guard ring for stress protection, encapsulated in ultra small Surface-Mounted Device (SMD) plastic packages.

Table 1. Product overview

Type number	Package		Configuration
	NXP	JEITA	
PMEG3005EB	SOD523	SC-79	single
PMEG3005EL	SOD882	-	single

1.2 Features

- Forward current: $I_F \leq 0.5$ A
- Reverse voltage: $V_R \leq 30$ V
- Very low forward voltage
- Ultra small SMD plastic packages

1.3 Applications

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

1.4 Quick reference data

Table 2. Quick reference data

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
I_F	forward current	$T_{sp} \leq 55$ °C	-	-	0.5	A
V_R	reverse voltage		-	-	30	V
V_F	forward voltage	$I_F = 500$ mA	[1] -	430	500	mV

[1] Pulse test: $t_p \leq 300$ μ s; $\delta \leq 0.02$.

2. Pinning information

Table 3. Pinning

Pin	Description	Simplified outline	Symbol
SOD523			
1	cathode		 <i>sym001</i>
2	anode		
SOD882			
1	cathode	 Transparent top view	 <i>sym001</i>
2	anode		

[1] The marking bar indicates the cathode.

3. Ordering information

Table 4. Ordering information

Type number	Package		
	Name	Description	Version
PMEG3005EB	SC-79	plastic surface-mounted package; 2 leads	SOD523
PMEG3005EL	-	leadless ultra small plastic package; 2 terminals; body 1.0 × 0.6 × 0.5 mm	SOD882

4. Marking

Table 5. Marking codes

Type number	Marking code
PMEG3005EB	KB
PMEG3005EL	AM

5. Limiting values

Table 6. Limiting values

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

Symbol	Parameter	Conditions	Min	Max	Unit
V_R	reverse voltage		-	30	V
I_F	forward current	$T_{sp} \leq 55\text{ °C}$	-	0.5	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	square wave; $t_p = 8\text{ ms}$	-	3	A
P_{tot}	total power dissipation	$T_{amb} \leq 25\text{ °C}$	[1]		
	PMEG3005EB		-	310	mW
	PMEG3005EL		-	250	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.

6. Thermal characteristics

Table 7. Thermal characteristics

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
$R_{th(j-a)}$	thermal resistance from junction to ambient	in free air	[1][2]			
	PMEG3005EB		-	-	400	K/W
	PMEG3005EL		-	-	500	K/W
$R_{th(j-sp)}$	thermal resistance from junction to solder point		[3]			
	PMEG3005EB		-	-	75	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.

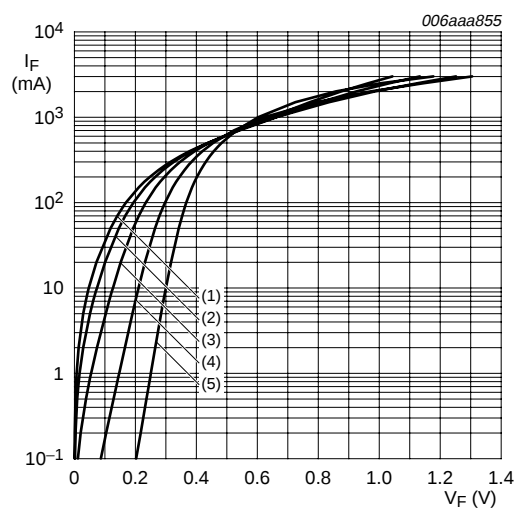
[3] Soldering point of cathode tab.

7. Characteristics

Table 8. Characteristics
T_{amb} = 25 °C unless otherwise specified.

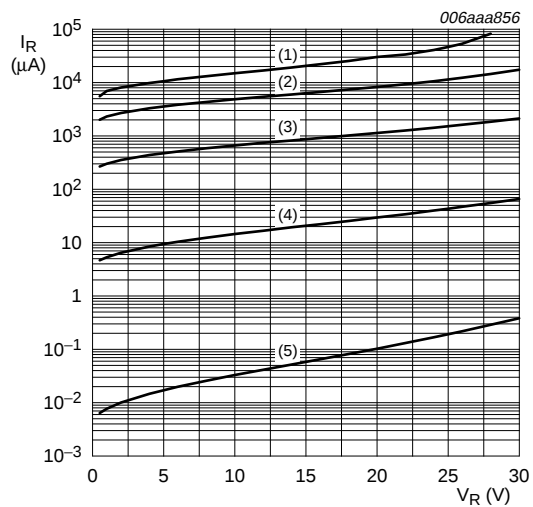
Symbol	Parameter	Conditions	Min	Typ	Max	Unit
V _F	forward voltage		[1]			
		I _F = 0.1 mA	-	90	180	mV
		I _F = 1 mA	-	150	200	mV
		I _F = 10 mA	-	210	270	mV
		I _F = 100 mA	-	295	360	mV
		I _F = 500 mA	-	430	500	mV
I _R	reverse current	V _R = 10 V	-	15	200	μA
		V _R = 30 V	-	70	500	μA
C _d	diode capacitance	V _R = 1 V; f = 1 MHz	-	24	30	pF

[1] Pulse test: t_p ≤ 300 μs; δ ≤ 0.02.



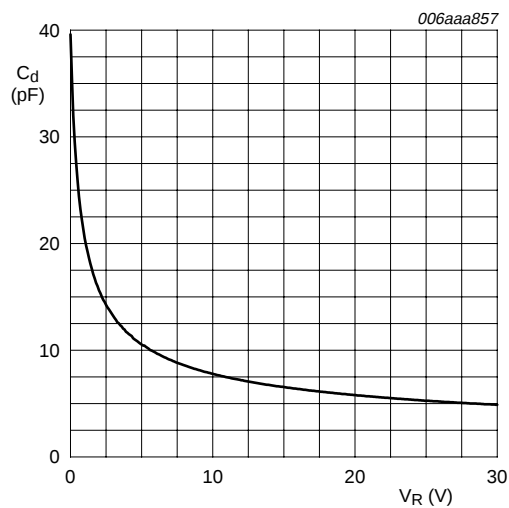
- (1) $T_{amb} = 150\text{ }^{\circ}\text{C}$
- (2) $T_{amb} = 125\text{ }^{\circ}\text{C}$
- (3) $T_{amb} = 85\text{ }^{\circ}\text{C}$
- (4) $T_{amb} = 25\text{ }^{\circ}\text{C}$
- (5) $T_{amb} = -40\text{ }^{\circ}\text{C}$

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



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

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



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

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