

## 1. Product profile

### 1.1 Description

N-channel enhancement mode field-effect transistor in a plastic package using TrenchMOS™ technology.

Product availability:

PMV60EN in SOT23.

### 1.2 Features

- Surface mount package
- Fast switching.

### 1.3 Applications

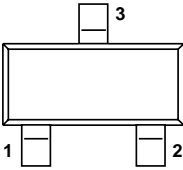
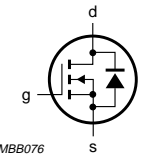
- Battery management
- High speed switch.

### 1.4 Quick reference data

- $V_{DS} \leq 30\text{ V}$
- $I_D \leq 4.7\text{ A}$
- $P_{tot} \leq 2\text{ W}$
- $R_{DS(on)} \leq 55\text{ m}\Omega$

## 2. Pinning information

Table 1: Pinning - SOT23 simplified outline and symbol

Pin	Description	Simplified outline	Symbol
1	gate (g)	 <p>Top view MSB003</p> <p><b>SOT23</b></p>	 <p>MBB076</p>
2	source (s)		
3	drain (d)		

## 3. Limiting values

**Table 2: Limiting values**

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

Symbol	Parameter	Conditions	Min	Max	Unit
V <sub>DS</sub>	drain-source voltage (DC)	25 °C ≤ T <sub>j</sub> ≤ 150 °C	-	30	V
V <sub>DGR</sub>	drain-gate voltage (DC)	25 °C ≤ T <sub>j</sub> ≤ 150 °C; R <sub>GS</sub> = 20 kΩ	-	30	V
V <sub>GS</sub>	gate-source voltage (DC)		-	±20	V
I <sub>D</sub>	drain current (DC)	T <sub>sp</sub> = 25 °C; V <sub>GS</sub> = 10 V; <b>Figure 2 and 3</b>	-	4.7	A
		T <sub>sp</sub> = 100 °C; V <sub>GS</sub> = 10 V; <b>Figure 2</b>	-	2.9	A
I <sub>DM</sub>	peak drain current	T <sub>sp</sub> = 25 °C; pulsed; t <sub>p</sub> ≤ 10 μs; <b>Figure 3</b>	-	18.8	A
P <sub>tot</sub>	total power dissipation	T <sub>sp</sub> = 25 °C; <b>Figure 1</b>	-	2	W
T <sub>stg</sub>	storage temperature		-55	+150	°C
T <sub>j</sub>	junction temperature		-55	+150	°C
<b>Source-drain diode</b>					
I <sub>S</sub>	source (diode forward) current (DC)	T <sub>sp</sub> = 25 °C	-	1.7	A
I <sub>SM</sub>	peak source (diode forward) current	T <sub>sp</sub> = 25 °C; pulsed; t <sub>p</sub> ≤ 10 μs	-	6.9	A

## 4. Characteristics

**Table 3: Characteristics**

$T_j = 25\text{ }^\circ\text{C}$  unless otherwise specified.

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
<b>Static characteristics</b>						
$V_{(BR)DSS}$	drain-source breakdown voltage	$I_D = 250\ \mu\text{A}; V_{GS} = 0\ \text{V}$				
		$T_j = 25\text{ }^\circ\text{C}$	30	-	-	V
		$T_j = -55\text{ }^\circ\text{C}$	27	-	-	V
$V_{GS(th)}$	gate-source threshold voltage	$I_D = 1\ \text{mA}; V_{DS} = V_{GS};$ <b>Figure 9</b>				
		$T_j = 25\text{ }^\circ\text{C}$	1	-	2	V
		$T_j = 150\text{ }^\circ\text{C}$	0.6	-	-	V
$I_{DSS}$	drain-source leakage current	$V_{DS} = 30\ \text{V}; V_{GS} = 0\ \text{V}$				
		$T_j = 25\text{ }^\circ\text{C}$	-	-	1	μA
		$T_j = 150\text{ }^\circ\text{C}$	-	-	100	μA
$I_{GSS}$	gate-source leakage current	$V_{GS} = \pm 20\ \text{V}; V_{DS} = 0\ \text{V}$	-	10	100	nA
$R_{DS(on)}$	drain-source on-state resistance	$V_{GS} = 10\ \text{V}; I_D = 2\ \text{A};$ <b>Figure 7 and 8</b>				
		$T_j = 25\text{ }^\circ\text{C}$	-	47	55	mΩ
		$T_j = 150\text{ }^\circ\text{C}$	-	79.9	93.5	mΩ
		$V_{GS} = 4.5\ \text{V}; I_D = 1.5\ \text{A};$ <b>Figure 7</b>	-	60	72	mΩ
<b>Dynamic characteristics</b>						
$Q_{g(tot)}$	total gate charge	$I_D = 3\ \text{A}; V_{DD} = 15\ \text{V}; V_{GS} = 10\ \text{V};$ <b>Figure 13</b>	-	9.4	-	nC
$Q_{gs}$	gate-source charge		-	1.2	-	nC
$Q_{gd}$	gate-drain (Miller) charge		-	1.9	-	nC
$C_{iss}$	input capacitance	$V_{GS} = 0\ \text{V}; V_{DS} = 30\ \text{V}; f = 1\ \text{MHz};$ <b>Figure 11</b>	-	350	-	pF
$C_{oss}$	output capacitance		-	70	-	pF
$C_{rss}$	reverse transfer capacitance		-	50	-	pF
$t_{d(on)}$	turn-on delay time	$V_{DD} = 15\ \text{V}; R_L = 15\ \Omega; V_{GS} = 10\ \text{V}; R_G = 6\ \Omega$	-	5	-	ns
$t_r$	rise time		-	7	-	ns
$t_{d(off)}$	turn-off delay time		-	16	-	ns
$t_f$	fall time		-	5.5	-	ns
<b>Source-drain diode</b>						
$V_{SD}$	source-drain (diode forward) voltage	$I_S = 1.5\ \text{A}; V_{GS} = 0\ \text{V};$ <b>Figure 12</b>	-	0.79	1.2	V