

## 1. Product profile

### 1.1 General description

N-channel enhancement mode Field-Effect Transistor (FET) in a small SOT23 (TO-236AB) Surface-Mounted Device (SMD) plastic package using Trench MOSFET technology.

### 1.2 Features and benefits

- Low threshold voltage
- Very fast switching
- Trench MOSFET technology

### 1.3 Applications

- Relay driver
- High-speed line driver
- Low-side loadswitch
- Switching circuits

### 1.4 Quick reference data

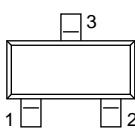
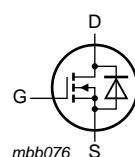
**Table 1. Quick reference data**

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
$V_{DS}$	drain-source voltage	$T_j = 25^\circ\text{C}$	-	-	20	V
$V_{GS}$	gate-source voltage		-12	-	12	V
$I_D$	drain current	$V_{GS} = 4.5 \text{ V}; T_{amb} = 25^\circ\text{C}$	[1]	-	-	A
<b>Static characteristics</b>						
$R_{DSon}$	drain-source on-state resistance	$V_{GS} = 4.5 \text{ V}; I_D = 3.2 \text{ A}; T_j = 25^\circ\text{C}$	-	28	35	$\text{m}\Omega$

[1] Device mounted on an FR4 Printed-Circuit Board (PCB), single-sided copper, tin-plated, mounting pad for drain 6 cm<sup>2</sup>.

## 2. Pinning information

**Table 2. Pinning information**

Pin	Symbol	Description	Simplified outline	Graphic symbol
1	G	gate		
2	S	source		
3	D	drain	 <b>SOT23 (TO-236AB)</b>	 mbb076

# PMV30XN

## 20 V, 3.2 A N-channel Trench MOSFET



### 3. Ordering information

Table 3. Ordering information

Type number	Package	Description	Version
Name			
PMV30XN	TO-236AB	plastic surface-mounted package; 3 leads	SOT23

### 4. Marking

Table 4. Marking codes

Type number	Marking code <sup>[1]</sup>
PMV30XN	NZ%

[1] % = placeholder for manufacturing site code

### 5. Limiting values

Table 5. Limiting values

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

Symbol	Parameter	Conditions	Min	Max	Unit
$V_{DS}$	drain-source voltage	$T_j = 25 \text{ }^\circ\text{C}$	-	20	V
$V_{GS}$	gate-source voltage		-12	12	V
$I_D$	drain current	$V_{GS} = 4.5 \text{ V}; T_{amb} = 25 \text{ }^\circ\text{C}$	<sup>[1]</sup>	-	3.2 A
		$V_{GS} = 4.5 \text{ V}; T_{amb} = 100 \text{ }^\circ\text{C}$	<sup>[1]</sup>	-	2.1 A
$I_{DM}$	peak drain current	$T_{amb} = 25 \text{ }^\circ\text{C}$ ; single pulse; $t_p \leq 10 \mu\text{s}$	-	12.8	A
$P_{tot}$	total power dissipation	$T_{amb} = 25 \text{ }^\circ\text{C}$	<sup>[2]</sup>	-	mW
		$T_{sp} = 25 \text{ }^\circ\text{C}$	<sup>[1]</sup>	-	520 mW
			-	1800	mW
$T_j$	junction temperature		-55	150	$^\circ\text{C}$
$T_{amb}$	ambient temperature		-55	150	$^\circ\text{C}$
$T_{stg}$	storage temperature		-65	150	$^\circ\text{C}$
Source-drain diode					
$I_S$	source current	$T_{amb} = 25 \text{ }^\circ\text{C}$	<sup>[1]</sup>	-	0.6 A

[1] Device mounted on an FR4 Printed-Circuit Board (PCB), single-sided copper, tin-plated, mounting pad for drain 6 cm<sup>2</sup>.

[2] Device mounted on an FR4 Printed-Circuit Board (PCB), single-sided copper, tin-plated and standard footprint.

# PMV30XN

## 20 V, 3.2 A N-channel Trench MOSFET



## 6. Characteristics

**Table 6. Characteristics**

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
<b>Static characteristics</b>						
$V_{(BR)DSS}$	drain-source breakdown voltage	$I_D = 250 \mu A; V_{GS} = 0 V; T_j = 25^\circ C$	20	-	-	V
$V_{GSth}$	gate-source threshold voltage	$I_D = 250 \mu A; V_{DS} = V_{GS}; T_j = 25^\circ C$	0.5	1	1.5	V
$I_{DSS}$	drain leakage current	$V_{DS} = 20 V; V_{GS} = 0 V; T_j = 25^\circ C$	-	-	1	$\mu A$
		$V_{DS} = 20 V; V_{GS} = 0 V; T_j = 150^\circ C$	-	-	10	$\mu A$
$I_{GSS}$	gate leakage current	$V_{GS} = 12 V; V_{DS} = 0 V; T_j = 25^\circ C$	-	-	100	nA
		$V_{GS} = -12 V; V_{DS} = 0 V; T_j = 25^\circ C$	-	-	100	nA
$R_{DSon}$	drain-source on-state resistance	$V_{GS} = 4.5 V; I_D = 3.2 A; T_j = 25^\circ C$	-	28	35	$m\Omega$
		$V_{GS} = 4.5 V; I_D = 3.2 A; T_j = 150^\circ C$	-	44	51	$m\Omega$
		$V_{GS} = 2.5 V; I_D = 2.6 A; T_j = 25^\circ C$	-	39	60	$m\Omega$
$g_{fs}$	forward transconductance	$V_{DS} = 10 V; I_D = 3 A; T_j = 25^\circ C$	-	15	-	S
<b>Dynamic characteristics</b>						
$Q_{G(tot)}$	total gate charge	$V_{DS} = 15 V; I_D = 3 A; V_{GS} = 4.5 V;$ $T_j = 25^\circ C$	-	4.9	7.4	nC
$Q_{GS}$	gate-source charge		-	1.5	-	nC
$Q_{GD}$	gate-drain charge		-	2.9	-	nC
$C_{iss}$	input capacitance	$V_{DS} = 15 V; f = 1 MHz; V_{GS} = 0 V;$ $T_j = 25^\circ C$	-	420	-	pF
$C_{oss}$	output capacitance		-	125	-	pF
$C_{rss}$	reverse transfer capacitance		-	73	-	pF
$t_{d(on)}$	turn-on delay time	$V_{DS} = 15 V; V_{GS} = 4.5 V; R_{G(ext)} = 6 \Omega;$ $T_j = 25^\circ C; I_D = 3 A$	-	11	-	ns
$t_r$	rise time		-	28	-	ns
$t_{d(off)}$	turn-off delay time		-	93	-	ns
$t_f$	fall time		-	51	-	ns
<b>Source-drain diode</b>						
$V_{SD}$	source-drain voltage	$I_S = 0.6 A; V_{GS} = 0 V; T_j = 25^\circ C$	-	0.67	1.2	V