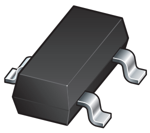


PMV45EN

N-channel TrenchMOS logic level FET

Rev. 2 — 7 November 2011 **Product data sheet**

1. Product profile

1.1 General description

Logic level N-channel enhancement mode Field-Effect Transistor (FET) in a plastic package using TrenchMOS technology. This product is designed and qualified for use in computing, communications, consumer and industrial applications.

1.2 Features and benefits

- Logic-level compatible
- Very fast switching
- Trench MOSFET technology

1.3 Applications

- Battery management
- High-speed switching

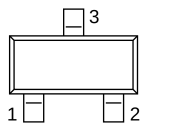
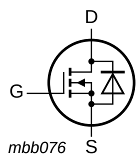
1.4 Quick reference data

Table 1. Quick reference data

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
V_{DS}	drain-source voltage	T_j ≥ 25 °C; T_j ≤ 150 °C	-	-	30	V
I_D	drain current	T_{sp} = 25 °C; V_{GS} = 10 V; see Figure 1; see Figure 3	-	-	5.4	A
V_{GS}	gate-source voltage		-20	-	20	V
Static characteristics						
R_{DSon}	drain-source on-state resistance	V_{GS} = 10 V; I_D = 2 A; T_j = 25 °C; see Figure 9; see Figure 10	-	35	42	mΩ

2. Pinning information

Table 2. Pinning information

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

3. Ordering information

Table 3. Ordering information

Type number	Package		
	Name	Description	Version
PMV45EN	TO-236AB	plastic surface-mounted package; 3 leads	SOT23

4. Marking

Table 4. Marking codes

Type number	Marking code[1]
PMV45EN	%4N

[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	$T_j \geq 25$ °C; $T_j \leq 150$ °C	-	30	V
V_{DGR}	drain-gate voltage	$T_j \geq 25$ °C; $T_j \leq 150$ °C; $R_{GS} = 20$ kΩ	-	30	V
V_{GS}	gate-source voltage		-20	20	V
I_D	drain current	$T_{sp} = 100$ °C; $V_{GS} = 10$ V; see Figure 1	-	3.4	A
		$T_{sp} = 25$ °C; $V_{GS} = 10$ V; see Figure 1; see Figure 3	-	5.4	A
I_{DM}	peak drain current	$T_{sp} = 25$ °C; pulsed; $t_p \leq 10$ µs; see Figure 3	-	21.6	A
P_{tot}	total power dissipation	$T_{sp} = 25$ °C; see Figure 2	-	2	W
T_{stg}	storage temperature		-55	150	°C
T_j	junction temperature		-55	150	°C
Source-drain diode					
I_S	source current	$T_{sp} = 25$ °C	-	1.7	A
I_{SM}	peak source current	$T_{sp} = 25$ °C; pulsed; $t_p \leq 10$ µs	-	6.9	A

6. Characteristics

Table 6. Characteristics

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Static characteristics						
$V_{(BR)DSS}$	drain-source breakdown voltage	I_D = 250 μA; V_{GS} = 0 V; T_j = 25 °C	30	-	-	V
		I_D = 250 μA; V_{GS} = 0 V; T_j = -55 °C	27	-	-	V
$V_{GS(th)}$	gate-source threshold voltage	I_D = 1 mA; V_{DS} = V_{GS}; T_j = 25 °C; see Figure 8	1	1.5	2	V
		I_D = 1 mA; V_{DS} = V_{GS}; T_j = 150 °C; see Figure 8	0.6	-	-	V
		I_D = 1 mA; V_{DS} = V_{GS}; T_j = -55 °C; see Figure 8	-	-	2.2	V
I_{DSS}	drain leakage current	V_{DS} = 30 V; V_{GS} = 0 V; T_j = 25 °C	-	-	1	μA
		V_{DS} = 30 V; V_{GS} = 0 V; T_j = 150 °C	-	-	100	μA
I_{GSS}	gate leakage current	V_{GS} = 20 V; V_{DS} = 0 V; T_j = 25 °C	-	10	100	nA
		V_{GS} = -20 V; V_{DS} = 0 V; T_j = 25 °C	-	10	100	nA
R_{DSon}	drain-source on-state resistance	V_{GS} = 10 V; I_D = 2 A; T_j = 25 °C; see Figure 9; see Figure 10	-	35	42	mΩ
		V_{GS} = 10 V; I_D = 2 A; T_j = 150 °C; see Figure 9; see Figure 10	-	59.5	71.4	mΩ
		V_{GS} = 4.5 V; I_D = 1.5 A; T_j = 25 °C; see Figure 9; see Figure 10	-	45	54	mΩ
Dynamic characteristics						
$Q_{G(tot)}$	total gate charge	I_D = 3 A; V_{DS} = 15 V; V_{GS} = 10 V; T_j = 25 °C; see Figure 11	-	9.4	-	nC
Q_{GS}	gate-source charge		-	1.2	-	nC
Q_{GD}	gate-drain charge		-	1.9	-	nC
C_{iss}	input capacitance	V_{DS} = 30 V; V_{GS} = 0 V; f = 1 MHz; T_j = 25 °C	-	350	-	pF
C_{oss}	output capacitance		-	70	-	pF
C_{rss}	reverse transfer capacitance		-	50	-	pF
$t_{d(on)}$	turn-on delay time	V_{DS} = 15 V; R_L = 15 Ω; V_{GS} = 10 V; $R_{G(ext)}$ = 6 Ω; T_j = 25 °C	-	5	-	ns
t_r	rise time		-	7	-	ns
$t_{d(off)}$	turn-off delay time		-	16	-	ns
t_f	fall time		-	5.5	-	ns
Source-drain diode						
V_{SD}	source-drain voltage	I_S = 1.5 A; V_{GS} = 0 V; T_j = 25 °C; see Figure 12	-	0.79	1.2	V