



PMV65XP

20 V, single P-channel Trench MOSFET

12 February 2013

Product data sheet

1. General description

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

2. Features and benefits

- Low threshold voltage
- Low on-state resistance
- Trench MOSFET technology

3. Applications

- Low power DC-to-DC converters
- Load switching
- Battery management
- Battery powered portable equipment

4. Quick reference data

Table 1. Quick reference data

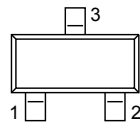
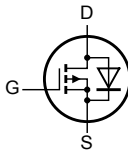
Symbol	Parameter	Conditions	Min	Typ	Max	Unit
V_{DS}	drain-source voltage	$T_j = 25\text{ °C}$	-	-	-20	V
V_{GS}	gate-source voltage		-12	-	12	V
I_D	drain current	$V_{GS} = -4.5\text{ V}; T_{sp} = 25\text{ °C}$	-	-	-4.3	A
Static characteristics						
$R_{DS(on)}$	drain-source on-state resistance	$V_{GS} = -4.5\text{ V}; I_D = -2.8\text{ A}; T_j = 25\text{ °C}$	-	58	74	mΩ

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5. Pinning information

Table 2. Pinning information

Pin	Symbol	Description	Simplified outline	Graphic symbol
1	G	gate	 <p>TO-236AB (SOT23)</p>	 <p>017aaa257</p>
2	S	source		
3	D	drain		

6. Ordering information

Table 3. Ordering information

Type number	Package		
	Name	Description	Version
PMV65XP	TO-236AB	plastic surface-mounted package; 3 leads	SOT23

7. Marking

Table 4. Marking codes

Type number	Marking code
PMV65XP	%M9

[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_{DS}	drain-source voltage	$T_j = 25\text{ °C}$	-	-20	V
V_{GS}	gate-source voltage		-12	12	V
I_D	drain current	$V_{GS} = -4.5\text{ V}; T_{sp} = 25\text{ °C}$	-	-4.3	A
		$V_{GS} = -4.5\text{ V}; T_{amb} = 25\text{ °C}$	[1]	-2.8	A
		$V_{GS} = -4.5\text{ V}; T_{amb} = 100\text{ °C}$	[1]	-1.8	A
I_{DM}	peak drain current	$T_{amb} = 25\text{ °C};$ single pulse; $t_p \leq 10\text{ }\mu\text{s}$	-	-16	A
P_{tot}	total power dissipation	$T_{amb} = 25\text{ °C}$	[2]	480	mW
			[1]	833	mW
		$T_{sp} = 25\text{ °C}$		4165	mW

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9. Thermal characteristics

Table 6. Thermal characteristics

Symbol	Parameter	Conditions		Min	Typ	Max	Unit
R _{th(j-a)}	thermal resistance from junction to ambient	in free air	[1]	-	230	260	K/W
			[2]	-	125	150	K/W
R _{th(j-sp)}	thermal resistance from junction to solder point			-	25	30	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 drain 6 cm².

10. Characteristics

Table 7. 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		-20	-	-	V
V _{GSth}	gate-source threshold voltage	I _D = -250 μA; V _{DS} = V _{GS} ; T _j = 25 °C		-0.47	-0.65	-0.9	V
I _{DSS}	drain leakage current	V _{DS} = -20 V; V _{GS} = 0 V; T _j = 25 °C		-	-	-1	μA
		V _{DS} = -20 V; V _{GS} = 0 V; T _j = 150 °C		-	-	-100	μA

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Symbol	Parameter	Conditions	Min	Typ	Max	Unit
I _{GSS}	gate leakage current	V _{GS} = -12 V; V _{DS} = 0 V; T _j = 25 °C	-	-	-100	nA
		V _{GS} = 12 V; V _{DS} = 0 V; T _j = 25 °C	-	-	100	nA
R _{DSon}	drain-source on-state resistance	V _{GS} = -4.5 V; I _D = -2.8 A; T _j = 25 °C	-	58	74	mΩ
		V _{GS} = -4.5 V; I _D = -2.8 A; T _j = 150 °C	-	82	105	mΩ
		V _{GS} = -2.5 V; I _D = -2.3 A; T _j = 25 °C	-	67	92	mΩ
		V _{GS} = -1.8 V; I _D = -1 A; T _j = 25 °C	-	87	135	mΩ
g _{fs}	forward transconductance	V _{DS} = -10 V; I _D = -2.8 A; T _j = 25 °C	-	15	-	S
Dynamic characteristics						
Q _{G(tot)}	total gate charge	V _{DS} = -6 V; I _D = -2.8 A; V _{GS} = -4.5 V; T _j = 25 °C	-	7.7	-	nC
Q _{GS}	gate-source charge		-	1	-	nC
Q _{GD}	gate-drain charge		-	1.65	-	nC
C _{iss}	input capacitance	V _{DS} = -20 V; f = 1 MHz; V _{GS} = 0 V; T _j = 25 °C	-	744	-	pF
C _{oss}	output capacitance		-	65	-	pF
C _{rss}	reverse transfer capacitance		-	53	-	pF
t _{d(on)}	turn-on delay time		V _{DS} = -6 V; V _{GS} = -4.5 V; R _{G(ext)} = 6 Ω; T _j = 25 °C; I _D = -1 A	-	7	-
t _r	rise time	-		18	-	ns
t _{d(off)}	turn-off delay time	-		135	-	ns
t _f	fall time	-		68	-	ns
Source-drain diode						
V _{SD}	source-drain voltage	I _S = -0.9 A; V _{GS} = 0 V; T _j = 25 °C	-	-0.8	-1.2	V