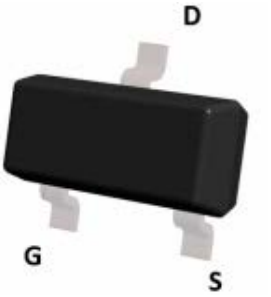
PMV37ENEA

60V N-Channel Enhancement Mode MOSFET

Description

The PMV37ENEA uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with gate voltages as low as 4.5V. This device is suitable for use as a Battery protection or in other Switching application.

Dimensions SOT-23

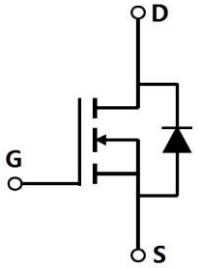


General Features

V_{DS} = 60V I_D =3A

$R_{DS(ON)}$ < 100mΩ @ V_{GS}=10V

Pin Configuration



Application

- Battery protection
- Load switch
- Uninterruptible power supply

Package Marking and Ordering Information

Device	Device Marking	Device Package	Reel Size	Tape width	Quantity
PMV37ENEA	6003	SOT-23	-	-	3000 units

Absolute Maximum Ratings (TC=25℃unless otherwise noted)

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	60	V
V_{GS}	Gate-Source Voltage	±20	V
I_D@T_A=25℃	Continuous Drain Current, V_{GS} @ 10V[1]	3.0	A
I_D@T_A=70℃	Continuous Drain Current, V_{GS} @ 10V[1]	1.8	A
I_{DM}	Pulsed Drain Current[2]	9.2	A
P_D@T_A=25℃	Total Power Dissipation[3]	1	W
T_{STG}	Storage Temperature Range	-55 to 150	℃
T_J	Operating Junction Temperature Range	-55 to 150	℃
$R_{\theta JA}$	Thermal Resistance Junction-Ambient [1]	125	℃/W
$R_{\theta JC}$	Thermal Resistance Junction-Case[1]	80	℃/W

Electrical Characteristics (TJ=25℃, unless otherwise noted)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V , I_D=250uA	60	---	---	V
$\triangle BV_{DSS}/\triangle T_J$	BV_{DSS} Temperature Coefficient	Reference to 25℃ , I_D=1mA	---	0.054	---	V/℃
$R_{DS(ON)}$	Static Drain-Source On-Resistance[2]	V_{GS}=10V , I_D=2A	---	80	100	mΩ
		V_{GS}=4.5V , I_D=1A	---	85	110	
$V_{GS(th)}$	Gate Threshold Voltage	V_{GS}=V_{DS} , I_D =250uA	1.2	---	2.5	V
$\triangle V_{GS(th)}$	$V_{GS(th)}$ Temperature Coefficient		---	-4.96	---	mV/℃
I_{DSS}	Drain-Source Leakage Current	V_{DS}=48V , V_{GS}=0V , T_J=25℃	---	---	1	uA
		V_{DS}=48V , V_{GS}=0V , T_J=55℃	---	---	5	
I_{GSS}	Gate-Source Leakage Current	V_{GS}=±20V , V_{DS}=0V	---	---	±100	nA
gfs	Forward Transconductance	V_{DS}=5V , I_D=2A	---	13	---	S
Q_g	Total Gate Charge (4.5V)	V_{DS}=48V , V_{GS}=4.5V , I_D=2A	---	5	7.0	nC
Q_{gs}	Gate-Source Charge		---	1.68	2.4	
Q_{gd}	Gate-Drain Charge		---	1.9	2.7	
$T_{d(on)}$	Turn-On Delay Time	V_{DD}=30V , V_{GS}=10V , R_G=3.3 , I_D=2A	---	1.6	3.2	ns
T_r	Rise Time		---	7.2	13	
$T_{d(off)}$	Turn-Off Delay Time		---	25	50	
T_f	Fall Time		---	14.4	28.8	
C_{iss}	Input Capacitance	V_{DS}=15V , V_{GS}=0V , f=1MHz	---	511	715	pF
C_{oss}	Output Capacitance		---	38	53	
C_{rss}	Reverse Transfer Capacitance		---	25	35	
I_S	Continuous Source Current[1,4]	V_G=V_D=0V , Force Current	---	---	2.3	A
I_{SM}	Pulsed Source Current[2,4]		---	---	9.2	A
V_{SD}	Diode Forward Voltage[2]	V_{GS}=0V , I_S=1A , T_J=25℃	---	---	1.2	V
t_{rr}	Reverse Recovery Time	I_F=2A , dI/dt=100A/μs , T_J=25℃	---	9.7	---	nS
Q_{rr}	Reverse Recovery Charge		---	5.8	---	nC

Note :

1.The data tested by surface mounted on a 1 inch^2 FR-4 board with 2OZ copper.

2.The data tested by pulsed , pulse width ≦ 300us , duty cycle ≦ 2%

3.The power dissipation is limited by 150℃ junction temperature.

4.The data is theoretically the same as I_D and I_{DM} , in real applications , should be limited by total power dissipation.

Typical Characteristics

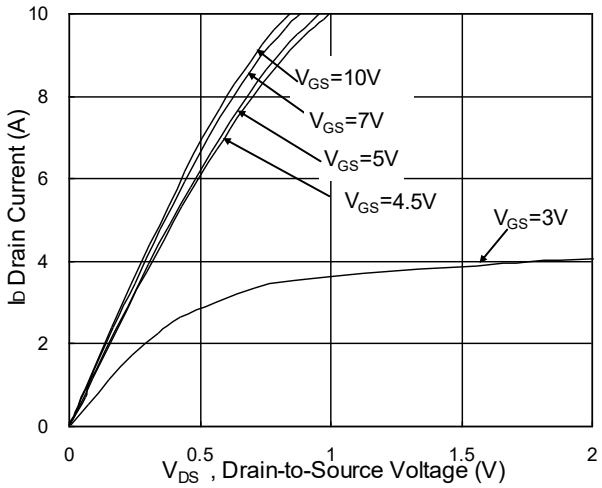


Fig.1 Typical Output Characteristics

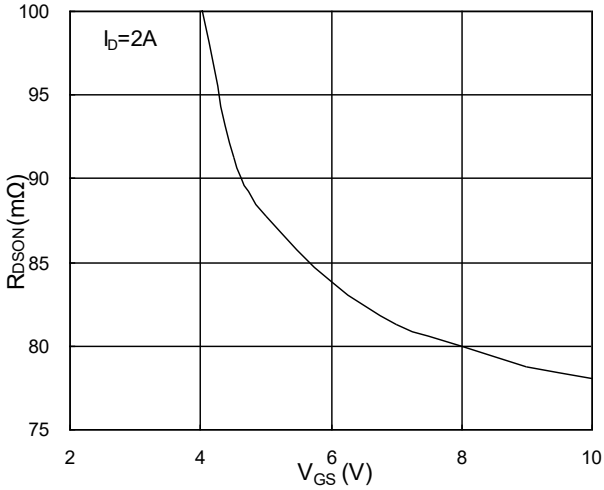


Fig.2 On-Resistance v.s Gate-Source

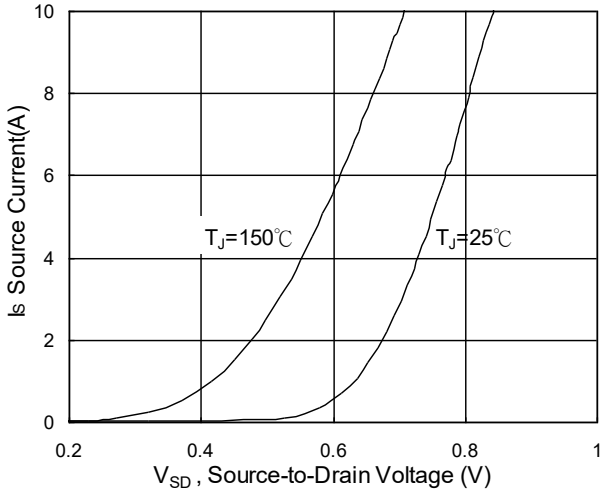


Fig.3 Forward Characteristics of Reverse

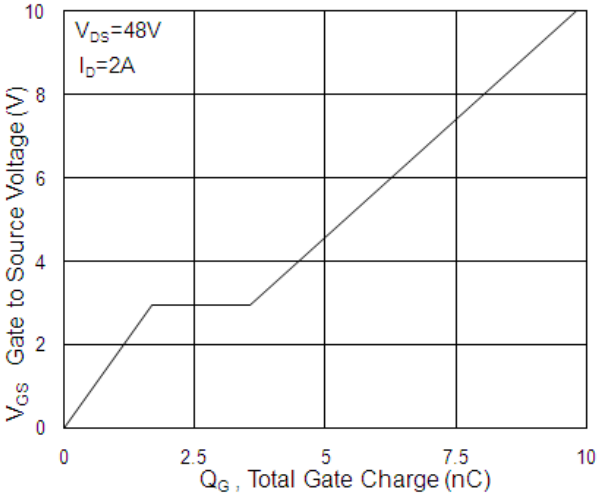


Fig.4 Gate-Charge Characteristics

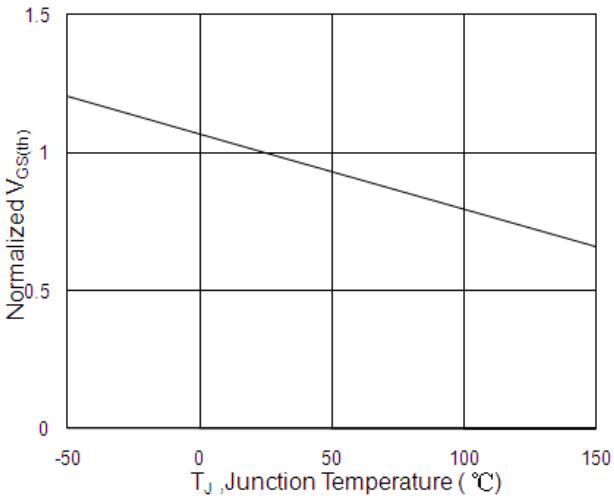


Fig.5 Normalized $V_{GS(th)}$ v.s T_J

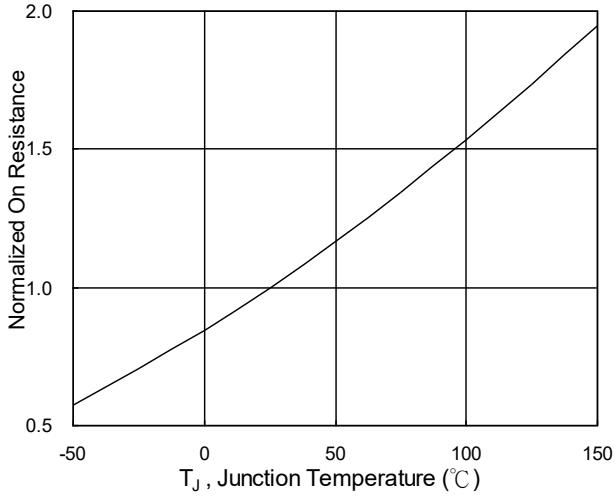


Fig.6 Normalized R_{DSON} v.s T_J

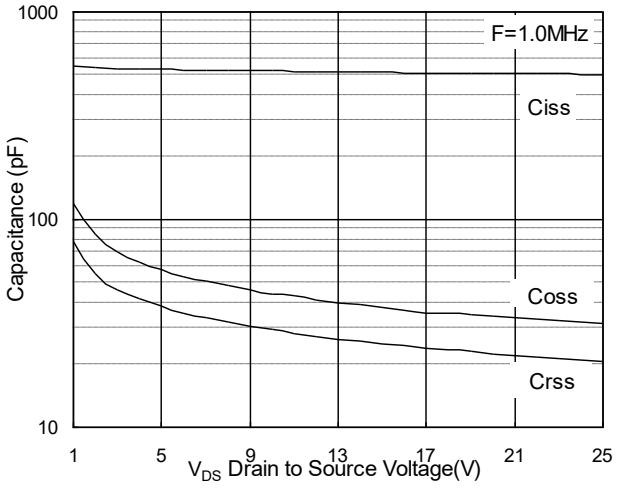


Fig.7 Capacitance

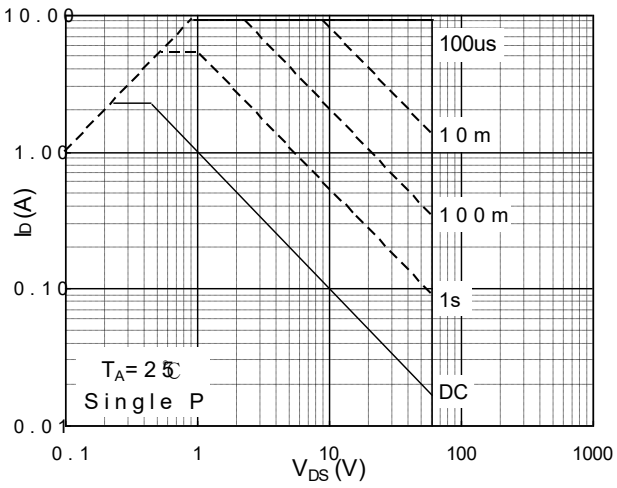


Fig.8 Safe Operating Area

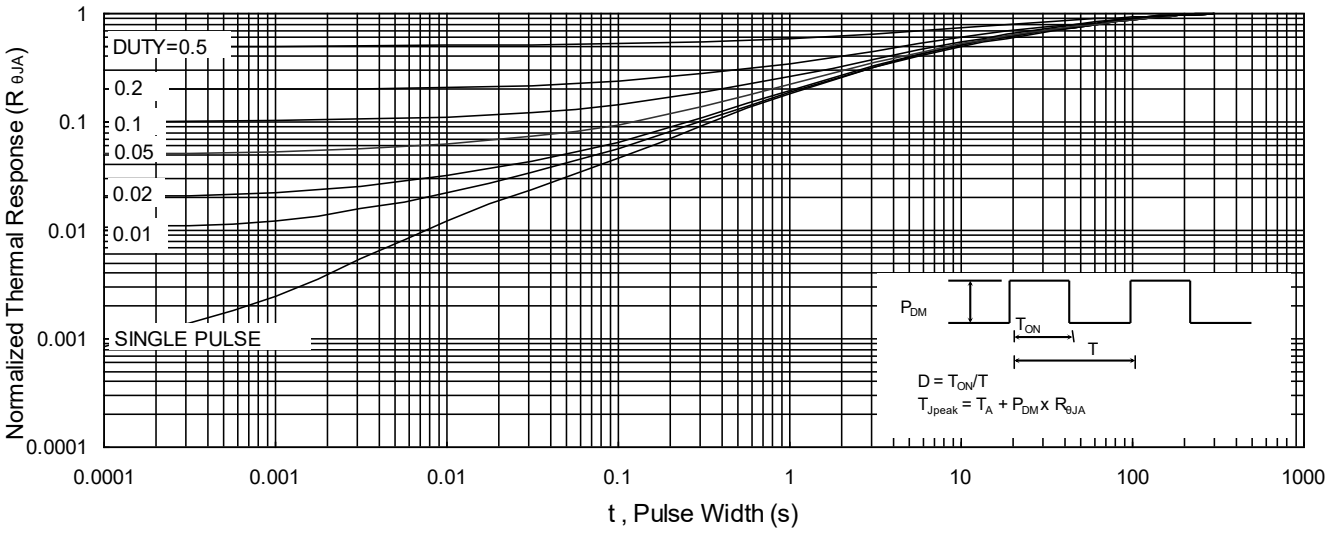


Fig.9 Normalized Maximum Transient Thermal Impedance

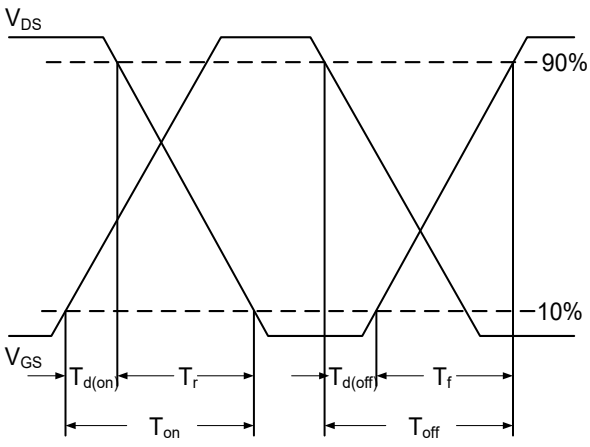


Fig.10 Switching Time Waveform

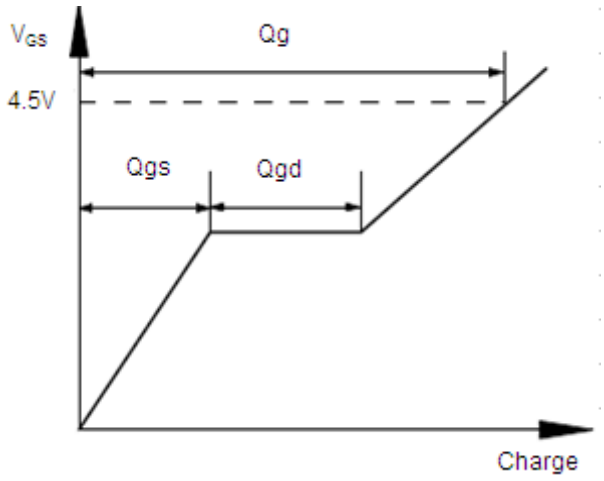
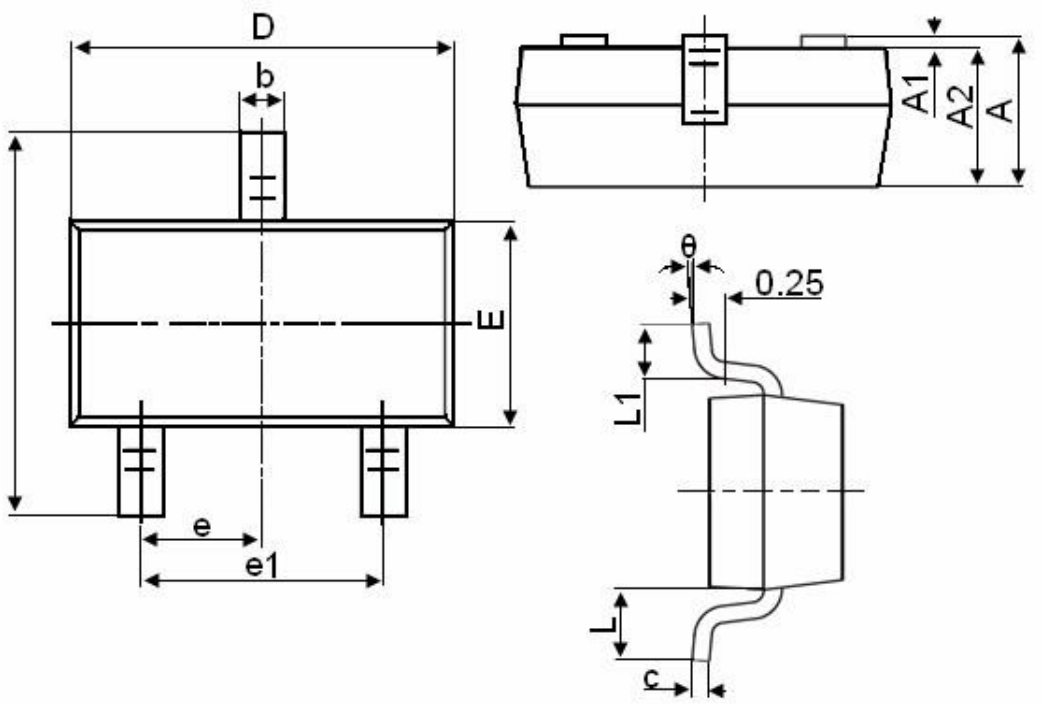


Fig.11 Gate Charge Waveform

Package Mechanical Data-SOT-23



Symbol	Dimensions in Millimeters	
	MIN.	MAX.
A	0.900	1.150
A1	0.000	0.100
A2	0.900	1.050
b	0.300	0.500
c	0.080	0.150
D	2.800	3.000
E	1.200	1.400
E1	2.250	2.550
e	0.950TYP	
e1	1.800	2.000
L	0.550REF	
L1	0.300	0.500
θ	0°	8°

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