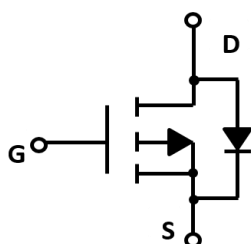
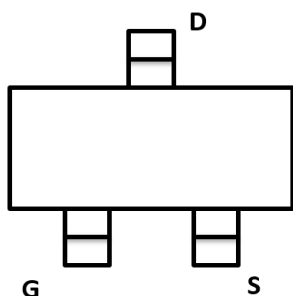


Top View

**SOT-23**



### Product Summary

- $V_{DS}$  -30V
- $I_D$  -4.1A
- $R_{DS(ON)}$ ( at  $V_{GS}=-10V$ ) <60 mohm
- $R_{DS(ON)}$ ( at  $V_{GS}=-4.5V$ ) <75 mohm

### General Description

- Trench Power LV MOSFET technology
- High density cell design for Low  $R_{DS(ON)}$
- High Speed switching

### Applications

- Battery protection
- Load switch
- Power management

### ■ Absolute Maximum Ratings ( $T_A=25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Maximum	Unit
Drain-source Voltage	$V_{DS}$	-30	V
Gate-source Voltage	$V_{GS}$	$\pm 20$	V
Drain Current	$I_D$	$T_A=25^\circ\text{C}$ @ Steady State	-4.1
		$T_A=70^\circ\text{C}$ @ Steady State	-3.2
Pulsed Drain Current <sup>A</sup>	$I_{DM}$	-15	A
Total Power Dissipation @ $T_A=25^\circ\text{C}$	$P_D$	1.5	W
Thermal Resistance Junction-to-Ambient @ Steady State <sup>B</sup>	$R_{\theta JA}$	82	$^\circ\text{C}/\text{W}$
Junction and Storage Temperature Range	$T_J, T_{STG}$	-55~+150	$^\circ\text{C}$

### ■ Ordering Information (Example)

PREFERED P/N	Marking	MINIMUM PACKAGE(pcs)	DELIVERY MODE
PMV50EPEA	3407	3000	7" reel

## ■ Electrical Characteristics ( $T_J=25^{\circ}\text{C}$ unless otherwise noted)

Parameter	Symbol	Conditions	Min	Typ	Max	Units
<b>Static Parameter</b>						
Drain-Source Breakdown Voltage	$BV_{DSS}$	$V_{GS}=0V, I_D=-250\mu A$	-30			V
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=-30V, V_{GS}=0V, T_C=25^{\circ}\text{C}$			-1	$\mu A$
Gate-Body Leakage Current	$I_{GSS}$	$V_{GS}=\pm 20V, V_{DS}=0V$			$\pm 100$	nA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=-250\mu A$	-1.0	-1.5	-2.4	V
Static Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=-10V, I_D=-4.1A$		46	60	m $\Omega$
		$V_{GS}=-4.5V, I_D=-3.5A$		58	75	
Diode Forward Voltage	$V_{SD}$	$I_S=-4.1A, V_{GS}=0V$		-0.8	-1.2	V
Maximum Body-Diode Continuous Current	$I_S$				-4.1	A
<b>Dynamic Parameters</b>						
Input Capacitance	$C_{iss}$	$V_{DS}=-15V, V_{GS}=0V, f=1\text{MHz}$		580		pF
Output Capacitance	$C_{oss}$			98		
Reverse Transfer Capacitance	$C_{riss}$			74		
<b>Switching Parameters</b>						
Total Gate Charge	$Q_g$	$V_{GS}=-10V, V_{DS}=-15V, I_D=-4.1A$		6.8		nC
Gate Source Charge	$Q_{gs}$			1.0		
Gate Drain Charge	$Q_{gd}$			1.4		
Turn-on Delay Time	$t_{D(on)}$	$V_{GS}=-10V, V_{DD}=-15V, R_L=15\Omega, I_D=-1A, R_{GEN}=2.5\Omega$		14		ns
Turn-on Rise Time	$t_r$			61		
Turn-off Delay Time	$t_{D(off)}$			19		
Turn-off Fall Time	$t_f$			10		

A. Pulse Test: Pulse Width  $\leq 300\mu s$ , Duty cycle  $\leq 2\%$ .

B. Device mounted on FR-4 PCB, 1 inch x 0.85 inch x 0.062 inch.

## ■ Typical Performance Characteristics

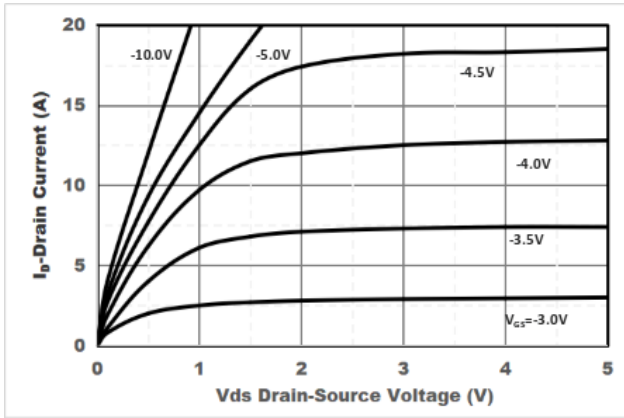


Figure1. Output Characteristics

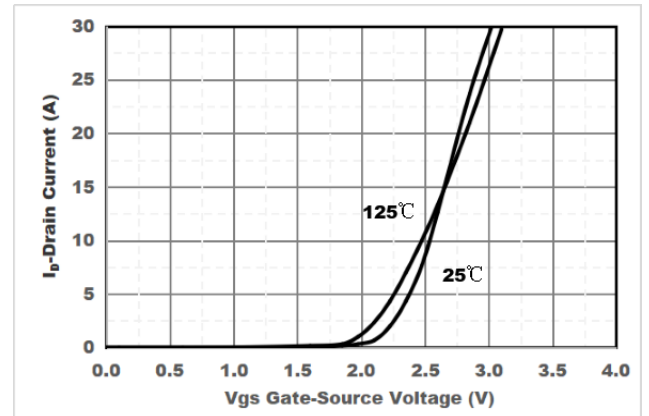


Figure2. Transfer Characteristics

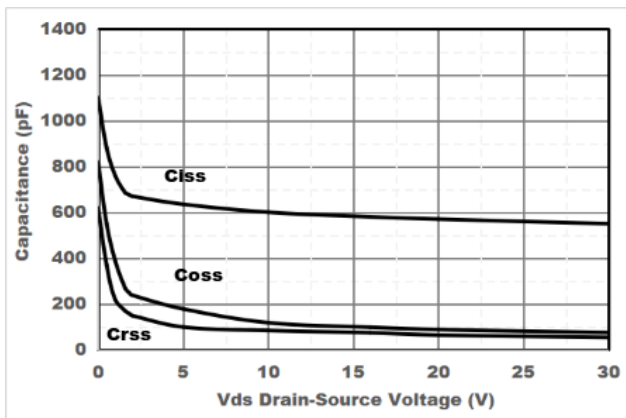


Figure3. Capacitance Characteristics

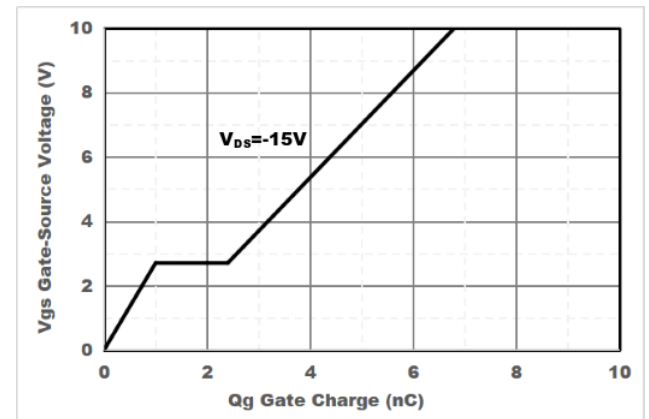


Figure4. Gate Charge

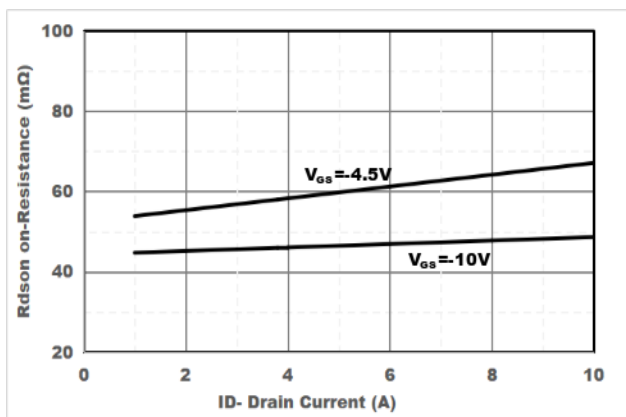


Figure5. Drain-Source on Resistance

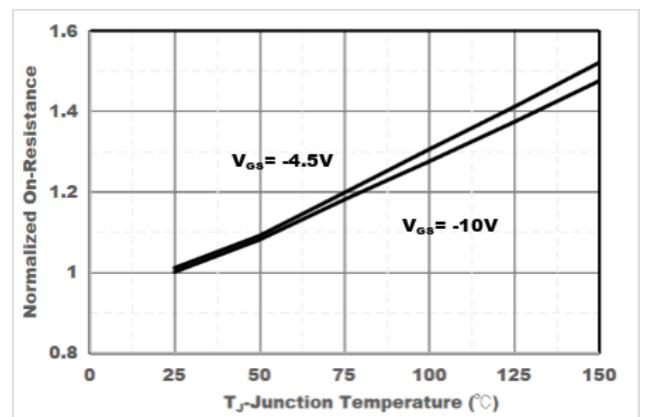


Figure6. Drain-Source on Resistance

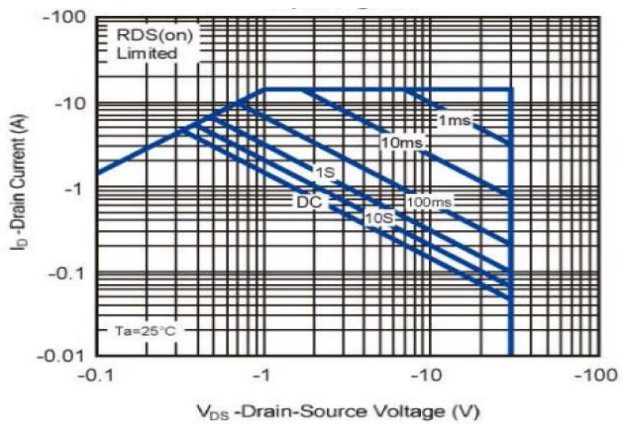


Figure7. Safe Operation Area

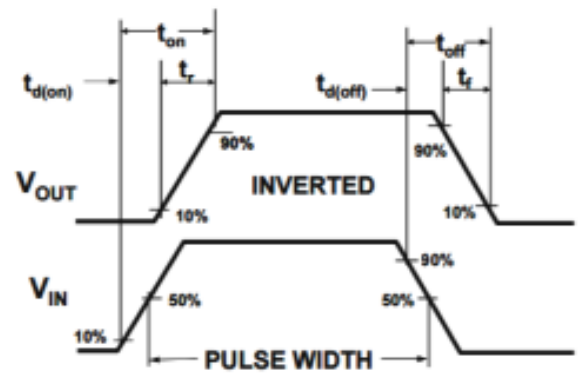
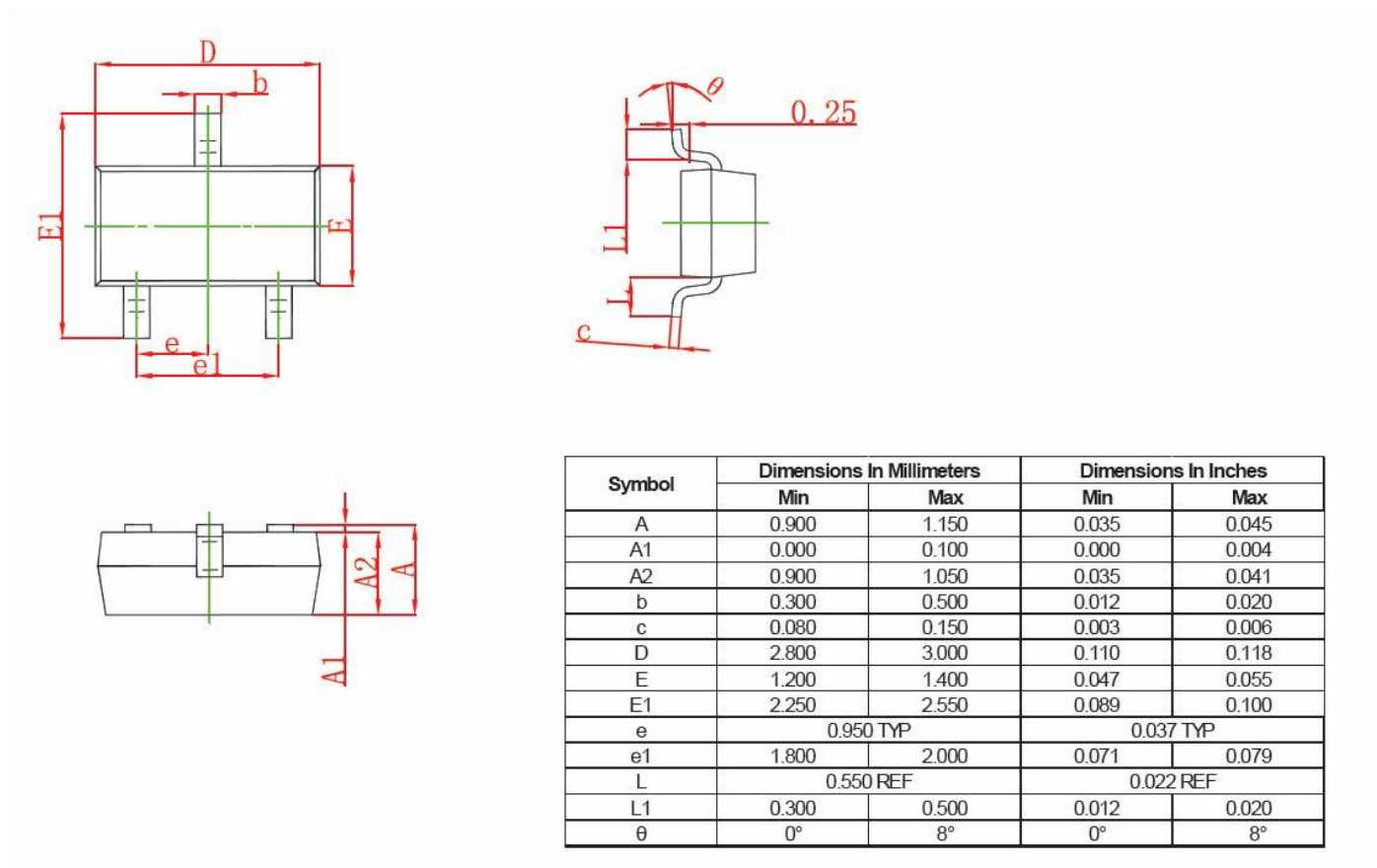
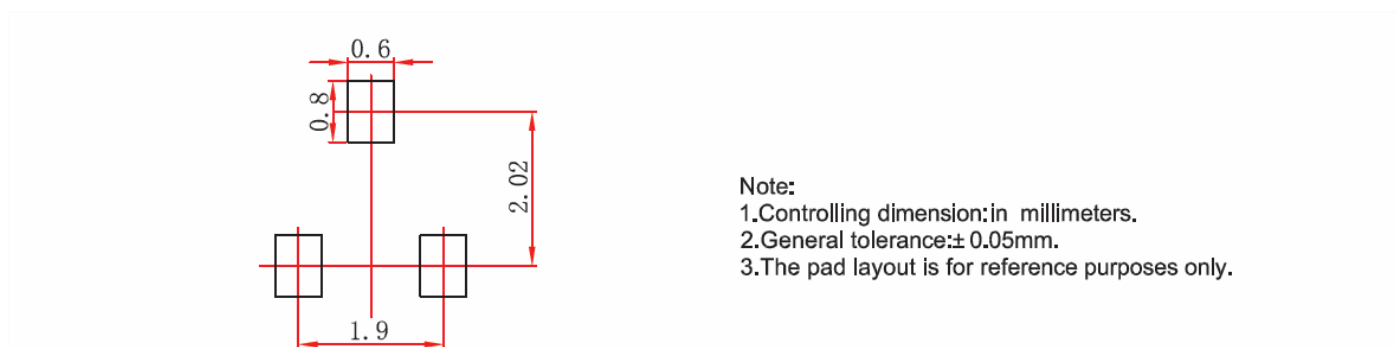


Figure8. Switching wave

## ■ SOT-23 Package information



## ■ SOT-23 Suggested Pad Layout



- Note:
1. Controlling dimension: in millimeters.
  2. General tolerance:  $\pm 0.05\text{mm}$ .
  3. The pad layout is for reference purposes only.

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