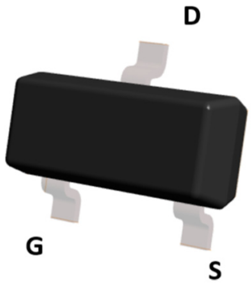
PPMT2301

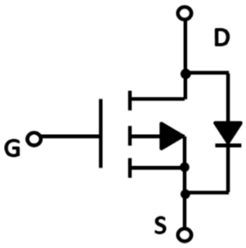
P-Channel MOSFET

Description

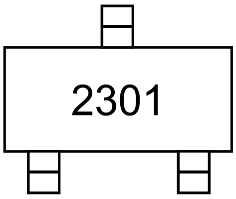
- Trench Power LV MOSFET technology
- High Power and Current handing capability
- Low Gate Charge



Top View



Circuit Diagram



Marking (Top View)

MOSFET Product Summary		
V_{DS}(V)	$R_{DS(on)}$(mΩ)	I_D(A)
-20	90@V_{GS} = -4.5V	-4.0
	135@V_{GS} = -2.5V	

Applications

- PWM applications
- Load switch
- Power management

Absolute maximum rating@25℃

Rating		Symbol	Value	Units
Drain-source Voltage		V_{DS}	-20	V
Gate-source Voltage		V_{GS}	±10	V
Drain Current	T_A=25℃ @ Steady State	I_D	-4.0	A
	T_A=70℃ @ Steady State		-3.0	
Pulsed Drain Current¹⁾		I_{DM}	-14	A
Total Power Dissipation @ T_A=25℃		P_D	1	W
Thermal Resistance Junction-to-Ambient @ Steady State²⁾		$R_{\theta JA}$	125	℃/W
Junction and Storage Temperature Range		T_J, T_{STG}	-55~+150	℃

Notes:
1) Pulse Test: Pulse Width≤300μs,Duty cycle ≤2%.
2) Device mounted on FR-4 PCB, 1 inch x 0.85 inch x 0.062 inch.

Electrical characteristics per line@25℃ (unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Units
Static Parameter						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS} = 0V, I_D = -250μA	-20	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = -20V,V_{GS} = 0V	-	-	-1	μA
Gate-Body Leakage Current	I_{GSS}	V_{GS} = ±12V, V_{DS} = 0V	-	-	±100	nA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = -250μA	-0.5	-0.75	-1.1	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS} = -4.5V, I_D = -3.0A	-	-	90	mΩ
		V_{GS} = -2.5V, I_D = -2.0A	-	-	135	
Diode Forward Voltage	V_{SD}	I_S = -4.0A,V_{GS} = 0V	-	-0.8	-1.2	V
Maximum Body-Diode Continuous Current	I_S		-	-	-4.0	A
Dynamic Parameters						
Input Capacitance	C_{iss}	V_{DS} = -10V,V_{GS} = 0V, f = 1MHz	-	550	-	pF
Output Capacitance	C_{oss}		-	89	-	
Reverse Transfer Capacitance	C_{rss}		-	65	-	
Switching Parameters						
Total Gate Charge	Q_g	V_{GS} = -4.5V,V_{DS} = -10V, I_D = -4.0A	-	4.3	-	nC
Gate Source Charge	Q_{gs}		-	0.8	-	
Gate Drain Charge	Q_{gd}		-	1.1	-	
Turn-on Delay Time	$t_{D(on)}$	V_{GS} = -4.5V,V_{DD} = -10V, I_D = -1A, R_{GEN} = 2.5Ω	-	12	-	ns
Turn-on Rise Time	t_r		-	54	-	
Turn-off Delay Time	$t_{D(off)}$		-	15	-	
Turn-off Fall Time	t_r		-	9	-	

Typical Characteristics

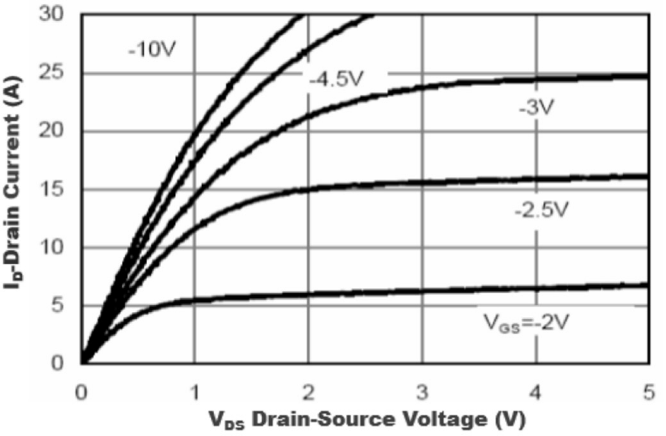


Figure1. Output Characteristics

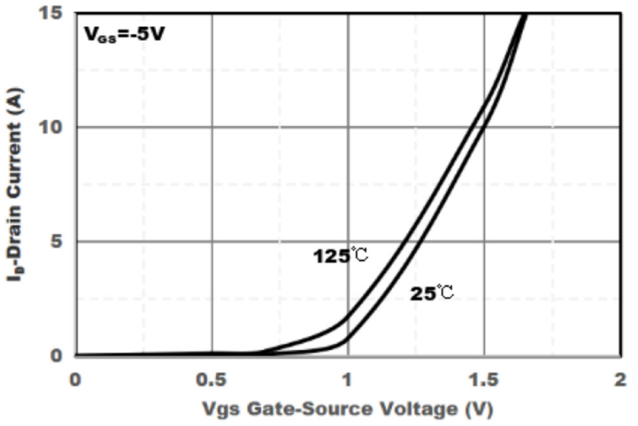


Figure2. Transfer Characteristics

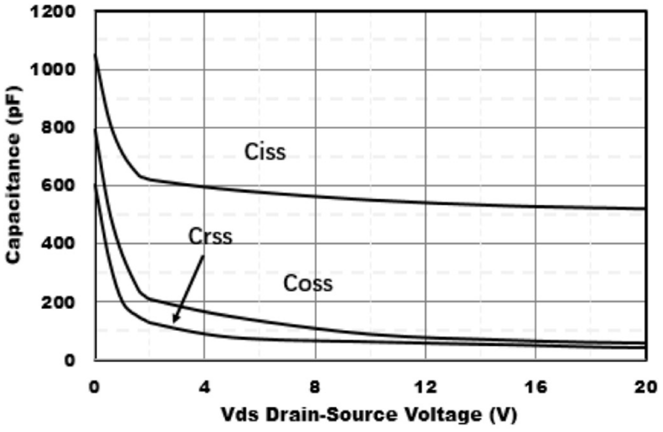


Figure3. Capacitance Characteristics

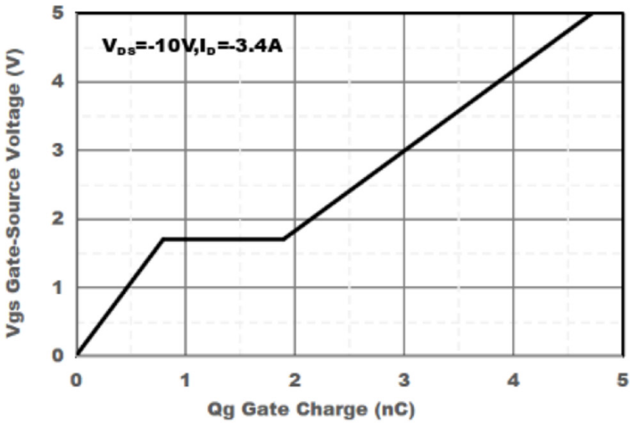


Figure4. Gate Charge

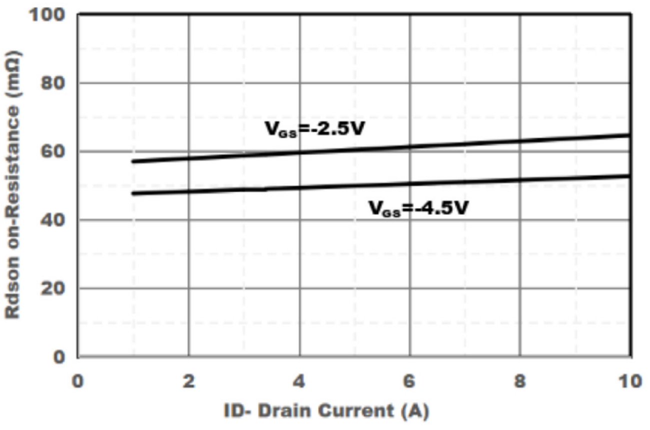


Figure5. Drain-Source on Resistance

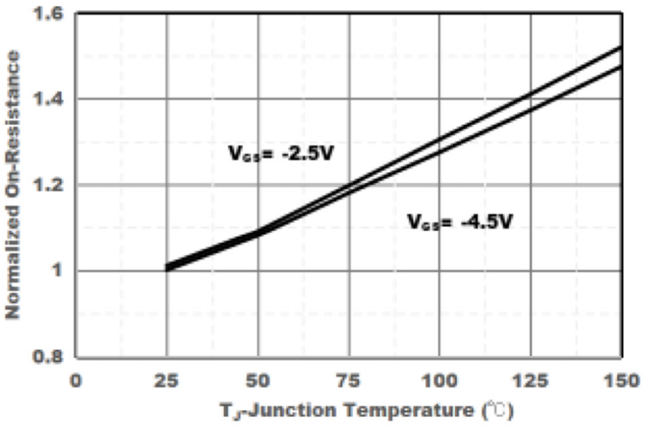


Figure6. Drain-Source on Resistance

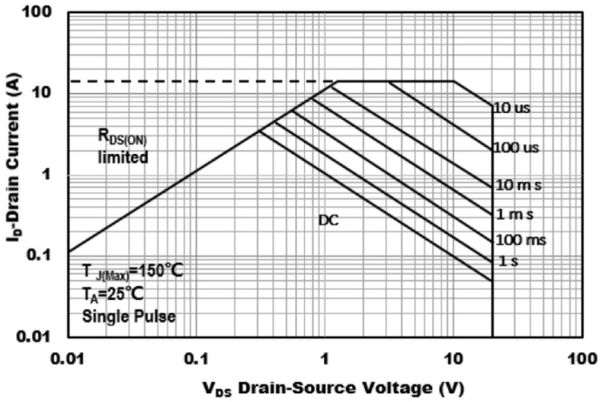


Figure7. Safe Operation Area

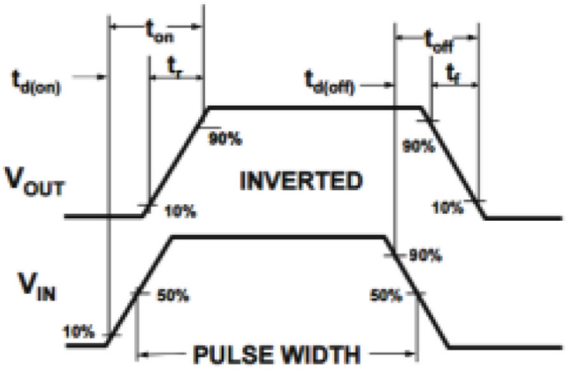
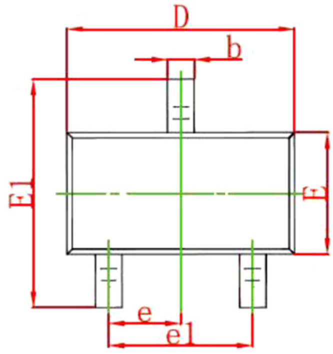
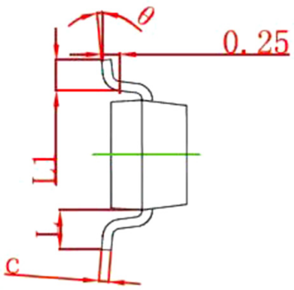
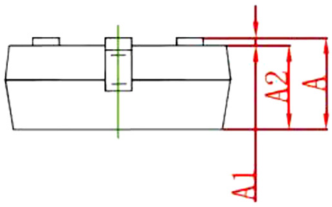


Figure8. Switching wave

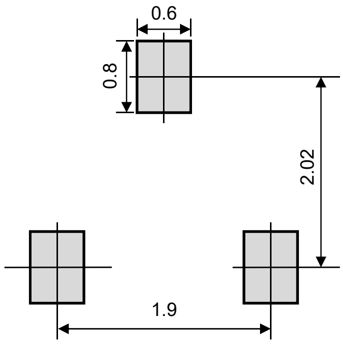
Product dimension (SOT-23)







Dim	Millimeters		Inches	
	Min	Max	Min	Max
A	0.900	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.050	0.035	0.041
b	0.300	0.500	0.012	0.020
c	0.080	0.150	0.003	0.006
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.950 Typ.		0.037 Typ.	
e1	1.800	2.000	0.071	0.079
L	0.550 Ref.		0.022 Ref.	
L1	0.300	0.500	0.012	0.020
θ	0°	8°	0°	8°



Unit:mm

Suggested PCB Layout

Ordering information

Device	Package	Reel	Shipping
PPMT2301	SOT-23 (Pb-Free)	7"	3000 / Tape & Reel

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