UMW SI2301A

-20V P-Channel MOSFET

1.Features

- $V_{DS(V)}$=-20V
- I_D=-2.8A
- $R_{DS(ON)}$<0.08Ω(V_{GS}=-4.5V)
- $R_{DS(ON)}$<0.09Ω(V_{GS}=-2.5V)

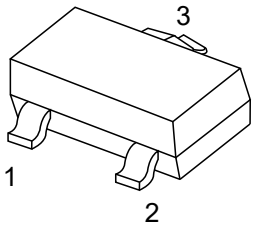
2.Application

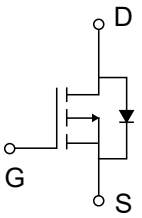
- Load Switch for Portable Devices
- DC/DC Converter

3.Pinning information

Pin	Symbol	Description
1	G	GATE
2	S	SOURCE
3	D	DRAIN

SOT-23





4.Absolute Maximum Ratings T_A= 25°C

Parameter	Symbol	Rating	Units
Drain-Source Voltage	V_{DS}	-20	V
Gate-Source Voltage	V_{GS}	±12	
Continuous Drain Curren	I_D	-2.8	A
Pulsed Drain Current	I_{DM}	-12	
Continuous Source-Drain Diode Current	I_S	-0.72	
Maximum Power Dissipation	P_D	0.4	W
Thermal Resistance from Junction to Ambient (t≤5s)	$R_{\theta JA}$	125	°C/W
Junction Temperature	T_J	150	°C
Storage Temperature	T_{STG}	-55 to 150	°C

5.Electrical Characteristics T_A= 25°C

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Static						
Drain-source breakdown voltage	$V_{(BR)DSS}$	V_{GS}=0V, I_D=-250μA	-20			V
Gate-source threshold voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=-250μA	-0.4		-1	V
Gate-source leakage	I_{GSS}	V_{DS}=0V, V_{GS}=±8V			±100	nA
Zero gate voltage drain current	I_{DSS}	V_{DS}=-20V, V_{GS}=0V			-1	μA
Drain-source on-state resistance [a]	$R_{DS(ON)}$	V_{GS}=-4.5V, I_D=-2.8A		0.065	0.08	Ω
		V_{GS}=-2.5V, I_D=-2A		0.07	0.09	Ω
Forward transconductance [a]	g_{FS}	V_{DS}=-5V, I_D=-2.8A		6.5		S
Dynamic [b]						
Input Capacitance	C_{iss}	V_{DS}=-10V, V_{GS}=0V, f=1MHz		405		pF
Output Capacitance	C_{oss}			75		pF
Reverse Transfer Capacitance	C_{rss}			55		pF
Total gate charge	Q_g	V_{DS}=-10V, V_{GS}=-4.5V, I_D=-3A		5.5	10	nC
		V_{DS}=-10V, V_{GS}=-2.5V I_D=-3A		3.3	6	nC
Gate-source charge	Q_{gs}			0.7		nC
Gate-drain charge	Q_{gd}			1.3		nC
Gate resistance	R_g	f=1MHz		6		Ω
Turn-On Delay Time	$t_{D(on)}$	V_{DD}=-10V R_L=10Ω, I_D=-1A V_{GEN}=-4.5V, R_G=1Ω		11	20	ns
Rise Time	t_r			35	60	ns
Turn-Off Delay Time	$t_{D(off)}$			30	50	ns
Fall time	t_f			10	20	ns
Drain-Source Body Diode Characteristics						
Continuous Source-Drain Diode Current	I_S	T_C=25°C			-1.3	A
Pulsed diode forward Current [a]	I_{SM}				-10	A
Body diode voltage	V_{SD}	I_S=-0.7A		-0.8	-1.2	V

a. Pulse Test : Pulse Width ≤ 300μs, Duty Cycle≤2%.

b. Guaranteed by design, not subject to production testing.

6.Typical Characteristic

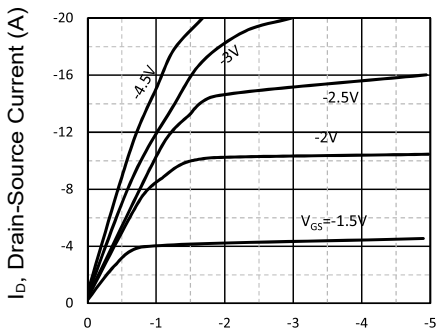


Figure 1: Typical Output Characteristics

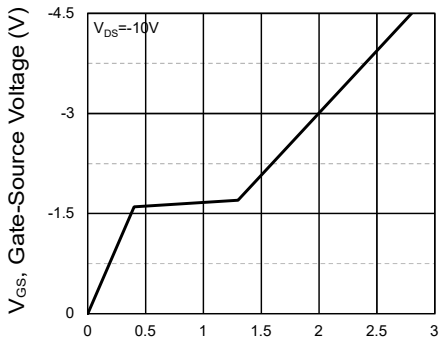


Figure 2: Typical Gate Charge Vs.Gate-Source Voltage

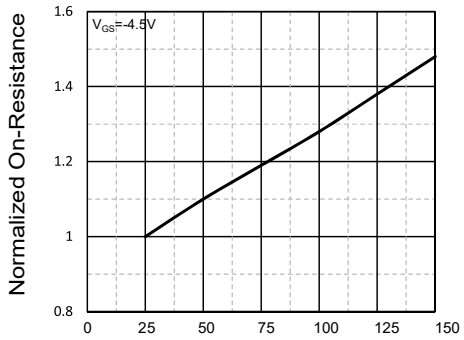


Figure 3: Normalized On-Resistance Vs. Temperature

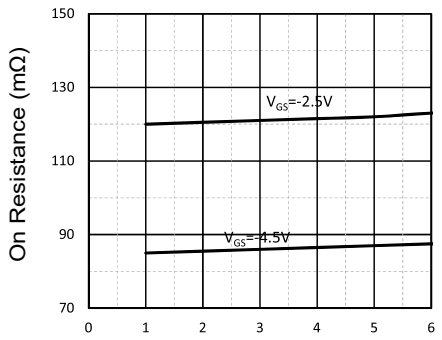


Figure 4: On Resistance Vs.Drain-Source Current

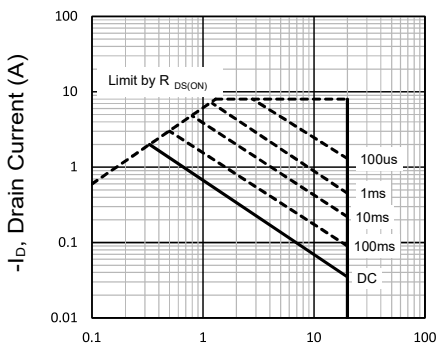


Figure 5: Maximum Safe Operating Area

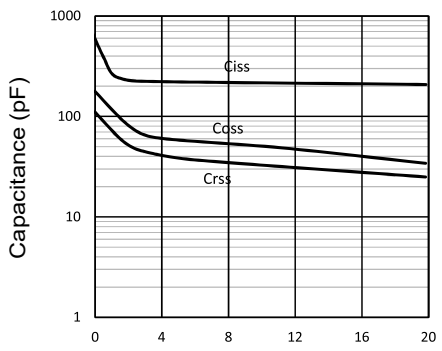
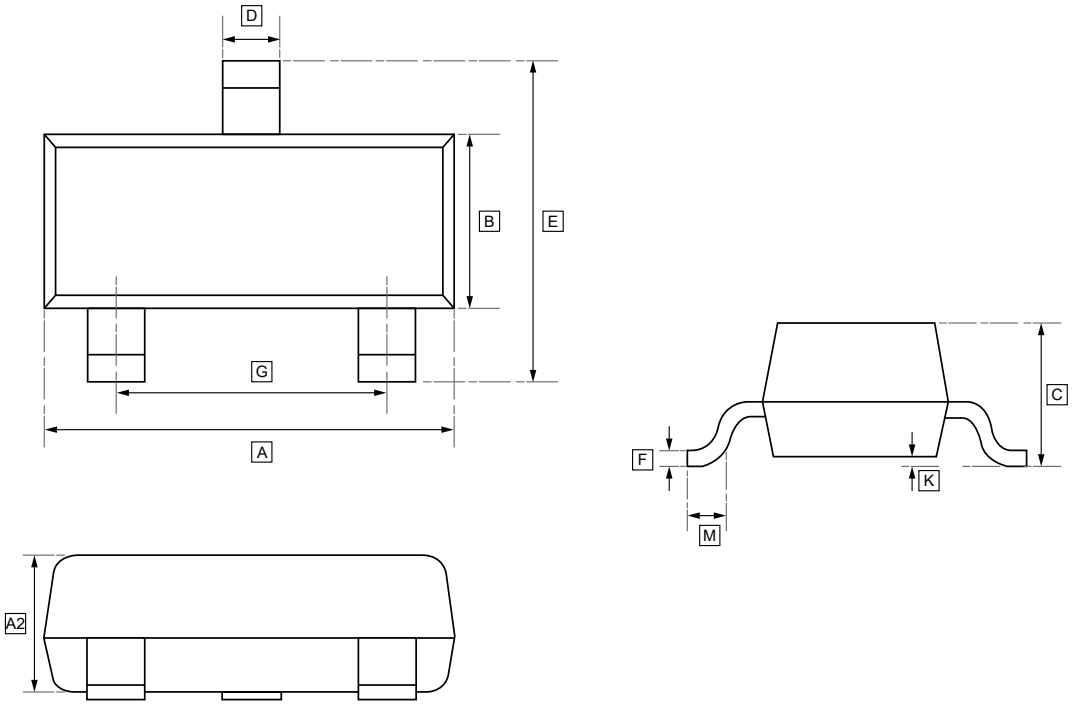


Figure 6: Typical Capacitance Vs.Drain-Source Voltage

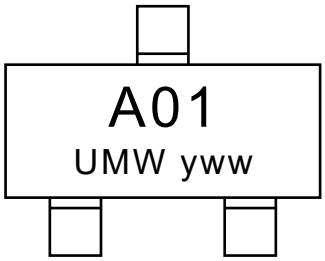
7.SOT-23 Package Outline Dimensions



DIMENSIONS (mm are the original dimensions)

Symbol	A	B	C	D	E	G	K	M	A2	F
Min	2.85	1.20	0.90	0.40	2.25	1.80	0.00	0.30	0.95	0.095
Max	3.04	1.40	1.10	0.50	2.55	2.00	0.10	-	1.05	0.115

8.Ordering information



yww: Batch Code

Order Code	Package	Base QTY	Delivery Mode
UMW SI2301A	SOT-23	3000	Tape and reel

9.Disclaimer

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