UMW SI2300A

20V N-Channel MOSFET

1.Features

- $V_{(BR)DSS}$=20V
- I_D=6A
- $R_{DS(ON)}$<25mΩ(V_{GS}=4.5V)
- $R_{DS(ON)}$<34mΩ(V_{GS}=2.5V)
- TrenchFET Power MOSFET

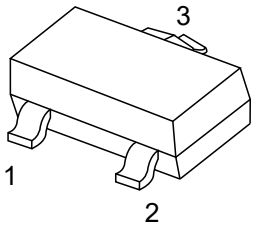
2.Applications

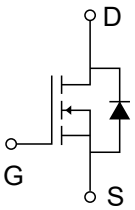
- Battery protection
- Load switch
- Power management

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	V
Continuous Drain Current	I_D	6	A
Continuous Source-Drain Current(Diode Conduction)	I_S	0.6	A
Power Dissipation	P_D	1.25	W
Thermal Resistance from Junction to Ambient (t≤5s)	$R_{\theta JA}$	312.5	°C/W
Operating Junction	T_J	150	°C
Storage Temperature	T_{STG}	-55~+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=10μA	20			V
Gate-threshold voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=50μA	0.4		1	V
Gate-body 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=6A		21	25	mΩ
		V_{GS}=2.5V, I_D=5.2A		28	34	mΩ
Forward transconductance [a]	g_{FS}	V_{DS}=5V, I_D=3.6A		8		S
Diode forward voltage	V_{SD}	I_S=0.94A, V_{GS}=0V		0.74	1.2	V
Dynamic						
Total gate charge	Q_g	V_{DS}=10V, V_{GS}=4.5V, I_D=3.6A		7.7	10	nC
Gate-source charge	Q_{gs}			0.32		nC
Gate-drain charge	Q_{gd}			2.1		nC
Input capacitance [b]	C_{iss}	V_{DS}=10V, V_{GS}=0V, f=1MHz		574		pF
Output capacitance [b]	C_{oss}			70		pF
Reverse transfer capacitance [b]	C_{rss}			60		pF
Switching [b]						
Turn-on delay time	$t_{D(on)}$	V_{DD}=10V R_L=5.5Ω, I_D≈3.6A V_{GEN}=4.5V, R_G=6Ω		78.7		ns
Rise time	t_r			128		ns
Turn-off delay time	$t_{D(off)}$			453		ns
Fall time	t_f			80.9		ns

Notes :

a. Pulse Test : Pulse width≤300μs, duty cycle ≤2%.

b. These parameters have no way to verify

6.1Typical Characterisitics

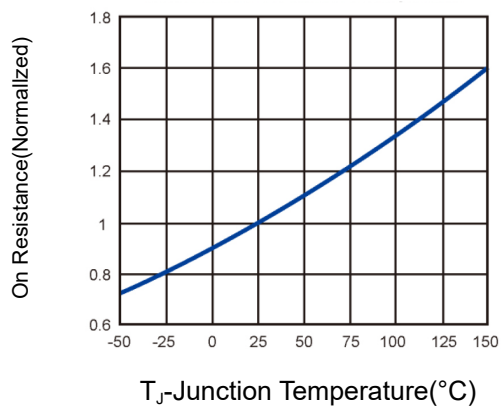


Figure 1: On Resistance vs. Junction Temperature

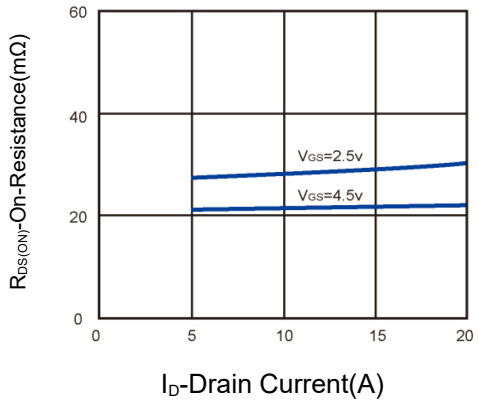


Figure 2: On Resistance vs. Drain Current

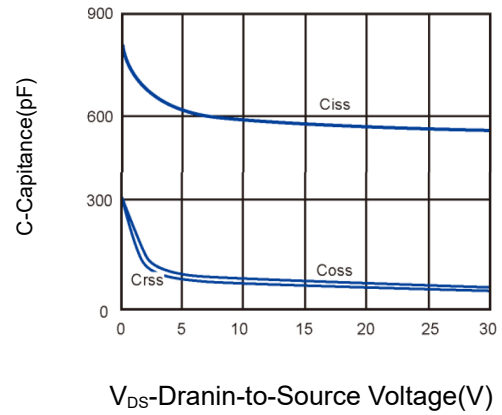


Figure 3: Capacitance

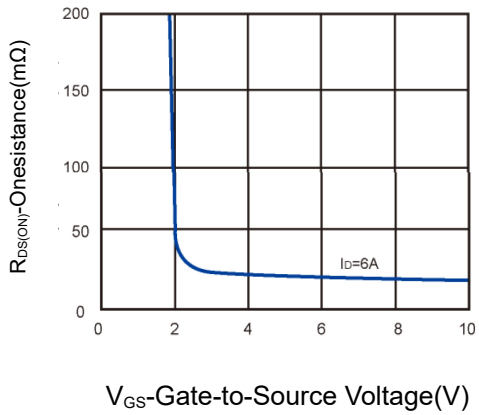


Figure 4: On Resistance vs.Gate-to-Source Voltage

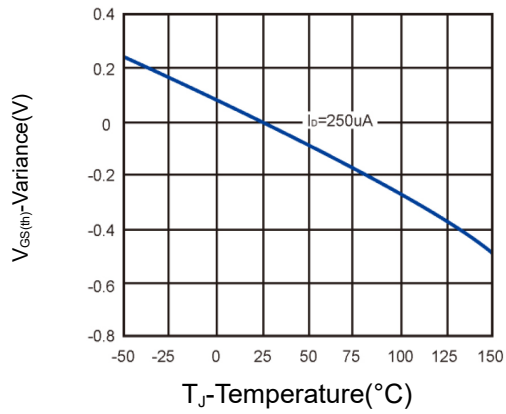


Figure 5: Threshold Voltage

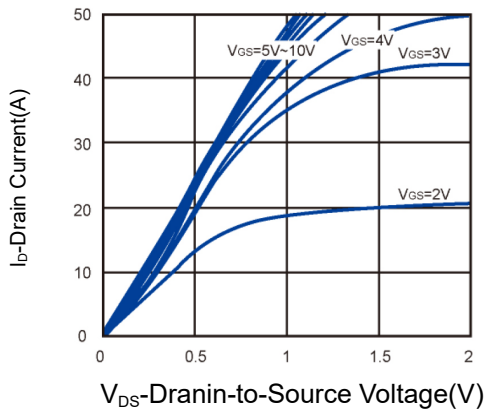


Figure 6: On-Region Characteristics

6.2Typical Characterisitics

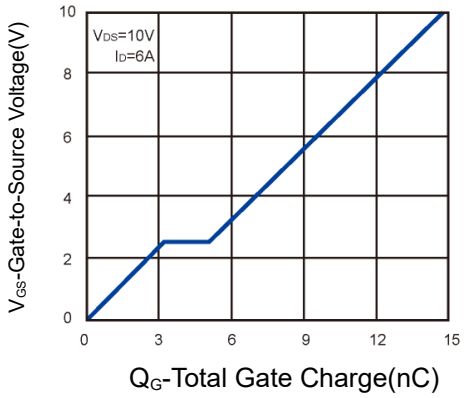


Figure 7: Gate-Charge

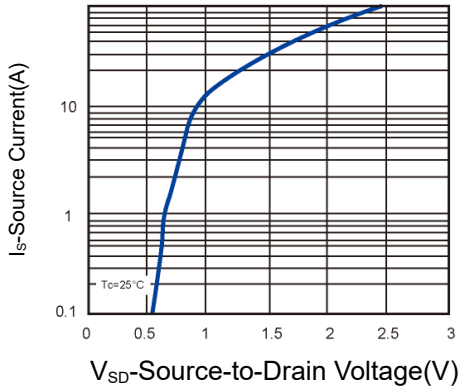
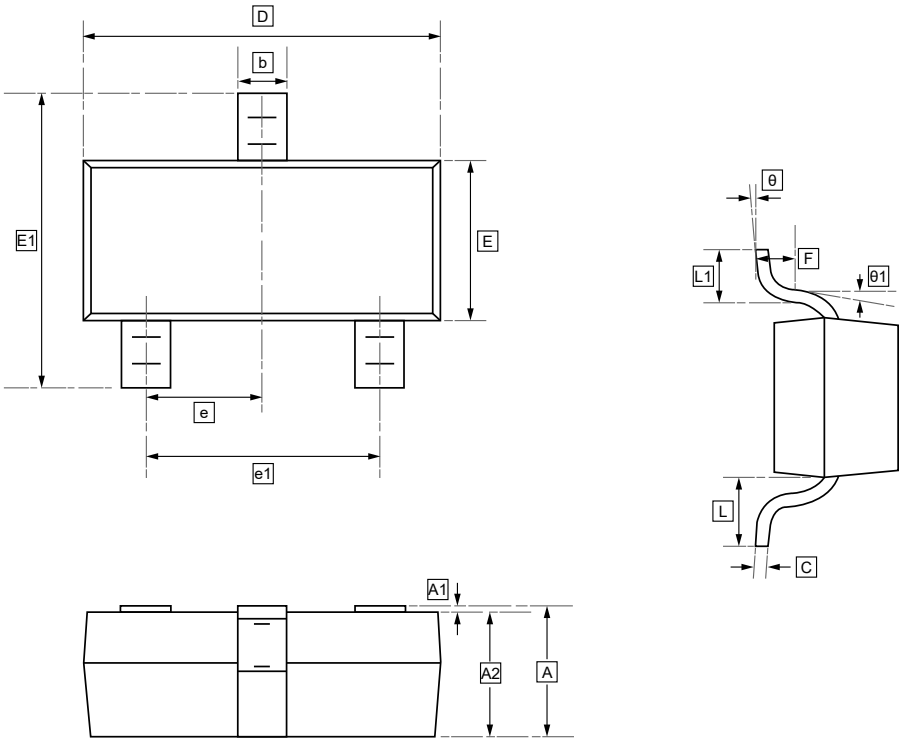


Figure 8: Body-diode characteristics

7.SOT-23 Package Outline Dimensions

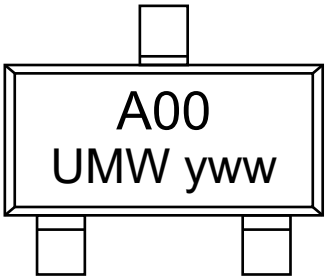


DIMENSIONS (mm are the original dimensions)

Symbol	A	A1	A2	b	C	D	E	E1	e	e1	L	L1
Min	0.90	0.00	0.90	0.30	0.08	2.80	1.20	2.25	0.95	1.80	0.55	0.30
Max	1.15	0.10	1.05	0.50	0.15	3.00	1.40	2.55	TYP.	2.00	REF	0.50

Symbol	F	θ	θ1
Min	0.25	0°	2°
Max		8°	12°

8.Ordering information



yww: Batch Code

Order Code	Package	Base QTY	Delivery Mode
UMW SI2300A	SOT-23	3000	Tape and reel

9.Disclaimer

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