UMW SI2302A

20V N-Channel MOSFET

1.Description

The SI2302A uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with gate voltages as low as 2.5V. This device is suitable for use as a Battery protection or in other Switching application.

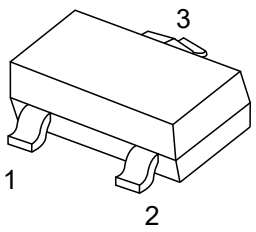
2.Features

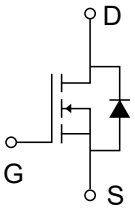
- V_{DS}=20V
- $R_{DS(ON)}$=35mΩ(V_{GS}=4.5V), I_D=3.6A
- $R_{DS(ON)}$=40mΩ(V_{GS}=2.5V), I_D=3.1A

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}	±8	
Continuous Drain Current *1	T_A=25°C	I_D	3.6	A
	T_A=70°C		3.1	
Pulsed Drain Current		I_{DM}	10	
Power Dissipation	T_A=25°C	P_D	1.25	W
	T_A=70°C		0.8	
Thermal Resistance.Junction- to-Ambient *1		R_{thJA}	100	°C/W
*2			166	
Junction Temperature		T_J	150	°C
Storage Temperature Range		T_{STG}	-55 to 150	

Notes :

*1.Surface Mounted on FR4 Board, t ≤ 5 sec.

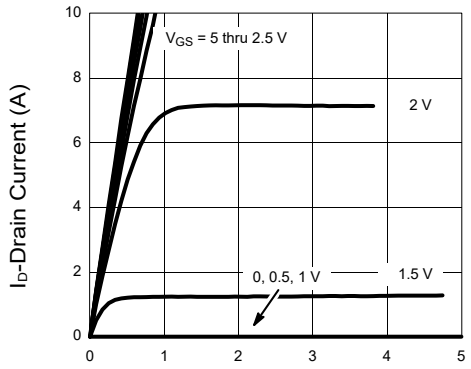
*2.Surface Mounted on FR4 Board.

5.Electrical Characteristics T_A= 25°C

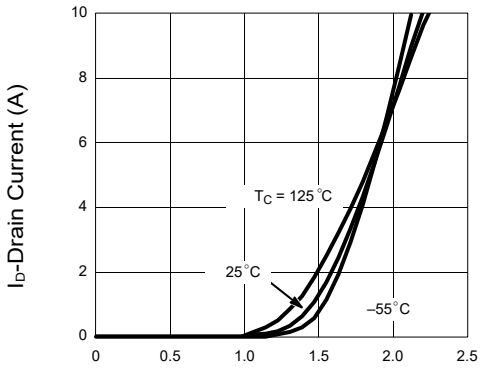
Parameter	Symbol	Conditions	Min	Typ	Max	Units
Drain-Source Breakdown Voltage	V_{DSS}	I_D=250μA, V_{GS}=0V	20			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=20V, V_{GS}=0V			1	μA
		V_{DS}=20V, V_{GS}=0V, T_J=55°C			10	
Gate-Body leakage current	I_{GSS}	V_{DS}=0V, V_{GS}=±8V			±100	nA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=250μA	0.62	0.95	1.9	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS}=4.5V, I_D=3.6A			35	mΩ
		V_{GS}=2.5V, I_D=3.1A			40	
Forward Transconductance	g_{FS}	V_{DS}=5V, I_D=3.6A		8		S
Input Capacitance	C_{iss}	V_{GS}=0V, V_{DS}=10V, f=1MHz		300		pF
Output Capacitance	C_{oss}			120		
Reverse Transfer Capacitance	C_{rss}			80		
Total Gate Charge	Q_g	V_{DS}=10V		4	10	nC
Gate Source Charge	Q_{gs}	V_{GS}=4.5V		0.65		
Gate Drain Charge	Q_{gd}	I_D=3.6A		1.5		
Turn-On DelayTime	$t_{D(on)}$	V_{GS}=4.5V, V_{DS}=10V		7	15	ns
Turn-On Rise Time	t_r	R_L=5.5Ω, R_{GEN}=6Ω		55	80	
Turn-Off DelayTime	$t_{D(off)}$	I_D=3.6A		16	60	
Turn-Off Fall Time	t_f			10	25	
Continuous Source Current (Diode Conduction)	I_S			1.6		A
Diode Forward Voltage	V_{SD}	I_S=1.6A, V_{GS}=0V		0.76	1.2	V

* Pulse test: PW ≤300us duty cycle≤ 2%.

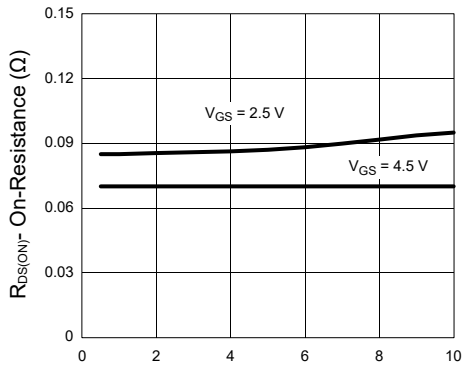
6.1Typical Characterisitics



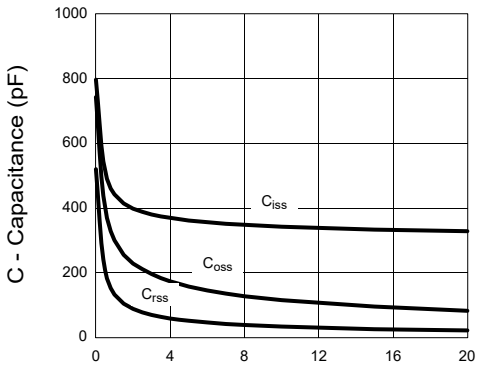
Output Characteristics



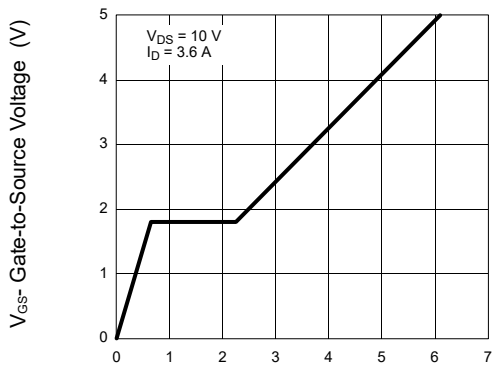
Transfer Characteristics



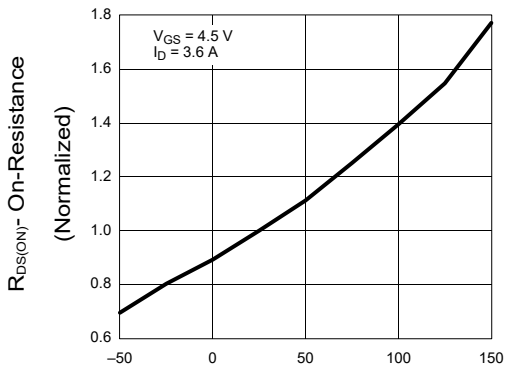
On-Resistance vs. Drain Current



Capacitance

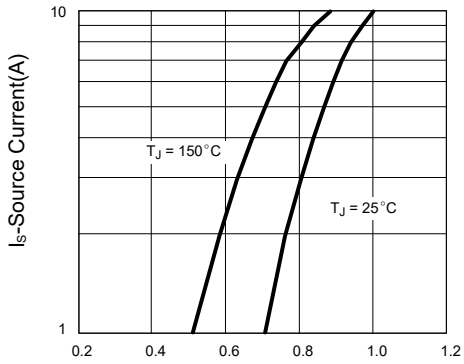


Gate Charge

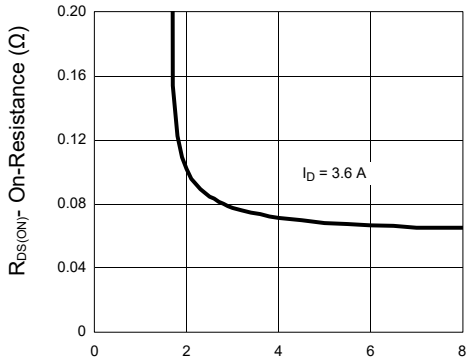


On-Resistance vs. Junction Temperature

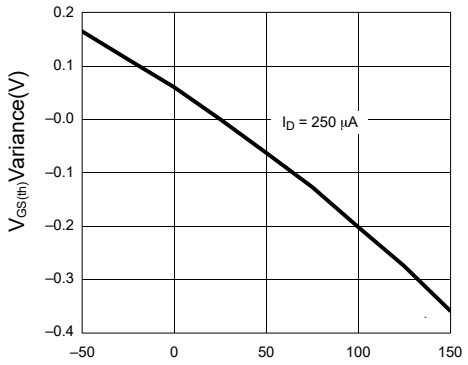
6.2Typical Characterisitics



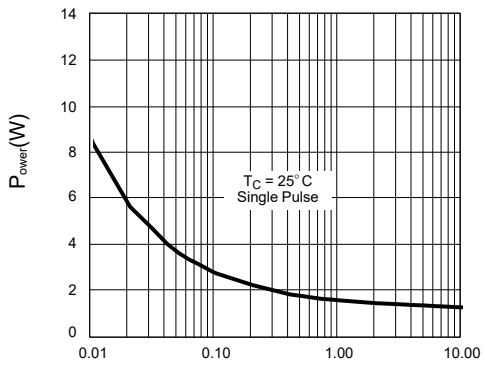
Source-Drain Diode Forward Voltage



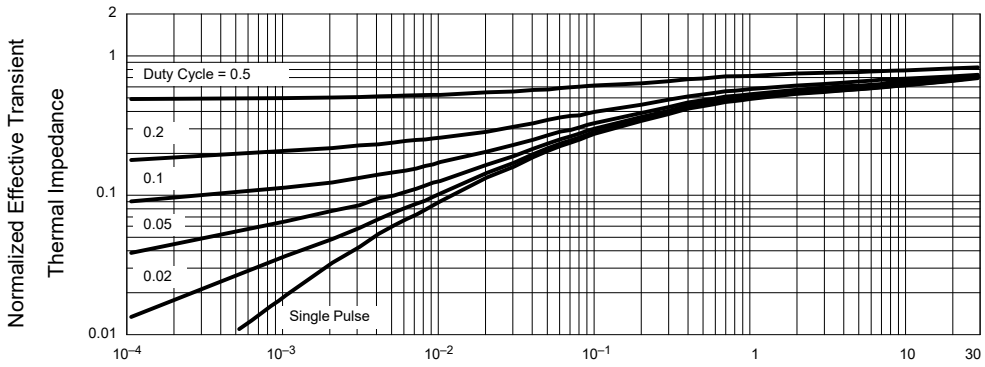
On-Resistance vs. Gate-to-Source Voltage



Threshold Voltage

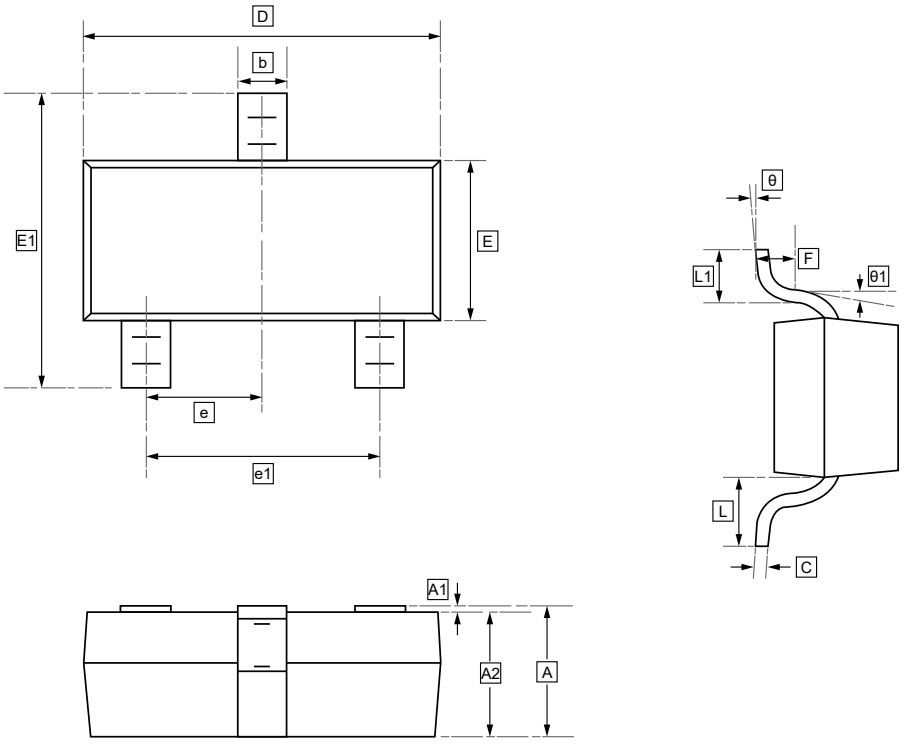


Single Pulse Power



Normalized Thermal Transient Impedance, Junction-to-Ambient

7.SOT-23 Package Outline Dimensions

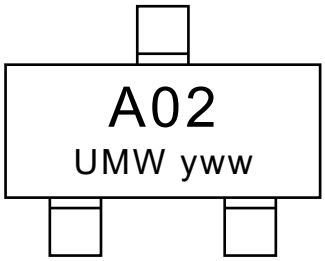


DIMENSIONS (mm are the original dimensions)

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 SI2302A	SOT-23	3000	Tape and reel

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