UMW SI2307A

-30V P-Channel MOSFET

1.Description

The SI2307A uses advanced trench technology to provide excellent $R_{DS(ON)}$, and low gate charge. This device is suitable for use as a load switch or in PWM applications.

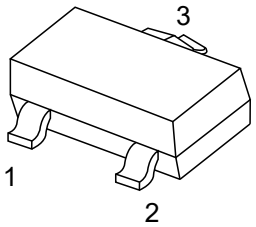
2.Features

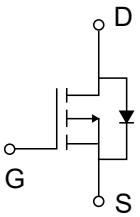
- $V_{DS(V)}$=-30V
- I_D=-3A(V_{GS}=-10V)
- $R_{DS(ON)}$<50mΩ(V_{GS}=-10V)
- $R_{DS(ON)}$<70mΩ(V_{GS}=-4.5V)

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

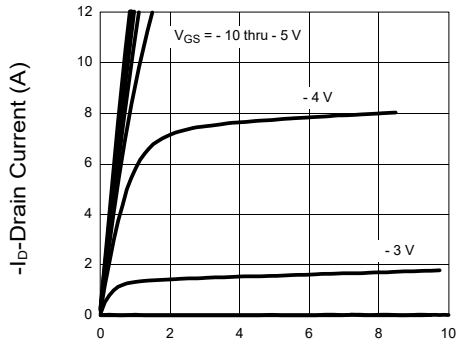
Parameter		Symbol	Rating	Units
Drain-Source Voltage		V_{DS}	-30	V
Gate-Source Voltage		V_{GS}	±20	
Continuous Drain Current	T_A=25°C	I_D	-3	A
	T_A=70°C		-2.5	
Pulsed Drain Current		I_{DM}	-12	
Power Dissipation	T_A=25°C	P_D	1.25	W
	T_A=70°C		0.8	
Thermal Resistance.Junction- to-Ambient	t ≤10sec	R_{thJA}	100	°C/W
Junction Temperature		T_J	150	°C
Storage Temperature Range		T_{STG}	-55 to 150	°C

5.Electrical Characteristics T_A= 25°C

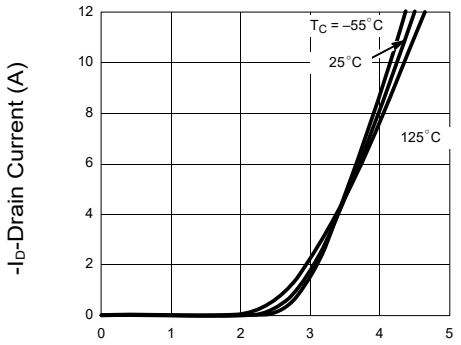
Parameter	Symbol	Conditions	Min	Typ	Max	Units
Drain-Source Breakdown Voltage	V_{DSS}	I_D=-250μA, V_{GS}=0V	-30			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=-24V, V_{GS}=0V			-1	μA
		V_{DS}=-24V,V_{GS}=0V,T_J=55°C			-10	
Gate-Body leakage current	I_{GSS}	V_{DS}=0V, V_{GS}=±20V			±100	nA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=-250μA	-1		-3	V
Static Drain-Source On-Resistance *1	$R_{DS(ON)}$	V_{GS}=-10V, I_D=-3A			50	mΩ
		V_{GS}=-4.5V, I_D=-2.5A			70	
On state drain current *1	$I_{D(ON)}$	V_{GS}=-10V, V_{DS}=-5A	-6			A
Forward Transconductance *1	g_{FS}	V_{DS}=-10V, I_D=-3A		4.5		S
Input Capacitance	C_{iss}	V_{GS}=0V, V_{DS}=-15V, f=1MHz		565		pF
Output Capacitance	C_{oss}			126		
Reverse Transfer Capacitance	C_{rss}			75		
Total Gate Charge	Q_g	V_{DS}=-15V V_{GS}=-15V I_D=-3A		10	15	nC
Gate Source Charge	Q_{gs}			1.9		
Gate Drain Charge	Q_{gd}			2		
Turn-On DelayTime	$t_{D(on)}$	V_{GS}=-10V, V_{DS}=-15V R_L=15Ω, R_{GEN}=6Ω I_D=-1A		10	20	ns
Turn-On Rise Time	t_r			9	20	
Turn-Off DelayTime	$t_{D(off)}$			27	50	
Turn-Off Fall Time	t_f			7	16	
Maximum Body-Diode Continuous Current	I_S				-1.25	A
Diode Forward Voltage	V_{SD}	I_S=-1.25A, V_{GS}=0V			-1.2	V

*1Pulse test: PW ≤ 300u s duty cycle ≤ 2%.

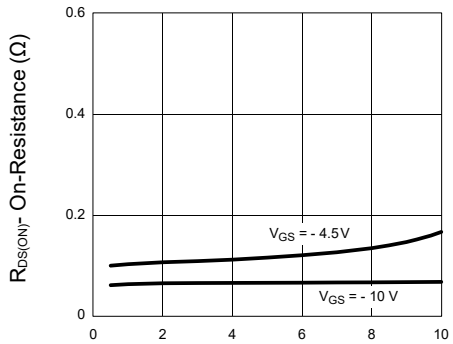
6.1Typical Characterisitics



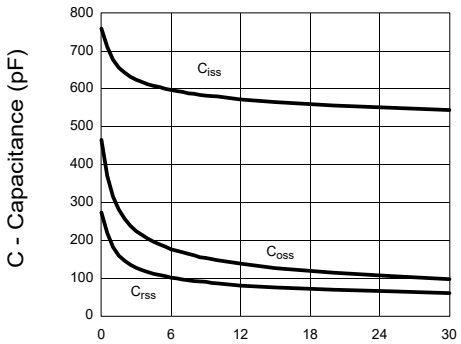
Output Characteristics



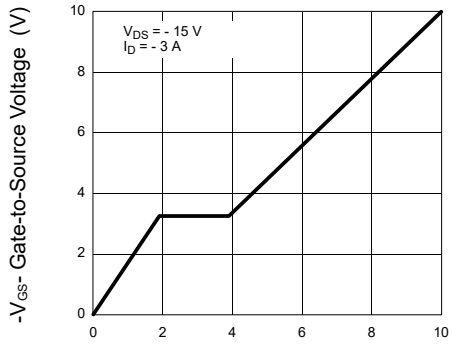
Transfer Characteristics



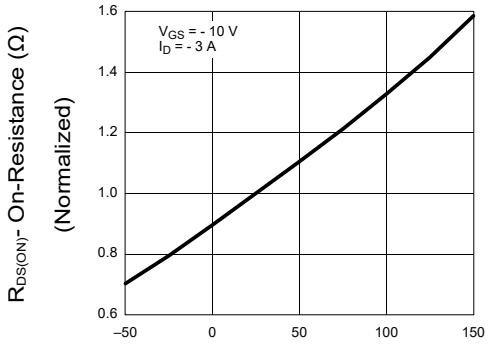
On-Resistance vs. Drain Current



Capacitance

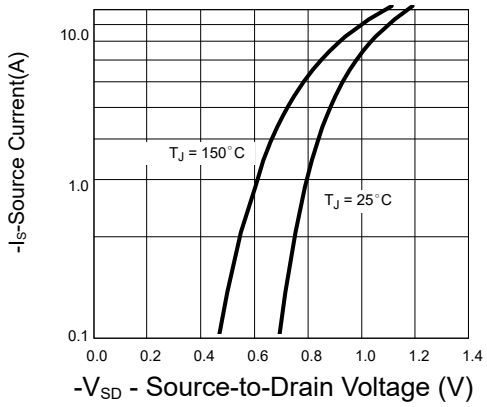


Gate Charge

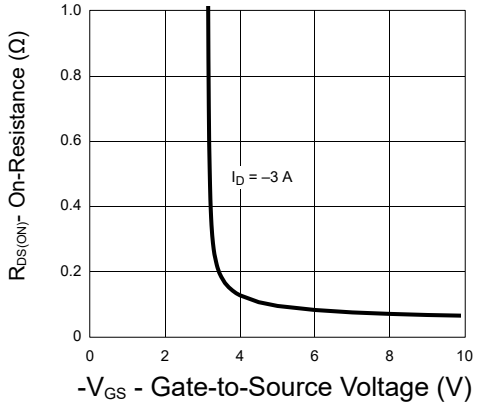


On-Resistance vs. Junction Temperature

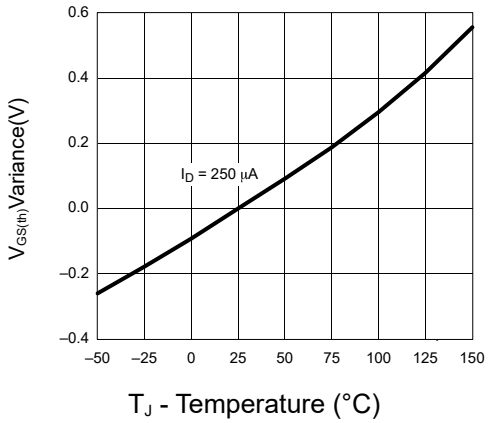
6.2Typical Characterisitics



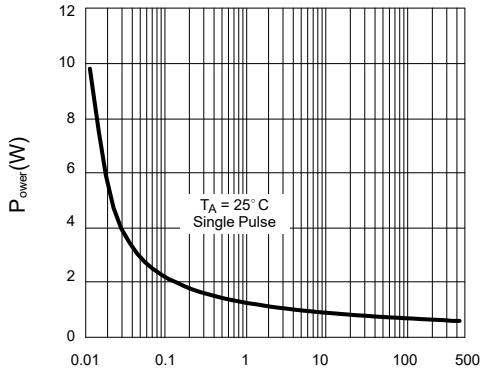
Source-Drain Diode Forward Voltage



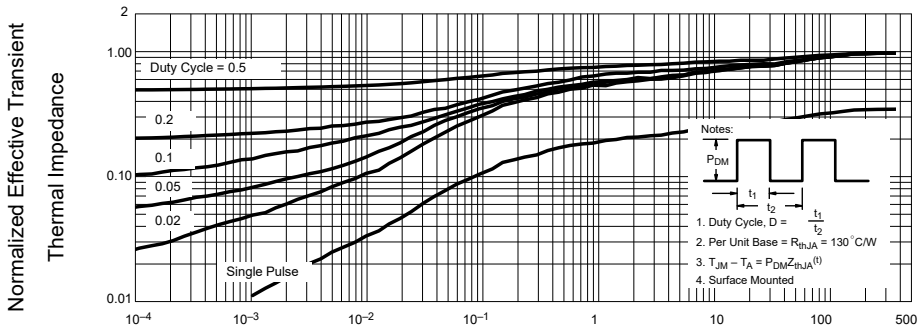
On-Resistance vs. Gate-to-Source Voltage



Threshold Voltage

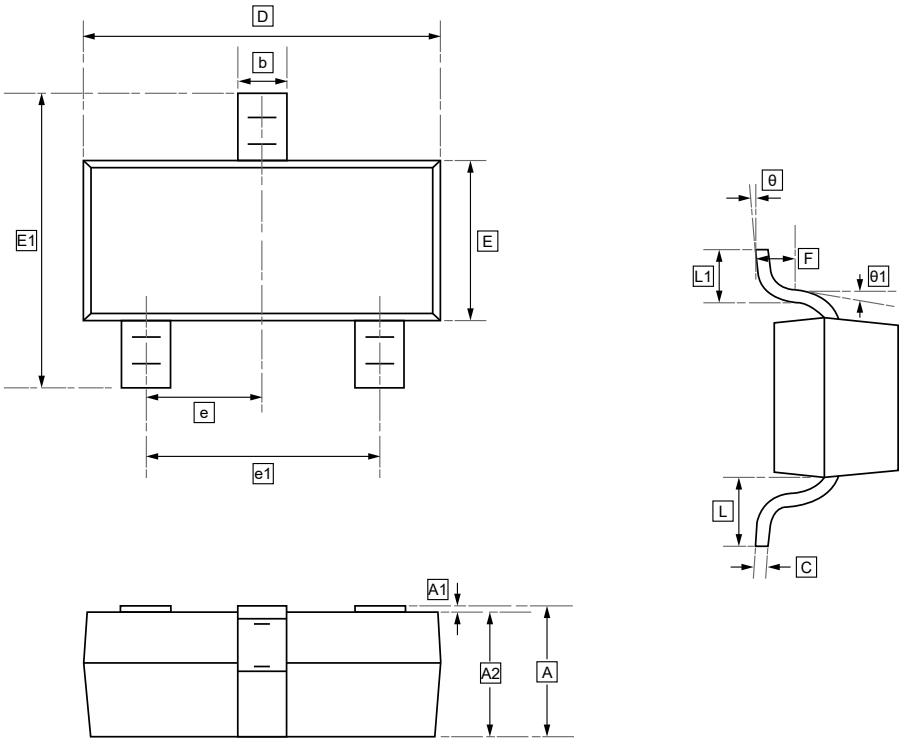


Single Pulse Power



Normalized Thermal Transient Impedance, Junction-to-Ambient

7.SOT-23 Package Outline Dimensions

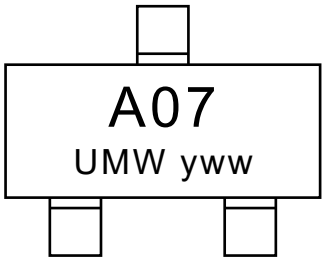


DIMENSIONS (mm are the original dimensions)

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 SI2307A	SOT-23	3000	Tape and reel

9.Disclaimer

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