UMW SI2305A

-20V P-Channel MOSFET

1.Description

The SI2305A 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.

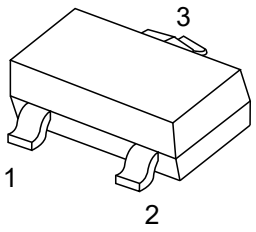
2.Features

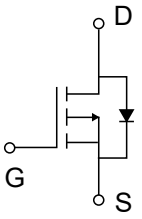
- $V_{DS(V)}$=-20V
- $R_{DS(ON)}$<40mΩ(V_{GS}=-4.5V), I_D=-4.2A
- $R_{DS(ON)}$<60mΩ(V_{GS}=-2.5V), I_D=-3.4A

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

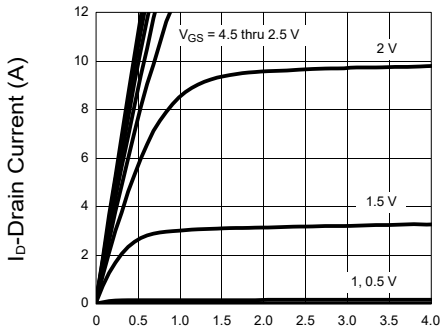
Parameter		Symbol	Maximum	Units
Drain-Source Voltage		V_{DS}	-20	V
Gate-Source Voltage		V_{GS}	±12	V
Continuous Drain Current	T_A=25°C	I_D	-4.2	A
	T_A=70°C		-3.4	
Pulsed Drain Current		I_{DM}	-10	
Power Dissipation	T_A=25°C	P_D	1.38	W
	T_A=70°C		0.8	
Thermal Resistance.Junction-to-Ambient		$R_{\theta JA}$	90	°C/W
Operating junction and storage temperature range		T_J,T_{STG}	-55 to 150	°C

5.Electrical Characteristics T_A= 25°C

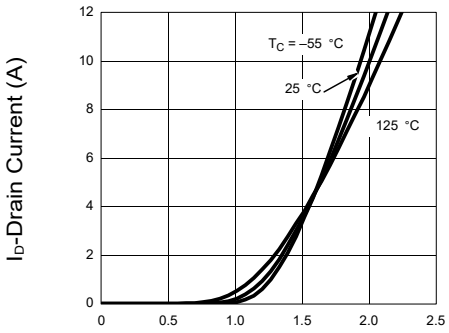
Parameter	Symbol	Conditions	Min	Typ	Max	Units
Drain-Source Breakdown Voltage	V_{DSS}	I_D=-10μA, V_{GS}=0V	-20			V
Gate threshold voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=-250μA	-0.5			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=-20V, V_{GS}=0V			-1	μA
		V_{DS}=-16V,V_{GS}=0V,T_J=55°C			-10	μA
Gate-body leakage	I_{GSS}	V_{DS}=0V, V_{GS}=±12V			±100	nA
Drain-source on-state resistance	$R_{DS(ON)}$	V_{GS}=-4.5V, I_D=-4.2A			40	mΩ
		V_{GS}=-2.5V, I_D=-3.4A			60	
On-state drain curren	$I_{D(ON)}$	V_{DS}≤-5V, V_{GS}=-4.5V	-6			A
		V_{DS}≤-5V, V_{GS}=-2.5V	-3			
Forward transconductance	g_{FS}	V_{DS}=-4.5V, I_D=-2.8A		9		S
Input capacitance *	C_{iss}	V_{GS}=0V, V_{DS}=-15V, f=1MHz		740		pF
Output capacitance *	C_{oss}			167		
Reverse transfer capacitance *	C_{rss}			126		
Total gate charge *	Q_g	V_{DS}=-16V V_{GS}=-4.5V I_D=-4.2A		10.6		nC
Gate-source charge *	Q_{gs}			2.32		
Gate-drain charge*	Q_{gd}			3.68		
Turn - On Delay Time	$t_{D(on)}$	V_{DD}=-15V, R_L=3.6Ω I_D=-4.2A V_{GEN}=-10V, R_G=6Ω		5.9		ns
Turn - On Rise Time	t_r			3.6		ns
Turn - Off Delay Time	$t_{D(off)}$			32.4		ns
Turn - Off Fall Time	t_f			2.6		ns
Continuous source current (diode conduction) *	I_S			-1.6		A
Diode forward voltage	V_{SD}	I_S=-1.2A, V_{GS}=0V		-0.8	-1.2	V

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

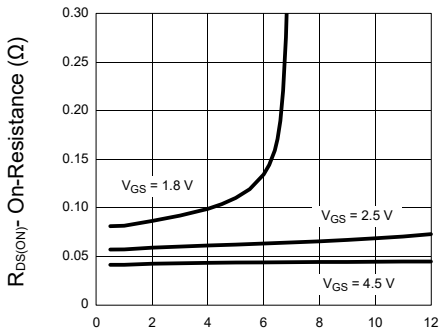
6.1Typical Characterisitics



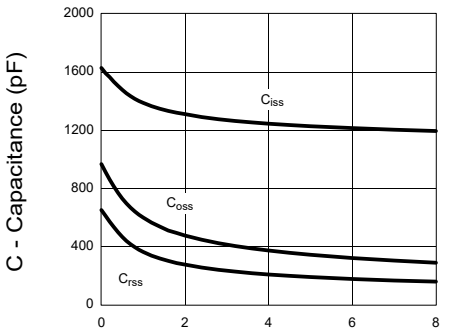
Output Characteristics



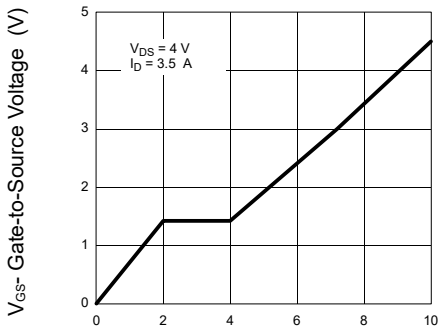
Transfer Characteristics



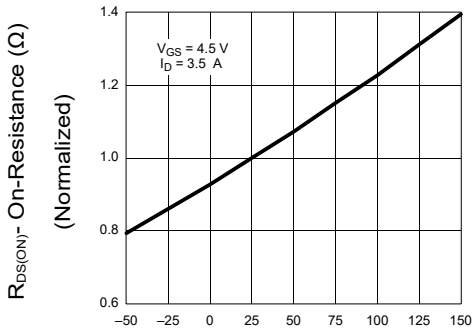
On-Resistance vs. Drain Current



Capacitance

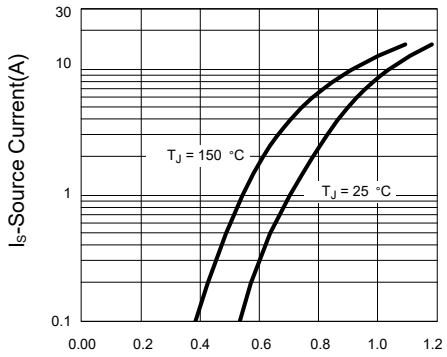


Gate Charge

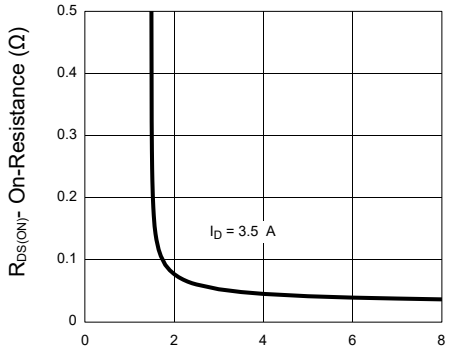


On-Resistance vs. Junction Temperature

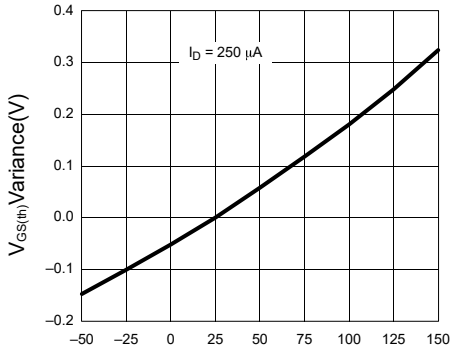
6.2Typical Characterisitics



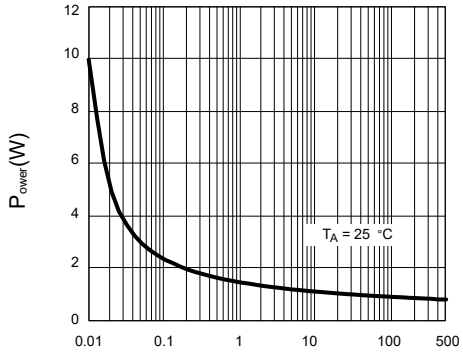
Source-Drain Diode Forward Voltage



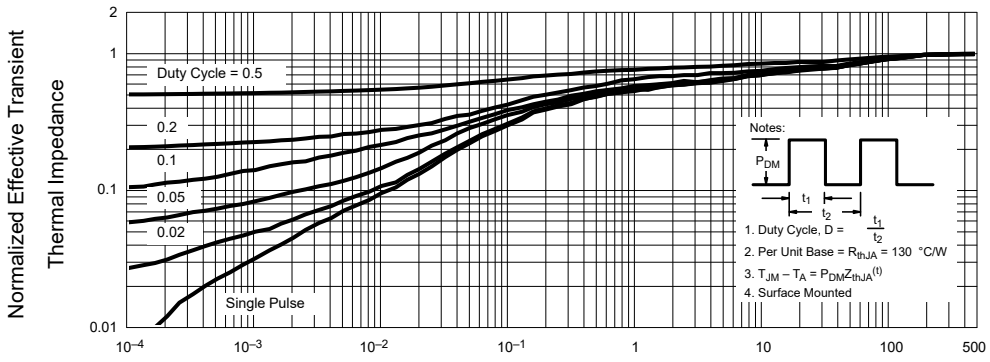
On-Resistance vs. Gate-to-Source Voltage



Threshold Voltage

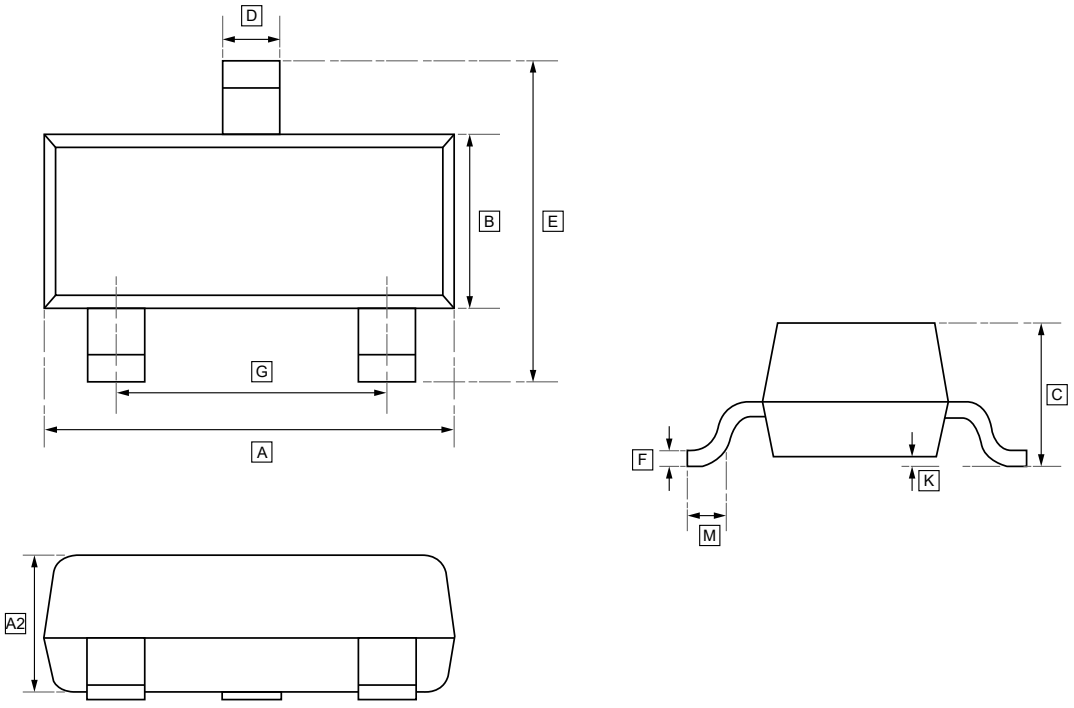


Single Pulse Power



Normalized Thermal Transient Impedance, Junction-to-Ambient

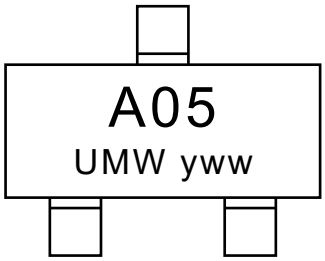
7.SOT-23 Package Outline Dimensions



DIMENSIONS (mm are the original dimensions)

Symbol	A	B	C	D	E	G	K	M	A2	F
Min	2.80	1.20	0.90	0.32	2.25	1.80	0.00	0.30	0.95	0.095
Max	3.04	1.40	1.10	0.55	2.55	2.00	0.10	-	1.05	0.115

8.Ordering information



yww: Batch Code

Order Code	Package	Base QTY	Delivery Mode
UMW SI2305A	SOT-23	3000	Tape and reel

9.Disclaimer

UMW reserves the right to make changes to all products, specifications. Customers should obtain the latest version of product documentation and verify the completeness and currency of the information before placing an order.

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