

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.

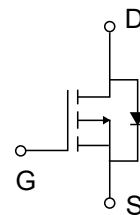
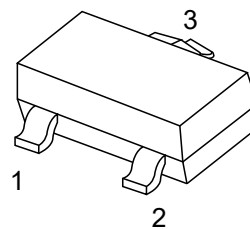
2.Features

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

3.Pinning information

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

SOT-23



4.Absolute Maximum Ratings $T_A = 25^\circ C$

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



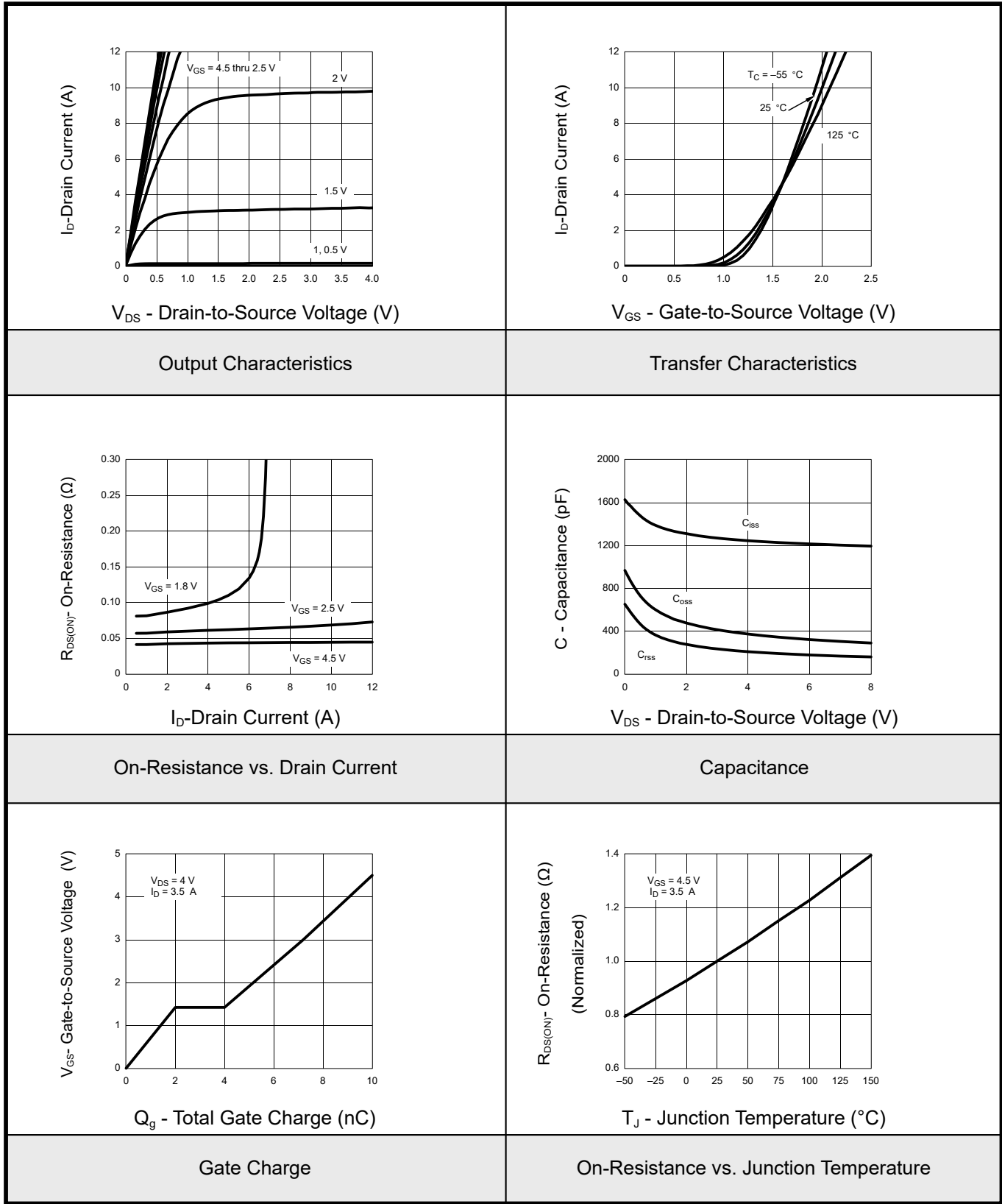
5. Electrical Characteristics $T_A = 25^\circ\text{C}$

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Drain-Source Breakdown Voltage	V_{DSS}	$I_D = -10\mu\text{A}$, $V_{GS} = 0\text{V}$	-20			V
Gate threshold voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}$, $I_D = -250\mu\text{A}$	-0.5			V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = -20\text{V}$, $V_{GS} = 0\text{V}$			-1	μA
		$V_{DS} = -16\text{V}$, $V_{GS} = 0\text{V}$, $T_J = 55^\circ\text{C}$			-10	μA
Gate-body leakage	I_{GSS}	$V_{DS} = 0\text{V}$, $V_{GS} = \pm 12\text{V}$			± 100	nA
Drain-source on-state resistance	$R_{DS(ON)}$	$V_{GS} = -4.5\text{V}$, $I_D = -4.2\text{A}$			40	m Ω
		$V_{GS} = -2.5\text{V}$, $I_D = -3.4\text{A}$			60	
On-state drain current	$I_{D(ON)}$	$V_{DS} \leq -5\text{V}$, $V_{GS} = -4.5\text{V}$	-6			A
		$V_{DS} \leq -5\text{V}$, $V_{GS} = -2.5\text{V}$	-3			
Forward transconductance	g_{FS}	$V_{DS} = -4.5\text{V}$, $I_D = -2.8\text{A}$		9		S
Input capacitance *	C_{iss}	$V_{GS} = 0\text{V}$, $V_{DS} = -15\text{V}$, $f = 1\text{MHz}$		740		pF
Output capacitance *	C_{oss}			167		
Reverse transfer capacitance *	C_{rss}			126		
Total gate charge *	Q_g	$V_{DS} = -16\text{V}$		10.6		nC
Gate-source charge *	Q_{gs}	$V_{GS} = -4.5\text{V}$		2.32		
Gate-drain charge*	Q_{gd}	$I_D = -4.2\text{A}$		3.68		
Turn - On Delay Time	$t_{D(on)}$	$V_{DD} = -15\text{V}$, $R_L = 3.6\Omega$ $I_D = -4.2\text{A}$ $V_{GEN} = -10\text{V}$, $R_G = 6\Omega$		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}	$I_S = -1.2\text{A}$, $V_{GS} = 0\text{V}$		-0.8	-1.2	V

* Pulse test: $PW \leq 300\mu\text{s}$ duty cycle $\leq 2\%$.

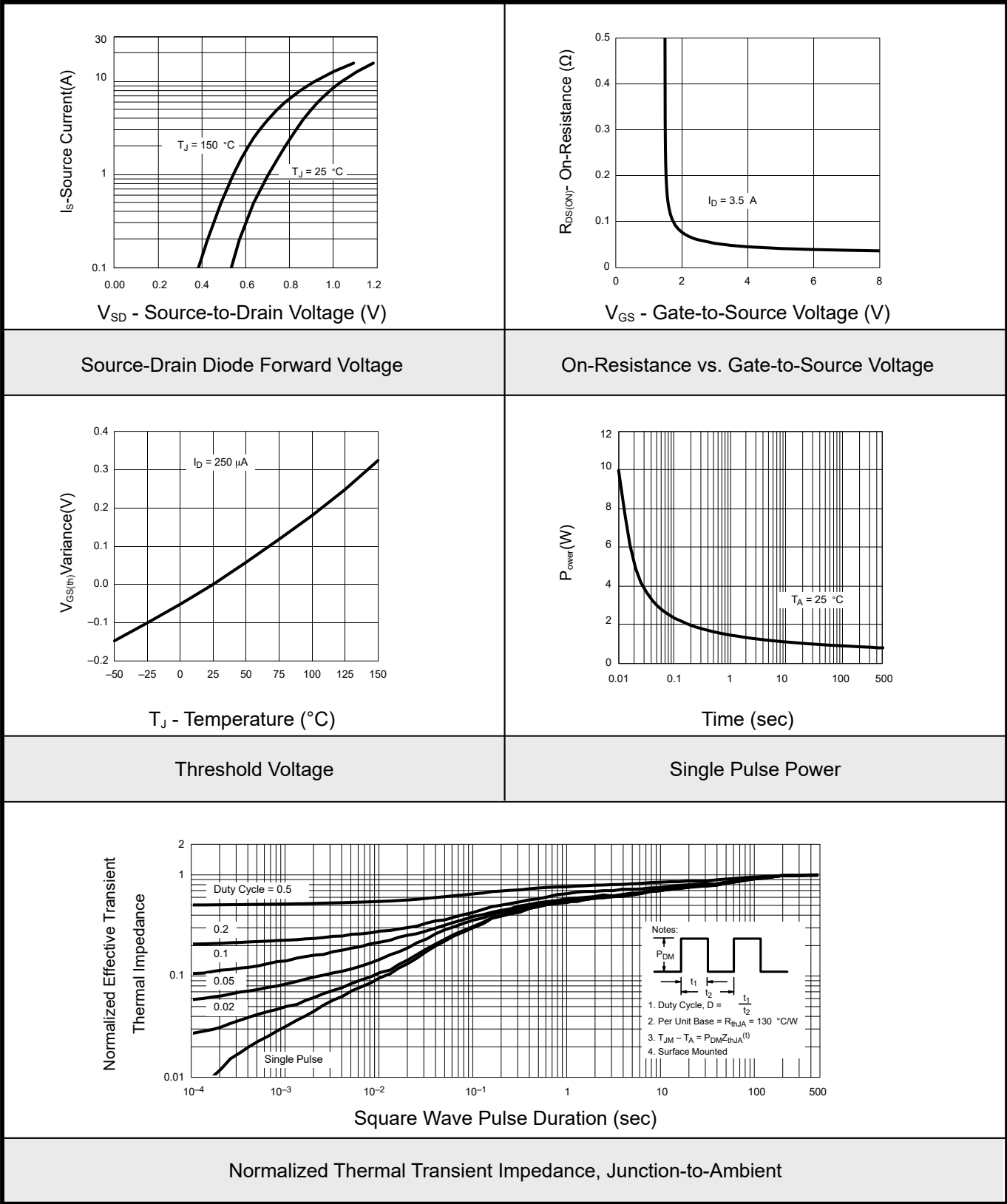


6.1Typical Characterisitics



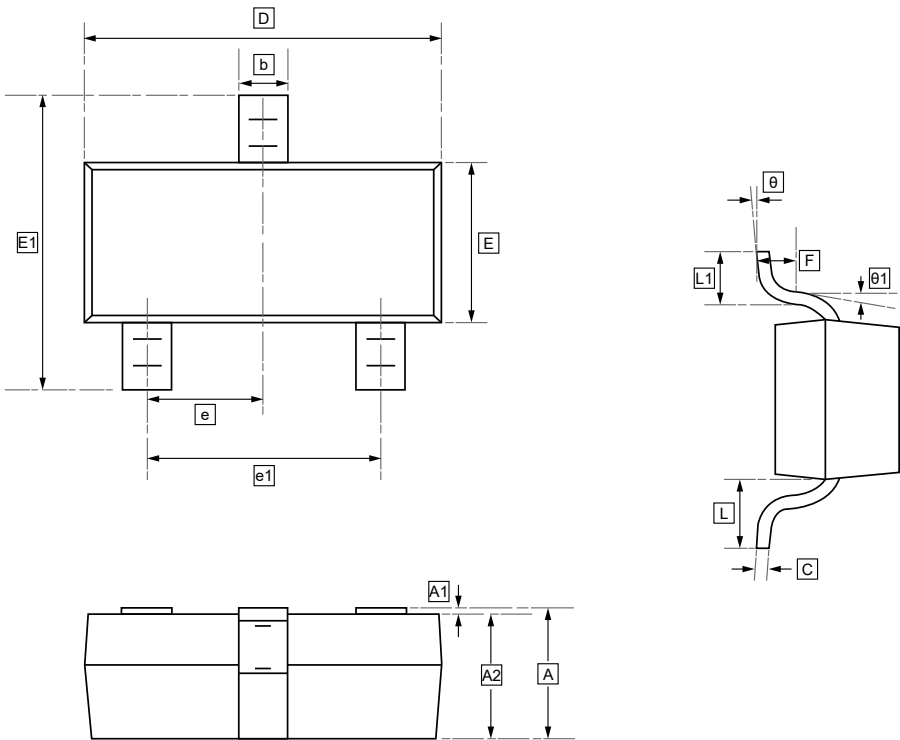


6.2Typical Characteristics





7.SOT-23 Package Outline Dimensions



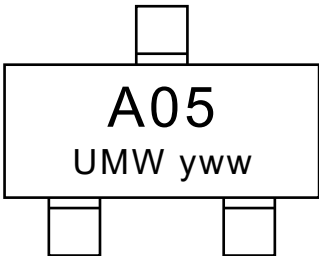
DIMENSIONS (mm are the original dimensions)

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 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.

When applying our products, please do not exceed the maximum rated values, as this may affect the reliability of the entire system. Under certain conditions, any semiconductor product may experience faults or failures. Buyers are responsible for adhering to safety standards and implementing safety measures during system design, prototyping, and manufacturing when using our products to prevent potential failure risks that could lead to personal injury or property damage.

Unless explicitly stated in writing, UMW products are not intended for use in medical, life-saving, or life-sustaining applications, nor for any other applications where product failure could result in personal injury or death. If customers use or sell the product for such applications without explicit authorization, they assume all associated risks.

When reselling, applying, or exporting, please comply with export control laws and regulations of China, the United States, the United Kingdom, the European Union, and other relevant countries, regions, and international organizations.

This document and any actions by UMW do not grant any intellectual property rights, whether express or implied, by estoppel or otherwise. The product names and marks mentioned herein may be trademarks of their respective owners.