

1.Description

The SI2304A 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.

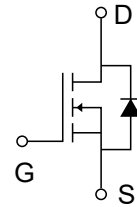
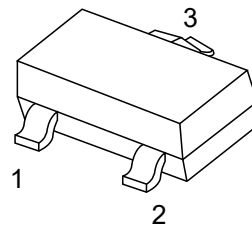
2.Features

- $V_{DS(V)}=30V$
- $R_{DS(ON)}=27m\Omega$ (TYP.) @ $V_{GS}=10V$
- $R_{DS(ON)}=36m\Omega$ (TYP.) @ $V_{GS}=4.5V$

3.Pinning information

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

SOT-23



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

Parameter		Symbol	Rating	Units
Drain-Source Voltage		V_{DS}	30	V
Gate-Source Voltage		V_{GS}	± 20	
Continuous Drain Current $T_J=150^{\circ}C$ *1	$T_A=25^{\circ}C$	I_D	3.6	A
	$T_A=70^{\circ}C$		3	
Pulsed Drain Current		I_{DM}	16	
Power Dissipation *1	$T_A=25^{\circ}C$	P_D	1.25	W
	$T_A=70^{\circ}C$		0.8	
Thermal Resistance.Junction- to-Ambient	$t \leq 5$ sec	R_{thJA}	100	$^{\circ}C/W$
	Steady State		130	
Junction Temperature		T_J	150	$^{\circ}C$
Storage Temperature Range		T_{STG}	-55 to 150	

*1.Surface Mounted on FR4 Board, $t \leq 5$ sec



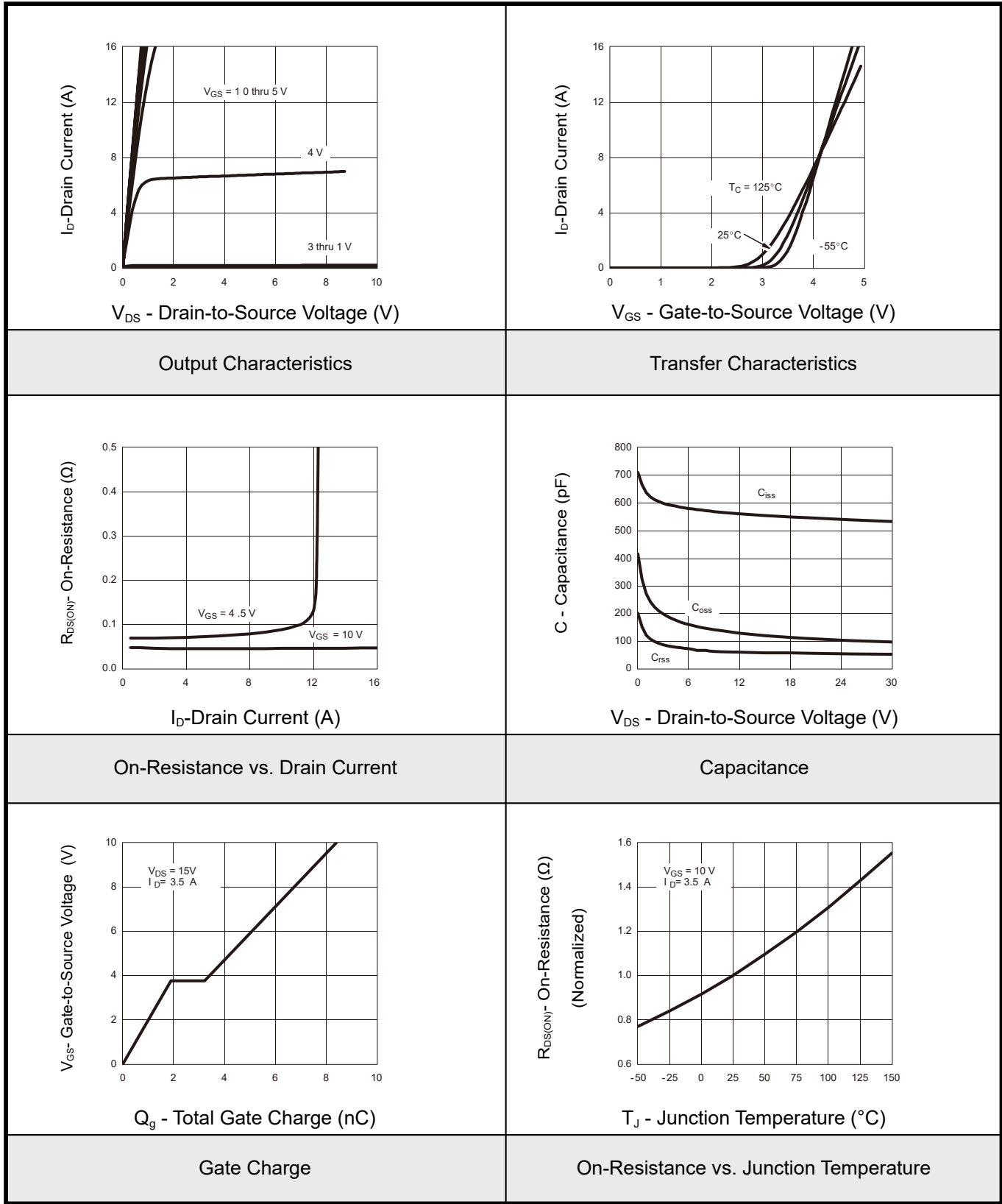
5. Electrical Characteristics $T_A = 25^\circ\text{C}$

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$I_D=250\mu\text{A}$, $V_{GS}=0\text{V}$	30			V
Gate threshold voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}$, $I_D=250\mu\text{A}$	1		3	V
Gate-body leakage	I_{GSS}	$V_{DS}=0\text{V}$, $V_{GS}=\pm 20\text{V}$			± 100	nA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=30\text{V}$, $V_{GS}=0\text{V}$			0.5	μA
		$V_{DS}=30\text{V}$, $V_{GS}=0\text{V}$, $T_J=55^\circ\text{C}$			10	
On-state drain current	$I_{D(ON)}$	$V_{DS}\geq 4.5\text{V}$, $V_{GS}=10\text{V}$	6			A
		$V_{DS}\geq 4.5\text{V}$, $V_{GS}=4.5\text{V}$	4			A
Drain-source on-state resistance	$R_{DS(ON)}$	$V_{GS}=10\text{V}$, $I_D=3.5\text{A}$		27	35	m Ω
		$V_{GS}=4.5\text{V}$, $I_D=2.8\text{A}$		36	46	
Forward transconductance	g_{FS}	$V_{DS}=4.5\text{V}$, $I_D=3.5\text{A}$		6.9		S
Diode forward voltage	V_{SD}	$I_S=1.25\text{A}$, $V_{GS}=0\text{V}$		0.8	1.2	V
gate charge *	Q_g	$V_{GS}=5\text{V}$, $V_{DS}=15\text{V}$, $I_D=3.5\text{A}$		4.2	7	nC
Total gate charge *	Q_{gt}	$V_{GS}=10\text{V}$		8.5	20	nC
Gate-source charge *	Q_{gs}	$V_{DS}=15\text{V}$		1.9		nC
Gate-drain charge *	Q_{gd}	$I_D=3.5\text{A}$		1.35		nC
Gate Resistance	R_g		0.5		2.4	Ω
Input capacitance *	C_{iss}	$V_{DS}=15\text{V}$		555		pF
Output capacitance *	C_{oss}	$V_{GS}=0\text{V}$		120		
Reverse transfer capacitance *	C_{rss}	$f=1\text{MHz}$		60		
Turn-on time	$t_{D(on)}$	$V_{DD}=15\text{V}$, $R_L=15\Omega$, $I_D=1\text{A}$		9	20	ns
	t_r			7.5	18	
Turn-off time	$t_{D(off)}$			17	35	
	t_f			5.2	12	

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

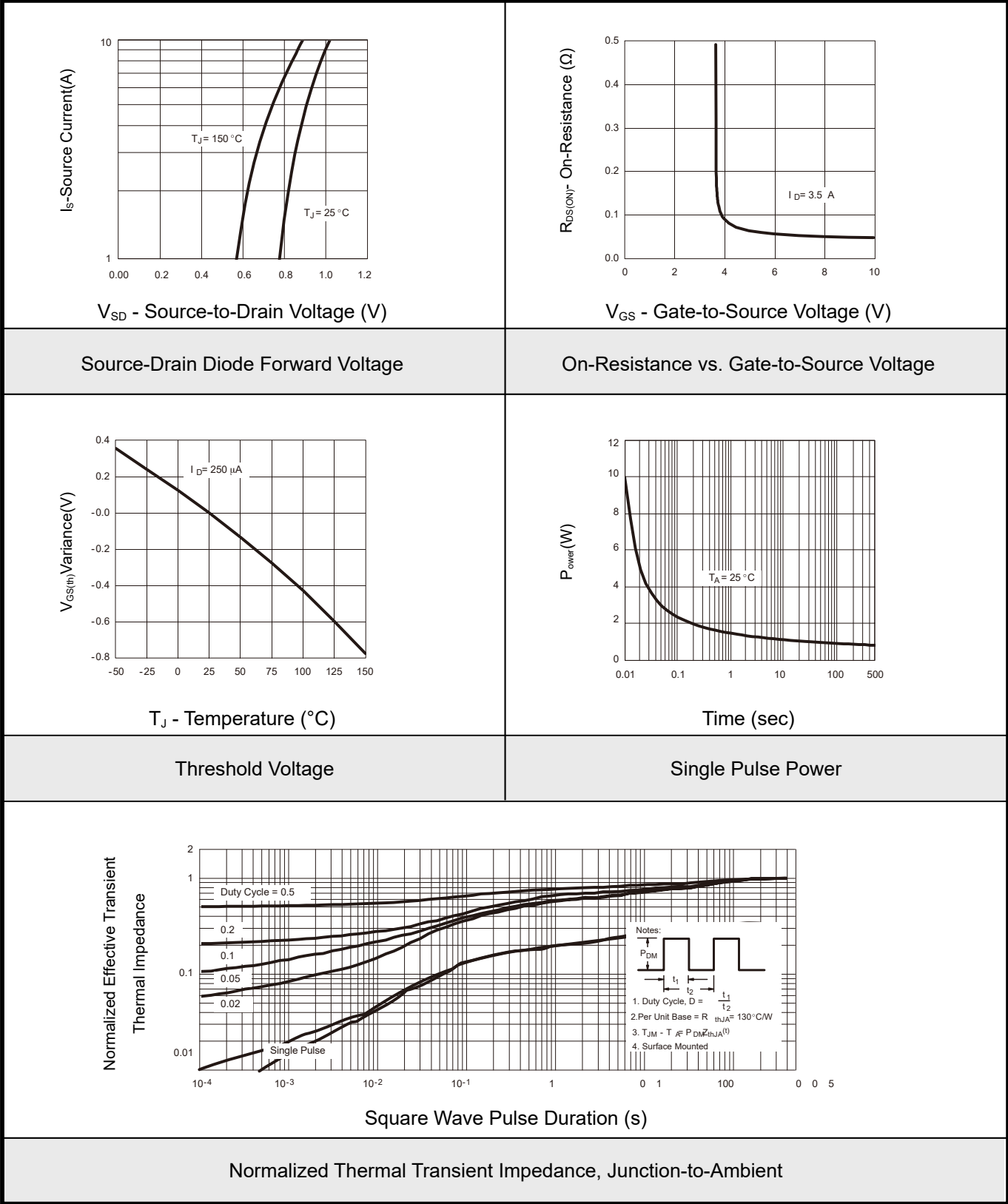


6.1Typical Characterisitics



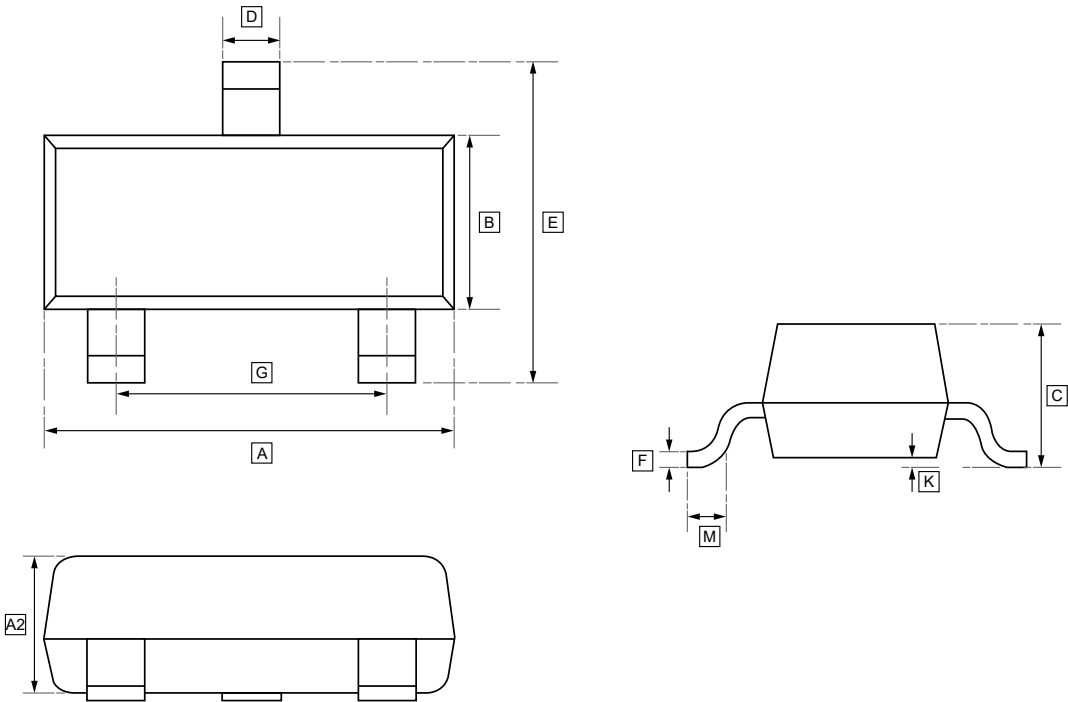


6.2Typical Characteristics





7.SOT-23 Package Outline Dimensions

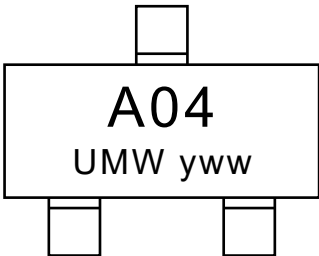


DIMENSIONS (mm are the original dimensions)

Symbol	A	B	C	D	E	G	K	M	A2	F
Min	2.85	1.20	0.90	0.40	2.25	1.80	0.00	0.30	0.95	0.095
Max	3.04	1.40	1.10	0.50	2.55	2.00	0.10	-	1.05	0.115



8.Ordering information



yww: Batch Code

Order Code	Package	Base QTY	Delivery Mode
UMW SI2304A	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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