

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.

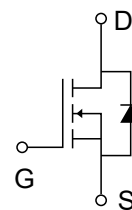
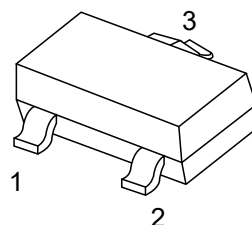
2.Features

- $V_{DS}=20V$
- $R_{DS(ON)}=45m\Omega(V_{GS}=4.5V), I_D=3.6A$
- $R_{DS(ON)}=60m\Omega(V_{GS}=2.5V), I_D=3.1A$

3.Pinning information

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

SOT-23



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

Parameter		Symbol	Rating	Units
Drain-Source Voltage		V_{DS}	20	V
Gate-Source Voltage		V_{GS}	± 8	
Continuous Drain Current *1	$T_A=25^{\circ}C$	I_D	3.6	A
	$T_A=70^{\circ}C$		3.1	
Pulsed Drain Current		I_{DM}	10	
Power Dissipation	$T_A=25^{\circ}C$	P_D	1.25	W
	$T_A=70^{\circ}C$		0.8	
Thermal Resistance.Junction- to-Ambient *1 *2		R_{thJA}	100	$^{\circ}C/W$
			166	
Junction Temperature		T_J	150	$^{\circ}C$
Storage Temperature Range		T_{STG}	-55 to 150	

Notes :

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

*2.Surface Mounted on FR4 Board.



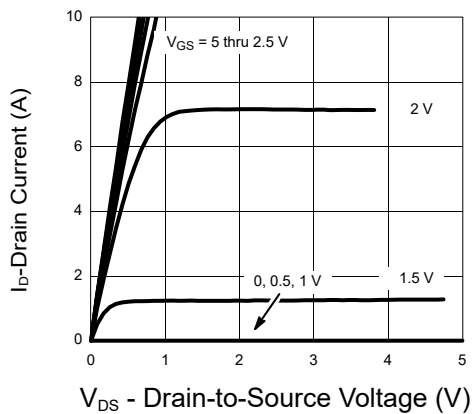
5. Electrical Characteristics $T_A = 25^\circ\text{C}$

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Drain-Source Breakdown Voltage	V_{DS}	$I_D=250\mu\text{A}$, $V_{GS}=0\text{V}$	20			V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=20\text{V}$, $V_{GS}=0\text{V}$			1	μA
		$V_{DS}=20\text{V}$, $V_{GS}=0\text{V}$, $T_J=55^\circ\text{C}$			10	
Gate-Body leakage current	I_{GSS}	$V_{DS}=0\text{V}$, $V_{GS}=\pm 8\text{V}$			± 100	nA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}$, $I_D=250\mu\text{A}$	0.62	0.95	1.9	V
Static Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=4.5\text{V}$, $I_D=3.6\text{A}$			45	m Ω
		$V_{GS}=2.5\text{V}$, $I_D=3.1\text{A}$			60	
Forward Transconductance	g_{FS}	$V_{DS}=5\text{V}$, $I_D=3.6\text{A}$		8		S
Input Capacitance	C_{iss}	$V_{GS}=0\text{V}$, $V_{DS}=10\text{V}$, $f=1\text{MHz}$		300		pF
Output Capacitance	C_{oss}			120		
Reverse Transfer Capacitance	C_{rss}			80		
Total Gate Charge	Q_g	$V_{DS}=10\text{V}$		4	10	nC
Gate Source Charge	Q_{gs}	$V_{GS}=4.5\text{V}$		0.65		
Gate Drain Charge	Q_{gd}	$I_D=3.6\text{A}$		1.5		
Turn-On DelayTime	$t_{D(on)}$	$V_{GS}=4.5\text{V}$, $V_{DS}=10\text{V}$ $R_L=5.5\Omega$, $R_{GEN}=6\Omega$ $I_D=3.6\text{A}$		7	15	ns
Turn-On Rise Time	t_r			55	80	
Turn-Off DelayTime	$t_{D(off)}$			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}	$I_S=1.6\text{A}$, $V_{GS}=0\text{V}$		0.76	1.2	V

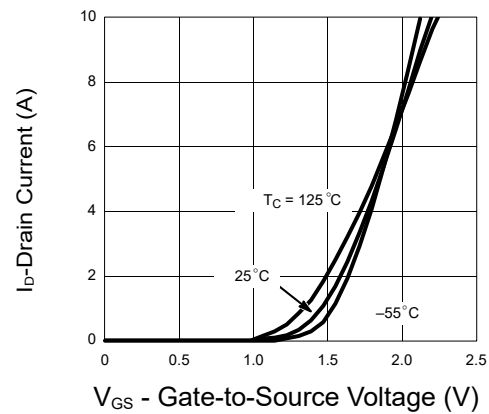
* Pulse test: $PW \leq 300\mu\text{s}$ duty cycle $\leq 2\%$.



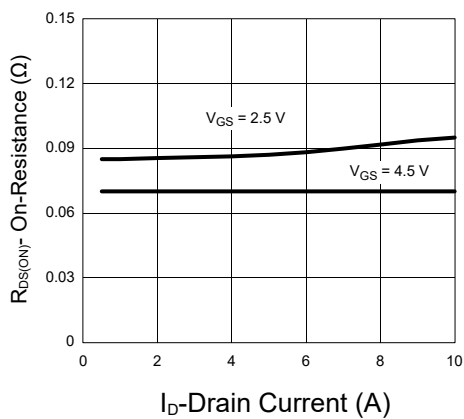
6.1 Typical Characteristics



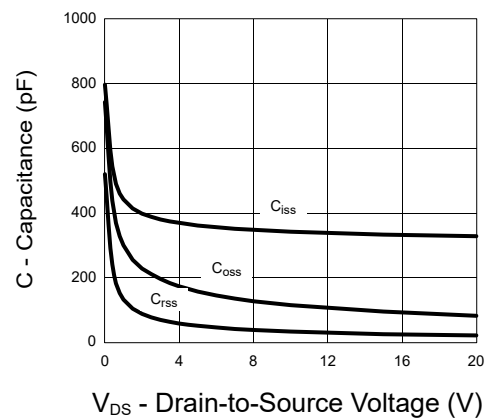
Output Characteristics



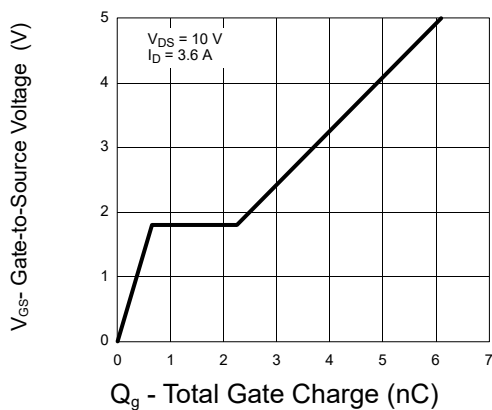
Transfer Characteristics



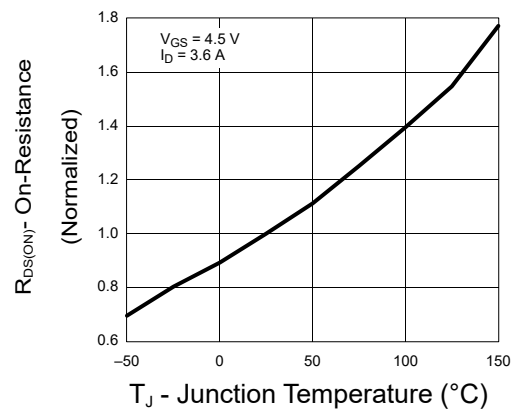
On-Resistance vs. Drain Current



Capacitance



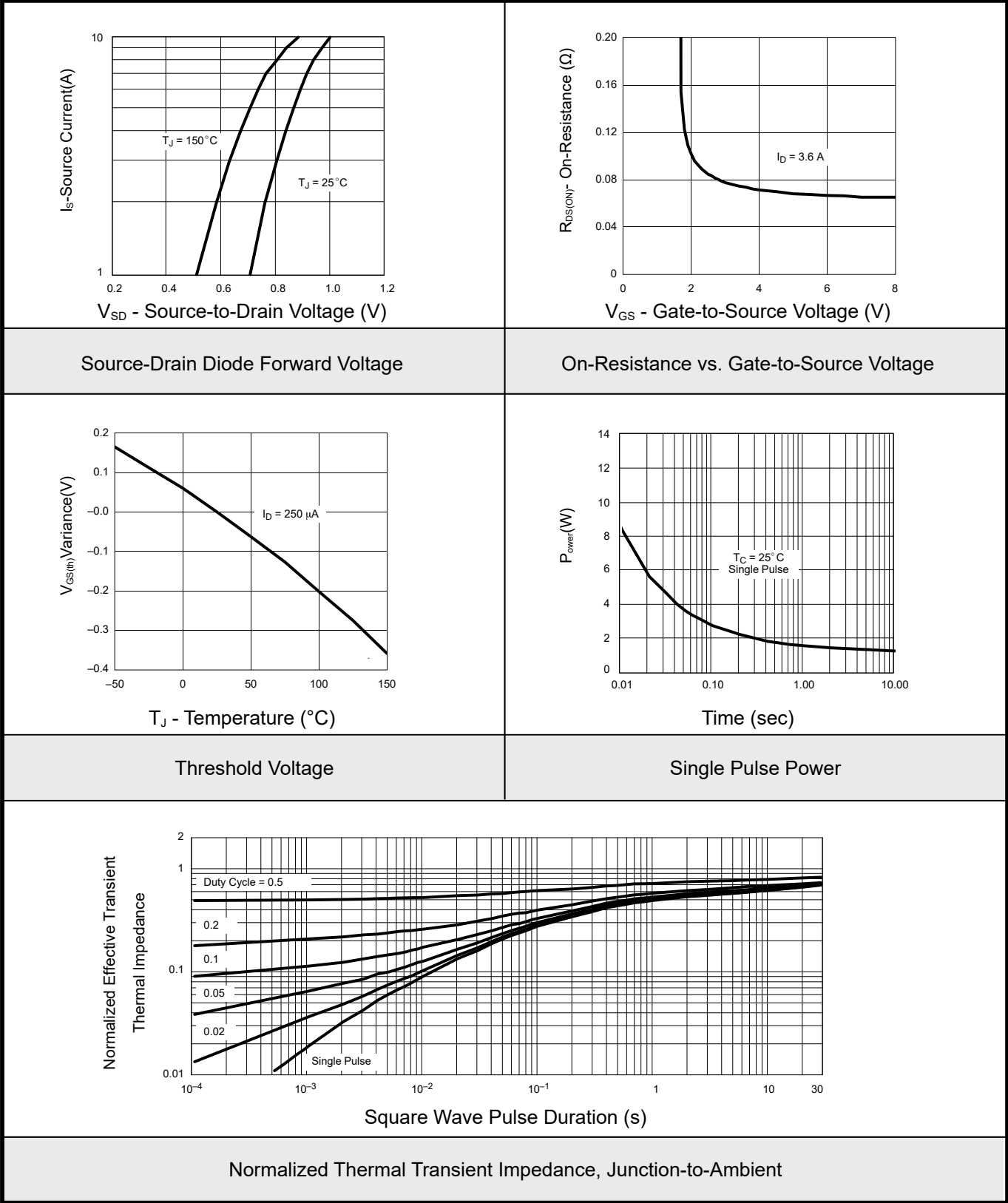
Gate Charge



On-Resistance vs. Junction Temperature

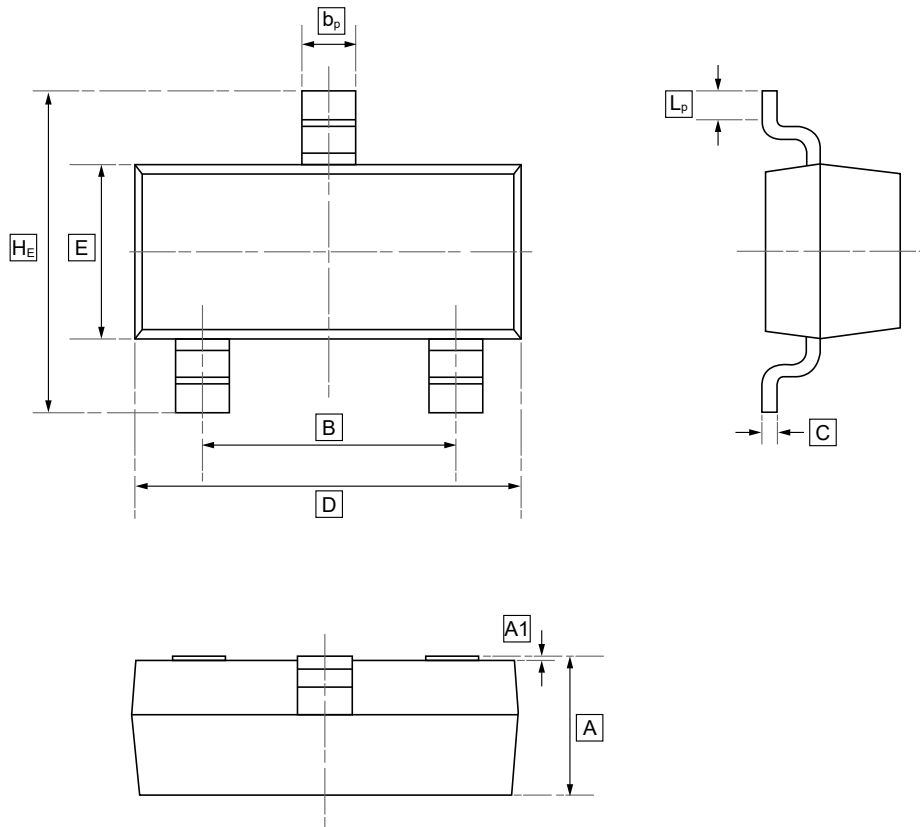


6.2Typical Characteristics





7.SOT-23 Package Outline Dimensions

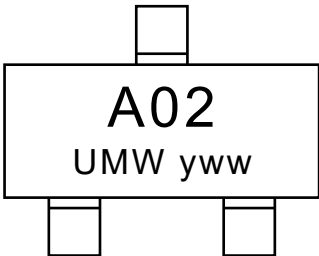


DIMENSIONS (mm are the original dimensions)

Symbol	A	B	b_p	C	D	E	H_E	A1	L_p
Min	0.95	1.78	0.35	0.08	2.70	1.20	2.20	0.013	0.20
Max	1.40	2.04	0.50	0.19	3.10	1.65	3.00	0.100	0.50



8.Ordering information



yww: Batch Code

Order Code	Package	Base QTY	Delivery Mode
UMW SI2302A	SOT-23	3000	Tape and reel



9.Disclaimer

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