

1.Description

The SI2318A 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.

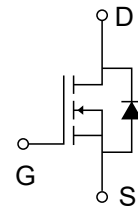
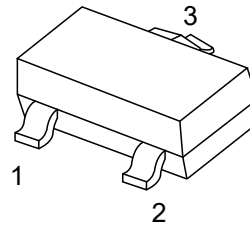
2.Features

- $V_{DS(V)}=40V$
- $I_D=5.6A$
- $R_{DS(ON)}<36m\Omega(V_{GS}=10V)$
- $R_{DS(ON)}<46m\Omega(V_{GS}=4.5V)$

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	Maximum	Units
Drain-Source Voltage		V_{DS}	40	V
Gate-Source Voltage		V_{GS}	± 20	
Continuous Drain Current	$T_C=25^{\circ}C$	I_D	5.6	A
	$T_C=70^{\circ}C$		4.5	
	$T_A=25^{\circ}C$		4.3 ^{b,c}	
	$T_A=70^{\circ}C$		3.5 ^{b,c}	
Pulsed Drain Current		I_{DM}	20	
Power Dissipation	$T_C=25^{\circ}C$	P_D	2.1	W
	$T_C=70^{\circ}C$		1.3	W
	$T_A=25^{\circ}C$		1.25 ^{b,c}	W
	$T_A=70^{\circ}C$		0.8 ^{b,c}	W



Thermal Resistance.Junction- to-Ambient	R_{thJA}	100	°C/W
Thermal Resistance.Junction-to-Foot	R_{thJF}	60	
Junction Temperature	T_J	150	°C
Storage Temperature Range	T_{STG}	-55 to 150	

- Notes:
- a. Package limited
 - b. Surface Mounted on 1" x 1" FR4 board.
 - c. $t = 5\text{ s}$.
 - d. Maximum under steady state conditions is 130°C/W.



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

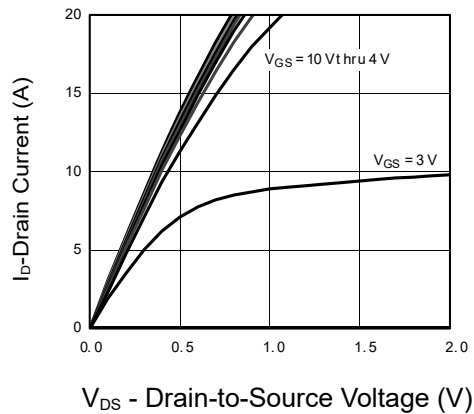
Parameter	Symbol	Conditions	Min	Typ	Max	Units
Drain-Source Breakdown Voltage	V_{DSS}	$I_D=250\mu\text{A}$, $V_{GS}=0\text{V}$	40			V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=40\text{V}$, $V_{GS}=0\text{V}$			1	μA
		$V_{DS}=10\text{V}$, $V_{GS}=0\text{V}$, $T_J=70^\circ\text{C}$			10	
Gate-Body leakage current	I_{GSS}	$V_{DS}=0\text{V}$, $V_{GS}=\pm 20\text{V}$			± 100	nA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}$, $I_D=250\mu\text{A}$	1.2		2.5	V
Static Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=10\text{V}$, $I_D=4.7\text{A}$			36	m Ω
		$V_{GS}=4.5\text{V}$, $I_D=3.9\text{A}$			46	
On state drain current	$I_{D(on)}$	$V_{GS}=10\text{V}$, $V_{DS}\geq 5\text{V}$	20			A
Forward Transconductance	g_{FS}	$V_{DS}=20\text{V}$, $I_D=4.3\text{A}$		17		S
Input Capacitance	C_{iss}	$V_{GS}=0\text{V}$, $V_{DS}=20\text{V}$, $f=1\text{MHz}$		340		pF
Output Capacitance	C_{oss}			60		
Reverse Transfer Capacitance	C_{rss}			30		
Gate resistance	R_g	$V_{GS}=0\text{V}$, $V_{DS}=0\text{V}$, $f=1\text{MHz}$	0.6		6.6	Ω
Total Gate Charge	Q_g	$V_{GS}=20\text{V}$, $V_{DS}=10\text{V}$, $I_D=4.3\text{A}$ $V_{GS}=20\text{V}$, $V_{DS}=4.5\text{V}$ $I_D=4.3\text{A}$		5.8	9	nC
Gate Source Charge	Q_{gs}			2.9	6	
Gate Drain Charge	Q_{gd}			1.1		
Gate Drain Charge	Q_{gd}			0.9		
Turn-On DelayTime	$t_{D(on)}$	$V_{DD}=20\text{V}$, $R_G=1\Omega$ $R_L=5.7\Omega$, $V_{GEN}=4.5\text{V}$ $I_D=3.5\text{A}$		12	20	ns
Turn-On Rise Time	t_r			50	75	
Turn-Off DelayTime	$t_{D(off)}$			10	20	
Turn-Off Fall Time	t_f			8	16	
Turn-On DelayTime	$t_{D(on)}$	$V_{DD}=20\text{V}$, $R_G=1\Omega$ $R_L=5.7\Omega$, $V_{GEN}=10\text{V}$ $I_D=3.5\text{A}$		7	14	ns
Turn-On Rise Time	t_r			20	30	
Turn-Off DelayTime	$t_{D(off)}$			14	21	
Turn-Off Fall Time	t_f			8	16	



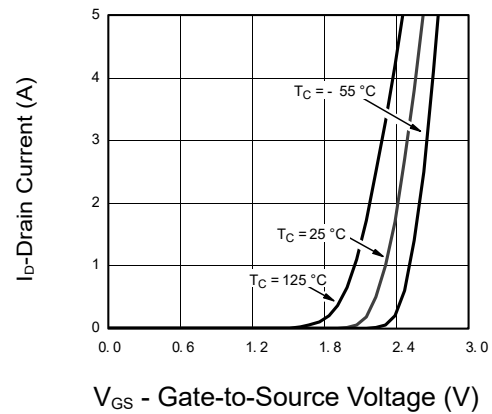
Body Diode Reverse Recovery Time	t_{rr}	$I_F=3.5A, dI_F/dt=100A/\mu s$ $T_J=25^{\circ}C$		15	23	ns
Body Diode Reverse Recovery Charge	Q_{rr}			7	14	ns
Reverse Recovery Fall Time	t_a			11		ns
Reverse Recovery Rise Time	t_b			4		ns
Maximum Body-Diode Continuous Current	I_S	$T_C=25^{\circ}C$			1.75	A
Pulse Diode Forward Current	I_{SM}				20	A
Diode Forward Voltage	V_{SD}	$I_S=3.5A, V_{GS}=0V$			1.2	V



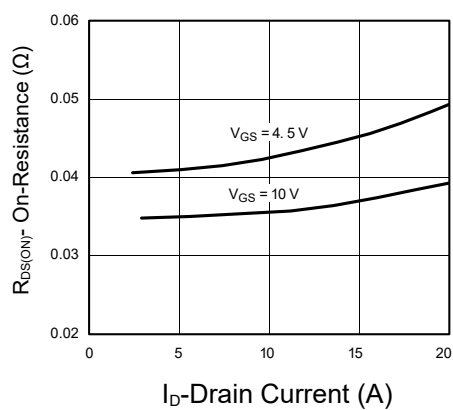
6.1 Typical Characteristics



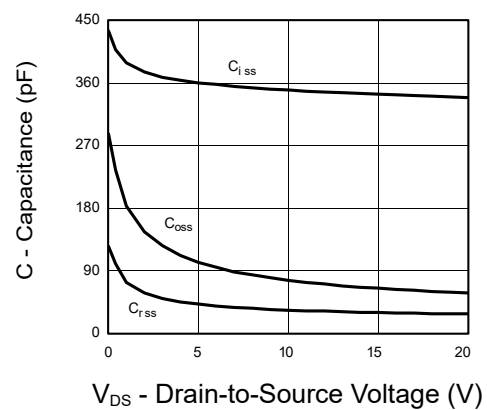
Output Characteristics



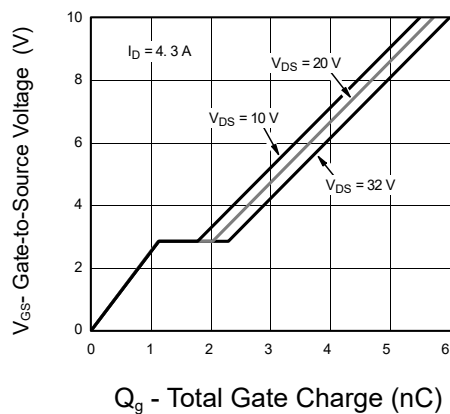
Transfer Characteristics



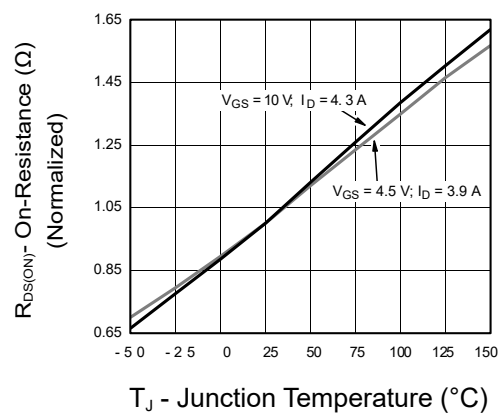
On-Resistance vs. Drain Current



Capacitance



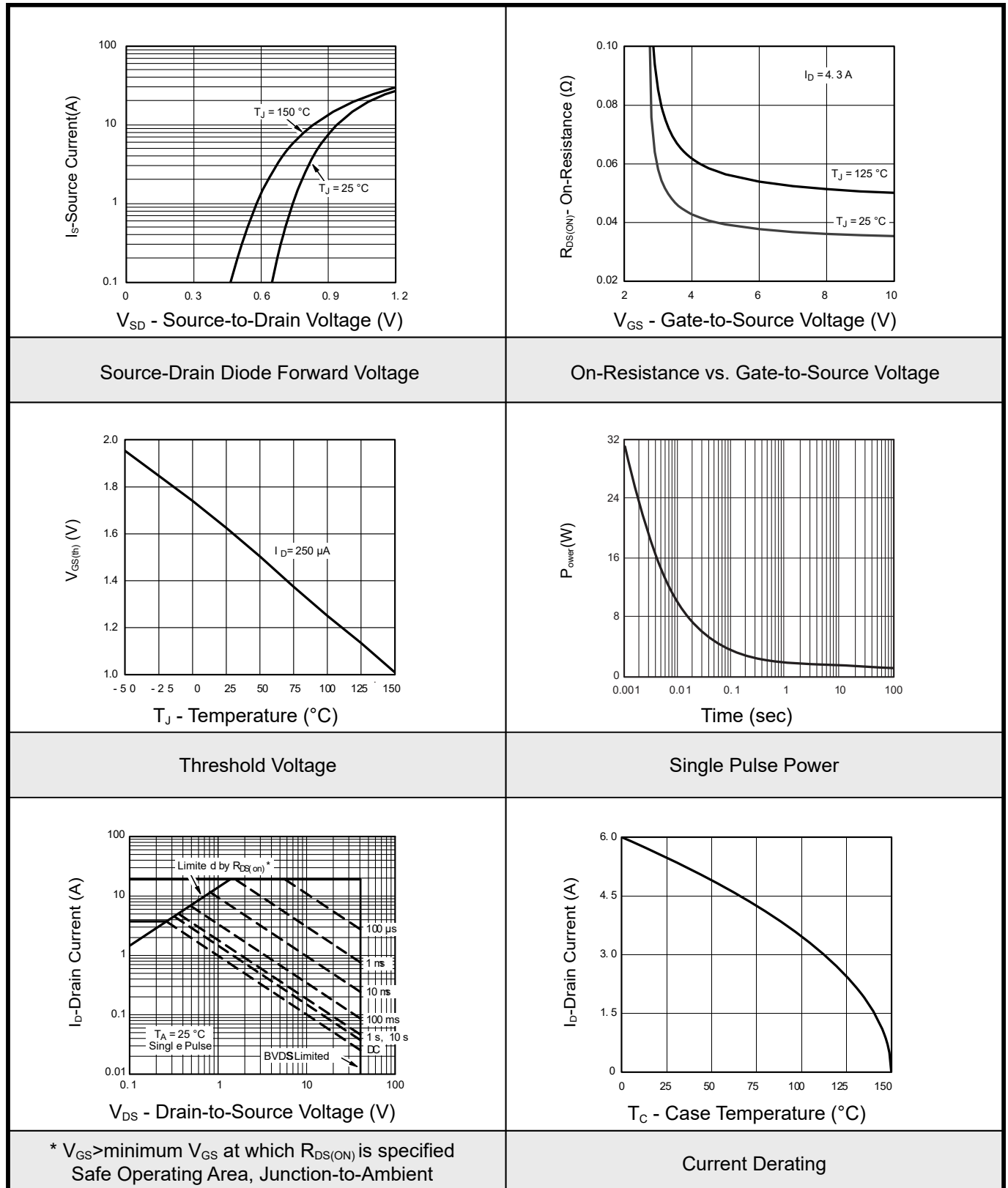
Gate Charge



On-Resistance vs. Junction Temperature

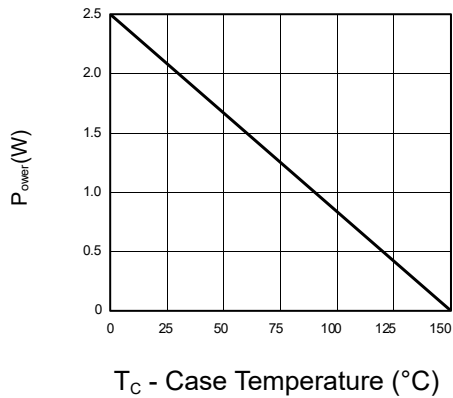


6.2 Typical Characteristics

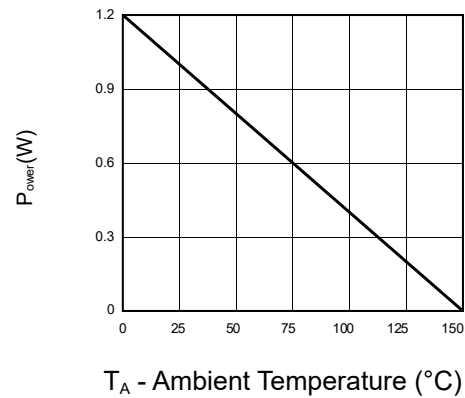




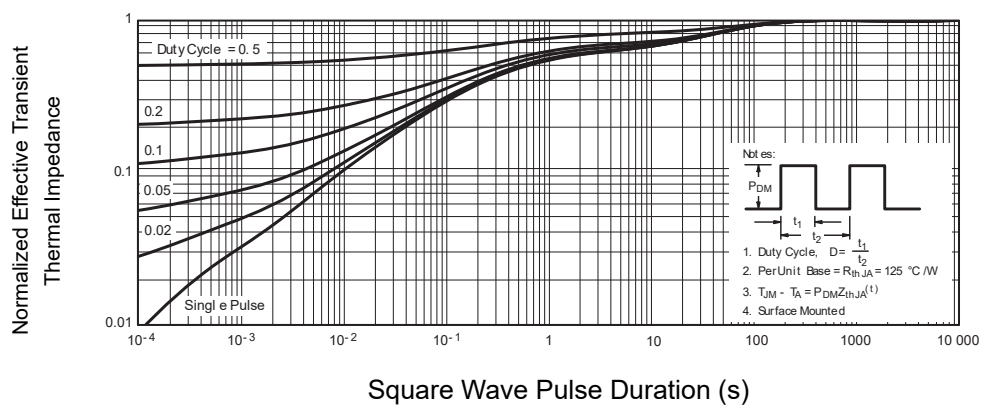
6.2 Typical Characteristics



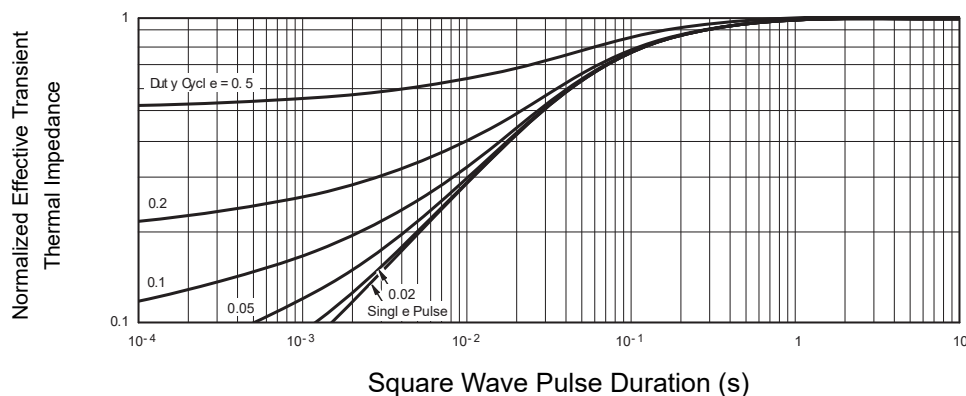
Power Derating, Junction-to-Foot



Power Derating, Junction-to-Ambient



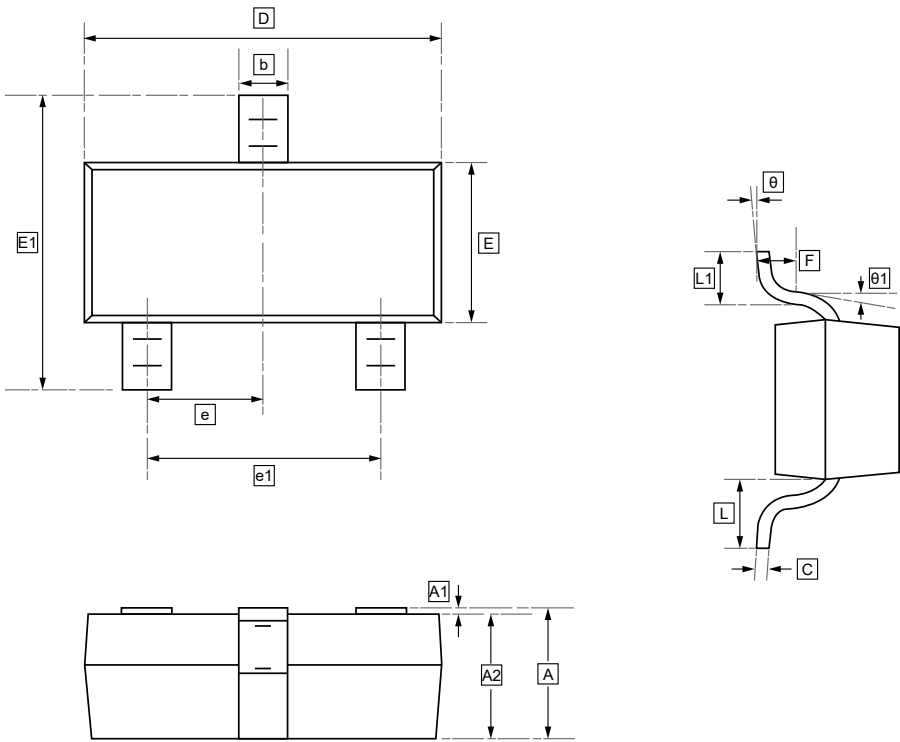
Normalized Thermal Transient Impedance, Junction-to-Ambient



Normalized Thermal Transient Impedance, Junction-to-Foot



7.SOT-23 Package Outline Dimensions



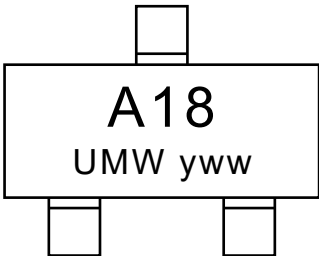
DIMENSIONS (mm are the original dimensions)

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 SI2318A	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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