UMW SI2318A

40V N-Channel MOSFET

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.

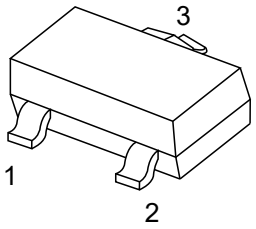
2.Features

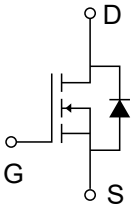
- $V_{DS(V)}$=40V
- I_D=5.6A
- $R_{DS(ON)}$<36mΩ(V_{GS}=10V)
- $R_{DS(ON)}$<46mΩ(V_{GS}=4.5V)

3.Pinning information

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

SOT-23





4.Absolute Maximum Ratings T_A= 25°C

Parameter		Symbol	Maximum	Units
Drain-Source Voltage		V_{DS}	40	V
Gate-Source Voltage		V_{GS}	±20	
Continuous Drain Current	T_C=25°C	I_D	5.6	A
	T_C=70°C		4.5	
	T_A=25°C		4.3[b,c]	
	T_A=70°C		3.5[b,c]	
Pulsed Drain Current		I_{DM}	20	
Power Dissipation	T_C=25°C	P_D	2.1	W
	T_C=70°C		1.3	W
	T_A=25°C		1.25[b,c]	W
	T_A=70°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 s.

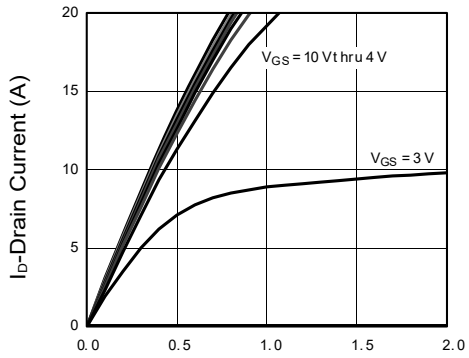
d. Maximum under steady state conditions is 130°C/W.

5.Electrical Characteristics T_A= 25°C

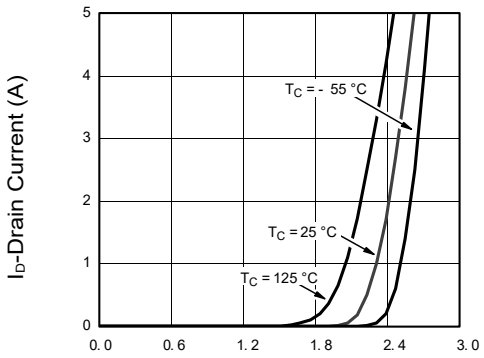
Parameter	Symbol	Conditions	Min	Typ	Max	Units
Drain-Source Breakdown Voltage	V_{DSS}	I_D=250μA, V_{GS}=0V	40			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=40V, V_{GS}=0V			1	μA
		V_{DS}=10V,V_{GS}=0V,T_J=70°C			10	
Gate-Body leakage current	I_{GSS}	V_{DS}=0V, V_{GS}=±20V			±100	nA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=250μA	1.2		2.5	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS}=10V, I_D=4.7A			36	mΩ
		V_{GS}=4.5V, I_D=3.9A			46	
On state drain current	$I_{D(ON)}$	V_{GS}=10V, V_{DS}≥5V	20			A
Forward Transconductance	g_{FS}	V_{DS}=20V, I_D=4.3A		17		S
Input Capacitance	C_{iss}	V_{GS}=0V, V_{DS}=20V, f=1MHz		340		pF
Output Capacitance	C_{oss}			60		
Reverse Transfer Capacitance	C_{rss}			30		
Gate resistance	R_g	V_{GS}=0V, V_{DS}=0V, f=1MHz	0.6		6.6	Ω
Total Gate Charge	Q_g	V_{GS}=20V, V_{DS}=10V, I_D=4.3A		5.8	9	nC
		V_{GS}=20V, V_{DS}=4.5V, I_D=4.3A		2.9	6	
Gate Source Charge	Q_{gs}			1.1		
Gate Drain Charge	Q_{gd}			0.9		
Turn-On DelayTime	$t_{D(on)}$	V_{DD}=20V, R_G=1Ω, R_L=5.7Ω, V_{GEN}=4.5V, I_D=3.5A		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}=20V, R_G=1Ω, R_L=5.7Ω, V_{GEN}=10V, I_D=3.5A		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/μs T_J=25°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°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

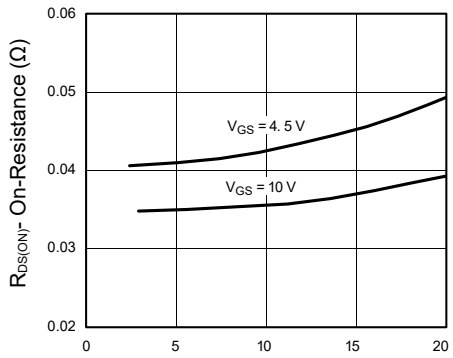
6.1Typical Characterisitics



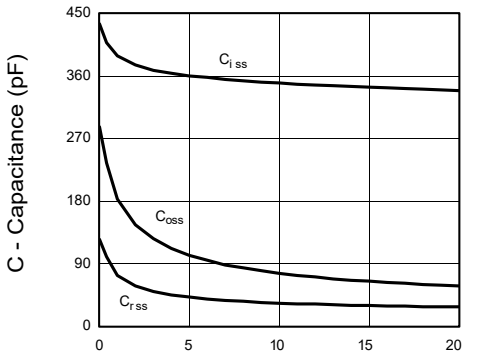
Output Characteristics



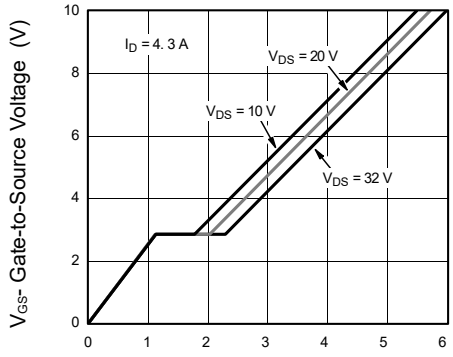
Transfer Characteristics



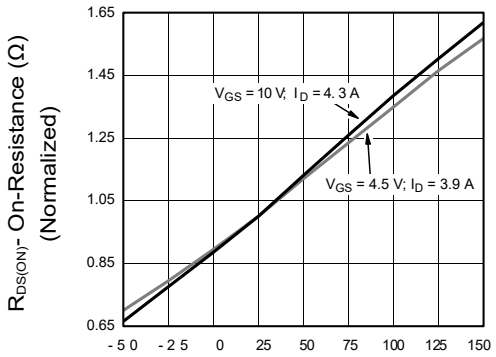
On-Resistance vs. Drain Current



Capacitance

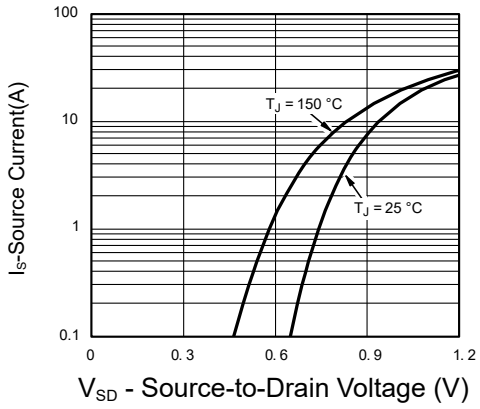


Gate Charge

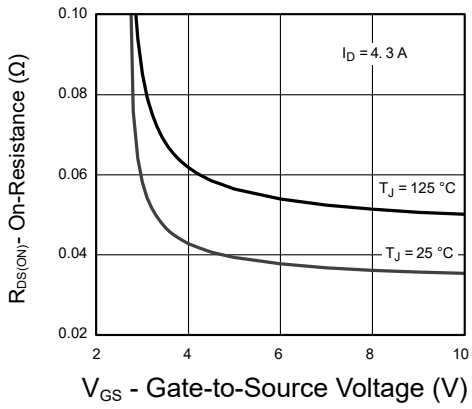


On-Resistance vs. Junction Temperature

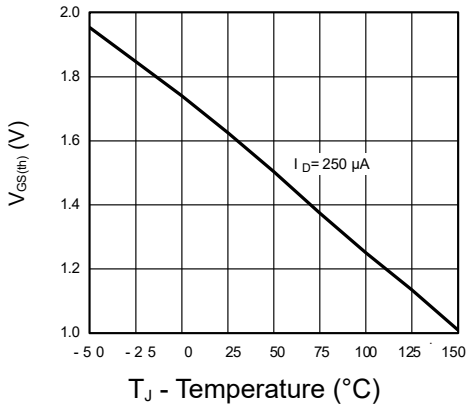
6.2Typical Characterisitics



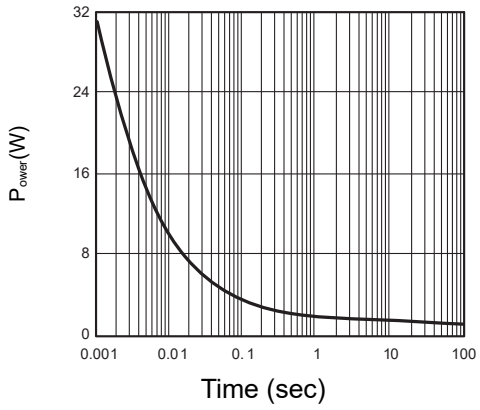
Source-Drain Diode Forward Voltage



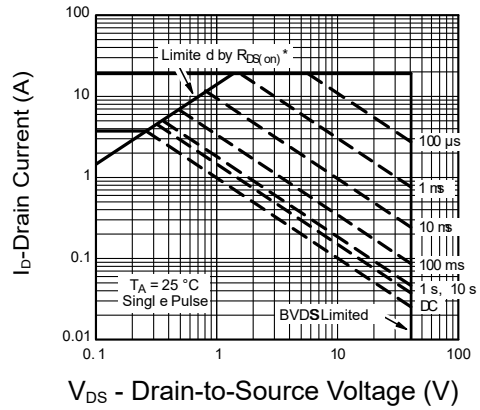
On-Resistance vs. Gate-to-Source Voltage



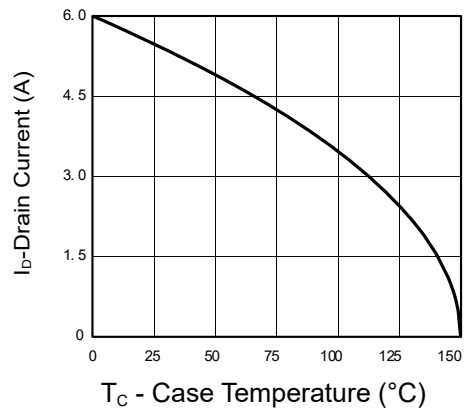
Threshold Voltage



Single Pulse Power

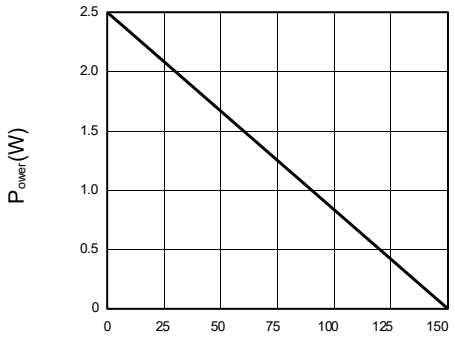


* V_{GS}>minimum V_{GS} at which $R_{DS(ON)}$ is specified
Safe Operating Area, Junction-to-Ambient

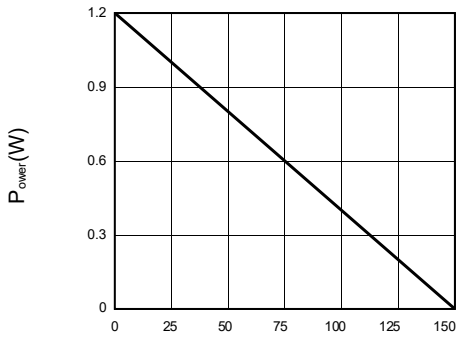


Current Derating

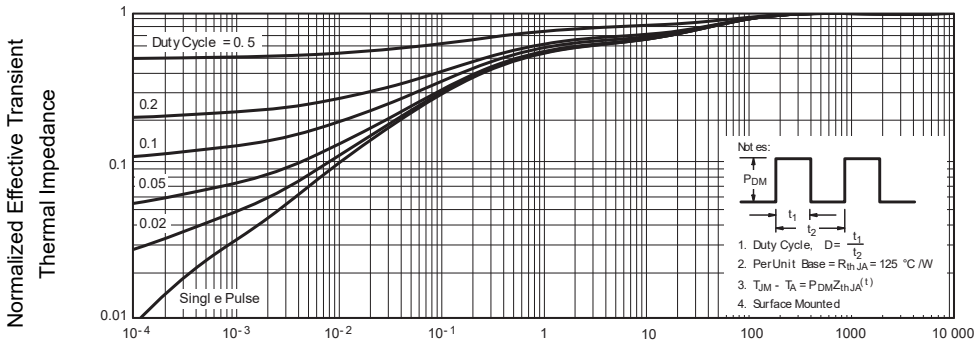
6.2Typical Characterisitics



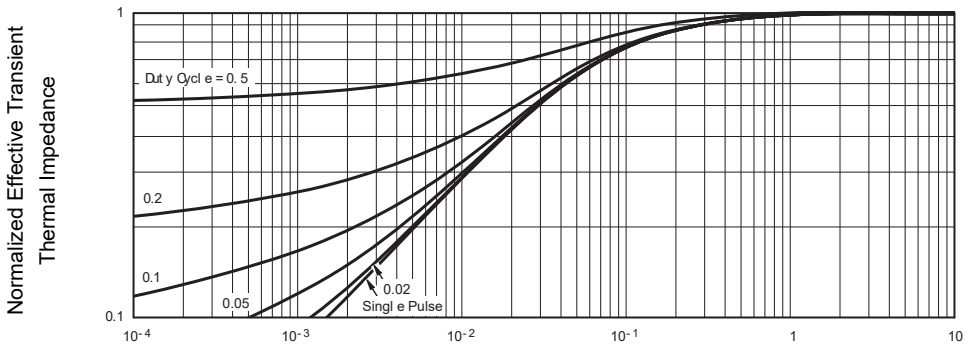
Power Derating, Junction-to-Foot



Power Derating, Junction-to-Ambient

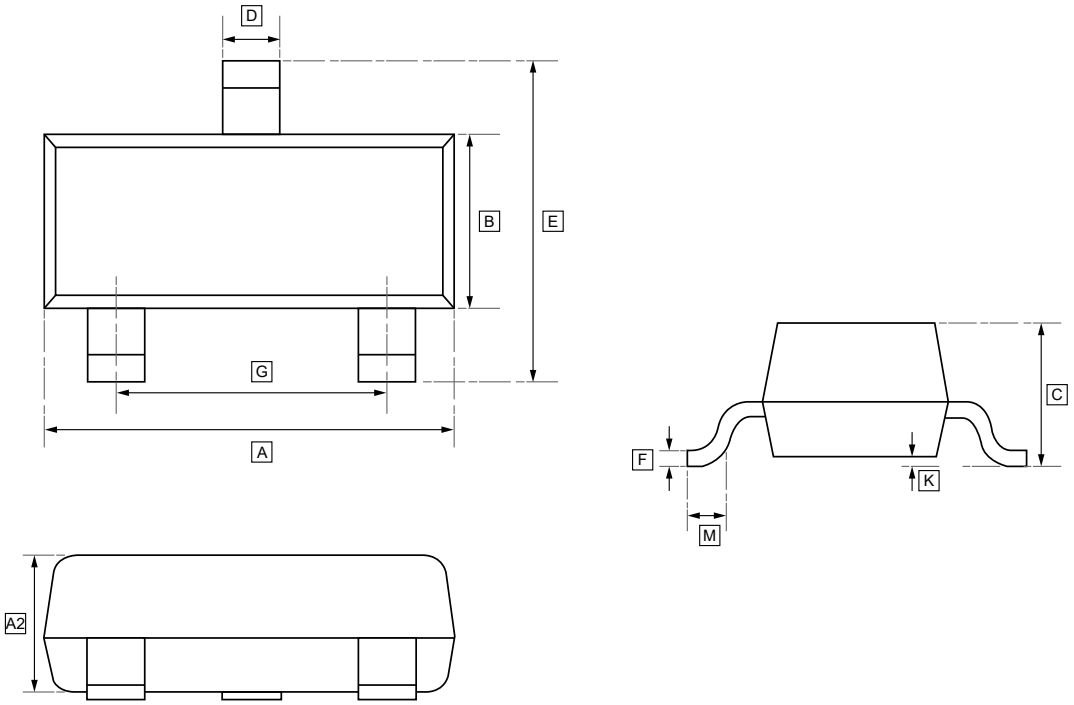


Normalized Thermal Transient Im pedance, Junction-to-Ambient



Normalized Thermal Transient Impedance, Junction-to-Foot

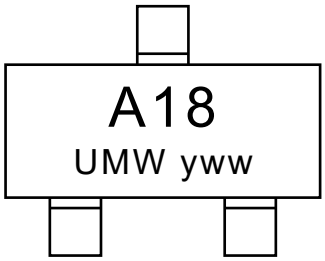
7.SOT-23 Package Outline Dimensions



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 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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