UMW SI2309A

-60V P-Channel MOSFET

1.Features

- $V_{DS(V)}$=-60V
- I_D=-1.25A(V_{GS}=-10V)
- $R_{DS(ON)}$<340mΩ(V_{GS}=-10V)
- $R_{DS(ON)}$<550mΩ(V_{GS}=-4.5V)

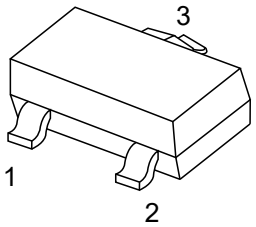
2.Applications

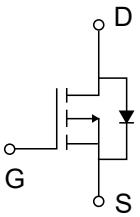
- Load/Power Switching
- Interfacing Switching
- Logic Level Shift

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	Rating	Units
Drain-Source Voltage		V_{DS}	-60	V
Gate-Source Voltage		V_{GS}	±20	
Continuous Drain Current *1,*2	T_A=25°C	I_D	-1.25	A
	T_A=70°C		-0.85	
Pulsed Drain Current		I_{DM}	-8	
Avalanche Current	L=0.1mH	I_{AS}	-5	
Power Dissipation *1,*2	T_A=25°C	P_D	1.25	W
	T_A=70°C		0.8	
Thermal Resistance.Junction- to-Ambient	t ≤ 5sec	R_{thJA}	100	°C/W
	Steady State *1		166	
Thermal Resistance.Junction- to-Case *1		R_{thJC}	60	
Junction Temperature		T_J	150	°C
Storage Temperature Range		T_{STG}	-55 to 150	

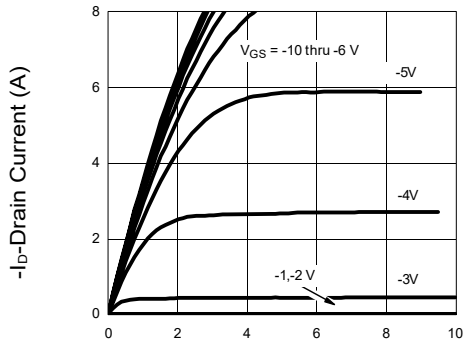
*1 Surface Mounted on FR4 Board. *2 t ≤ 5 sec.

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	-60			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=-48V, V_{GS}=0V			-1	μA
		V_{DS}=-48V,V_{GS}=0V,T_J=125°C			-50	
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		-3	V
Static Drain-Source On-Resistance *1	$R_{DS(ON)}$	V_{GS}=-10V, I_D=-1.25A			340	mΩ
		V_{GS}=-4.5V, I_D=-1A			550	
On state drain current *1	$I_{D(ON)}$	V_{GS}=-4.5V, V_{DS}=-10A	-6			A
Forward Transconductance *1	g_{FS}	V_{DS}=-4.5V, I_D=-1A		1.9		S
Input Capacitance	C_{iss}	V_{GS}=0V		270		pF
Output Capacitance	C_{oss}	V_{DS}=-25V		170		
Reverse Transfer Capacitance	C_{rss}	f=1MHz		31		
Total Gate Charge	Q_g	V_{GS}=-10V		5.4	12	nC
Gate Source Charge	Q_{gs}	V_{DS}=-30V		1.15		
Gate Drain Charge	Q_{gd}	I_D=-1.25A		0.92		
Turn-On DelayTime	$t_{D(on)}$	V_{GS}=-4.5V, V_{DS}=-30V		10.5	20	ns
Turn-On Rise Time	t_r	R_L=30Ω, R_{GEN}=6Ω		11.5	20	
Turn-Off DelayTime	$t_{D(off)}$	I_D=-1A		15.5	30	
Turn-Off Fall Time	t_f			7.5	15	
Body Diode Reverse Recovery Time	t_{rr}	I_F=-1.25A, d_I/d_t=100A/μs		30	55	
Maximum Body-Diode Continuous Current	I_S				-1.25	A
Diode Forward Voltage	V_{SD}	I_S=-1.25A, V_{GS}=0V		-0.82	-1.2	V

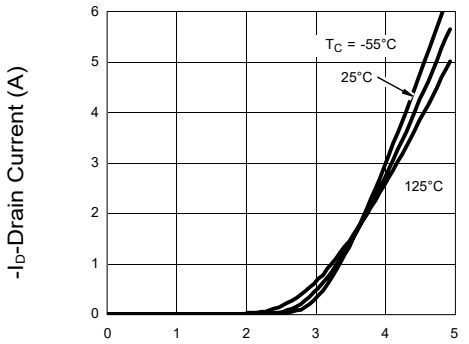
*1 Pulse test: PW ≤ 300us, duty cycle ≤ 2%.

6.1Typical Characterisitics



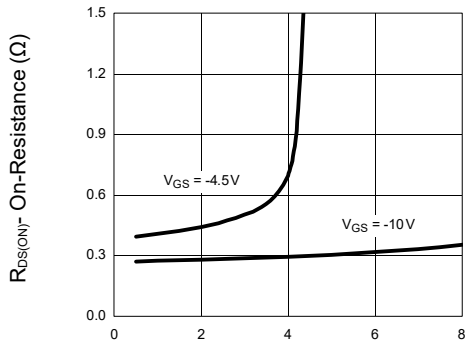
-V_{DS} - Drain-to-Source Voltage (V)

Output Characteristics



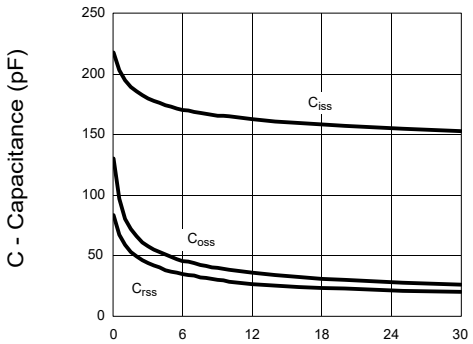
-V_{GS} - Gate-to-Source Voltage (V)

Transfer Characteristics



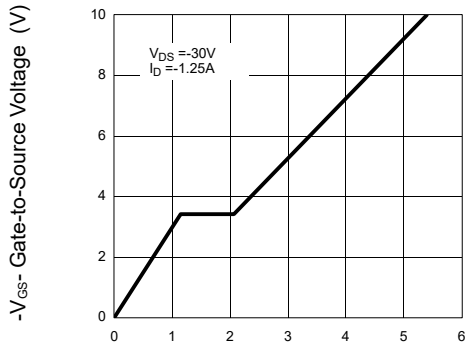
-I_D-Drain Current (A)

On-Resistance vs. Drain Current



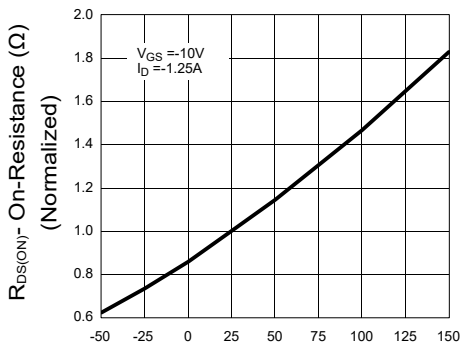
-V_{DS} - Drain-to-Source Voltage (V)

Capacitance



Q_g - Total Gate Charge (nC)

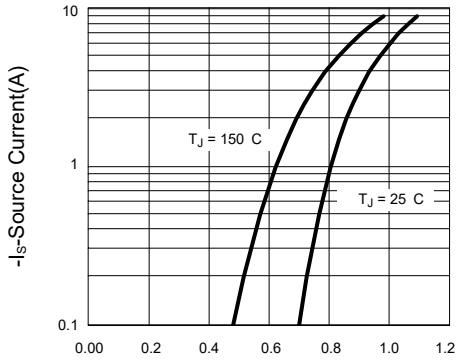
Gate Charge



T_J - Junction Temperature (°C)

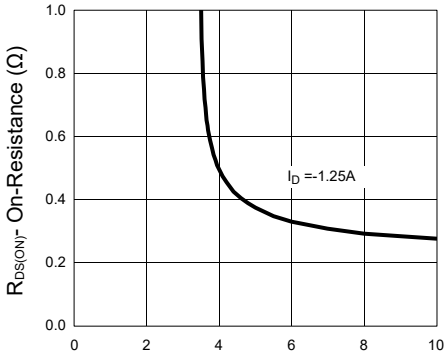
On-Resistance vs. Junction Temperature

6.2Typical Characterisitics



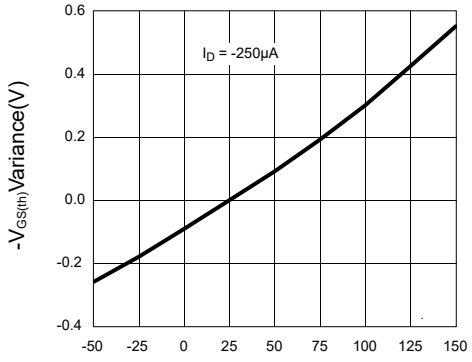
$-V_{SD}$ - Source-to-Drain Voltage (V)

Source-Drain Diode Forward Voltage



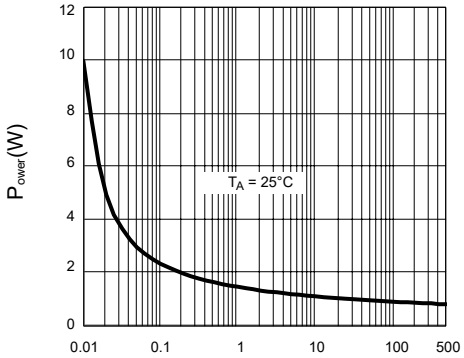
$-V_{GS}$ - Gate-to-Source Voltage (V)

On-Resistance vs. Gate-to-Source Voltage



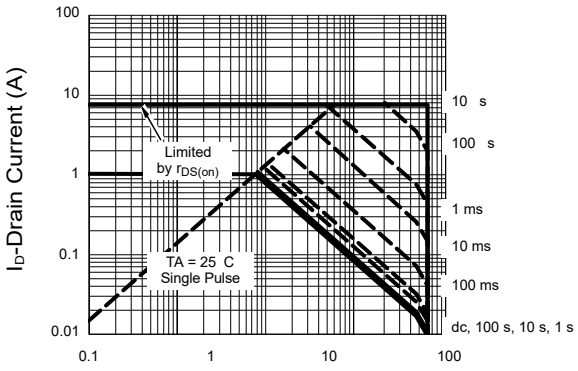
T_J - Temperature (°C)

Threshold Voltage



Time (sec)

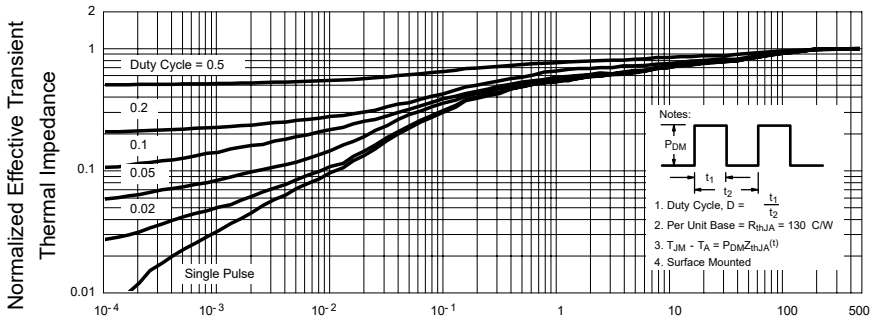
Single Pulse Power



V_{DS} - Drain-to-Source Voltage (V)

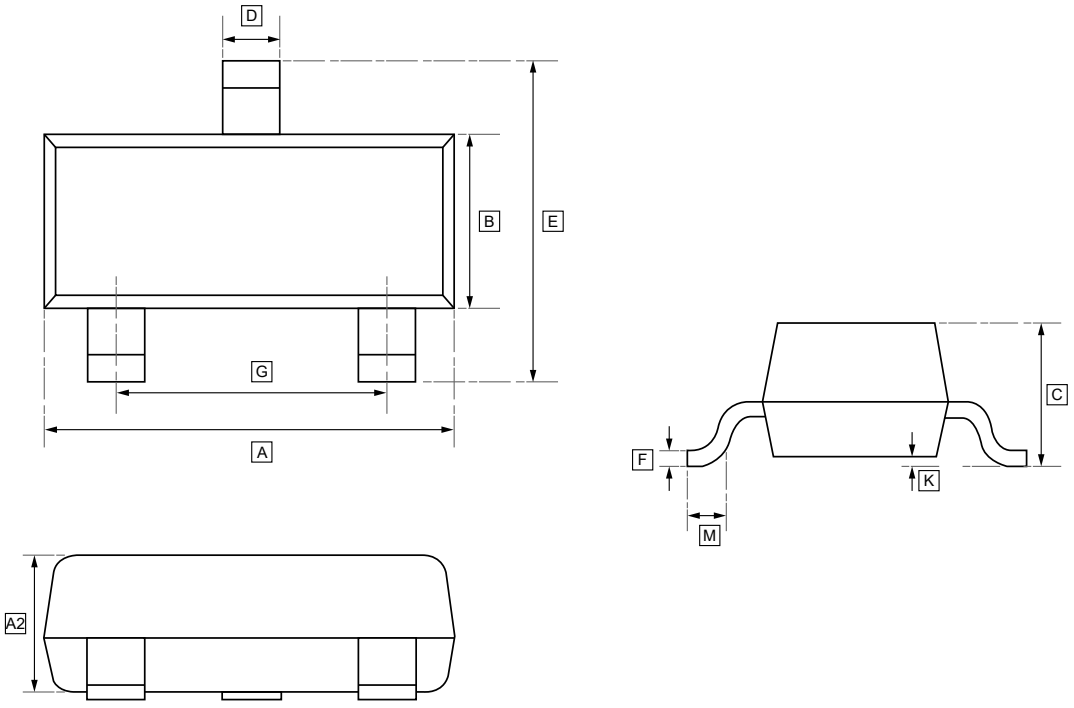
Safe Operating Area, Junction-to-Ambient

6.3Typical Characterisitics



Normalized Thermal Transient Impedance, Junction-to-Ambient

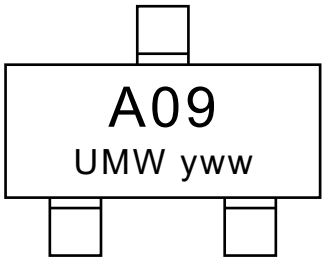
7.SOT-23 Package Outline Dimensions



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 SI2309A	SOT-23	3000	Tape and reel

9.Disclaimer

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