

1.Features

- $V_{DS(V)}=60V$
- $I_D=3A$
- $R_{DS(ON)}<80m\Omega(V_{GS}=10V)$
- $R_{DS(ON)}<95m\Omega(V_{GS}=4.5V)$

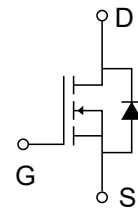
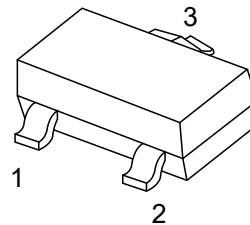
2.Applications

- Load/Power Switching
- Interfacing Switching
- Logic Level Shift
- Battery Management for Ultra Small Portable

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	Value	Units
Drain-Source Voltage		V_{DS}	60	V
Gate-Source Voltage		V_{GS}	± 20	V
Continuous Drain Current	$T_A=25^{\circ}C$	I_D	3	A
	$T_A=70^{\circ}C$		2.3	
Pulsed Drain Current *		I_{DM}	10	
Power Dissipation	$T_A=25^{\circ}C$	P_D	1.38	W
Linear Derating Factor			0.01	W/ $^{\circ}C$
Thermal Resistance.Junction-to-ambient		R_{thJa}	90	$^{\circ}C/W$
Junction and Storage Temperature Range		T_J, T_{STG}	-55 to 150	$^{\circ}C$

*2.Pulse width $\leq 300\mu s$,duty cycle $\leq 2\%$.

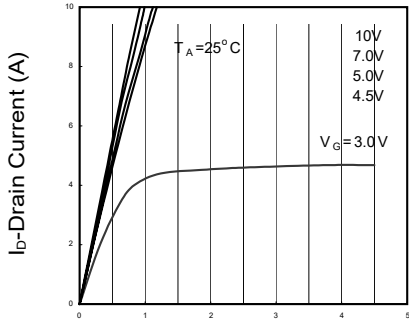
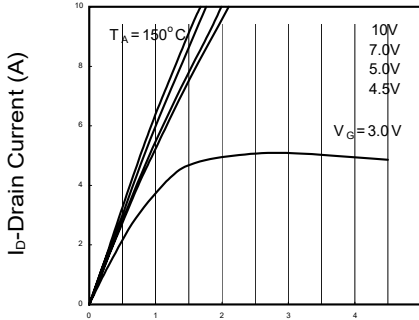
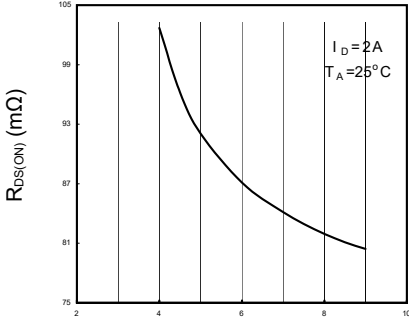
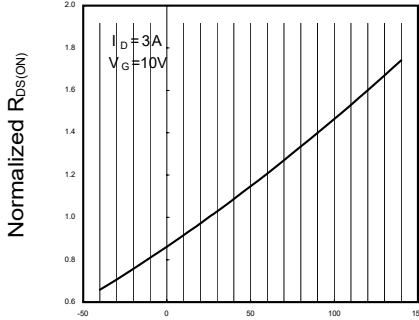
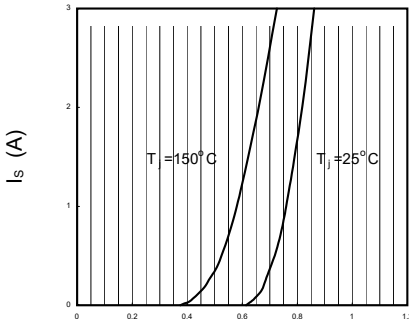
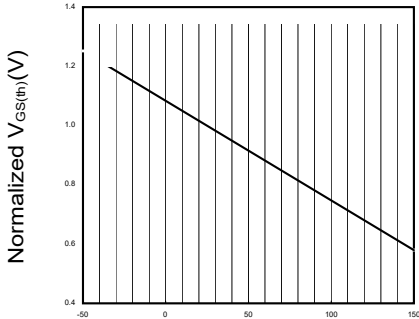


5. Electrical Characteristics $T_A = 25^\circ\text{C}$

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Drain-Source Breakdown Voltage	V_{DSS}	$I_D = 250\mu\text{A}$, $V_{GS} = 0\text{V}$	60			V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 60\text{V}$, $V_{GS} = 0\text{V}$			10	μA
		$V_{DS} = 48\text{V}$, $V_{GS} = 0\text{V}$, $T_J = 70^\circ\text{C}$			25	
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		3	V
Static Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS} = 10\text{V}$, $I_D = 3\text{A}$		67	80	m Ω
		$V_{GS} = 4.5\text{V}$, $I_D = 2\text{A}$		77	95	
Forward Transconductance	g_{FS}	$V_{DS} = 5\text{V}$, $I_D = 3\text{A}$		5		S
Input Capacitance	C_{iss}	$V_{GS} = 0\text{V}$, $V_{DS} = 25\text{V}$, $f = 1\text{MHz}$		490	780	pF
Output Capacitance	C_{oss}			55		
Reverse Transfer Capacitance	C_{rss}			40		
Total Gate Charge	Q_g	$V_{DS} = 48\text{V}$		6	10	nC
Gate Source Charge	Q_{gs}	$V_{GS} = 4.5\text{V}$		1.6		
Gate Drain Charge	Q_{gd}	$I_D = 3\text{A}$		3		
Turn-On DelayTime	$t_{D(on)}$	$V_{GS} = 10\text{V}$, $V_{DS} = 30\text{V}$ $R_D = 30\Omega$, $R_{GEN} = 3.3\Omega$ $I_D = 1\text{A}$		6		ns
Turn-On Rise Time	t_r			5		
Turn-Off DelayTime	$t_{D(off)}$			16		
Turn-Off Fall Time	t_f			3		
Body Diode Reverse Recovery Time	t_{rr}	$I_S = 3\text{A}$, $di/dt = 100\text{A}/\mu\text{s}$		25		
Body Diode Reverse Recovery Charge	Q_{rr}	$I_S = 3\text{A}$, $di/dt = 100\text{A}/\mu\text{s}$		26		nC
Diode Forward Voltage	V_{SD}	$I_S = 1.2\text{A}$, $V_{GS} = 0\text{V}$			1.2	V

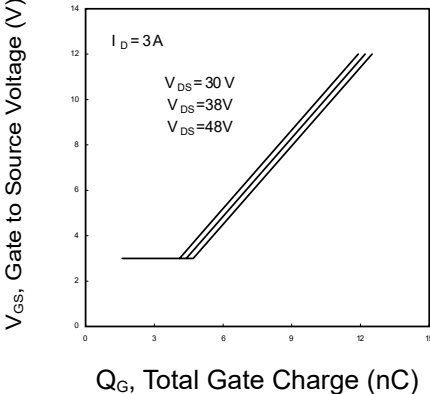
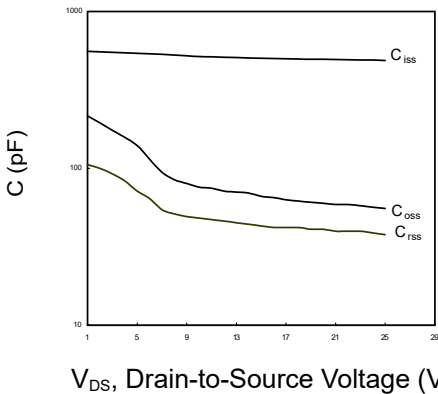
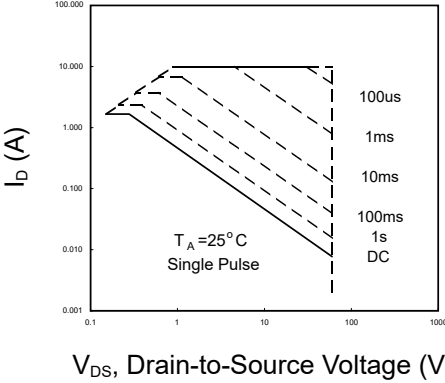
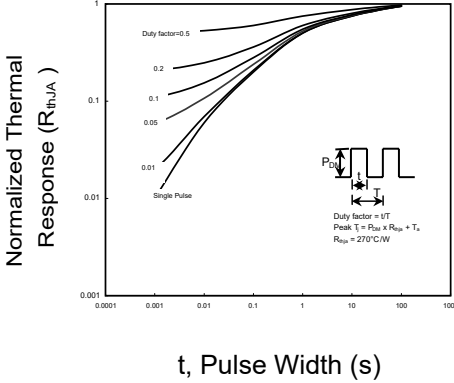


6.1Typical Characteristics

 I_D-Drain Current (A) $T_A = 25^{\circ}\text{C}$ $V_G = 3.0\text{V}$ V_{DS} - Drain-to-Source Voltage (V)	 I_D-Drain Current (A) $T_A = 150^{\circ}\text{C}$ $V_G = 3.0\text{V}$ V_{DS} - Drain-to-Source Voltage (V)
Fig 1. Typical Output Characteristics	Fig 2. Typical Output Characteristics
 $R_{DS(on)}$ (mΩ) $I_D = 2\text{A}$ $T_A = 25^{\circ}\text{C}$ V_{GS} - Gate-to-Source Voltage (V)	 Normalized $R_{DS(on)}$ $I_D = 3\text{A}$ $V_G = 10\text{V}$ T_J, Junction Temperature ($^{\circ}\text{C}$)
Fig 3. On-Resistance v.s. Gate Voltage	Fig 4. Normalized On-Resistance v.s. Junction Temperature
 I_S (A) $T_J = 150^{\circ}\text{C}$ $T_J = 25^{\circ}\text{C}$ V_{SD}, Source-to-Drain Voltage (V)	 Normalized $V_{GS(th)}$ (V) T_J - Junction Temperature ($^{\circ}\text{C}$)
Fig 5. Forward Characteristic of Reverse Diode	Fig 6. Gate Threshold Voltage v.s. Reverse Diode Junction Temperature

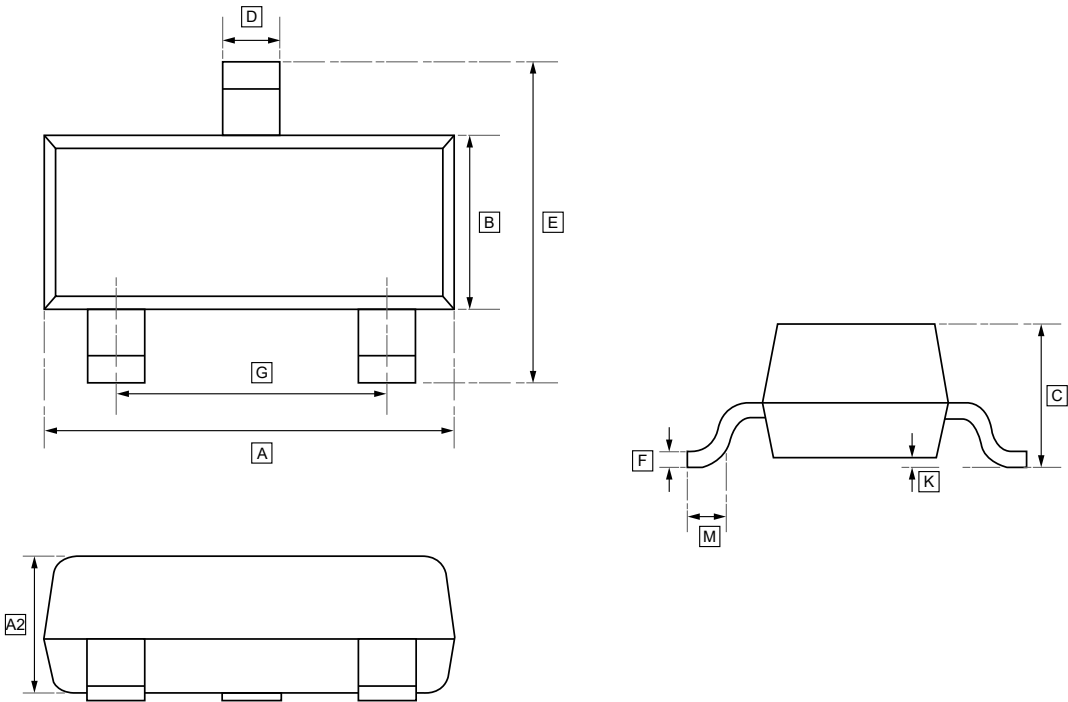


6.2Typical Characterisitics

 V_{GS}, Gate to Source Voltage (V) $I_D = 3A$ $V_{DS} = 30V$ $V_{DS} = 38V$ $V_{DS} = 48V$ Q_G, Total Gate Charge (nC)	 C (pF) V_{DS}, Drain-to-Source Voltage (V) C_{iss} C_{oss} C_{rss}	Fig 7. Gate Charge Characteristics	Fig 8. Typical Capacitance Characteristics
 I_D (A) V_{DS}, Drain-to-Source Voltage (V) $T_A = 25^{\circ}C$ Single Pulse 100us 1ms 10ms 100ms 1s DC	 Normalized Thermal Response (R_{thJA}) t, Pulse Width (s) Duty factor=0.5 0.2 0.1 0.05 0.01 Single Pulse P_{DM} t T_j Duty factor = t/T Peak $T_j = P_{DM} \times R_{thJA} + T_a$ $R_{thJA} = 270^{\circ}C/W$	Fig 9. Maximum Safe Operating Area	Fig 10. Effective Transient Thermal Impedance



7.SOT-23 Package Outline Dimensions

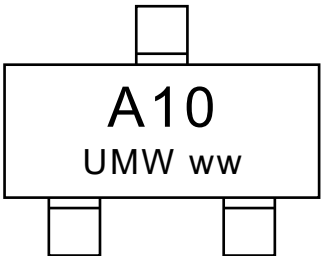


DIMENSIONS (mm are the original dimensions)

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



ww: Batch Code

Order Code	Package	Base QTY	Delivery Mode
UMW SI2310A	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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