

## 1.Features

- $V_{DS(V)} = -20V$
- $I_D = -2.8A$
- $R_{DS(ON)} < 0.08\Omega (V_{GS} = -4.5V)$
- $R_{DS(ON)} < 0.09\Omega (V_{GS} = -2.5V)$

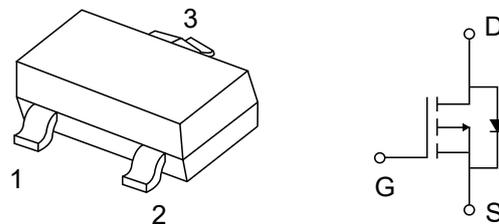
## 2.Application

- Load Switch for Portable Devices
- DC/DC Converter

## 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	$V_{GS}$	$\pm 12$	
Continuous Drain Current	$I_D$	-2.8	A
Pulsed Drain Current	$I_{DM}$	-12	
Continuous Source-Drain Diode Current	$I_S$	-0.72	
Maximum Power Dissipation	$P_D$	0.4	W
Thermal Resistance from Junction to Ambient ( $t \leq 5s$ )	$R_{\theta JA}$	125	$^\circ C/W$
Junction Temperature	$T_J$	150	$^\circ C$
Storage Temperature	$T_{STG}$	-55 to 150	$^\circ C$



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

Parameter	Symbol	Conditions	Min	Typ	Max	Units	
<b>Static</b>							
Drain-source breakdown voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=-250\mu A$	-20			V	
Gate-source threshold voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=-250\mu A$	-0.4		-1	V	
Gate-source leakage	$I_{GSS}$	$V_{DS}=0V, V_{GS}=\pm 8V$			$\pm 100$	nA	
Zero gate voltage drain current	$I_{DSS}$	$V_{DS}=-20V, V_{GS}=0V$			-1	$\mu A$	
Drain-source on-state resistance <sup>a</sup>	$R_{DS(on)}$	$V_{GS}=-4.5V, I_D=-2.8A$		0.065	0.08	$\Omega$	
		$V_{GS}=-2.5V, I_D=-2A$		0.07	0.09	$\Omega$	
Forward transconductance <sup>a</sup>	$g_{FS}$	$V_{DS}=-5V, I_D=-2.8A$		6.5		S	
<b>Dynamic <sup>b</sup></b>							
Input Capacitance	$C_{iss}$	$V_{DS}=-10V, V_{GS}=0V, f=1MHz$		405		pF	
Output Capacitance	$C_{oss}$				75		pF
Reverse Transfer Capacitance	$C_{rss}$				55		pF
Total gate charge	$Q_g$	$V_{DS}=-10V, V_{GS}=-4.5V, I_D=-3A$		5.5	10	nC	
		$V_{DS}=-10V, V_{GS}=-2.5V$		3.3	6	nC	
Gate-source charge	$Q_{gs}$	$I_D=-3A$		0.7		nC	
Gate-drain charge	$Q_{gd}$			1.3		nC	
Gate resistance	$R_g$	$f=1MHz$		6		$\Omega$	
Turn-On Delay Time	$t_{D(on)}$	$V_{DD}=-10V$ $R_L=10\Omega, I_D=-1A$ $V_{GEN}=-4.5V, R_G=1\Omega$		11	20	ns	
Rise Time	$t_r$			35	60	ns	
Turn-Off Delay Time	$t_{D(off)}$			30	50	ns	
Fall time	$t_f$			10	20	ns	
<b>Drain-Source Body Diode Characteristics</b>							
Continuous Source-Drain Diode Current	$I_S$	$T_C=25^\circ C$			-1.3	A	
Pulsed diode forward Current <sup>a</sup>	$I_{SM}$				-10	A	
Body diode voltage	$V_{SD}$	$I_S=-0.7A$		-0.8	-1.2	V	

a. Pulse Test : Pulse Width  $\leq 300\mu s$ , Duty Cycle  $\leq 2\%$ .

b. Guaranteed by design, not subject to production testing.



## 6. Typical Characteristic

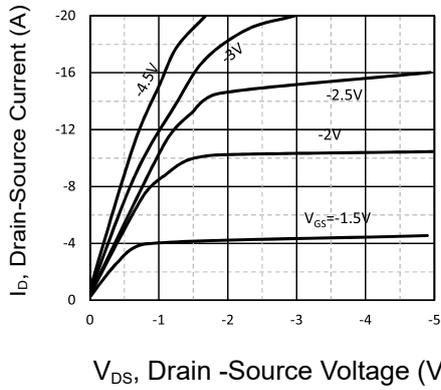


Figure 1: Typical Output Characteristics

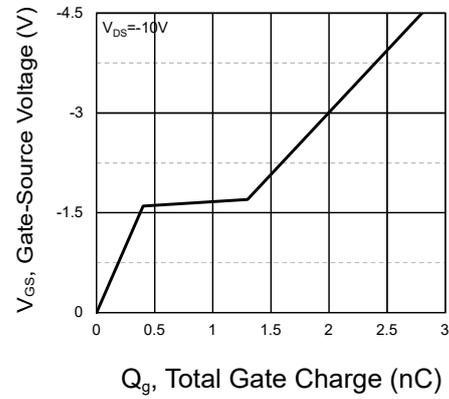


Figure 2: Typical Gate Charge Vs. Gate-Source Voltage

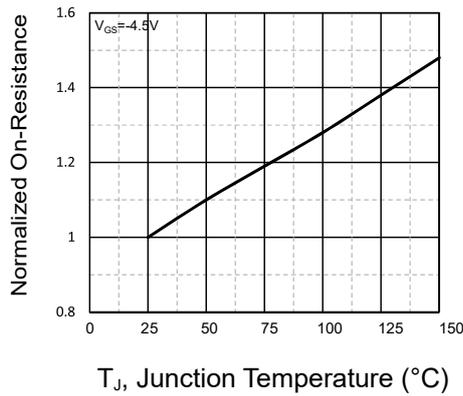


Figure 3: Normalized On-Resistance Vs. Temperature

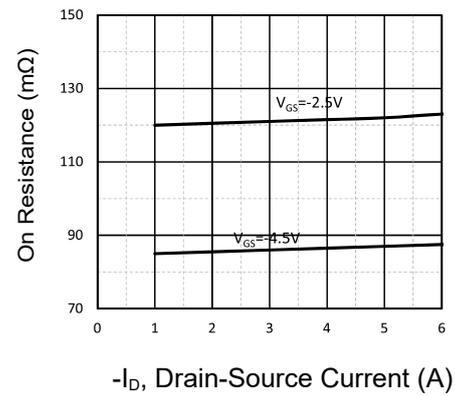


Figure 4: On Resistance Vs. Drain-Source Current

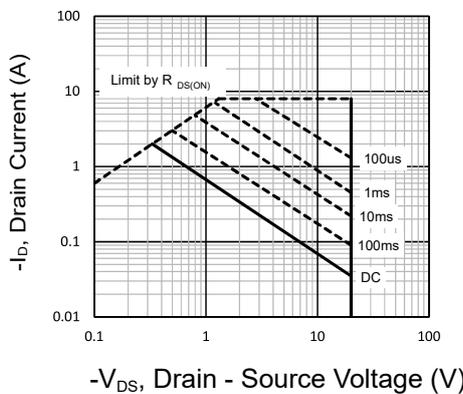


Figure 5: Maximum Safe Operating Area

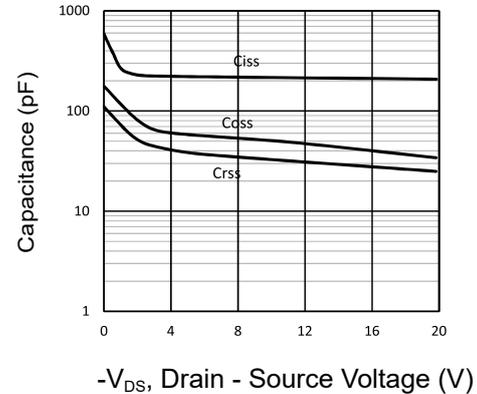
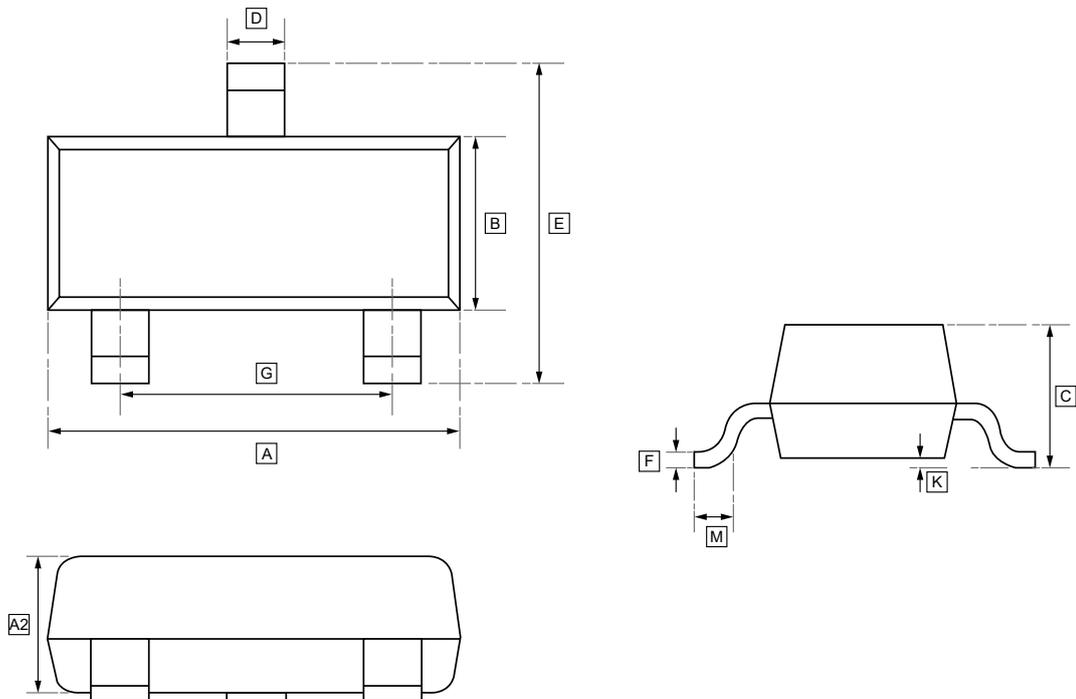


Figure 6: Typical Capacitance Vs. Drain-Source Voltage



## 7.SOT-23 Package Outline Dimensions

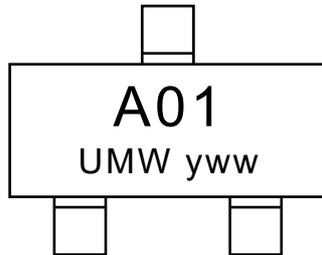


### DIMENSIONS (mm are the original dimensions)

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



yww: Batch Code

Order Code	Package	Base QTY	Delivery Mode
UMW SI2301A	SOT-23	3000	Tape and reel



## **9.Disclaimer**

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