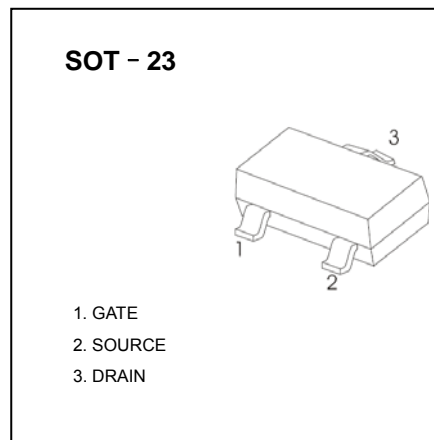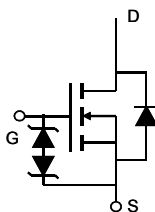# UMW AO3416A

N-Channel MOSFET

■ Features

- $V_{DS\,(V)}$ = 20V
- I_D = 6 A (V_{GS} = 4.5V)
- $R_{DS(ON)} < 25m\Omega$ (V_{GS} = 4.5V)
- $R_{DS(ON)} < 33m\Omega$ (V_{GS} = 2.5V)
- $R_{DS(ON)} < 51m\Omega$ (V_{GS} = 1.8V)

SOT－23

1. GATE
2. SOURCE
3. DRAIN

■ Absolute Maximum Ratings Ta = 25℃

Parameter		Symbol	Rating	Unit
Drain-Source Voltage		V_{DS}	20	V
Gate-Source Voltage		V_{GS}	±8	
Continuous Drain Current	Ta=25℃	I_D	6	A
	Ta=70℃		5	
Pulsed Drain Current		I_{DM}	30	
Power Dissipation	Ta=25℃	P_D	1.4	W
	Ta=70℃		0.9	
Thermal Resistance.Junction- to-Ambient　t≤10sec		R_{thJA}	90	℃/W
Steady State			125	
Thermal Resistance.Junction-to-Foot		R_{thJF}	80	
Junction Temperature		T_J	150	℃
Storage Temperature Range		T_{stg}	-55 to 150	

■ Electrical Characteristics Ta = 25℃

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	V_{DSS}	I_D=250uA, V_{GS}=0V	20			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=20V, V_{GS}=0V			1	uA
		V_{DS}=20V, V_{GS}=0V, Ta=70℃			5	
Gate-Body Leakage Current	I_{GSS}	V_{DS}=0V, V_{GS}=±8V			±10	uA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS} , I_D=250μA	0.4		1.1	V
On-State Drain Current	$I_{D(on)}$	V_{DS}=5 V, V_{GS} = 4.5 V	30			A
Static Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS}=4.5V, I_D=6.5A			25	mΩ
		V_{GS}=2.5V, I_D=5.5A			33	
		V_{GS}=1.8V, I_D=5A			51	
Forward Transconductance	g_{FS}	V_{DS}=5V, I_D=6.5A		50		S
Input Capacitance	C_{iss}	V_{GS}=0V,V_{DS}=10V,f=1MHz		1295	1650	pF
Output Capacitance	C_{oss}			160		
Reverse Transfer Capacitance	C_{rss}			87		
Gate Resistance	R_g	V_{GS}=0V,V_{DS}=0V,f=1MHz		1.8		KΩ
Total Gate Charge	Q_g	V_{GS}=4.5V, V_{DS}=10V, I_D=6.5A		10		nC
Gate Source Charge	Q_{gs}			4.2		
Gate Drain Charge	Q_{gd}			2.6		
Turn-On DelayTime	$t_{d(on)}$	V_{DS}=10V, ,V_{GEN}=4.5V		280		ns
Turn-On Rise Time	t_r			328		
Turn-Off DelayTime	$t_{d(off)}$	R_L=1.54Ω,R_G=3Ω		3.76		
Turn-Off Fall Time	t_f			2.24		
Body Diode Reverse Recovery Time	t_{rr}	I_F= 6.5A, dI/dt= 100A/μs		31	41	
Body Diode Reverse Recovery Charg	Q_{rr}			6.8		nC
Maximum Body-Diode Continuous Current	I_s				2	A
Diode Forward Voltage	V_{SD}	I_s=1.0A,V_{GS}=0V		0.62	1	V

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

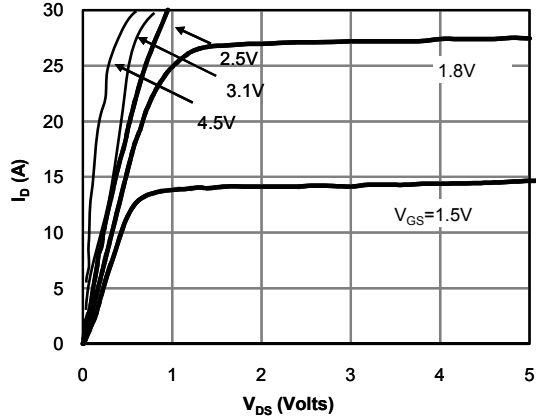■ Typical Characterisitics

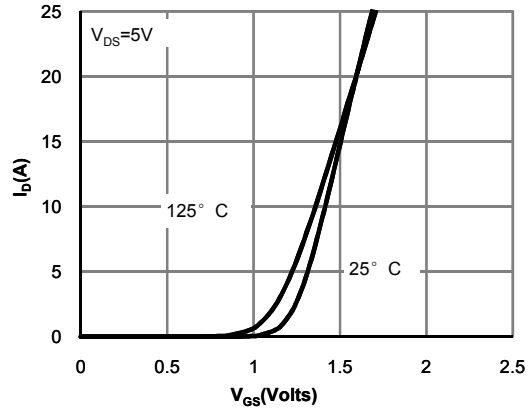Fig 1: On-Region Characteristics (Note E)
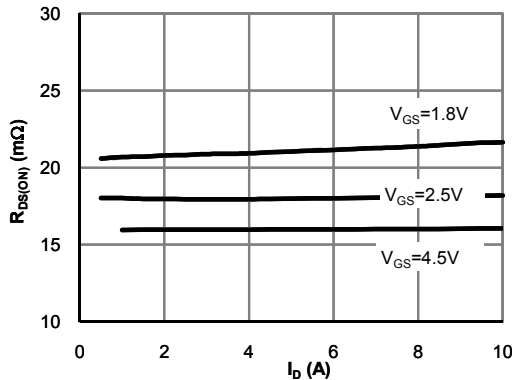

Figure 2: Transfer Characteristics (Note E)

Figure 3: On-Resistance vs. Drain Current and Gate Voltage (Note E)
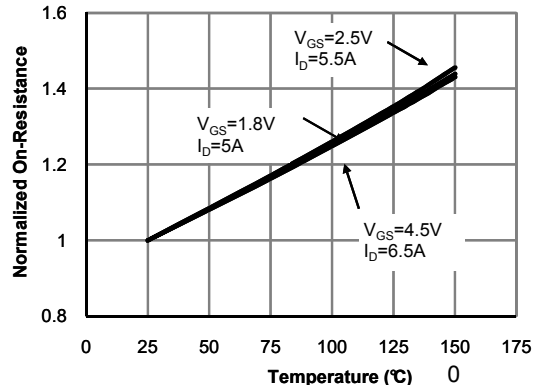

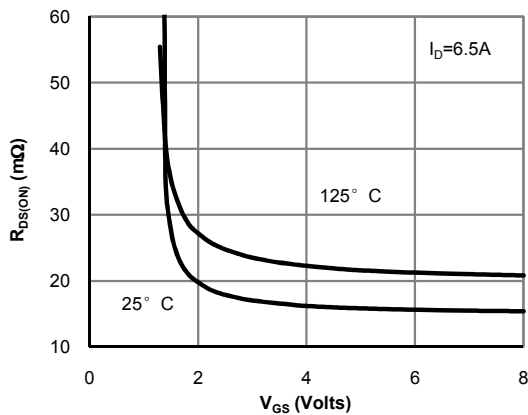Figure 4: On-Resistance vs. Junction Temperature (Note E)

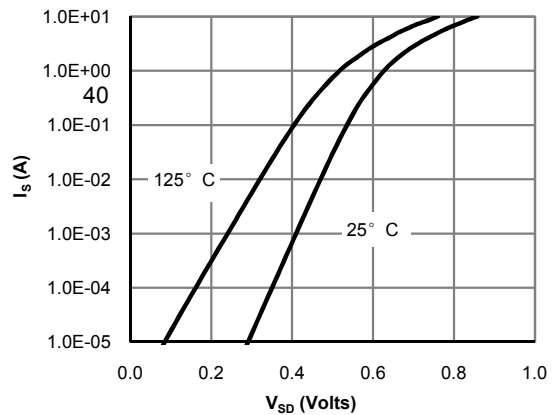Figure 5: On-Resistance vs. Gate-Source Voltage (Note E)

Figure 6: Body-Diode Characteristics (Note E)
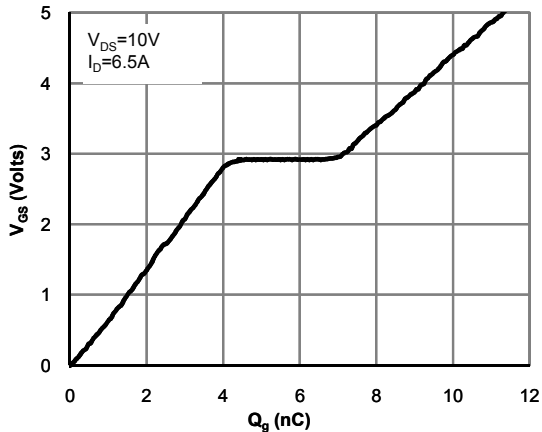
■ Typical Characterisitics
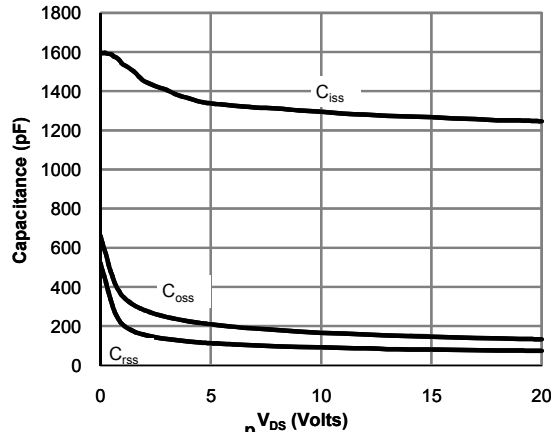

Figure 7: Gate-Charge Characteristics
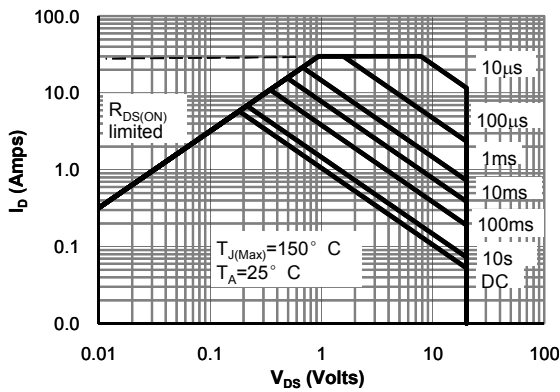

Figure 8: Capacitance Characteristics

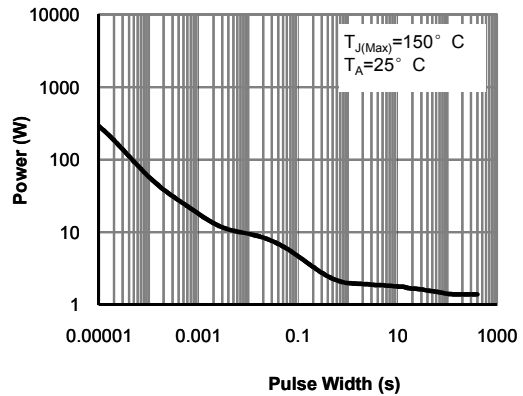Figure 9: Maximum Forward Biased Safe Operating Area (Note F)

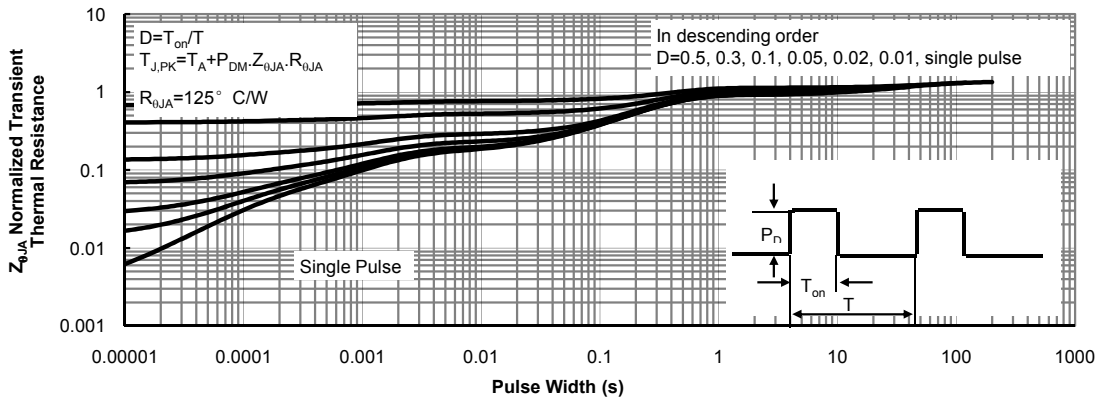Figure 10: Single Pulse Power Rating Junction-to-Ambient (Note F)
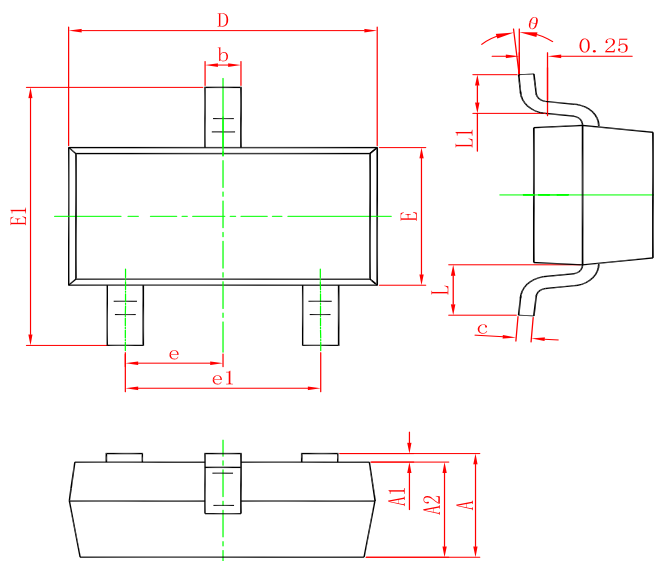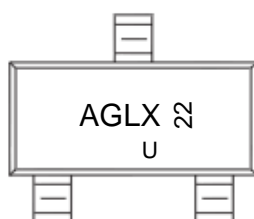

Figure 11: Normalized Maximum Transient Thermal Impedance (Note F)

SOT-23 PACKAGE OUTLINE DIMENSIONS

Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.900	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.050	0.035	0.041
b	0.300	0.500	0.012	0.020
c	0.080	0.150	0.003	0.006
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.950 TYP.		0.037 TYP.	
e1	1.800	2.000	0.071	0.079
L	0.550 REF.		0.022 REF.	
L1	0.300	0.500	0.012	0.020
θ	0°	8°	0°	8°

Marking

AGLX 22
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Ordering information

Order code	Package	Baseqty	Deliverymode
UMW AO3416A	SOT-23	3000	Tape and reel