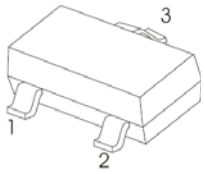
N-Channel Enhancement MOSFET

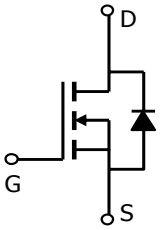
■ Features

- $V_{DS\ (V)}$ = 30V
- I_D =5.8 A (V_{GS}=10V)
- $R_{DS(ON)}$ < 25 mΩ (V_{GS} = 10V)
- $R_{DS(ON)}$ < 36 mΩ (V_{GS} = 4.5V)

SOT－23



1. GATE
2. SOURCE
3. DRAIN



■ Absolute Maximum Ratings Ta = 25℃

Parameter		Symbol	Rating	Unit
Drain-Source Voltage		V_{DS}	30	V
Gate-Source Voltage		V_{GS}	±20	
Continuous Drain Current	Ta=25℃	I_D	5.8	A
	Ta=100℃		4.9	
Pulsed Drain Current		I_{DM}	20	
Power Dissipation	Ta=25℃	P_D	1.4	W
	Ta=70℃		1	
Thermal Resistance.Junction- to-Ambient	t ≤ 5sec	R_{thJA}	90	℃/W
	Steady State		125	
Thermal Resistance.Junction- to-Lead		R_{thJL}	60	
Junction Temperature		TJ	150	℃
Storage Temperature Range		Tstg	-55 to 150	

■ Electrical Characteristics Ta = 25℃

Parameter	Symbol	Testconditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	V_{DSS}	I_D=250μA, V_{GS}=0V	30			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=24V, V_{GS}=0V			1	μA
		V_{DS}=24V, V_{GS}=0V ,TJ=55℃			5	
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	1.9	3	V
On state drain current	$I_{D(ON)}$	V_{GS}=4.5V, V_{DS}=5V	20			A
Static Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS}=10V, I_D=5.8A			25	mΩ
		V_{GS}=4.5V, I_D=5.0A			36	mΩ
Forward Transconductance	g_{FS}	V_{DS}=5V, I_D=5.8A	10			S
Diode Forward Voltage	V_{SD}	I_S=1A		0.76	1	V
Maximum Body-Diode Continuous Current	I_S				2.5	A
Reverse Transfer Capacitance	C_{iss}	V_{GS}=0V, V_{DS}=15V, f=1MHz		680	820	pF
Gate resistance	C_{oss}			102		pF
Input Capacitance	C_{rss}			77		pF
Output Capacitance	R_g	V_{GS}=0V, V_{DS}=0V, f=1MHz		3	3.6	Ω
Total Gate Charge (10V)	Q_g	V_{GS}=10V, V_{DS}=15V, I_D=5.8A		13.88	17	nC
Total Gate Charge (4.5V)	Q_g			6.78	8.1	nC
Gate Source Charge	Q_{gs}			1.8		nC
Gate Drain Charge	Q_{gd}			3.12		nC
Turn-On Rise Time	$t_{D(on)}$	V_{GS}=10V, V_{DS}=15V, R_L=2.7Ω ,R_{GEN}=3Ω		4.6	6.5	ns
Turn-Off DelayTime	t_r			3.8	5.7	ns
Turn-Off Fall Time	$t_{D(off)}$			20.9	30	ns
Turn-On DelayTime	t_f			5	7.5	ns
Body Diode Reverse Recovery Time	t_{rr}	I_F=5.8A, dI/dt=100A/μs		16.1	21	ns
Body Diode Reverse Recovery Charge	Q_{rr}	I_F=5.8A, dI/dt=100A/μs		7.4	10	nC

■ Typical Characterisitics

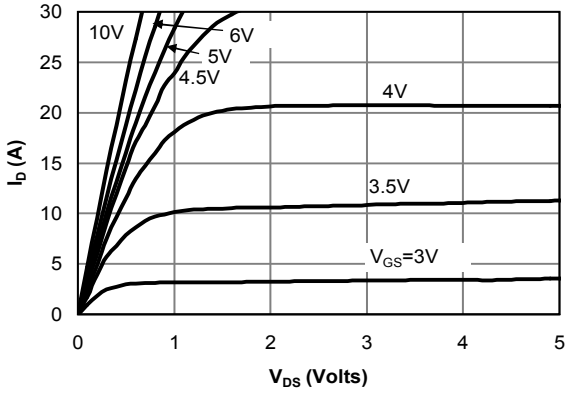


Fig 1: On-Region Characteristics

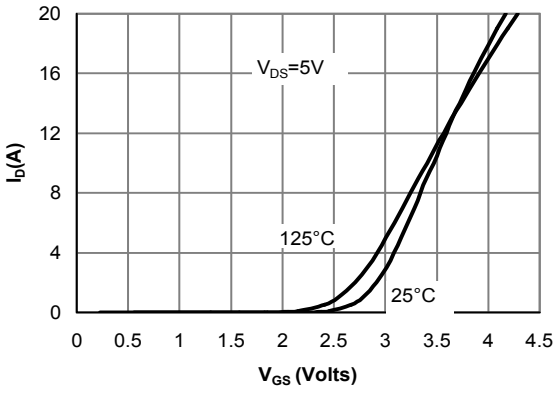


Figure 2: Transfer Characteristics

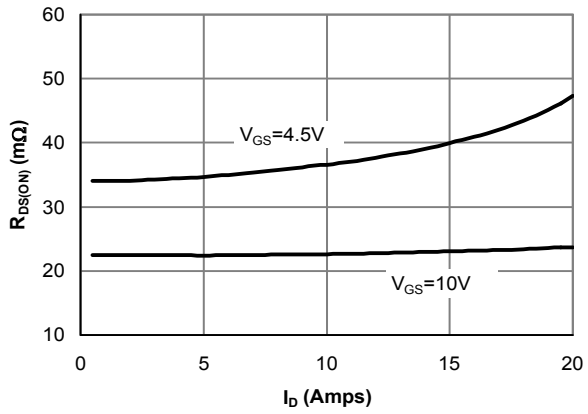


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

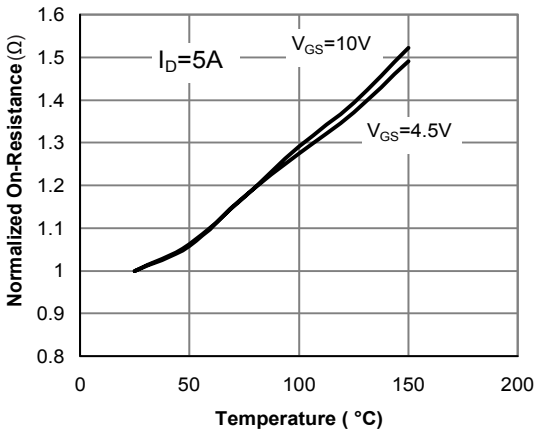


Figure 4: On-Resistance vs. Junction Temperature

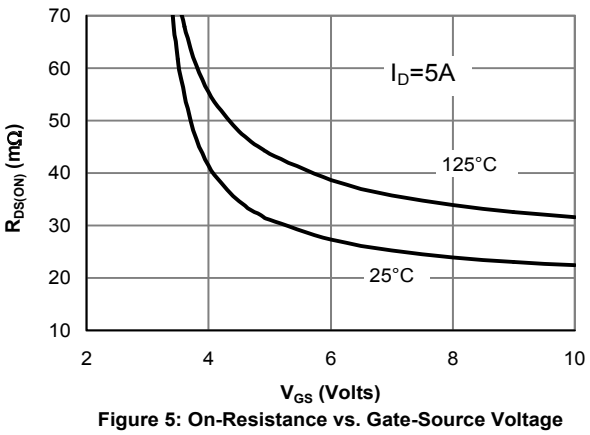


Figure 5: On-Resistance vs. Gate-Source Voltage

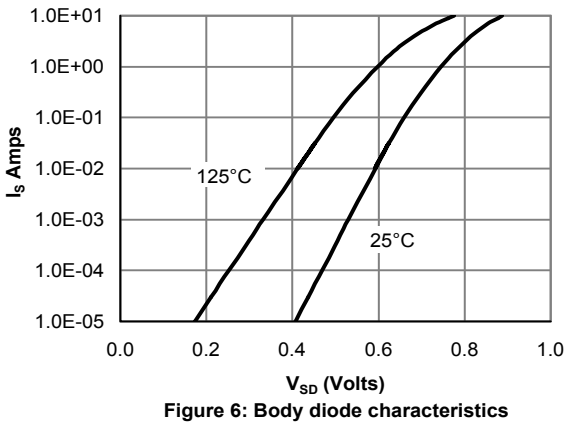


Figure 6: Body diode characteristics

■ Typical Characterisitics

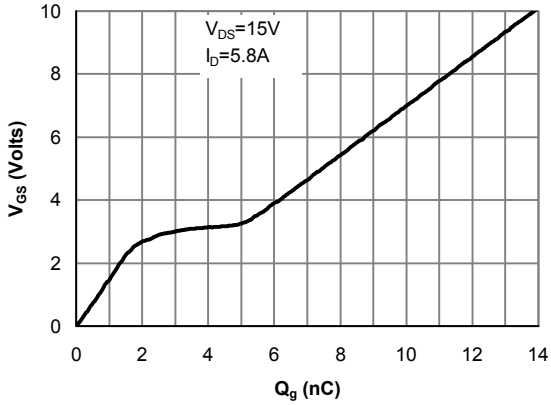


Figure 7: Gate-Charge characteristics

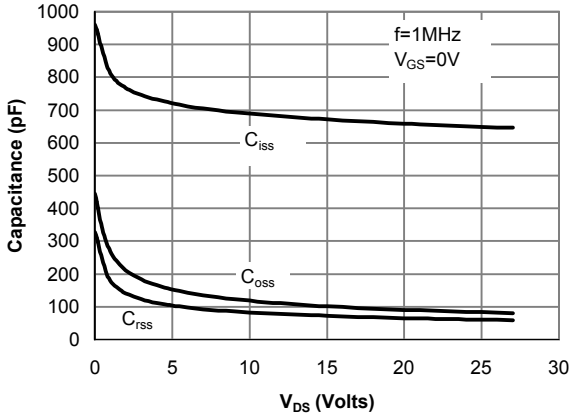


Figure 8: Capacitance Characteristics

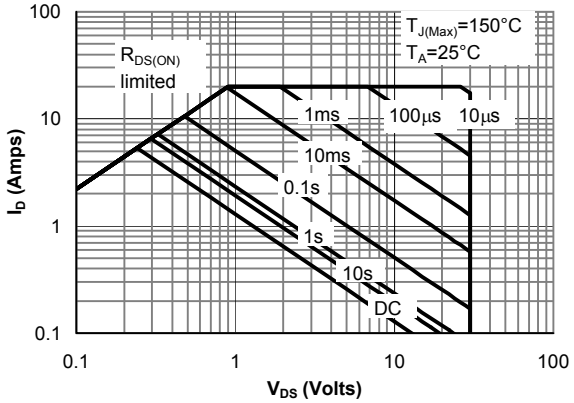


Figure 9: Maximum Forward Biased Safe Operating Area (Note E)

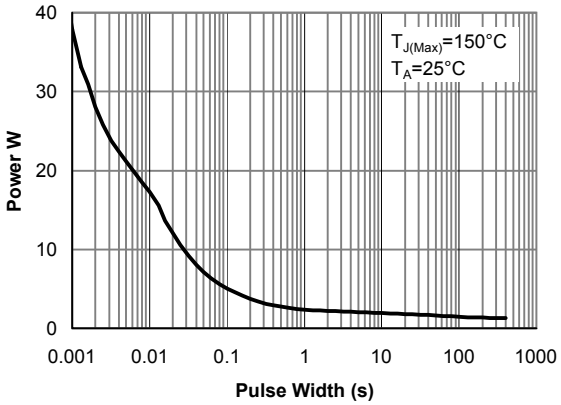


Figure 10: Single Pulse Power Rating Junction-to-Ambient (Note E)

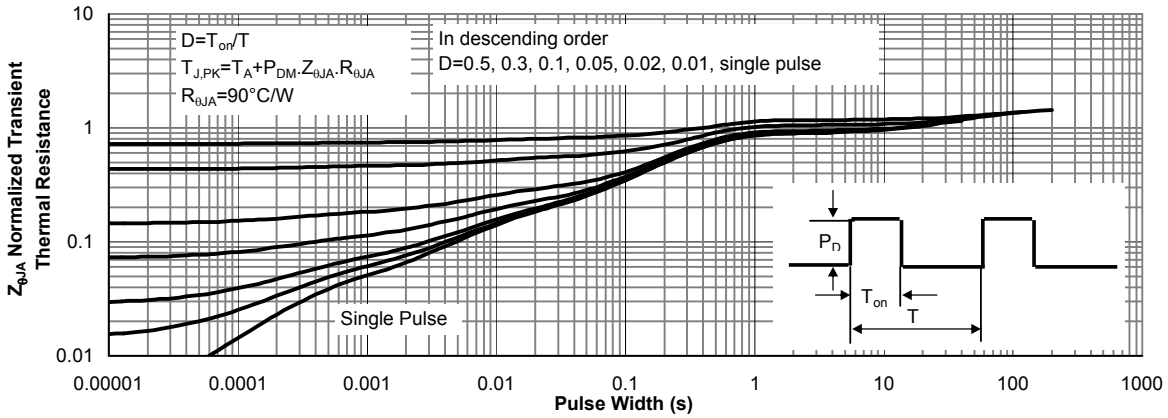
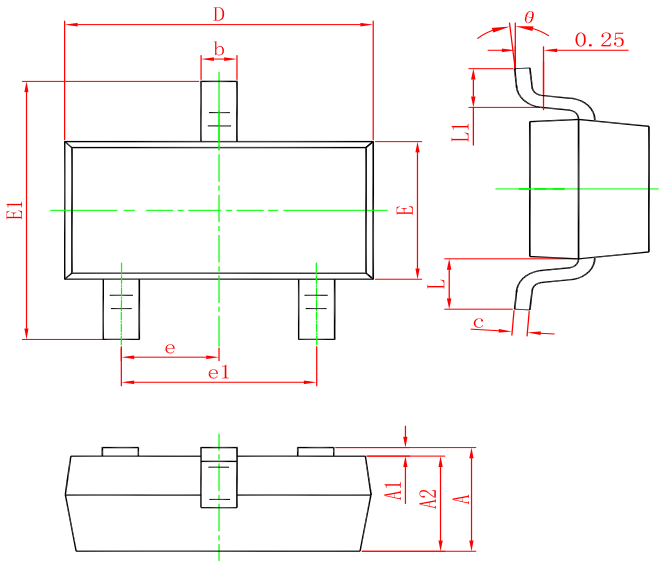


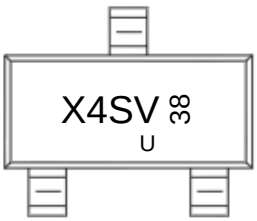
Figure 11: Normalized Maximum Transient Thermal Impedance

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



Ordering information

Order code	Package	Baseqty	Deliverymode
UMW AO3404A	SOT-23	3000	Tape and reel