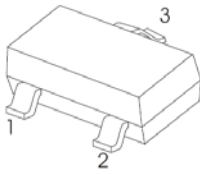
N-Channel Enhancement Mode

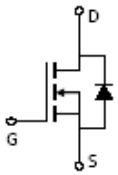
■ Features

- $V_{DS\ (V)}$ = 30V
- I_D = 5.8 A (V_{GS} = 10V)
- $R_{DS(ON)}$ < 28mΩ (V_{GS} = 10V)
- $R_{DS(ON)}$ < 33mΩ (V_{GS} = 4.5V)
- $R_{DS(ON)}$ < 52mΩ (V_{GS} = 2.5V)

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}	±12	V
Continuous Drain Current	T_A=25℃	I_D	5.8	A
	T_A=70℃		4.9	
Pulsed Drain Current *		I_{DM}	30	
Power Dissipation	T_A=25℃	P_D	1.4	W
	T_A=70℃		1	
Thermal Resistance.Junction- to-Ambient		R_{thJA}	125	℃/W
Thermal Resistance.Junction- to-Case		R_{thc}	60	℃/W
Junction and Storage Temperature Range		T_J, T_{STG}	-55 to 150	℃

* Repetitive rating, pulse width limited by junction temperature.

■ 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 ,T_J=55℃			5	
Gate-Body leakage current	I_{GSS}	V_{DS}=0V, V_{GS}=±12V			±100	nA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS} I_D=250μA	0.7	1.1	1.4	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS}=10V, I_D=5.8A		22.8	28	mΩ
		V_{GS}=10V, I_D=5.8A T_J=125℃		32	39	
		V_{GS}=4.5V, I_D=5A		27.3	33	mΩ
		V_{GS}=2.5V, I_D=4A		43.3	52	mΩ
On state drain current	$I_{D(ON)}$	V_{GS}=4.5V, V_{DS}=5V	30			A
Forward Transconductance	g_{FS}	V_{DS}=5V, I_D=5A	10	15		S
Input Capacitance	C_{iss}	V_{GS}=0V, V_{DS}=15V, f=1MHz		823	1050	pF
Output Capacitance	C_{oss}			99		pF
Reverse Transfer Capacitance	C_{rss}			77		pF
Gate resistance	R_g	V_{GS}=0V, V_{DS}=0V, f=1MHz		1.4	3.6	Ω
Total Gate Charge	Q_g	V_{GS}=4.5V, V_{DS}=15V, I_D=5.8A		9.7	12	nC
Gate Source Charge	Q_{gs}			1.6		nC
Gate Drain Charge	Q_{gd}			3.1		nC
Turn-On DelayTime	$t_{D(on)}$	V_{GS}=10V, V_{DS}=15V, R_L=2.7Ω ,R_{GEN}=3Ω		3.3	5	ns
Turn-On Rise Time	t_r			4.8	7	ns
Turn-Off DelayTime	$t_{D(off)}$			26.3	40	ns
Turn-Off Fall Time	t_f			4.1	6	ns
Body Diode Reverse Recovery Time	t_{rr}	I_F=5A, dI/dt=100A/μs		16	20	ns
Body Diode Reverse Recovery Charge	Q_{rr}	I_F=5A, dI/dt=100A/μs		8.9	12	nC
Maximum Body-Diode Continuous Current	I_S				2.5	A
Diode Forward Voltage	V_{SD}	I_S=1A,V_{GS}=0V		0.71	1	V

■ Typical Characterisitics

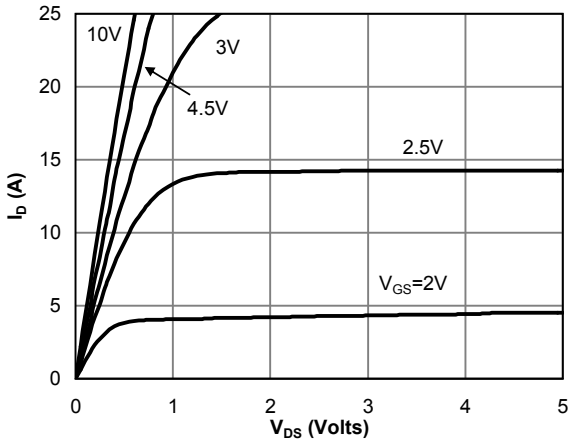


Fig 1: On-Region Characteristics

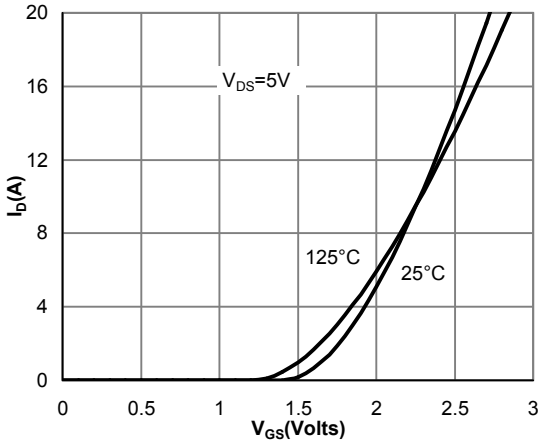


Figure 2: Transfer Characteristics

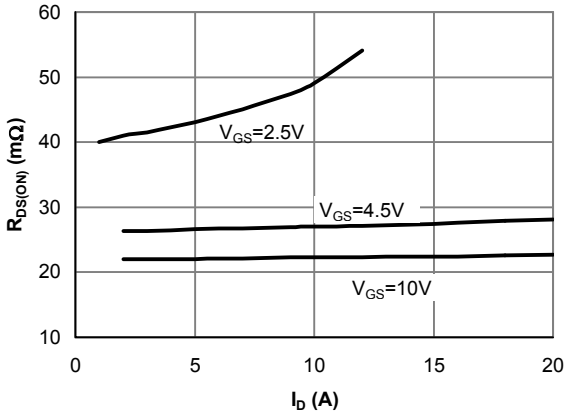


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

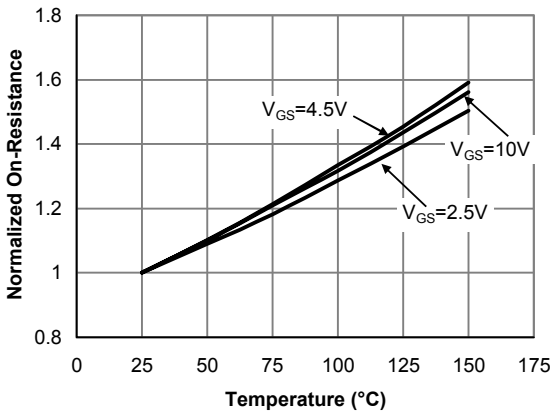


Figure 4: On-Resistance vs. Junction Temperature

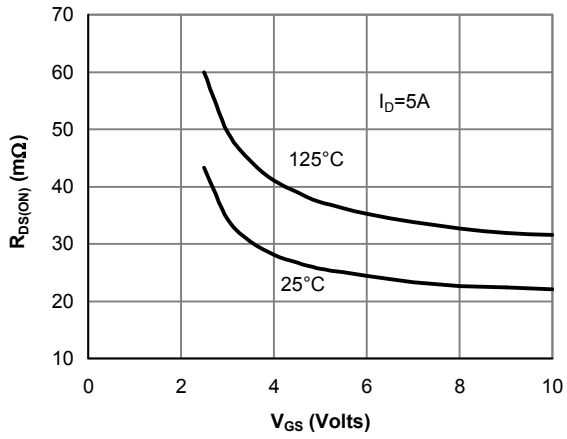


Figure 5: On-Resistance vs. Gate-Source Voltage

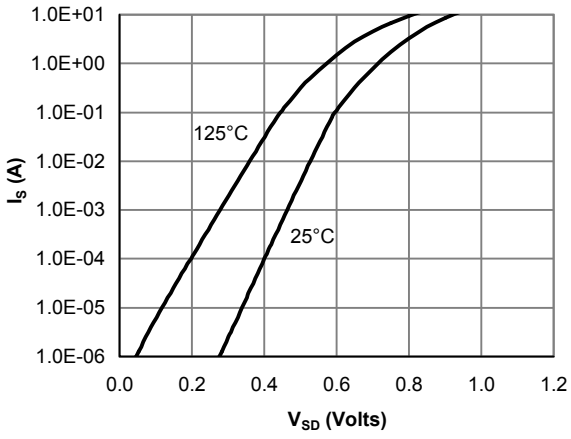


Figure 6: Body-Diode Characteristics

■ Typical Characterisitics

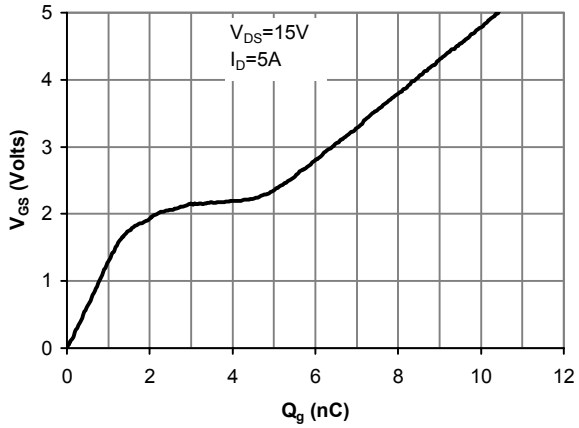


Figure 7: Gate-Charge Characteristics

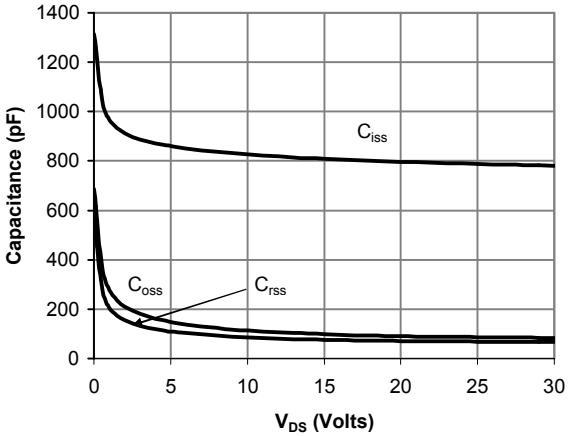


Figure 8: Capacitance Characteristics

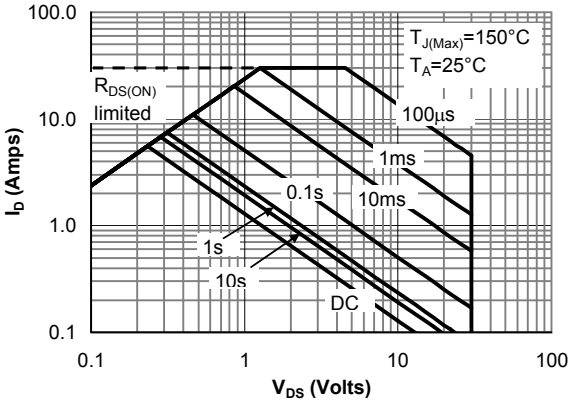


Figure 9: Maximum Forward Biased Safe Operating Area (Note E)

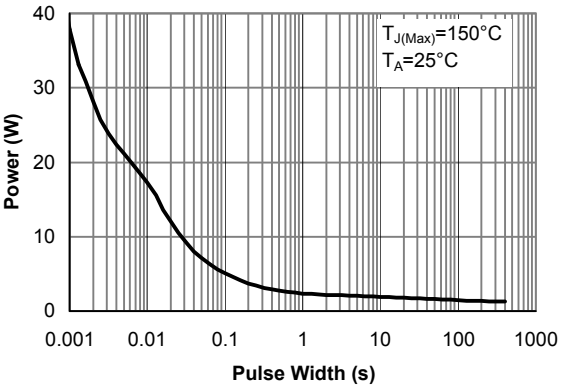


Figure 10: Single Pulse Power Rating Junction-to-Ambient (Note E)

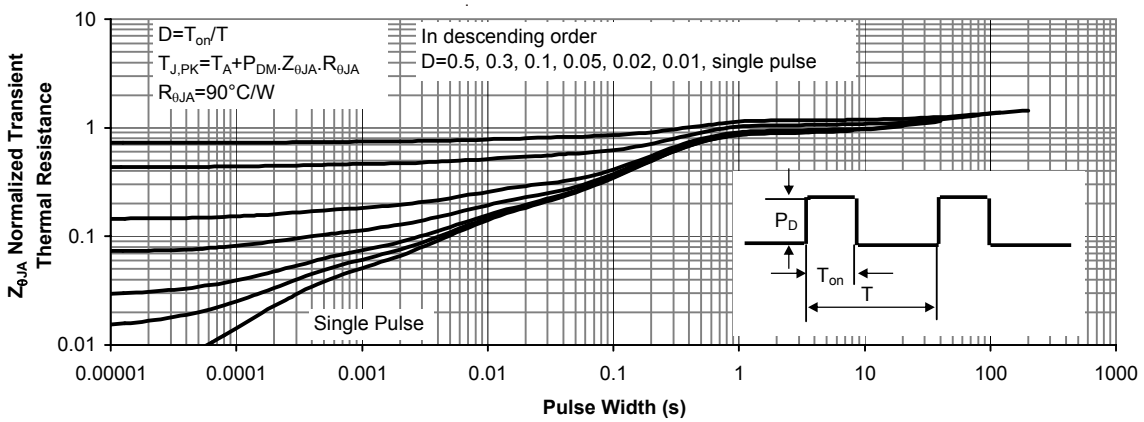
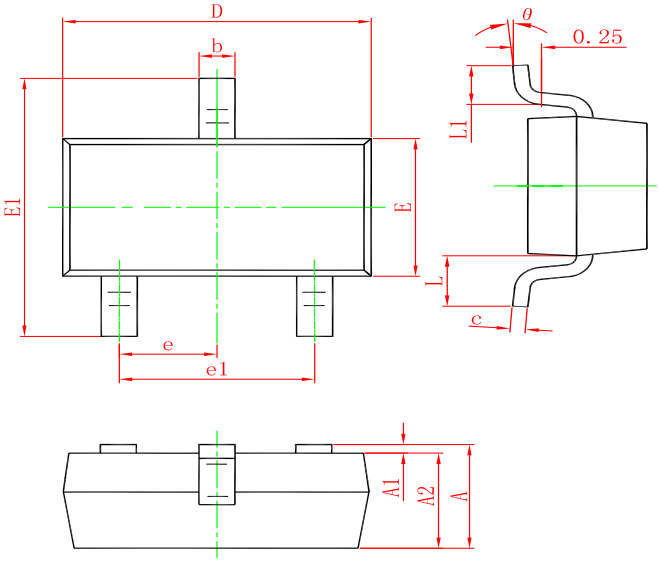


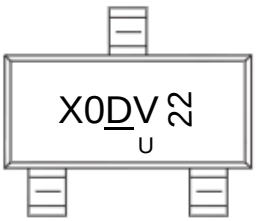
Figure 11: Normalized Maximum Transient Thermal Impedance

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 AO3400A	SOT-23	3000	Tape and reel