UMW AON6240

40V N-Channel MOSFET

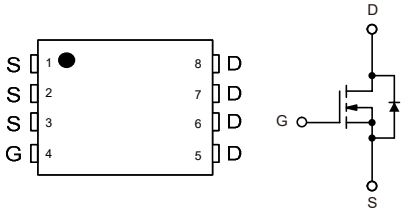
1.Features

- V_{DS}=40V
- I_D =85A (V_{GS}=10V)
- $R_{DS(ON)}$ <1.6mΩ(V_{GS}=10V)
- $R_{DS(ON)}$ <2.4mΩ(V_{GS}=4.5V)

2.Pinning information

Pin	Symbol	Description
1,2,3	S	SOURCE
4	G	GATE
5,6,7,8	D	DRAIN

PDFN-8



3.Absolute Maximum Ratings T_A=25°C unless otherwise noted

Parameter		Symbol	Maximum	Units
Drain-Source Voltage		V_{DS}	40	V
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current [G]	T_C=25°C	I_D	85	A
	T_C=100°C		67	A
Pulsed Drain Current [C]		I_{DM}	355	A
Continuous Drain Current	T_A=25°C	I_{DSM}	27	A
	T_A=70°C		22	A
Avalanche Current [C]		I_{AS},I_{AR}	82	A
Avalanche energy L=0.1mH [C]		E_{AS},E_{AR}	336	mJ
Power Dissipation [B]	T_C=25°C	P_D	83	W
	T_C=100°C		33	W
Power Dissipation [A]	T_A=25°C	P_{DSM}	2.3	W
	T_A=70°C		1.5	W
Junction and Storage Temperature Range		T_J,T_{STG}	-55 to 150	°C

4.Thermal Characteristics

Parameter		Symbol	Typ	Max	Units
Maximum Junction-to-Ambient	t≤10s	$R_{\theta JA}$	14	17	°C/W
Maximum Junction-to-Ambient	Steady-State		40	55	°C/W
Maximum Junction-to-Case	Steady-State	$R_{\theta JC}$	1	1.5	°C/W

5.Electrical Characteristic (T_J=25°C unless otherwise noted)

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Drain-Source Breakdown Voltage	BV_{DSS}	I_D=250μA, V_{GS}=0V	40			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=40V, V_{GS}=0V			1	μA
		T_J=55°C			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	1.3	1.9	2.4	V
On state drain current	$I_{D(ON)}$	V_{GS}=10V, V_{DS}=5V	355			A
Static Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS}=10V, I_D=20A		1.3	1.6	mΩ
		V_{GS}=4.5V, I_D=20A		1.8	2.4	mΩ
Forward Transconductance	g_{FS}	V_{DS}=5V, I_D=20A		166		S
Diode Forward Voltage	V_{SD}	I_S=1A, V_{GS}=0V		0.7	1	V
Maximum Body-Diode Continuous Current [G]	I_S				85	A
Input Capacitance	C_{iss}	V_{GS}=0V, V_{DS}=20V, f=1MHz	4360	5458	6550	pF
Output Capacitance	C_{oss}		970	1395	1815	pF
Reverse Transfer Capacitance	C_{rss}		30	103	176	pF
Gate resistance	R_g	V_{GS}=0V, V_{DS}=0V, f=1MHz	0.5	1	1.6	Ω
Total Gate Charge	Q_g(10V)	V_{GS}=10V, V_{DS}=20V, I_D=20A	58	72.8	88	nC
Total Gate Charge	Q_g(4.5V)		24	31	44	nC
Gate Source Charge	Q_{gs}			14.8		nC
Gate Drain Charge	Q_{gd}			10.8		nC
Turn-On DelayTime	$t_{D(on)}$	V_{GS}=10V, V_{DS}=20V, R_L=1Ω,R_{GEN}=3Ω		14.8		ns
Turn-On Rise Time	t_r			5.5		ns
Turn-Off DelayTime	$t_{D(off)}$			61.3		ns
Turn-Off Fall Time	t_f			10		ns
Body Diode Reverse Recovery Time	t_{rr}	I_F=20A, dI/dt=500A/μs	16	23.9	31	ns
Body Diode Reverse Recovery Charge	Q_{rr}	I_F=20A, dI/dt=500A/μs	59	84.6	110	nC

A. The value of $R_{\theta JA}$ is measured with the device mounted on $1in^2$ FR-4 board with 2oz. Copper, in a still air environment with T_A =25°C. The value in any given application depends on the user's specific board design.

B. The power dissipation P_D is based on $T_{J(MAX)}$=150°C, using ≤ 10s junction-to-ambient thermal resistance., and is more useful in setting the upper dissipation limit for cases where additional heatsinking is used.

C. Repetitive rating, pulse width limited by junction temperature $T_{J(MAX)}$=150°C. Ratings are based on low frequency and duty cycles to keep initial T_J=25°C.

D. The $R_{\theta JA}$ is the sum of the thermal impedence from junction to lead $R_{\theta JL}$ and lead to ambient.

E. The static characteristics in Figures 1 to 6 are obtained using <300μs pulses, duty cycle 0.5% max.

F. These curves are based on the junction-to-ambient thermal impedence which is measured with the device mounted on $1in^2$ FR-4 board with 2oz. Copper, assuming a maximum junction temperature of $T_{J(MAX)}$=150°C. The SOA curve provides a single pulse rating.

G. The maximum current rating is package limited.

H. These tests are performed with the device mounted on 1 in^2 FR-4 board with 2oz. Copper, in a still air environment with T_A=25°C.

6.1Typical characteristic

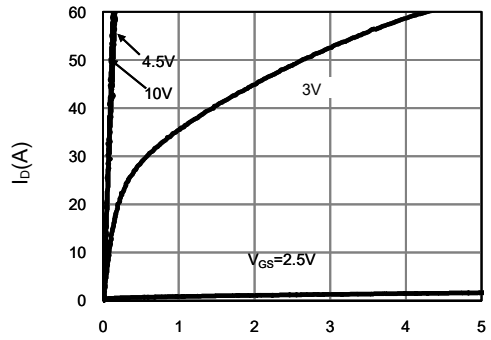


Fig 1: On-Region Characteristics (Note E)

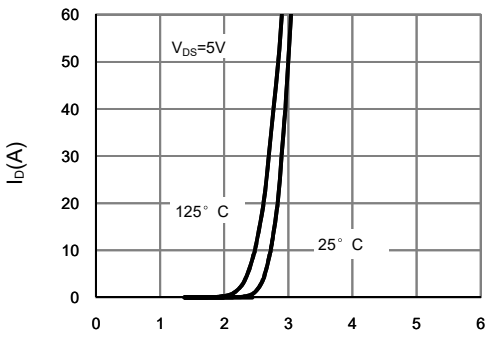


Figure 2: Transfer Characteristics (Note E)

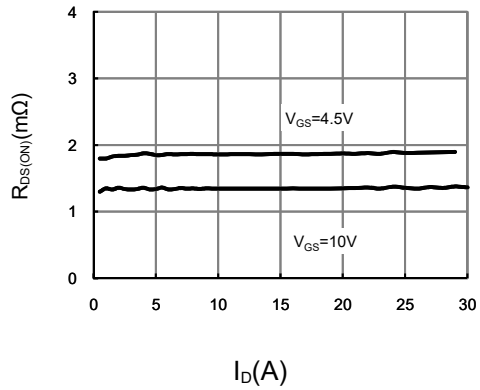


Figure 3: On-Resistance vs. Drain Current and Gate Voltage (Note E)

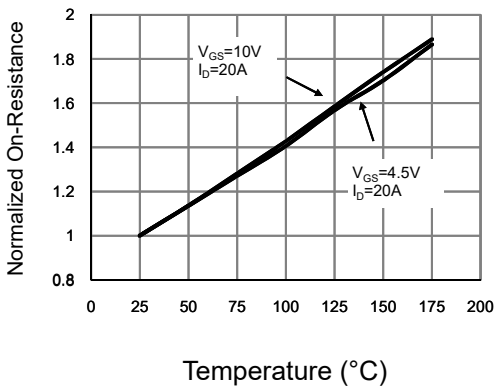


Figure 4: On-Resistance vs. Junction Temperature (Note E)

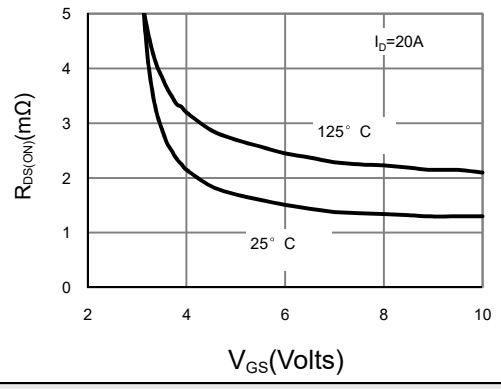


Figure 5: On-Resistance vs. Gate-Source Voltage (Note E)

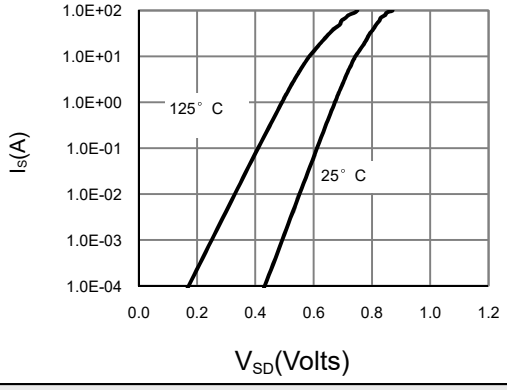


Figure 6: Body-Diode Characteristics(Note E)

6.2Typical characteristic

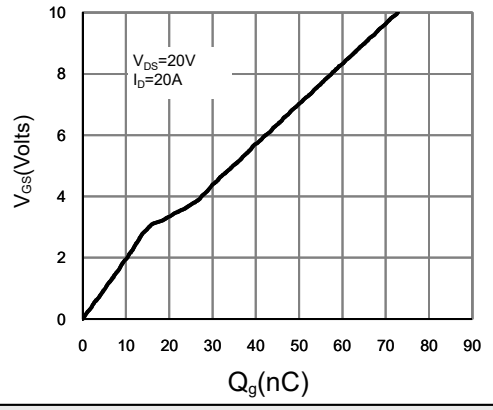


Figure 7: Gate-Charge Characteristics

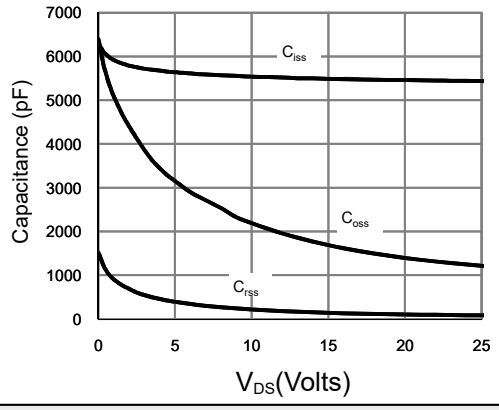


Figure 8: Capacitance Characteristics

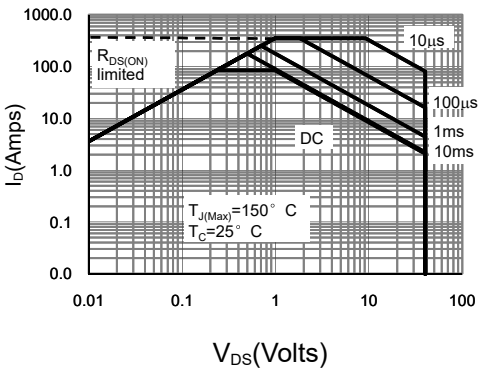


Figure 9: Maximum Forward Biased Safe Operating Area (Note F)

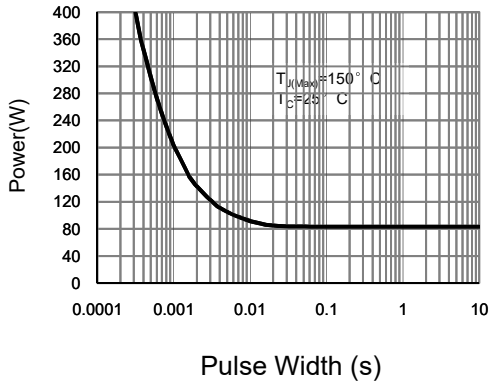


Figure 10: Single Pulse Power Rating Junction-to Case (Note F)

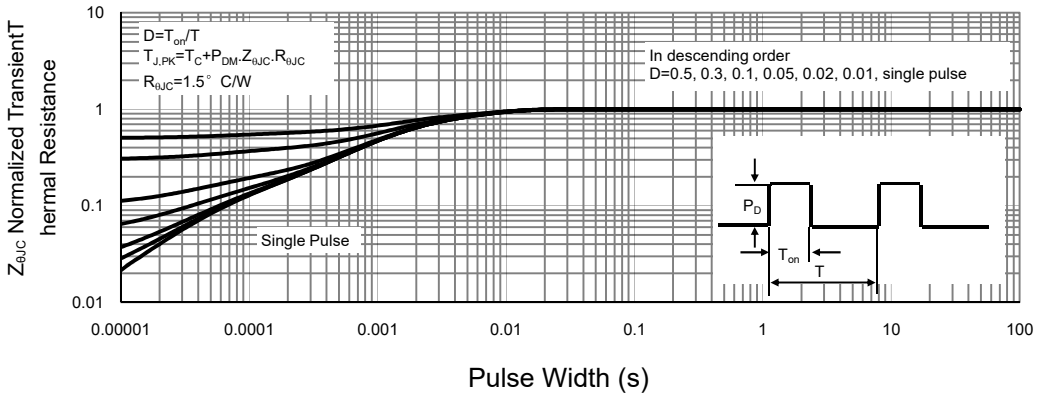


Figure 11: Normalized Maximum Transient Thermal Impedance (Note F)

6.3Typical characteristic

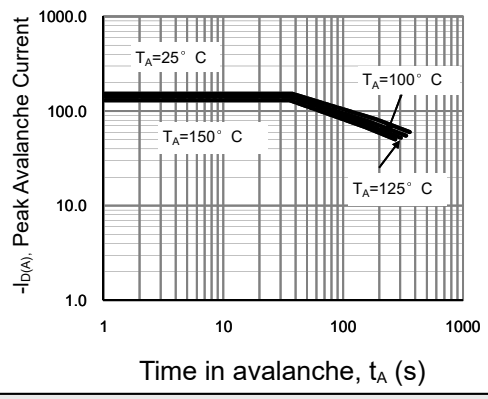


Figure 12: Single Pulse Avalanche capability

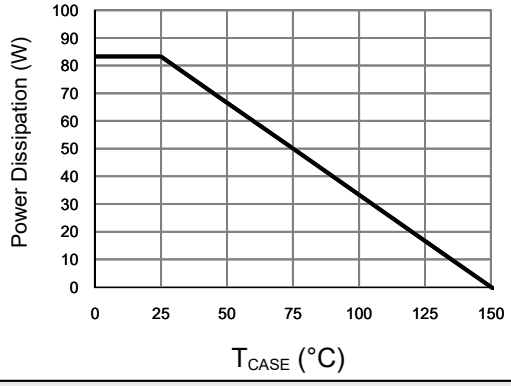


Figure 13: Power De-rating (Note B)

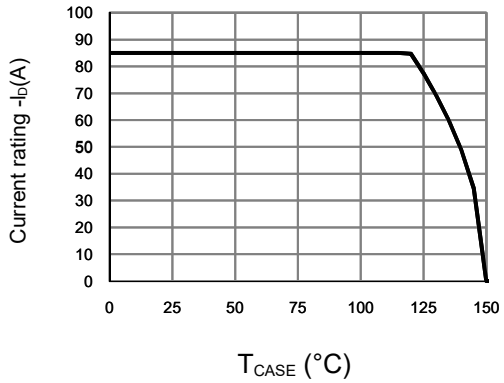


Figure 14: Current De-rating (Note B)

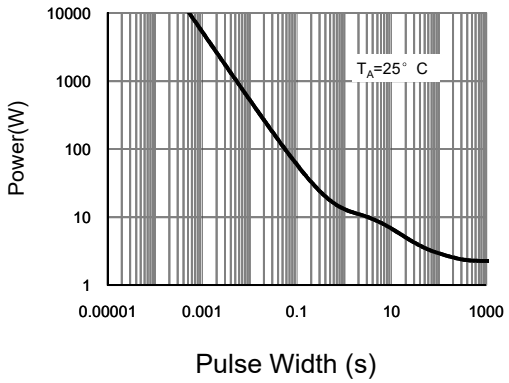


Figure 15: Single Pulse Power Rating Junction-to Ambient (Note H)

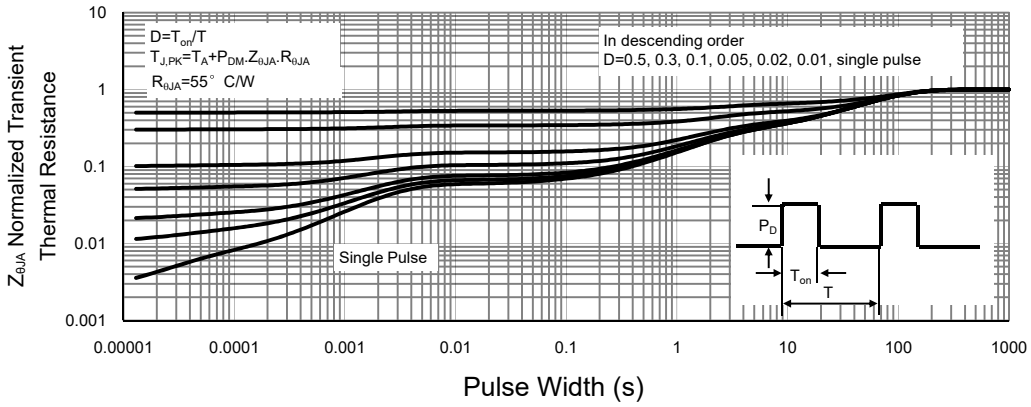
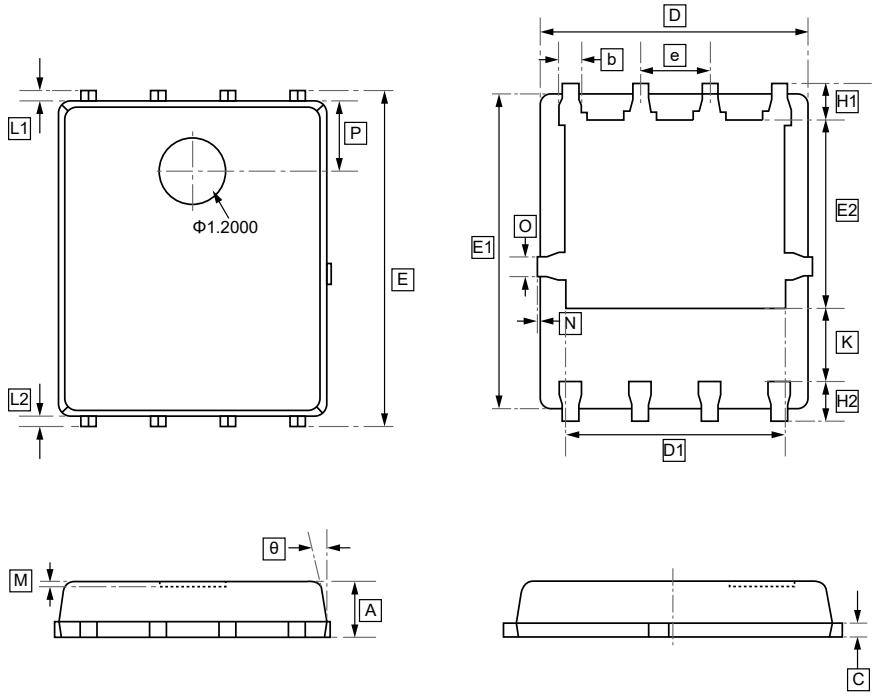


Figure 16: Normalized Maximum Transient Thermal Impedance (Note H)

7.PDFN-8(5.8x4.9) Package Outline Dimensions

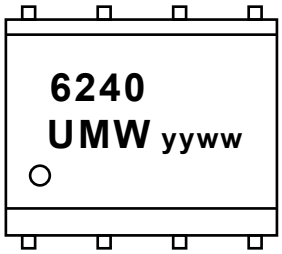


DIMENSIONS (mm are the original dimensions)

Symbol	A	b	C	D	D1	E	E1	E2	e	H1	H2	K
Min	0.90	0.35	0.20	4.80	3.90	6.05	5.65	2.30	1.27	0.62	0.60	1.23
Max	1.10	0.45	0.35	5.00	4.10	6.25	5.85	2.50	BSC	0.82	0.80	1.43

Symbol	L1/L2	θ	M	N	O	P
Min	0.2	8°	0.08	0.00	0.35	1.28
Max	REF	12°	REF	0.10	REF	REF

8.Ordering information



yy: Year Code
ww: Week Code

Order Code	Package	Base QTY	Delivery Mode
UMW AON6240	PDFN-8	3000	Tape and reel

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