UMW FDS4435BZ

-30V P-Channel MOSFET

1.Description

This device is well suited for Power Management and load switching applications common in Notebook Computers and Portable Battery Packs.

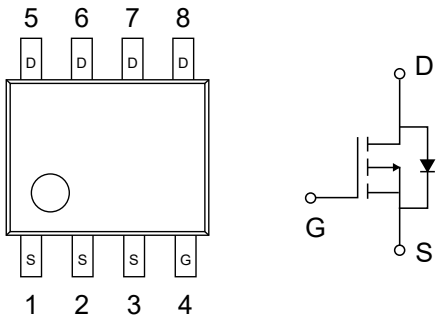
2.Features

- $V_{DS\ (V)}$=-30V
- I_D=-8.8A
- $R_{DS(ON)}$＜20mΩ(V_{GS}=-10V)
- $R_{DS(ON)}$＜35mΩ(V_{GS}=-4.5V)

3.Pinning Information

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

SOP-8



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

Parameter			Symbol	Value	Units
Drain-Source Voltage			V_{DS}	-30	V
Gate-Source Voltage			V_{GS}	±25	V
Drain Current – Continuous	T_A=25°C	(Note 1a)	I_D	-9	A
Drain Current – Pulsed				-50	
Power Dissipation	T_A=25°C	(Note 1a)	P_D	2.5	W
Power Dissipation	T_A=25°C	(Note 1b)		1	
Single Pulse Avalanche Energy		(Note 4)	E_{AS}	24	mJ
Operating and Storage Junction Temperature Range			T_J, T_{STG}	-55 to 150	°C
Thermal Resistance, Junction to Case			$R_{\theta JA}$	25	°C/W
Thermal Resistance, Junction to Ambient (Note 1a)			$R_{\theta JC}$	50	°C/W

5.Electrical Characteristics (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	-30			V
Breakdown Voltage Temperature Coefficient	$\frac{\Delta BV_{DSS}}{\Delta T_J}$	I_D=-250μA Referenced to 25°C		-21		mV/°C
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=-24V, V_{GS}=0V			1	μA
Gate to Source Leakage Current	I_{GSS}	V_{GS}=±25V, V_{DS}=0V			±10	μA
Gate to Source Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=-250μA	-1	-2.1	-3	V
Gate to Source Threshold Voltage Temperature Coefficient	$\frac{\Delta V_{GS(th)}}{\Delta T_J}$	I_D=-250μA Referenced to 25°C		6		mV/°C
Static Drain to Source On Resistance	$R_{DS(ON)}$	V_{GS}=-10V, I_D=-8.8A		15		mΩ
		V_{GS}=-4.5V, I_D=-6.7A		25		mΩ
Forward Transconductance	g_{FS}	V_{GS}=-5V, I_D=-8.8A		24		S
Input Capacitance	C_{iss}	V_{DS}=-15V, V_{GS}=0V		1380	1800	pF
Output Capacitance	C_{oss}	f =1MHz		275		pF
Reverse Transfer Capacitance	C_{rss}			230		pF
Gate Resistance	R_G			4.5		Ω
Turn-On Delay Time	$t_{D(on)}$			10	20	ns
Rise Time	t_r	V_{DD}=-15V, I_D=-8.8A		6	12	ns
Turn-Off DelayTime	$t_{D(off)}$	V_{GS}=-10V, R_{GEN}=6Ω		30	48	ns
Fall Time	t_f			12	20	ns
Total Gate Charge	Q_g	V_{GS}=0V to -10V, V_{DD}=-15V		28	40	nC
Total Gate Charge	Q_g	V_{GS}=0V to -5V, I_D=-8.8A		16	23	nC
Gate to Source Charge	Q_{gs}			5.2		nC
Gate to Drain “Miller” Charge	Q_{gd}	V_{GS}=0V, I_S=-8.8A (Note 2)		7		nC
Source to Drain Diode Forward Voltage	V_{SD}			-0.9	-1.2	V
Reverse Recovery Time	t_{rr}			29	44	ns
Reverse Recovery Charge	Q_{rr}	I_F=-8.8A, di/dt=100A/μs		23	35	nC

6.1Typical Characteristics

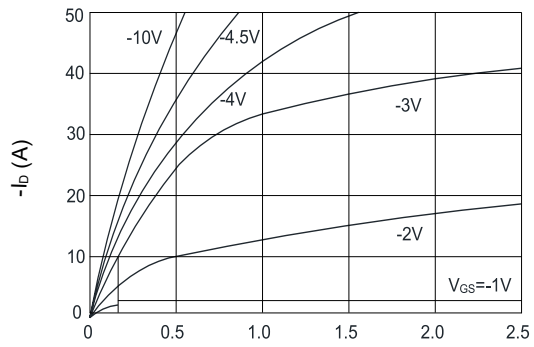


Figure 1: Output Characteristics

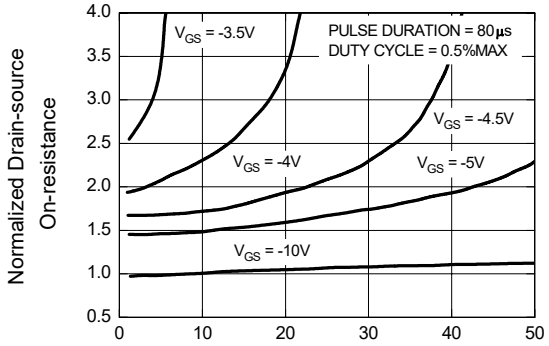


Figure 2: Normalized On-Resistance vs Drain Current and Gate Voltage

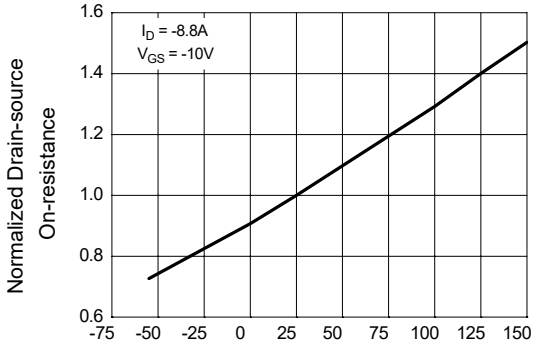


Figure 3: Normalized On-Resistance vs Drain Current and Gate Voltage

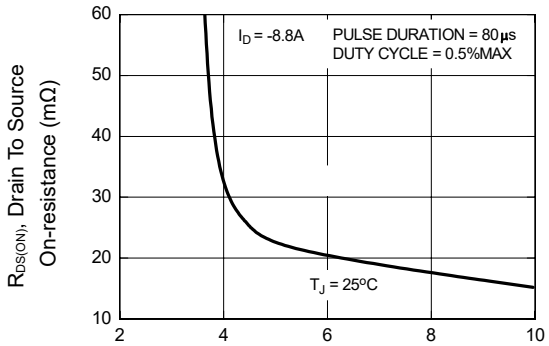


Figure 4: On-Resistance Variation with Gate-to-Source Voltage

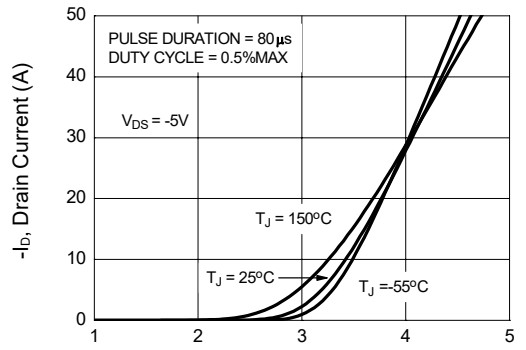


Figure 5: Transfer Characteristics.

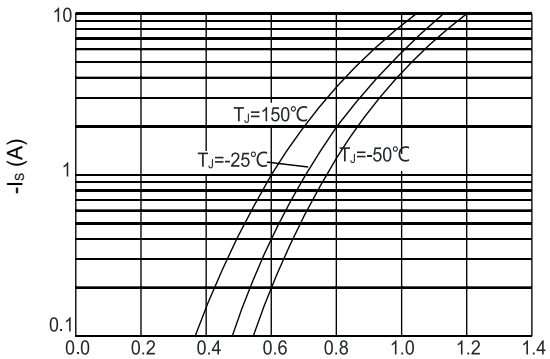


Figure 6: Body Diode Characteristics

6.2Typical Characteristics

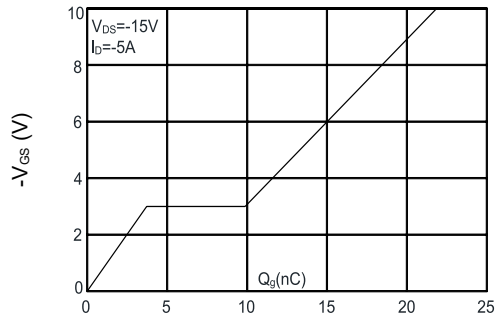


Figure 7: Gate Charge Characteristics

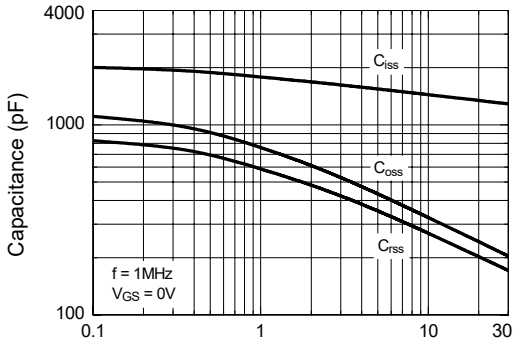


Figure 8: Capacitance vs Drain to Source Voltage

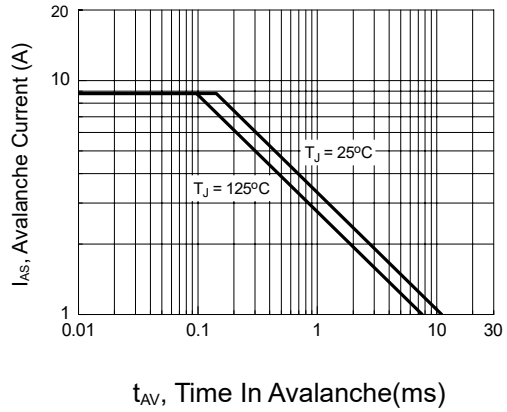


Figure 9: Unclamped Inductive Switching Capability

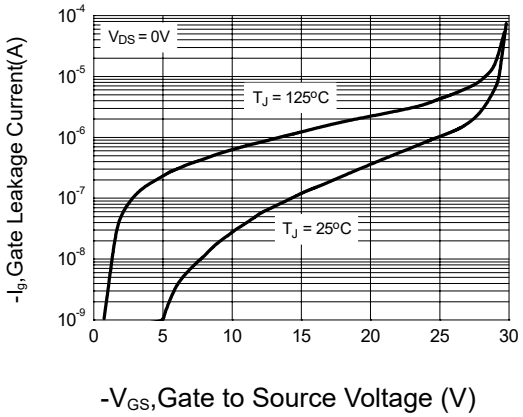


Figure 10: Gate Leakage Current vs Gate to Source Voltage

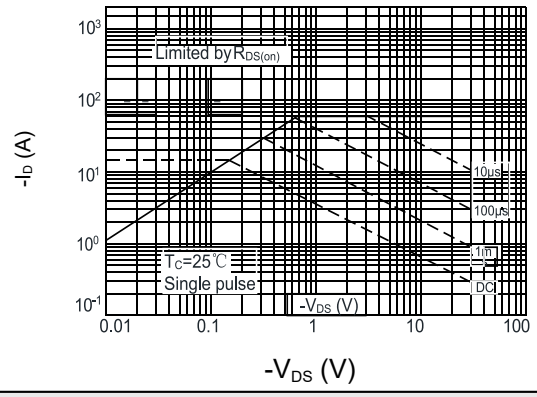


Figure 11: Maximum Safe Operating Area

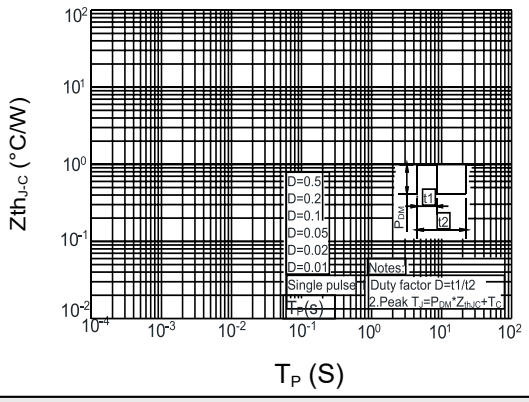
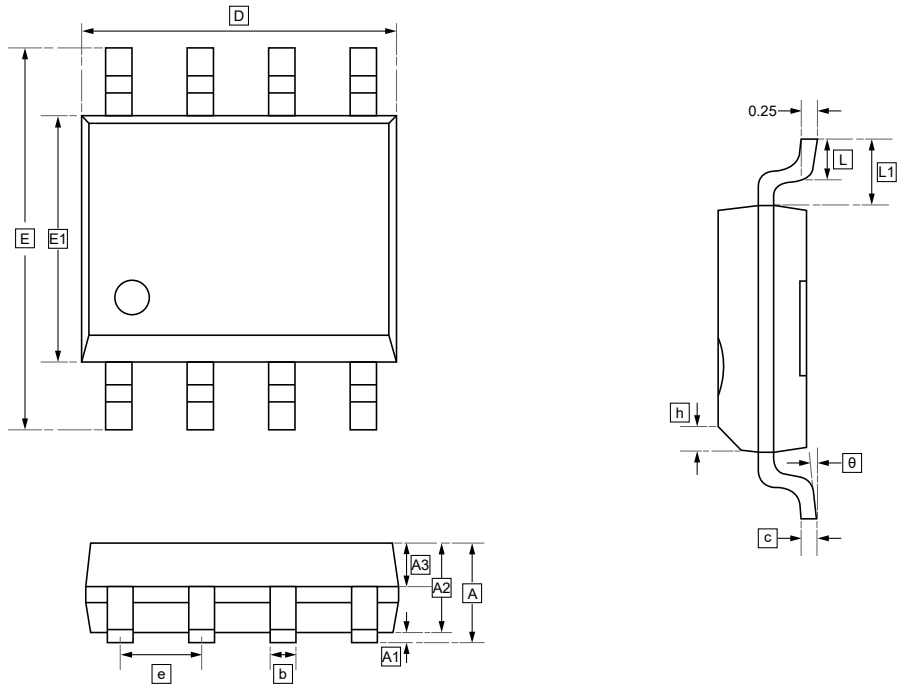


Figure 12: Maximum Effective Transient Thermal Impedance, Junction-to-Case

7.SOP-8 Package Outline Dimensions

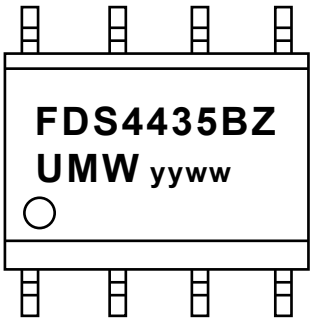


DIMENSIONS (mm are the original dimensions)

Symbol	A	A1	A2	A3	b	c	D	E	E1	e	h	L
Min	-	0.05	1.30	0.60	0.39	0.20	4.70	5.80	3.80	1.24	0.30	0.50
Max	1.75	0.20	1.50	0.70	0.47	0.24	5.10	6.20	4.00	1.30	0.50	0.80

Symbol	L1	θ
Min	1.00	0°
Max	1.10	8°

8.Ordering Information



yy: Year Code
ww: Week Code

Order Code	Package	Base QTY	Delivery Mode
UMW FDS4435BZ	SOP-8	3000	Tape and reel

9.Disclaimer

UMW reserves the right to make changes to all products, specifications. Customers should obtain the latest version of product documentation and verify the completeness and currency of the information before placing an order.

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