UMW FDS6679AZ

-30V P-Channel MOSFET

1.Features

- $V_{DS(V)}$=-30V
- Q_g=29.5nC
- $R_{DS(ON)}$=11mΩ(V_{GS}=-10V)
- $R_{DS(ON)}$=15mΩ(V_{GS}=4.5V)

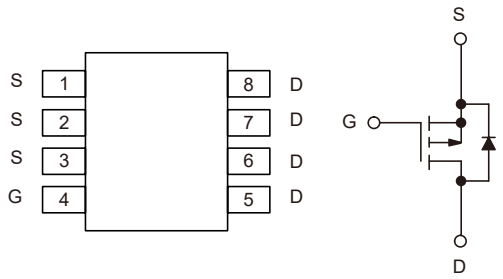
2.Applications

- Load Switch
- Notebook Adaptor Switch

3.Pinning information

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

SOP-8



4.Maximum ratings (T_A=25°C unless otherwise noted)

Parameter		Symbol	Ratings	Units
Drain-Source Voltage		V_{DSS}	-30	V
Gate-Source Voltage		V_{GSS}	±25	V
Drain Current - Continuous	(Note 1a)	I_D	-13	A
- Pulsed			-65	A
Power Dissipation for Single Operation	(Note 1a)	P_D	2.5	W
	(Note 1b)		1.2	W
	(Note 1c)		1	W
Operating and Storage Junction Temperature Range		T_J,T_{STG}	-55 to 150	°C

5.Thermal Characteristics

Parameter		Symbol	Ratings	Units
Thermal Resistance, Junction-to-Ambient	(Note 1a)	$R_{\theta JA}$	50	°C/W
Thermal Resistance, Junction-to-Case	(Note 1)	$R_{\theta JC}$	25	°C/W

6.Electrical Characteristics (T_J=25°C unless otherwise noted)

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Static						
Drain-Source Breakdown Voltage	V_{DS}	V_{GS}=0V, I_D=-250μA	-30			V
V_{DS} Temperature Coefficient	$\Delta V_{DS}/T_J$	I_D=-250μA		-34		mV/°C
$V_{GS(th)}$ Temperature Coefficient	$\Delta V_{GS(th)}/T_J$			5.3		
Gate-Source Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=-250μA	-1.4		-2.5	V
Gate-Source Leakage	I_{GSS}	V_{DS}=0V, V_{GS}=±25V			±100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=-30V, V_{GS}=0V			-1	μA
		V_{DS}=-30V, V_{GS}=0V, T_J=55°C			-5	
On-State Drain Current[a]	$I_{D(ON)}$	V_{DS}≥-10V, V_{GS}=-10V	-30			A
Drain-Source On-State Resistance[a]	$R_{DS(ON)}$	V_{GS}=-10V, I_D=-10A		11		mΩ
		V_{GS}=-4.5V, I_D=-8A		15		
Forward Transconductance[a]	g_{FS}	V_{DS}=-10V, I_D=-10A		28		S
Dynamic [b]						
Input Capacitance	C_{iss}	V_{DS}=-15V, V_{GS}=0V, f=1MHz		2550		pF
Output Capacitanc	C_{oss}			455		
Reverse Transfer Capacitance	C_{rss}			390		
Total Gate Charge	Q_g	V_{DS}=-15V,V_{GS}=-10V		57	86	nC
		I_D=-10A		29.5	45	
Gate Source Charge	Q_{gs}	V_{DS}=-15V, V_{GS}=-4.5V		8		
Gate Drain Charge	Q_{gd}	I_D=-10A		22		
Gate Resistance	R_g	f=1MHz	0.5	2.2	4.4	Ω
Turn-On DelayTime	$t_{D(on)}$	V_{DD} =-15V, R_L=1.5Ω		13	25	ns
Rise Time	t_r	I_D≅-10A, V_{GEN}=-10V		12	24	
Turn-Off DelayTime	$t_{D(off)}$	R_g=1Ω		40	70	
Fall Time	t_f			9	18	

Turn-On Delay Time	$t_{D(on)}$	V_{DD}=-15V, R_L=1.5Ω I_D≌-10V, V_{GEN}=-4.5V R_g=1Ω		48	80	ns
Rise Time	t_r			92	160	ns
Turn-Off Delay Time	$t_{D(off)}$			34	60	ns
Fall Time	t_f			19	35	ns
Drain-Source Body Diode Characteristics						
Continuous Source-Drain Diode Current	I_S	T_C=25°C			-4.1	A
Pulse Diode Forward Current	I_{SM}				-60	A
Body Diode Voltage	V_{SD}	I_S=-3A, V_{GS}=0V		-0.75	-1.2	V
Body Diode Reverse Recovery Time	t_{rr}	I_F=-10A, dI/dt=100A/μs T_J=25°C		27	45	ns
Body Diode Reverse Recovery Charge	Q_{rr}			16	27	nC
Reverse Recovery Fall Time	t_a			12		ns
Reverse Recovery Rise Time	t_b			15		ns

Notes:

a. Pulse test; pulse width ≤ 300 μs, duty cycle ≤ 2 %.

b. Guaranteed by design, not subject to production testing.

7.1Typical Characterisitics

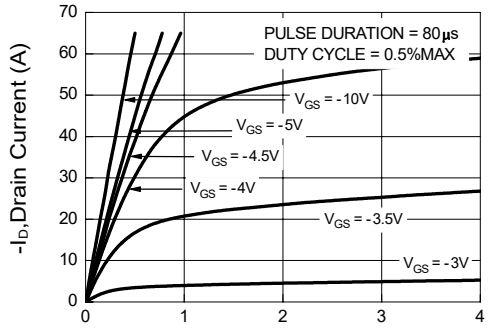


Figure 1: Output Characteristics

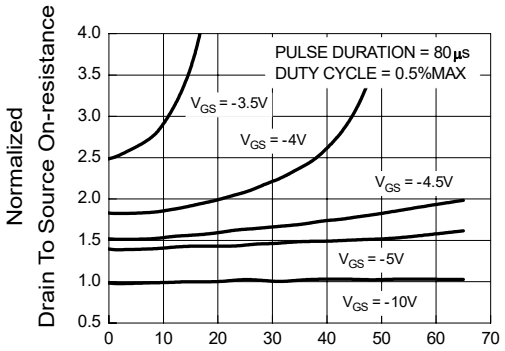


Figure 2: Normalized On-Resistance vs DrainCurrent and Gate Voltage

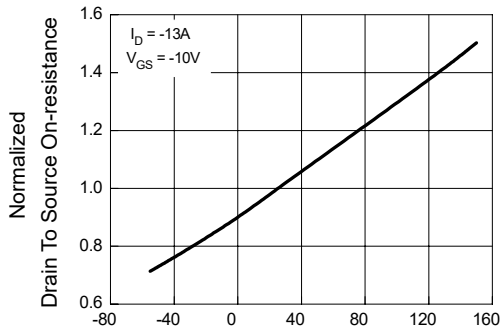


Figure 3: Normalized On Resistance vs Junction Temperature

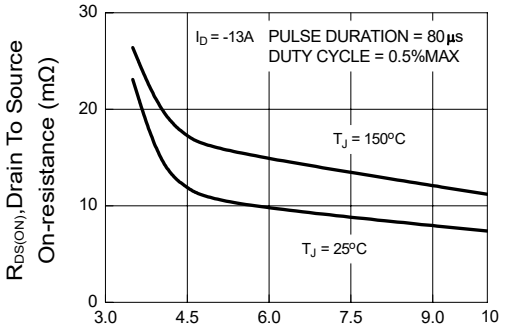


Figure 4: On-Resistance vs Gate to Source Voltage

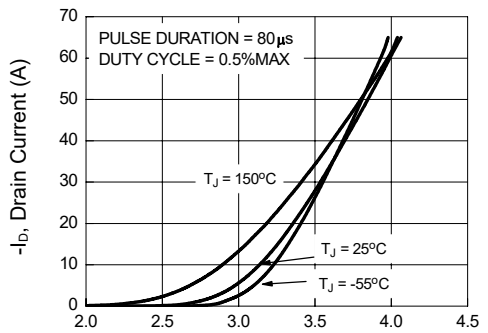


Figure 5: Transfer Characteristics

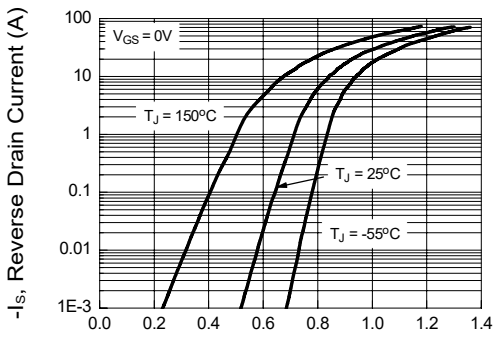


Figure 6: Source to Drain Diode Forward Voltage vs Source Current

7.2Typical Characterisitics

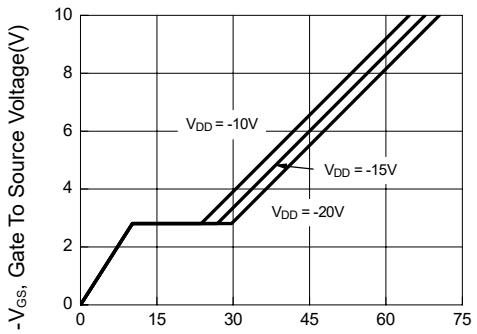


Figure 7: Gate Charge Characteristics

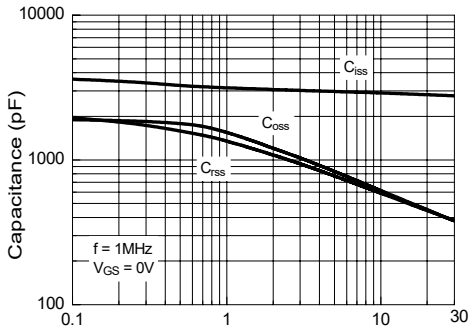


Figure 8: Capacitance vs Drain to Source Voltage

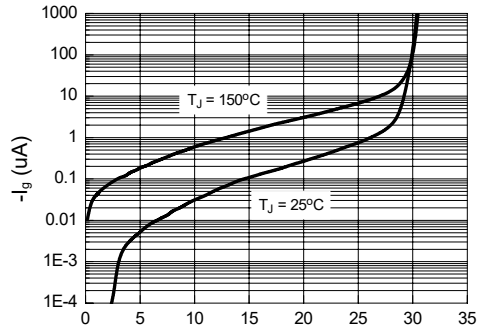


Figure 9: I_g vs V_{GS}

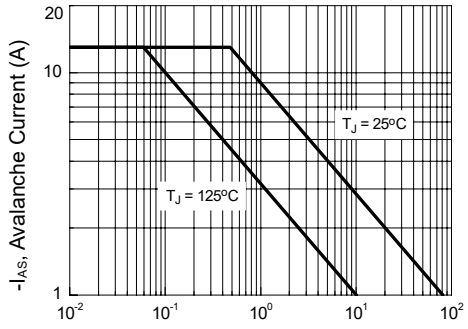


Figure 10: Unclamped Inductive Switching Capability

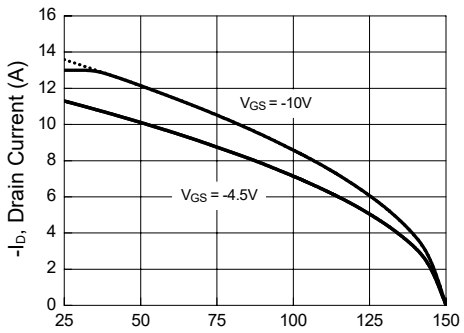


Figure 11: Maximum Continuous Drain Current vs Ambient Temperature

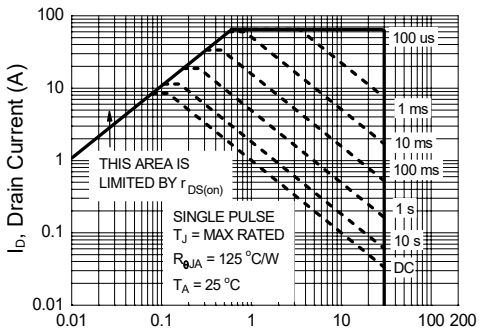


Figure 12: Forward Bias Safe Operating Area

7.3Typical Characterisitics

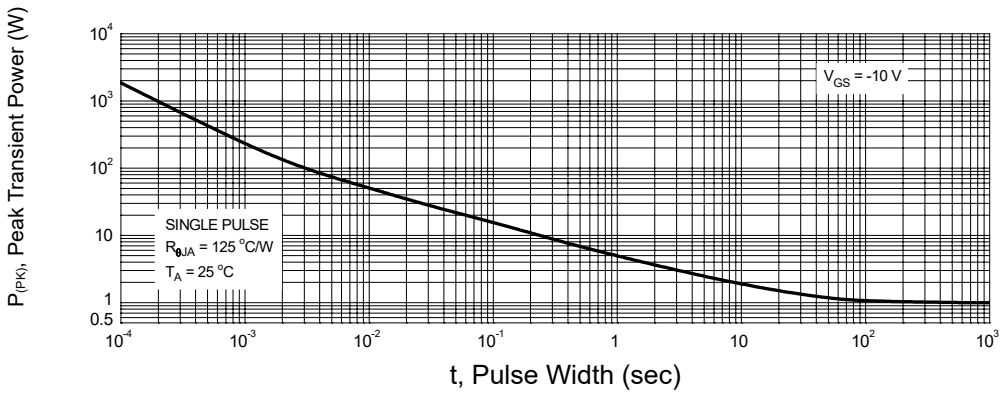


Figure 13: Single Pulse Maximum Power Dissipation

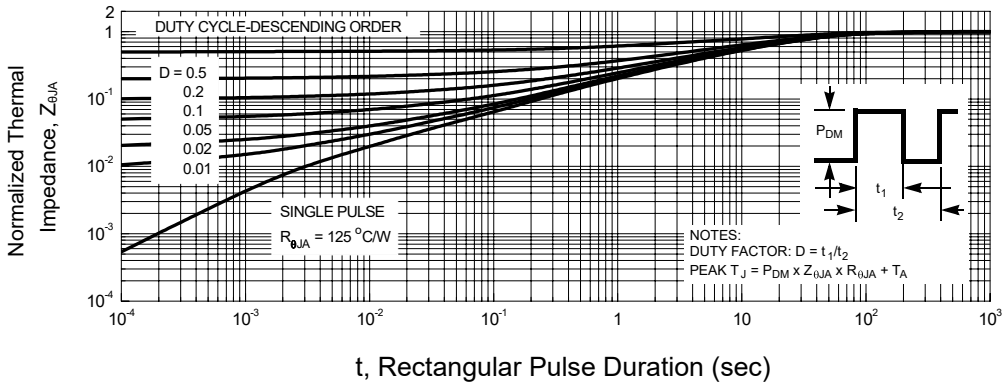
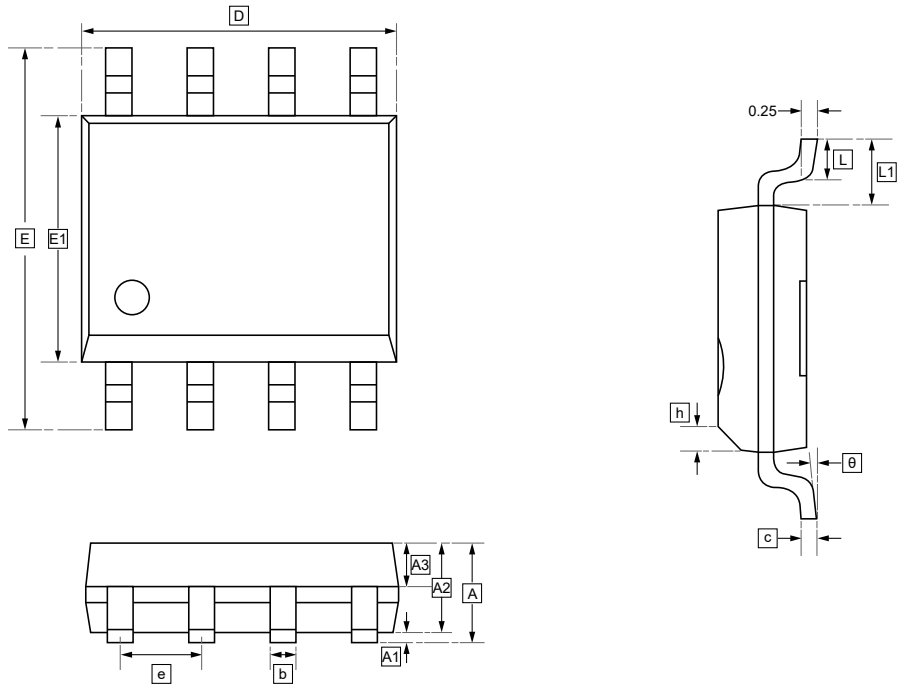


Figure 14: Junction-to-Ambient Transient Thermal Response Curve

8.SOP-8 Package Outline Dimensions

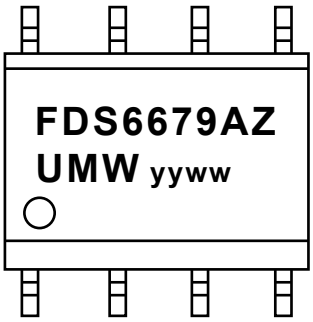


DIMENSIONS (mm are the original dimensions)

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°

9.Ordering information



yy: Year Code
ww: Week Code

Order Code	Package	Base QTY	Delivery Mode
UMW FDS6679AZ	SOP-8	3000	Tape and reel

10.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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