UMW FDN338P

SOT-23 Plastic-Encapsulate MOSFETS

1.Description

This P-Channel2.5Vspecified MOSFET usesFairchild's advanced low voltage PowerTrench process.It has been optimized for battery power managementapplications.

2.Features

- $V_{(BR)DSS}$=-20V
- I_D=-2.8A
- $R_{DS(ON)}$<75mΩ(V_{GS}=-4.5V)
- $R_{DS(ON)}$<90mΩ(V_{GS}=-2.5V)

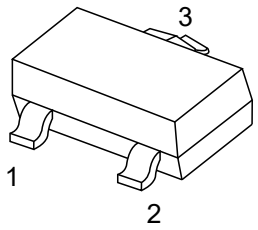
3.Application

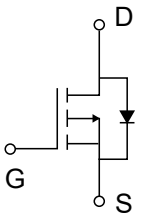
- Load Switch for Portable Devices
- DC/DC Converte

4.Pinning information

Pin	Symbol	Description
1	G	GATE
2	S	SOURCE
3	D	DRAIN

SOT-23





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

Parameter	Symbol	Rating	Units
Drain-Source Voltage	V_{DS}	-20	V
Gate-Source Voltage	V_{GS}	±8	
Continuous Drain Current	I_D	-2.8	A
Pulsed Drain Current	I_{DM}	-10	
Continuous Source-Drain Current	I_S	-0.72	
Maximum Power Dissipation	P_D	0.4	W
Thermal Resistance from Junction to Ambient (t≤5s)	$R_{\theta JA}$	312.5	°C/W
Junction Temperature	T_J	150	°C
Storage Temperature	T_{STG}	-55 to 150	°C

6.T_A=25°C unless otherwise specified

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Static						
Drain-source breakdown voltage	$V_{(BR)DSS}$	V_{GS}=0V, I_D=-250μA	-20			V
Gate-source threshold voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=-250μA	-0.4		-1	V
Gate-source leakage	I_{GSS}	V_{GS}=±8V, V_{DS}=0V			±100	nA
Zero gate voltage drain current	I_{DSS}	V_{DS}=-20V, V_{GS}=0V			-1	μA
Drain-source on-state resistance [a]	$R_{DS(ON)}$	V_{GS}=-4.5V, I_D=-2.8A		0.065	0.075	Ω
		V_{GS}=-2.5V, I_D=-2A		0.075	0.09	Ω
Forward transconductance [a]	g_{FS}	V_{DS}=-5V, I_D=-2.8A		6.5		S
Dynamic [b]						
Input Capacitance	C_{iss}	V_{DS}=-10V, V_{GS}=0V, f=1MHz		405		pF
Output Capacitance	C_{oss}			75		
Reverse Transfer Capacitance	C_{rss}			55		
Total gate charge	Q_g	V_{DS}=-10V, V_{GS}=-2.5V, I_D=-3A		5.5	10	nC
		V_{DS}=-10V, V_{GS}=-2.5V, I_D=-3A		3.3	6	
Gate-source charge	Q_{gs}			0.7		
Gate-drain charge	Q_{gd}			1.3		
Gate resistance	R_g	f=1MHz		6		Ω
Turn-on delay time	$t_{D(on)}$	V_{DD}=-10V, R_L=10Ω, I_D≈-1A, V_{GEN}=-4.5V, R_G=1Ω		11	20	ns
Rise time	t_r			35	60	ns
Turn-off delay time	$t_{D(off)}$			30	50	ns
Fall time	t_f			10	20	ns
Drain-source body diode characteristicstr						
Continuous Source-Drain Diode Current	I_S	T_C=25°C			-1.3	A
Pulsed Diode forward Curren	I_{SM}				-10	A
Body diode voltage	V_{SD}	I_S=-0.7A		-0.8	-1.2	V

Notes :

a.Pulse Test : Pulse Width < 300μs, Duty Cycle ≤2%.

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

7.1 Typical Characterisitics

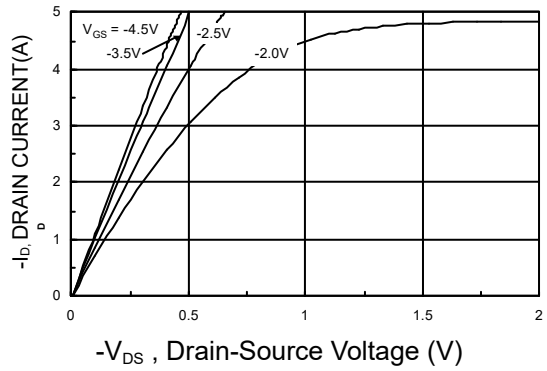


Figure 1: On-Region Characteristics.

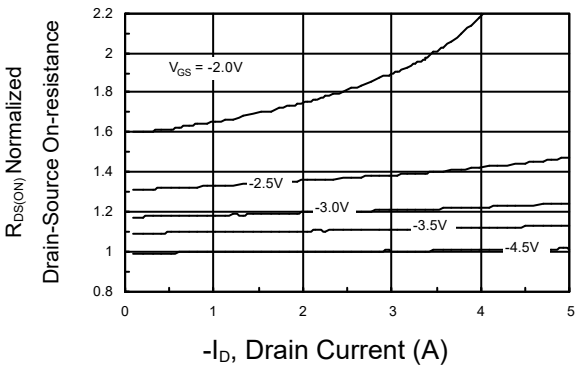


Figure 2: On-Resistance Variation with Drain Current and Gate Voltage.

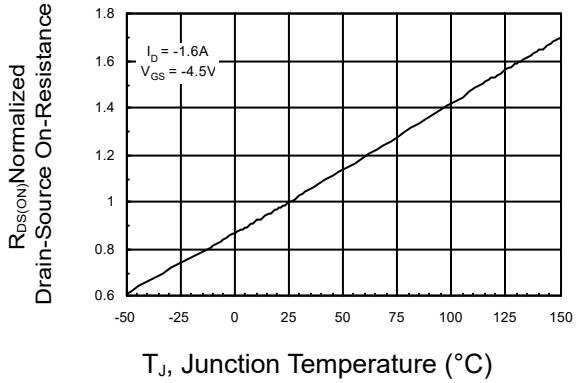


Figure 3: On-Resistance Variation with Temperature.

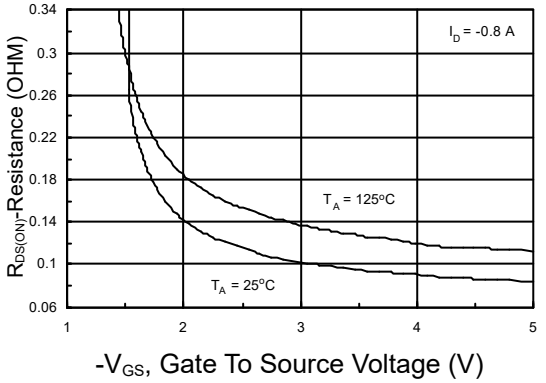


Figure 4: On-Resistance Variation with Gate-to-Source Voltage.

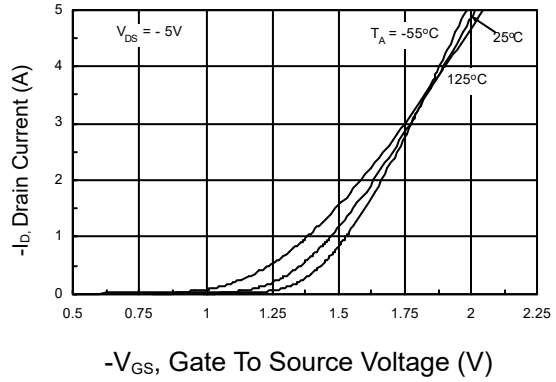


Figure 5: Transfer Characteristics.

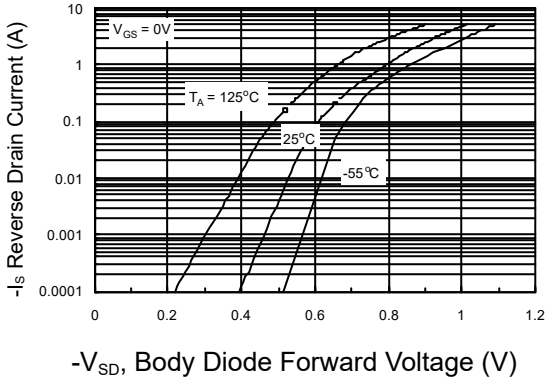


Figure 6: . Body Diode Forward Voltage Variation with Source Current and Temperature.

7.2 Typical Characterisitics

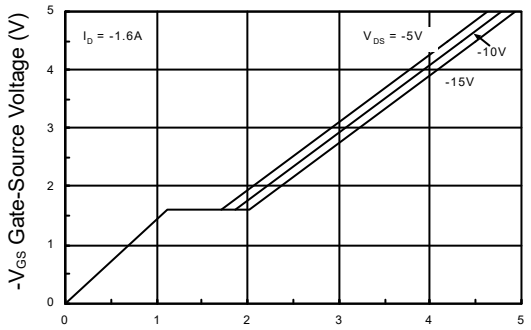


Figure 7: Gate-Charge Characteristics

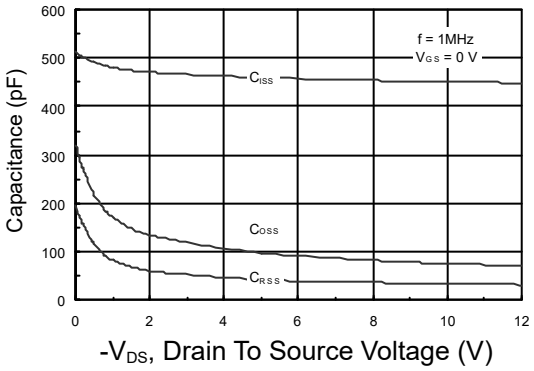


Figure 8: Capacitance Characteristics

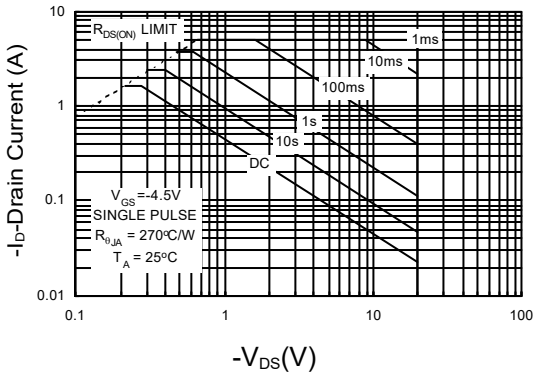


Figure 9: Maximum Safe Operating Area.

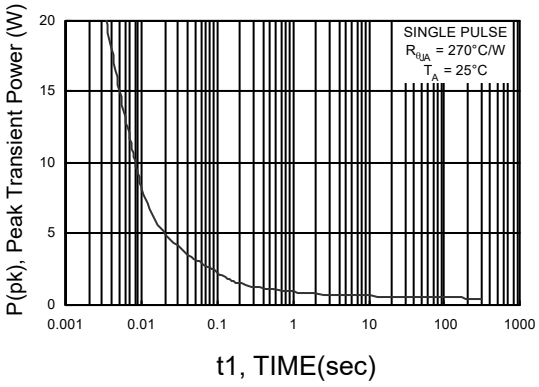


Figure 10: Single Pulse Maximum Power Dissipation.

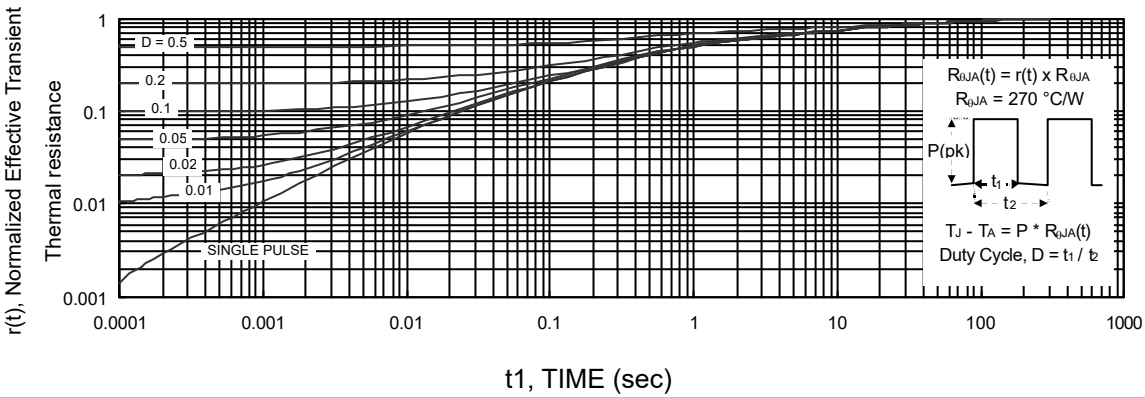
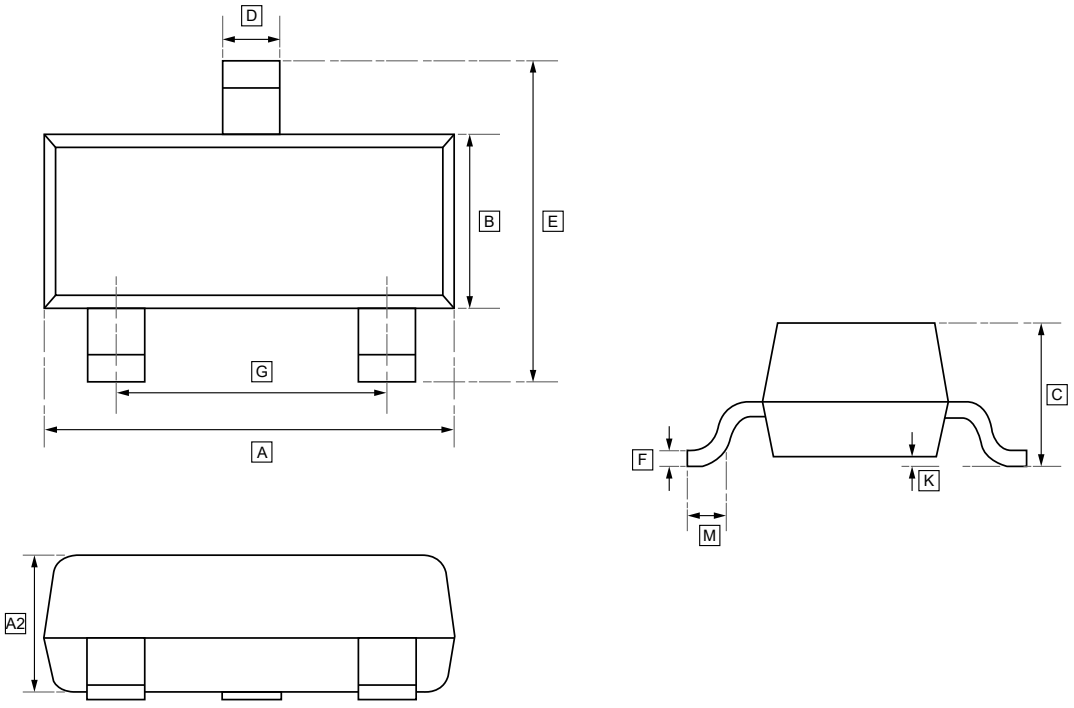


Figure 11. Transient Thermal Response Curve.

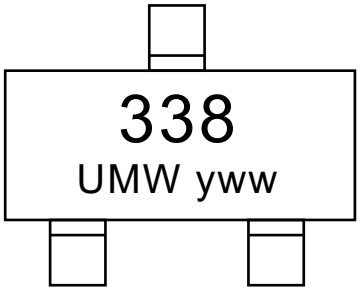
9.SOT-23 Package Outline Dimensions



DIMENSIONS (mm are the original dimensions)

Symbol	A	B	C	D	E	G	K	M	A2	F
Min	2.80	1.20	0.90	0.32	2.25	1.80	0.00	0.30	0.95	0.095
Max	3.04	1.40	1.10	0.55	2.55	2.00	0.10	-	1.05	0.115

9.Ordering Information



yww: Batch Code

Order Code	Package	Base QTY	Delivery Mode
UMW FDN338P	SOT-23	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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