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)

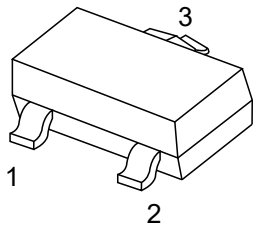
3.Application

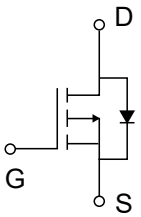
- Load Switch for Portable Devices
- DC/DC Converte

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.

7.1Typical Characterisitics

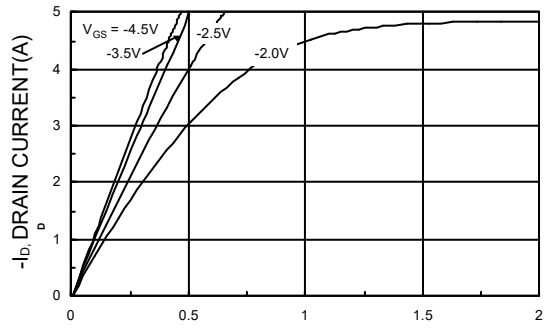


Figure 1: On-Region Characteristics.

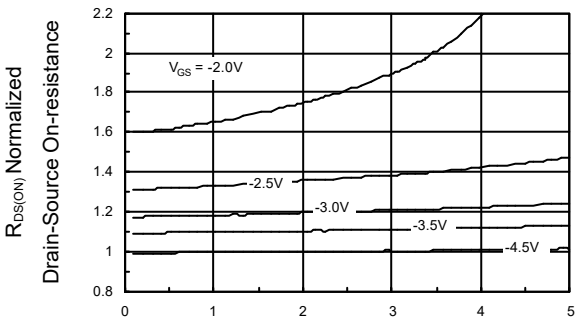


Figure 2: On-Resistance Variation with Drain Current and Gate Voltage.

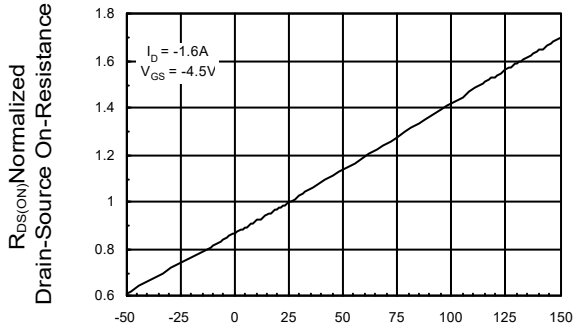


Figure 3: On-Resistance Variation with Temperature.

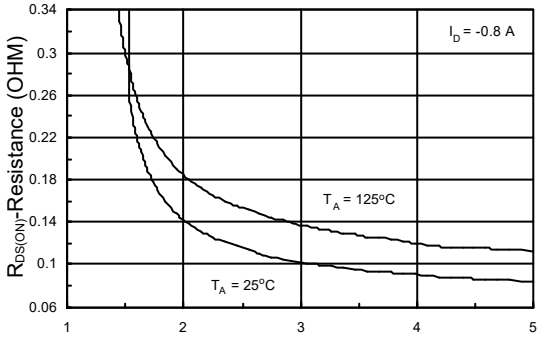


Figure 4: On-Resistance Variation with Gate-to-Source Voltage.

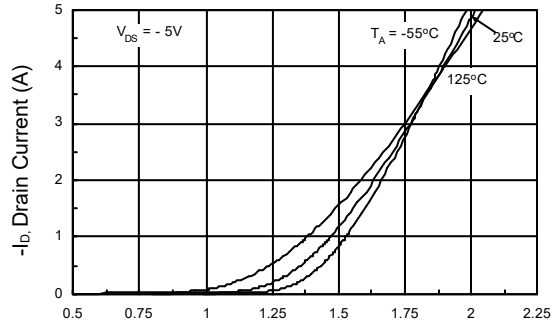


Figure 5: Transfer Characteristics.

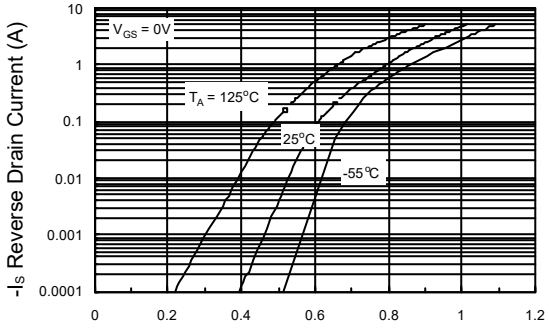


Figure 6: . Body Diode Forward Voltage Variation with Source Current and Temperature.

7.2Typical Characterisitics

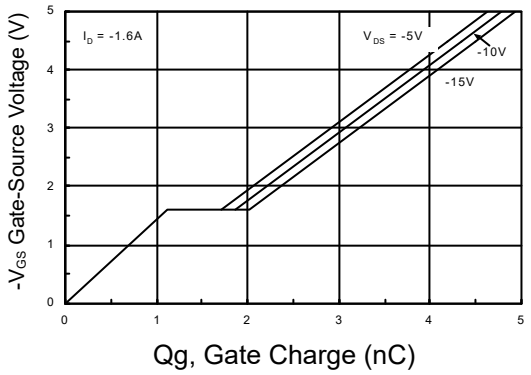


Figure 7: Gate-Charge Characteristics

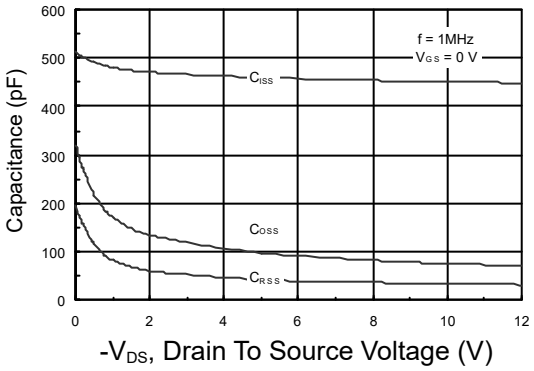


Figure 8: Capacitance Characteristics

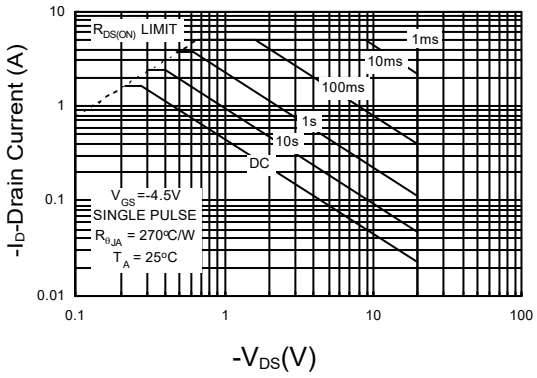


Figure 9: Maximum Safe Operating Area.

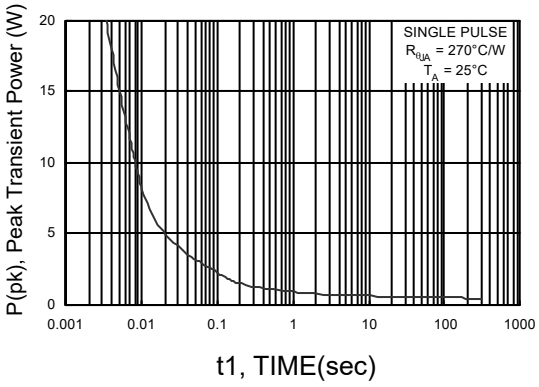


Figure 10: Single Pulse Maximum Power Dissipation.

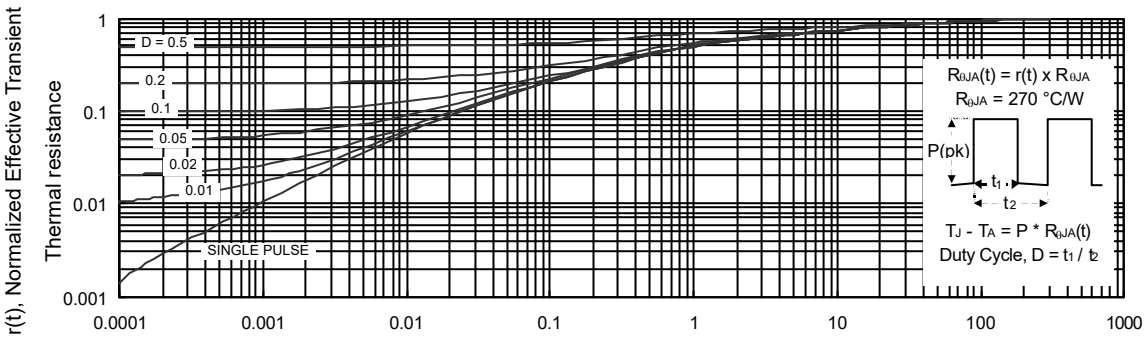
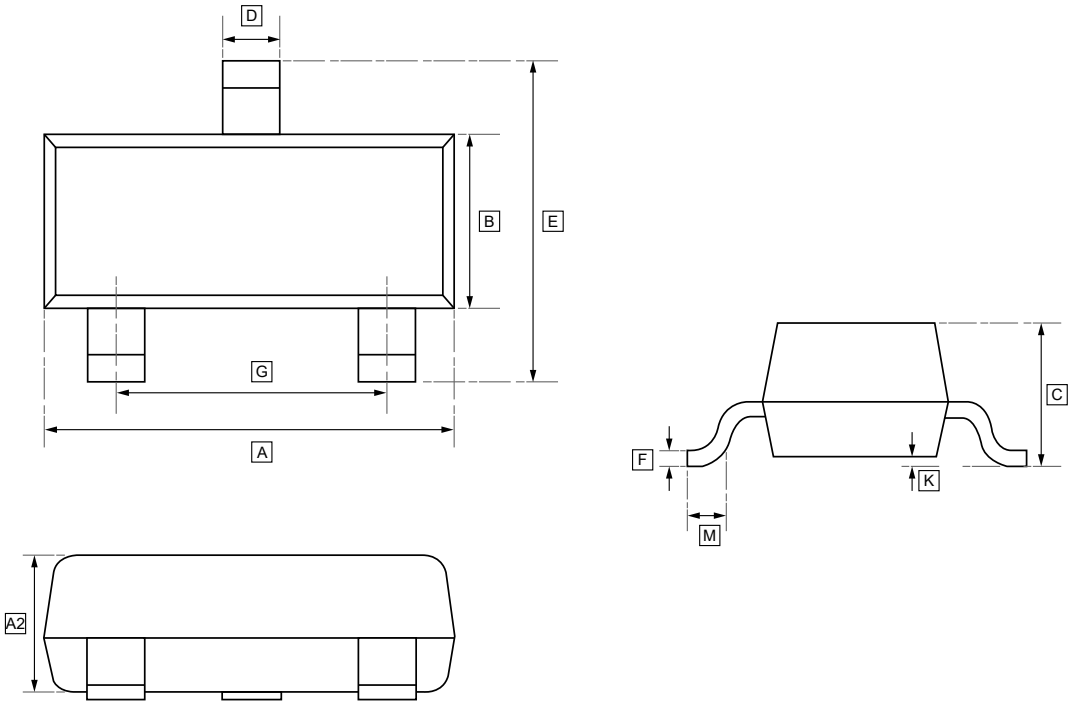


Figure 11. Transient Thermal Response Curve.

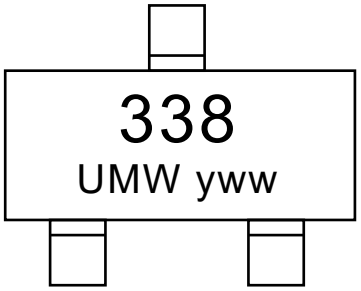
9.SOT-23 Package Outline Dimensions



DIMENSIONS (mm are the original dimensions)

Symbol	A	B	C	D	E	G	K	M	A2	F
Min	2.85	1.20	0.90	0.40	2.25	1.80	0.00	0.30	0.95	0.095
Max	3.04	1.40	1.10	0.50	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

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