UMW FDN361BN

30V N-Channel MOSFET

1.Description

These devices are particularly suited for low voltage applications in notebook computers, portable phones, PCMCIA cards, and other battery powered circuits where fast switching, and low in-line power loss are needed in a very small outline surface mount package.

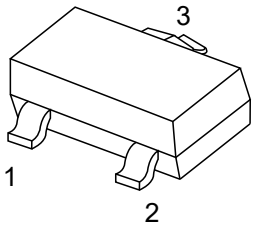
2.Features

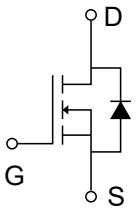
- $V_{DS(V)}$=30V
- $R_{DS(ON)}$<55mΩ(V_{GS}=10V)
- $R_{DS(ON)}$<70mΩ(V_{GS}=4.5V)

3.Pinning information

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

SOT-23





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

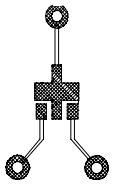
Parameter	Symbol	Value	Units
Drain-Source Voltage	V_{DSS}	30	V
Gate-Source Voltage	V_{GSS}	±20	V
Drain Current – Continuous (Note 1a)	I_D	1.4	A
– Pulsed		10	
Power Dissipation for Single Operation (Note 1a)	P_D	0.5	W
(Note 1b)		0.46	
Operating and Storage Junction Temperature Range	T_J, T_{STG}	-55 to 150	°C
Thermal Characteristics			
Thermal Resistance, Junction-to-Ambient (Note 1a)	$R_{\theta JA}$	250	°C/W
Thermal Resistance, Junction-to-Case (Note 1)	$R_{\theta JC}$	75	°C/W

5.T_A=25°C unless otherwise specified

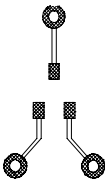
Parameter	Symbol	Conditions	Min	Typ	Max	Units
OFF CHARACTERISTICS						
Drain-source breakdown voltage	BV_{DSS}	V_{GS}=0V, I_D=250μA	30			V
Breakdown Voltage Temp. Coefficient	$\frac{\Delta BV_{DSS}}{\Delta T_J}$	I_D=250μA Referenced to 25°C		26		mV/°C
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=24V, V_{GS}=0V			1	μA
		V_{DS}=24V, V_{GS}=0V, T_J=55°C			10	μA
Gate - Body Leakage	I_{GSS}	V_{GS}=±20V, V_{DS}=0V			±100	nA
ON CHARACTERISTICS (Note 2)						
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=250μA	1	2.1	3	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS}=10V, I_D=1.4A		40	55	mΩ
		V_{GS}=4.5V, I_D=1.2A		55	70	
On-State Drain Current	$I_{D(ON)}$	V_{GS}=4.5V, V_{DS}=5V	3.5			A
Forward Transconductance	g_{FS}	V_{DS}=5V, I_D=1.4A		4		S
DYNAMIC CHARACTERISTICS						
Input Capacitance	C_{iss}	V_{DS}=15V, V_{GS}=0V, f=1MHz		145	193	pF
Output Capacitance	C_{oss}			35	47	pF
Reverse Transfer Capacitance	C_{rss}			15	23	pF
Gate Resistance	R_G	V_{GS}=15mV, f=1MHz		1.6		Ω
SWITCHING CHARACTERISTICS (Note 2)						
Turn - On Delay Time	$t_{D(on)}$	V_{DD}=15V, I_D=1A V_{GS}=10V, R_{GEN}=6Ω		3	6	ns
Turn - On Rise Time	t_r			8	16	ns
Turn - Off Delay Time	$t_{D(off)}$			16	29	ns
Turn - Off Fall Time	t_f			2	4	ns

Total Gate Charge	Q_g	V_{DS}=15V, I_D=2.7A V_{GS}=5V		1.3	1.8	nC
Gate-Source Charge	Q_{gs}			0.5		nC
Gate-Drain Charge	Q_{gd}			0.5		nC
Drain–Source Diode Characteristics and Maximum Ratings						
Drain–Source Diode Forward Voltage	V_{SD}	V_{GS}=0V, I_S=0.42A (Note 2)		0.8	1.2	V
Diode Reverse Recovery Time	T_{rr}	I_F=1.4A d_{IF}/d_t=100A/μs		11	22	ns
Diode Reverse Recovery Charge	Q_{rr}			4		nC

1. $R_{\theta JA}$ is the sum of the junction-to-case and case-to-ambient thermal resistance where the case thermal reference is defined as the solder mounting surface ofthe drain pins. $R_{\theta JC}$ is guaranteed by design while $R_{\theta CA}$ is determined by the user's board design.



a) 250°C/W when mounted on a 0.02 in^2 pad of 2 oz. copper.



b) 270°C/W when mounted on a minimum pad.

Scale 1 : 1 on letter size paper

2. Pulse Test: Pulse Width ≤ 300 μs, Duty Cycle ≤ 2.0%

6.1Typical Characterisitics

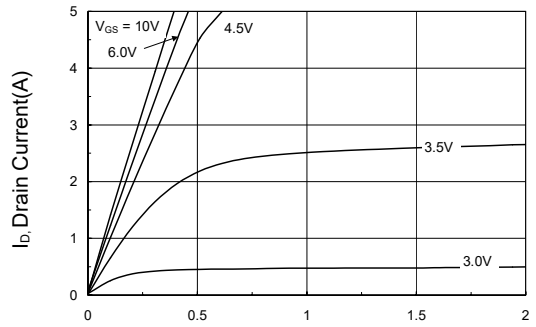


Figure 1: On-Region Characteristics.

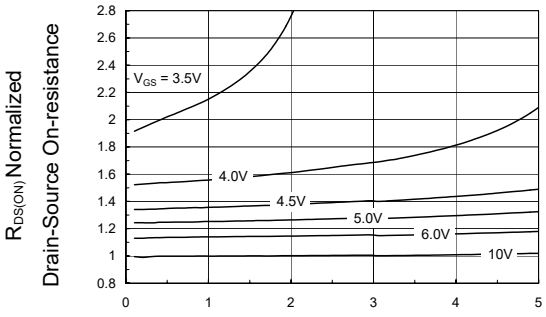


Figure 2: On-Resistance Variation with Drain Current and Gate Voltage.

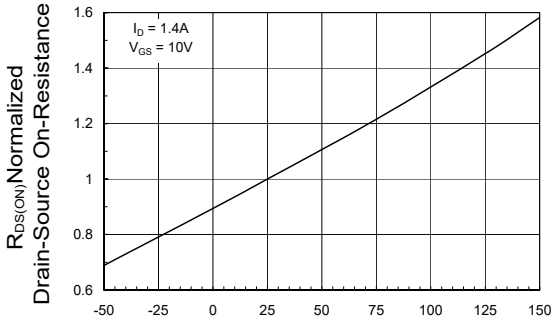


Figure 3: On-Resistance Variation with Temperature.

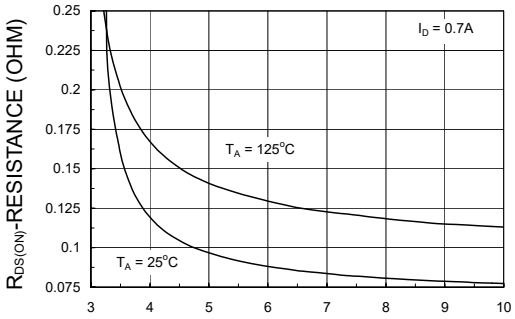


Figure 4: On-Resistance Variation with Gate-to-Source Voltage.

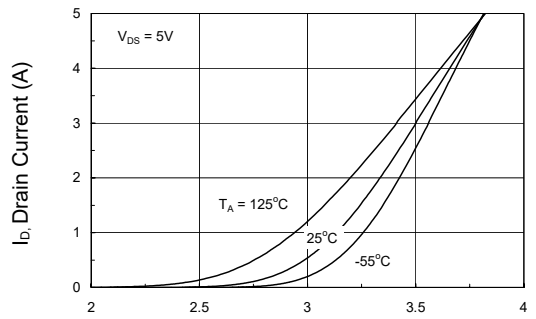


Figure 5: Transfer Characteristics.

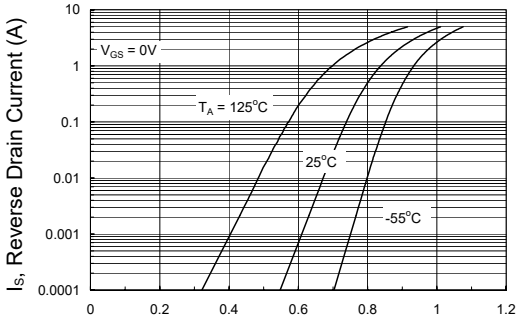


Figure 6: . Body Diode Forward Voltage Variation with Source Current and Temperature.

6.2Typical Characterisitics

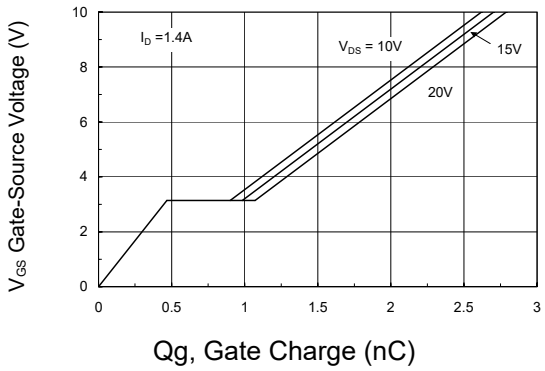


Figure 7: Gate-Charge Characteristics

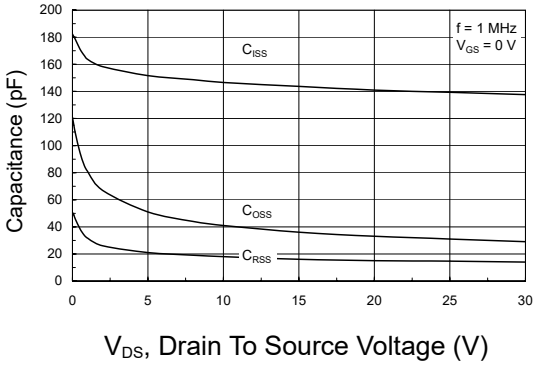


Figure 8: Capacitance Characteristics

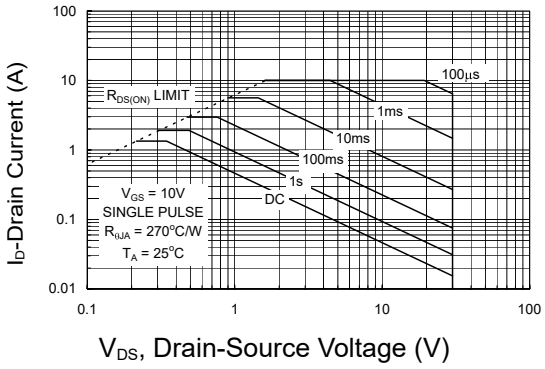


Figure 9: Maximum Safe Operating Area.

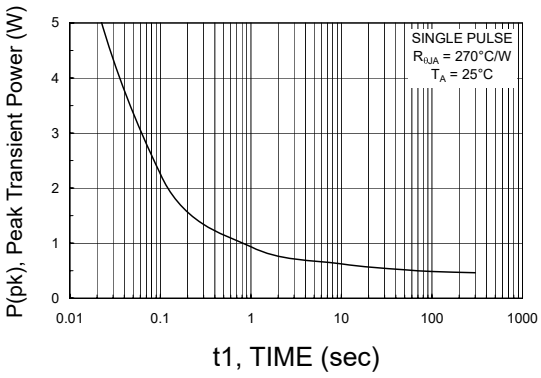


Figure 10: Single Pulse Maximum Power Dissipation.

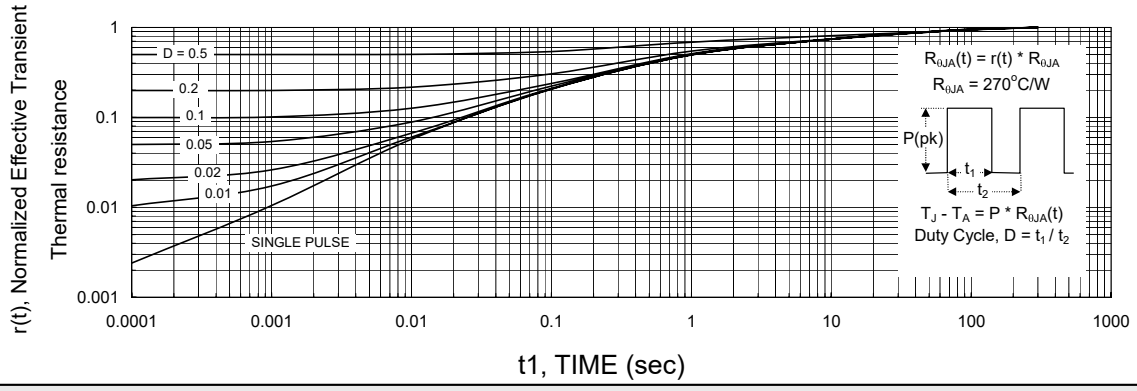
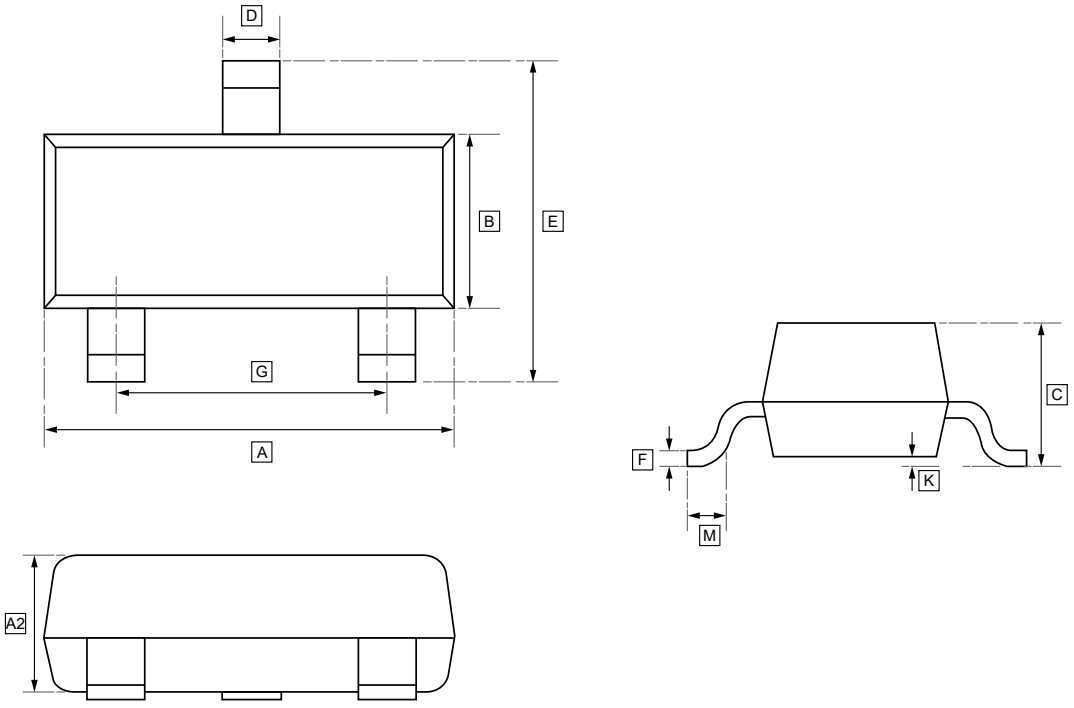


Figure 11. Transient Thermal Response Curve.

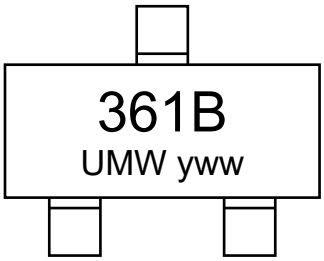
7.SOT-23 Package Outline Dimensions



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

8.Ordering information



yww: Batch Code

Order Code	Package	Base QTY	Delivery Mode
UMW FDN361BN	SOT-23	3000	Tape and reel

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