

1. Description

These devices are well suited for low voltage and battery powered applications where low in-line power loss is needed in a very small outline surface mount package.

3. Application

- Notebook computer power management

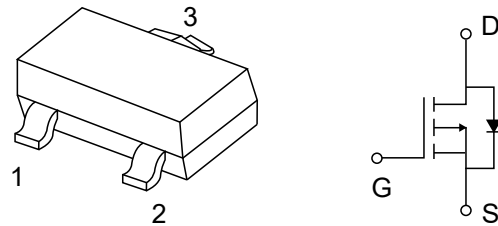
2. Features

- $V_{DS(V)} = -30V$
- $I_D = -1.3A$
- $R_{DS(ON)}(V_{GS} = -10V) \leq 150m\Omega$
- $R_{DS(ON)}(V_{GS} = -4.5V) \leq 250m\Omega$

4. Pinning information

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

SOT-23



5. Maximum ratings ($T_A = 25^\circ C$ unless otherwise noted)

Parameter	Symbol	Value	Units
Drain-Source Voltage	V_{DSS}	-30	V
Gate-Source Voltage	V_{GSS}	± 25	V
Drain Current – Continuous (Note 1a) – Pulsed	I_D	-1.3	A
		-10	
Maximum Power Dissipation (Note 1a) (Note 1b)	P_D	0.5	W
		0.46	
Operating and Storage Junction Temperature Range	T_J, T_{STG}	-55 to 150	$^\circ C$
Thermal Characteristics			
Thermal Resistance, Junction-to-Ambient (Note 1a)	$R_{\theta JA}$	250	$^\circ C/W$
Thermal Resistance, Junction-to-Case (Note 1)	$R_{\theta JC}$	75	$^\circ C/W$



6. $T_A=25^\circ\text{C}$ unless otherwise specified

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Off Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	$I_D=-250\mu\text{A}$, $V_{GS}=0\text{V}$	-30			V
Breakdown Voltage Temperature Coefficient	$\frac{\Delta BV_{DSS}}{\Delta T_J}$	$I_D=-250\mu\text{A}$ Referenced to 25°C		-17		mV/ $^\circ\text{C}$
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=-24\text{V}$, $V_{GS}=0\text{V}$			-1	μA
Gate-Body Leakage	I_{GSS}	$V_{GS}=\pm 25\text{V}$, $V_{DS}=0\text{V}$			± 100	nA
On Characteristics (Note 2)						
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}$, $I_D=-250\mu\text{A}$	-0.8	-2	-2.5	V
Gate Threshold Voltage Temperature Coefficient	$\frac{\Delta V_{GS(th)}}{\Delta T_J}$	$I_D=-250\mu\text{A}$ Referenced to 25°C		4		mV/ $^\circ\text{C}$
Static Drain-Source On-Resistance	$R_{DS(ON)}$	$V_{GS}=-10\text{V}$, $I_D=-1.3\text{A}$ $V_{GS}=-4.5\text{V}$, $I_D=-1.1\text{A}$		120 150	150 250	m Ω m Ω
Forward Transconductance	g_{FS}	$V_{DS}=-5\text{V}$, $I_D=-0.9\text{A}$		2		S
Dynamic Characteristics						
Input Capacitance	C_{iss}	$V_{DS}=-15\text{V}$, $V_{GS}=0\text{V}$, $f=1\text{MHz}$		150		pF
Output Capacitance	C_{oss}			40		pF
Reverse Transfer Capacitance	C_{rss}			20		pF
SWITCHING PARAMETERS (Note 2)						
Turn-On Delay Time	$t_{D(on)}$	$V_{DD}=-10\text{V}$, $I_D=-1\text{A}$ $V_{GS}=-10\text{V}$, $R_{GEN}=6\Omega$		4	8	ns
Turn-On Rise Time	t_r			15	28	ns
Turn-Off Delay Time	$t_{D(off)}$			10	18	ns
Turn-Off Fall Time	t_f			1	2	ns
Total Gate Charge	Q_g	$V_{DS}=-10\text{V}$, $I_D=-0.9\text{A}$ $V_{GS}=-4.5\text{V}$		1.4	1.9	nC
Gate-Source Charge	Q_{gs}			0.5		nC
Gate-Drain Charge	Q_{gd}			0.5		nC



Drain–Source Diode Characteristics and Maximum Ratings						
Maximum Continuous Drain–Source Diode Forward Current	I_S				-0.42	A
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}	$I_F=-3.9A$		17		ns
Diode Reverse Recovery Charge	Q_{rr}	$dI_F/dt=100A/\mu s$		7		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 of the drain pins. $R_{\theta JC}$ is guaranteed by design while $R_{\theta JA}$ is determined by the user's board design.

(a) $R_{\theta JA} = 250^{\circ}C/W$ when mounted on a 0.02 in^2 pad of 2oz. copper.

(b) $R_{\theta JA} = 270^{\circ}C/W$ when mounted on a 0.001 in^2 pad of 2oz. copper.

2. Pulse Test: Pulse Width < $300\mu s$, Duty Cycle < 2.0%

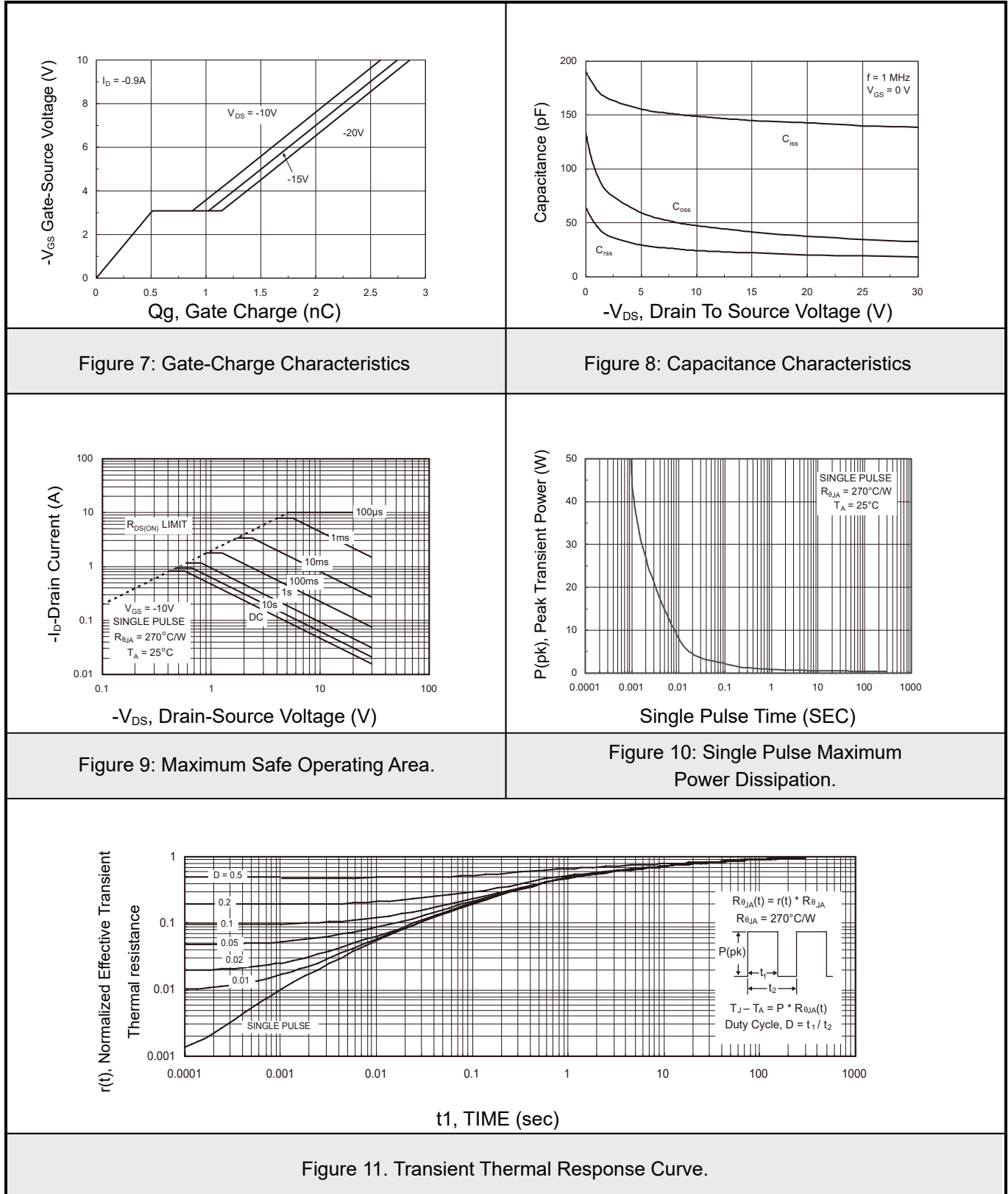


7.1 Typical Characteristics

<p>Figure 1: On-Region Characteristics.</p>	<p>Figure 2: On-Resistance Variation with Drain Current and Gate Voltage.</p>
<p>Figure 3: On-Resistance Variation with Temperature.</p>	<p>Figure 4: On-Resistance Variation with Gate-to-Source Voltage.</p>
<p>Figure 5: Transfer Characteristics.</p>	<p>Figure 6: . Body Diode Forward Voltage Variation with Source Current and Temperature.</p>

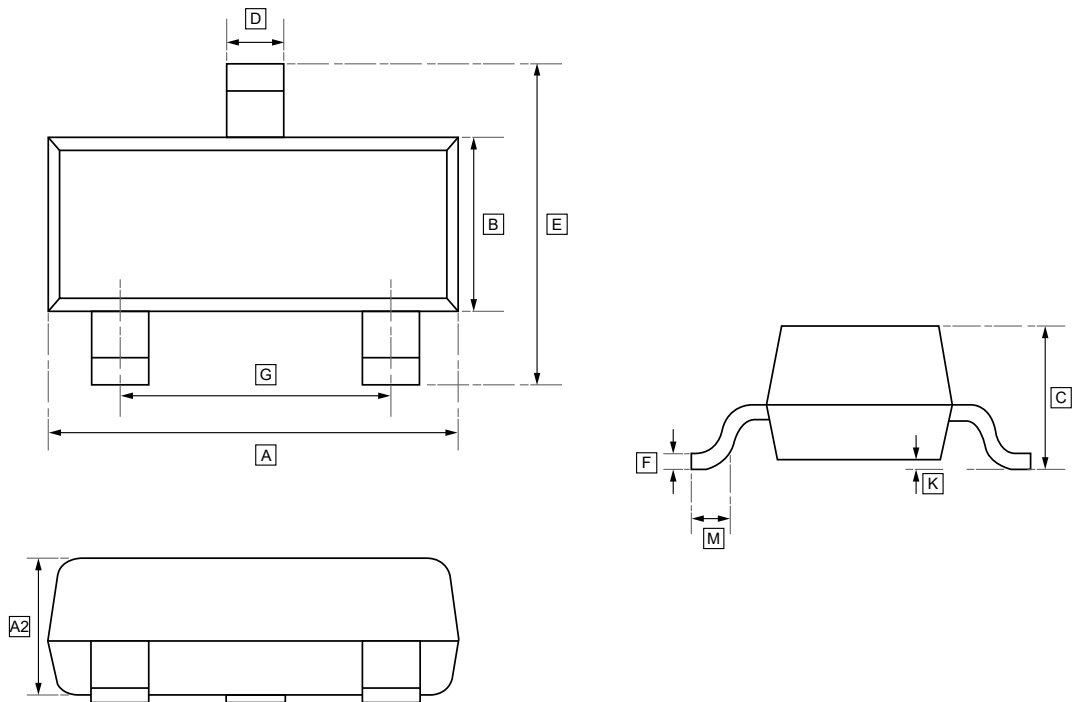


7.2 Typical Characteristics





8.SOT-23 Package Outline Dimensions

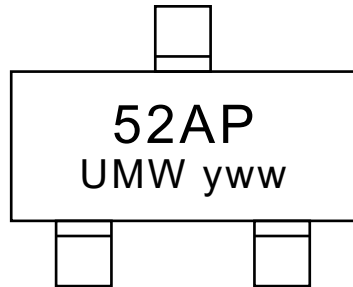


DIMENSIONS (mm are the original dimensions)

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 FDN352AP	SOT-23	3000	Tape and reel



10.Disclaimer

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