

1.Description

These miniature surface mount MOSFETs low $R_{DS(ON)}$ assure minimal power loss and conserve energy, making these devices ideal for use in space sensitive power management circuitry.

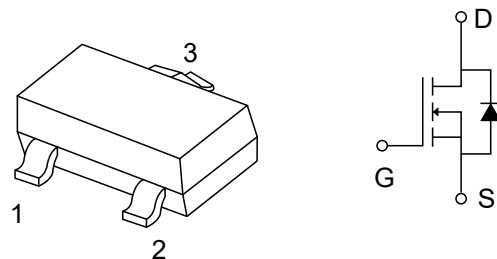
2.1Features

- $V_{DS(V)}=30V$
- $I_D=2.1A(V_{GS}=10V)$
- $R_{DS(ON)}<80m\Omega(V_{GS}=10V)$
- $R_{DS(ON)}<125m\Omega(V_{GS}=4.5V)$

3.Pinning information

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

SOT-23



4.Maximum ratings ($T_J=25^{\circ}C$ unless otherwise noted)

Parameter			Symbol	Value	Units
Drain – to – Source Voltage			V _{DS}	30	V
Drain – to – Source Voltage			V _{GS}	±20	
Continuous Drain Current R _{θJL}	Steady State	T _A =25°C	I _D	2.1	A
		T _A =85°C		1.5	
Power Dissipation R _{θJL}	Steady State	T _A =25°C	P _D	0.69	W
Continuous Drain Current (Note 1)	Steady State	T _A =25°C	I _D	1.6	A
		T _A =85°C		1.2	
Power Dissipation (Note 1)			T _A =25°C	P _D	0.42
Pulsed Drain Current	t _p =10μs		I _{DM}	6	A
ESD Capability (Note 3)	C=100pF, R _S =1500Ω		ESD	125	V
Operating Junction and Storage Temperature			T _J , T _{STG}	-55 to 150	°C
Source Current (Body Diode)			I _S	2.1	A
Lead Temperature for Soldering Purposes (1/8” from case for 10 sec)			T _L	260	°C



5.Thermal resist ance rating

Junction- to -Foot - Steady State	$R_{\theta JL}$	180	°C/W
Junction- to -Ambient - Steady State (Note 1)	$R_{\theta JA}$	300	°C/W
Junction- to -Ambient - $t<10s$ (Note 1)	$R_{\theta JA}$	250	°C/W
Junction- to -Ambient - Steady State (Note 2)	$R_{\theta JA}$	400	°C/W

- 1. Surface-mounted on FR4 board using 650 mm², 1 oz. Cu pad size.
- 2. Surface-mounted on FR4 board using 50 mm², 1 oz. Cu pad size.
- 3. ESD Rating Information: HBM Class 0.



6. Electrical Characteristics $T_A=25^\circ\text{C}$

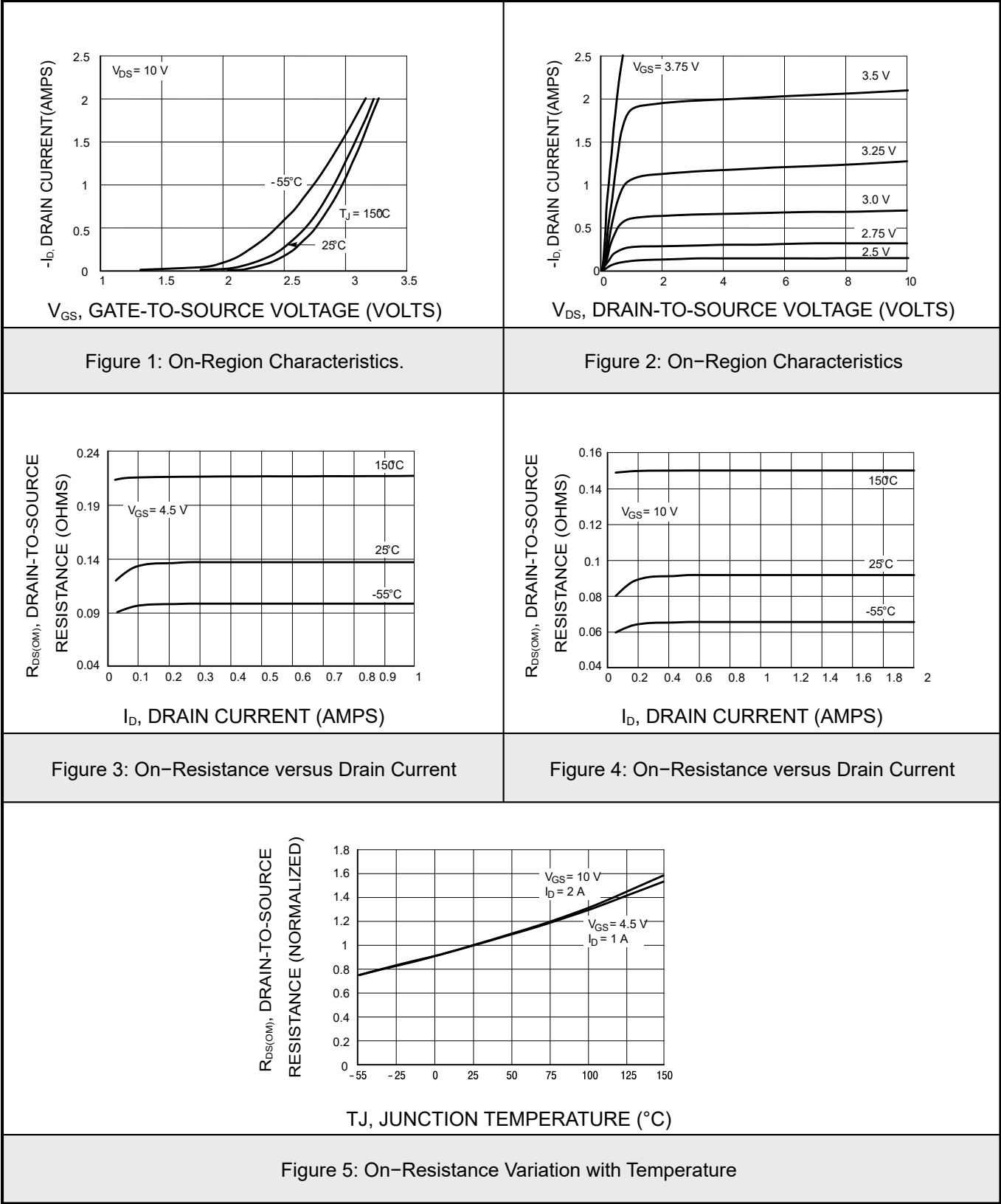
Parameter	Symbol	Conditions	Min	Typ	Max	Units
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$I_D=10\mu\text{Adc}$, $V_{GS}=0\text{V}$	30			Vdc
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=30\text{Vdc}$, $V_{GS}=0\text{Vdc}$			1	μAdc
		$V_{DS}=30\text{Vdc}$, $V_{GS}=0\text{Vdc}$, $T_J=125^\circ\text{C}$			10	
Gate-Body Leakage Current	I_{GSS}	$V_{GS}=\pm 20\text{Vdc}$, $V_{DS}=0\text{Vdc}$			± 100	nAdc
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}$, $I_D=250\mu\text{Adc}$	1	1.7	2.4	Vdc
Static Drain-to-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=10\text{Vdc}$, $I_D=1.2\text{Adc}$		0.08	0.1	Ω
		$V_{GS}=4.5\text{Vdc}$, $I_D=1\text{Adc}$		0.125	0.145	
Input Capacitance	C_{iss}	$V_{DS}=5\text{Vdc}$		140		pF
Output Capacitance	C_{oss}			100		
Transfer Capacitance	C_{rss}			40		
Turn-On Delay Time	$t_{D(on)}$	$I_D=1\text{Adc}$		2.5		ns
Rise Time	t_r	$R_L=50\Omega$		1		
Turn-Off Delay Time	$t_{D(off)}$	$V_{DD}=15\text{Vdc}$		16		
Fall Time	t_f			8		
Gate Charge (See Figure 6)	Q_T			6000		pC
Continuous Current	I_S				0.6	A
Pulsed Current	I_{SM}				0.75	
Forward Voltage (Note 5)	V_{SD}			0.8		V

4. Pulse Test: Pulse Width $\leq 300\mu\text{s}$, Duty Cycle $\leq 2\%$.

5. Switching characteristics are independent of operating junction temperature.

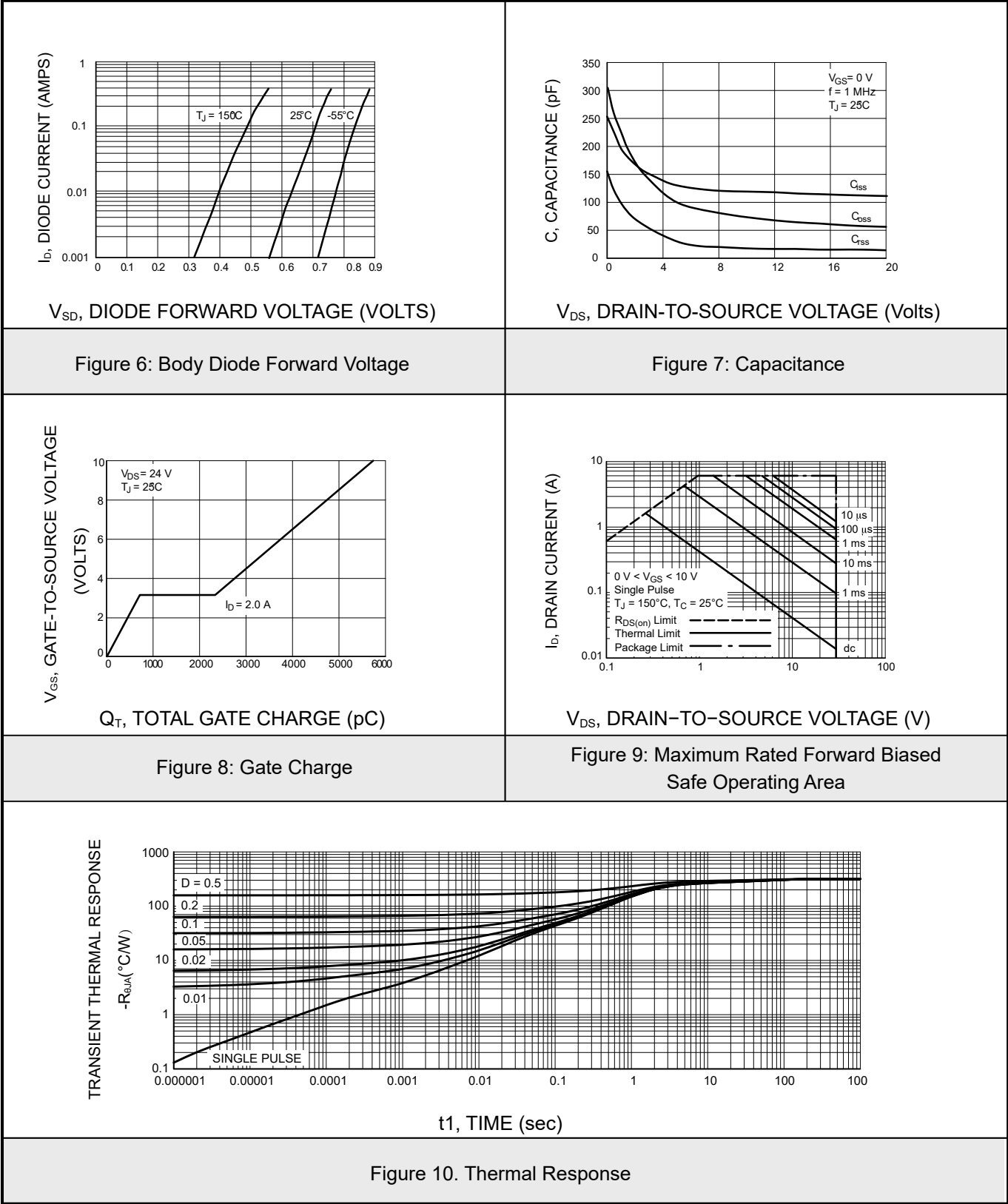


7.1Typical Characteristics



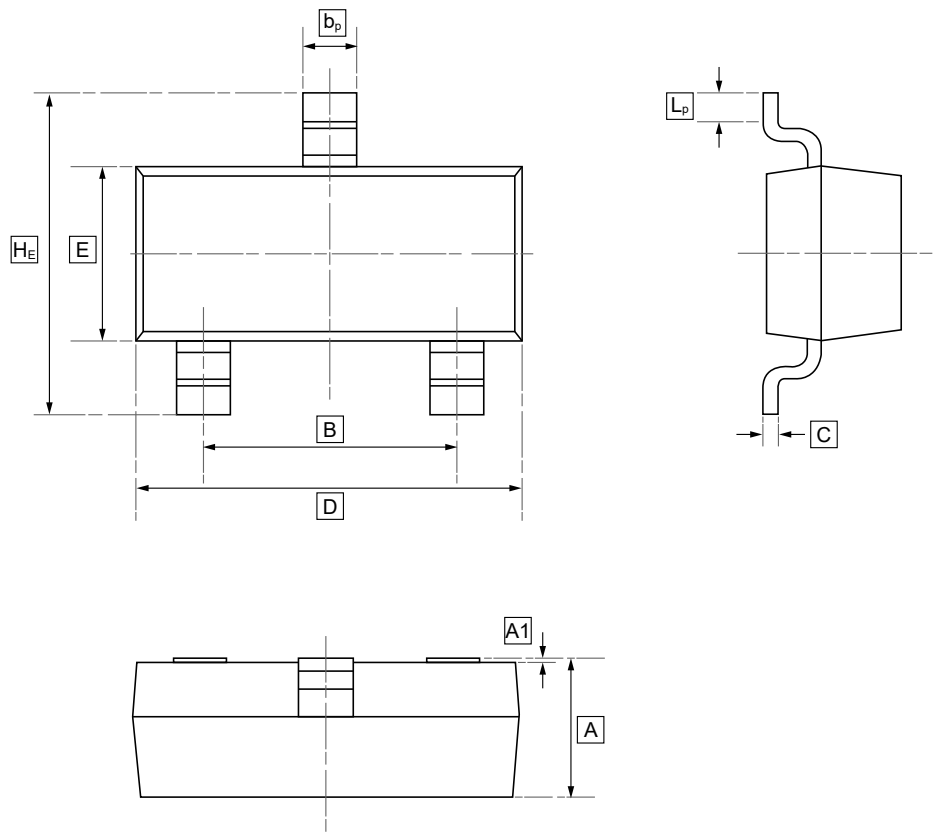


7.2Typical Characteristics





8.SOT-23 Package Outline Dimensions

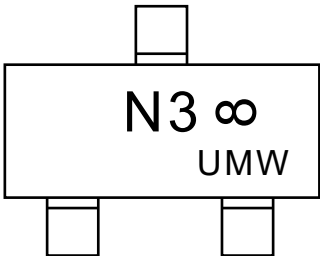


DIMENSIONS (mm are the original dimensions)

Symbol	A	B	b _p	C	D	E	H _E	A1	L _p
Min	0.95	1.78	0.35	0.08	2.70	1.20	2.20	0.013	0.20
Max	1.40	2.04	0.50	0.19	3.10	1.65	3.00	0.100	0.50



9.Ordering information



Order Code	Package	Base QTY	Delivery Mode
UMW MGSF1N03L	SOT-23	3000	Tape and reel



10.Disclaimer

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