UMW SI2319A

-40V P-Channel MOSFET

1.Features

- $V_{DS(V)}$=-40V
- $R_{DS(ON)}$<50mΩ(V_{GS}=10V), I_D=-4.4A
- $R_{DS(ON)}$<55mΩ(V_{GS}=4.5V), I_D=-3.5A

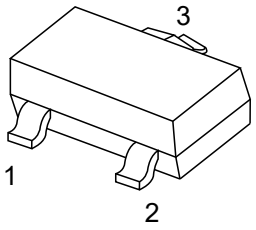
2.Applications

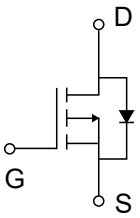
- DC/DC Converter

3.Pinning information

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

SOT-23





4.Absolute Maximum Ratings T_A= 25°C

Parameter	Symbol	Rating	Units
Drain-Source Voltage	V_{DS}	-40	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current	I_D	-4.4	A
Pulsed Diode Current	I_{DM}	-12	A
Continuous Source-Drain Current(Diode Conduction)	I_S	-1.25	A
Power Dissipation	P_D	1.25	W
Thermal Resistance from Junction to Ambient (t≤5s)	R_{thJF}	166	°C/W
Operating Junction	T_J	150	°C
Storage Temperature	T_{STG}	-55~+150	°C

5.Electrical Characteristics T_A= 25°C

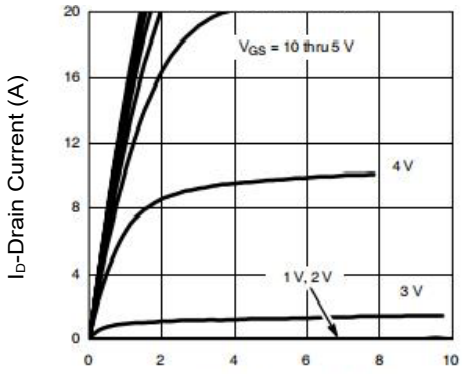
Parameter	Symbol	Conditions	Min	Typ	Max	Units
Static						
Drain-source breakdown voltage	$V_{(BR)DSS}$	V_{GS}=0V, I_D=-250μA	-40			V
Gate-source threshold voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=-250μA	-1		-3	V
Gate-source leakage	I_{GSS}	V_{DS}=0V, V_{GS}=±20V			±100	nA
Zero gate voltage drain current	I_{DSS}	V_{DS}=-40V, V_{GS}=0V			-1	μA
Drain-source on-state resistance	$R_{DS(ON)}$	V_{GS}=-10V, I_D=-4.4A			50	mΩ
		V_{GS}=-4.5V, I_D=-3.5A			55	mΩ
Forward transconductance [a]	g_{FS}	V_{DS}=-5V, I_D=-3A		7		S
Diode forward voltage	V_{SD}	I_S=-1.25A, V_{GS}=0V		-0.8	-1.25	V
Dynamic						
Input capacitance	C_{iss}	V_{DS}=-20V, V_{GS}=0V, f=1MHz		470		pF
Output capacitance	C_{oss}			85		pF
Reverse transfer capacitance [b]	C_{rss}			65		pF
Total gate charge	Q_g	V_{DS}=-20V, V_{GS}=-10V, I_D=-3A		11.5	17	nC
Gate-source charge	Q_{gs}			1.8		nC
Gate-drain charge	Q_{gd}			3.3		nC
Gate resistance	R_g	f=1MHz		9		nC
Switching [b]						
Turn-on delay time	$t_{D(on)}$	V_{DS}=-20V R_L=20Ω, I_D=-1A V_{GEN}=-4.5V, R_G=6Ω		7	15	ns
Rise time	t_r			15	25	ns
Turn-off delay time	$t_{D(off)}$			25	40	ns
Fall time	t_f			25	42	ns

Drain-source body diode characteristics						
Continuous Source-Drain Diode Current	I_S	T_C=25°C			-1.25	A
Pulsed Diode forward Curren	I_{SM}				-20	A

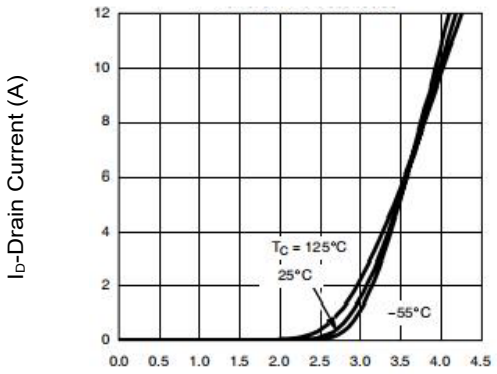
Notes :

1. Repetitive Rating : Pulse width limited by maximum junction temperature.
2. Surface Mounted on FR4 Board, t < 5 sec.
3. Pulse Test : Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.
4. Guaranteed by design, not subject to production testing

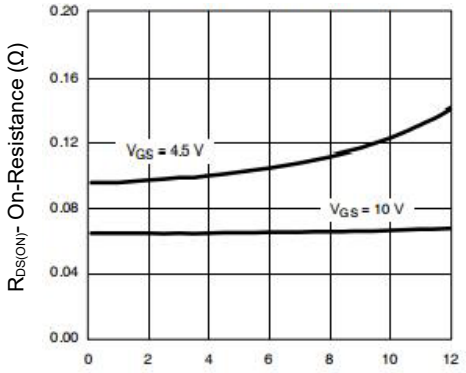
6.1Typical Characterisitics



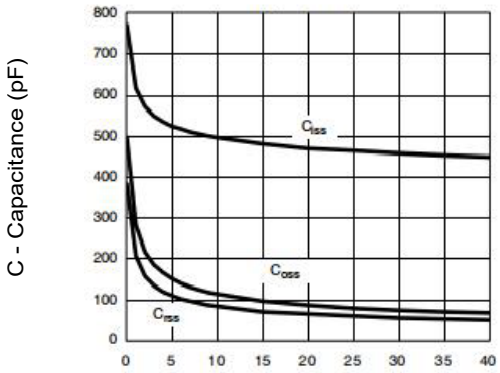
Output Characteristics



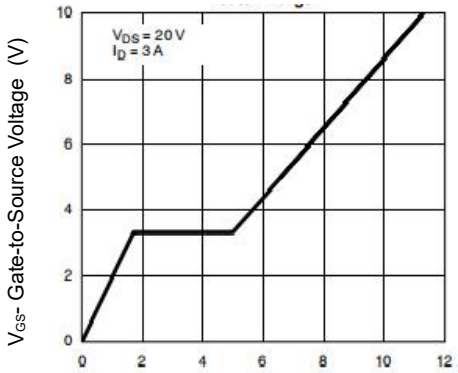
Transfer Characteristics



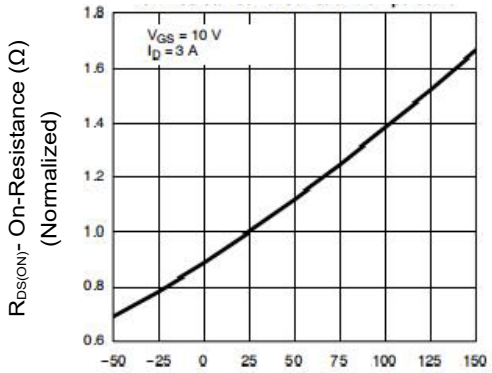
On-Resistance vs. Drain Current



Capacitance

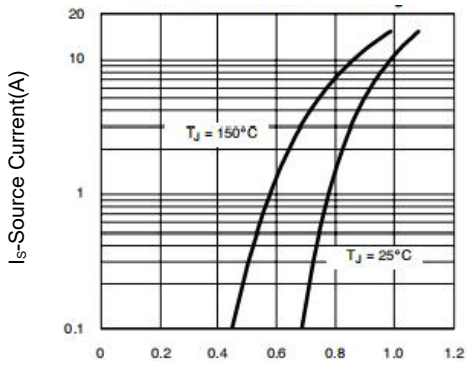


Gate Charge



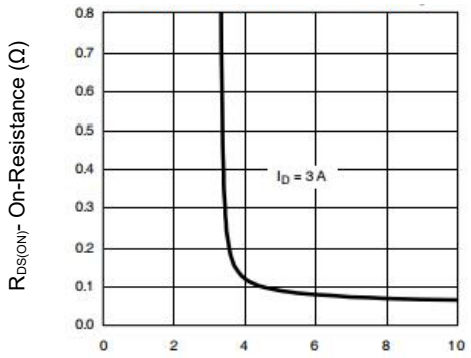
On-Resistance vs. Junction Temperature

6.2Typical Characterisitics



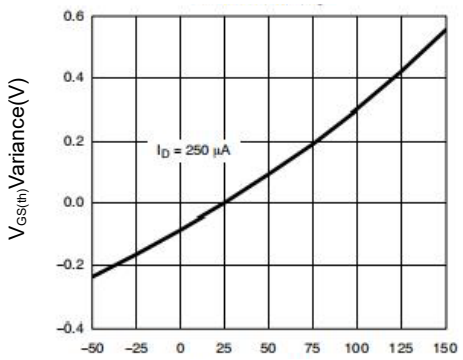
V_{SD} - Source-to-Drain Voltage (V)

Source-Drain Diode Forward Voltage



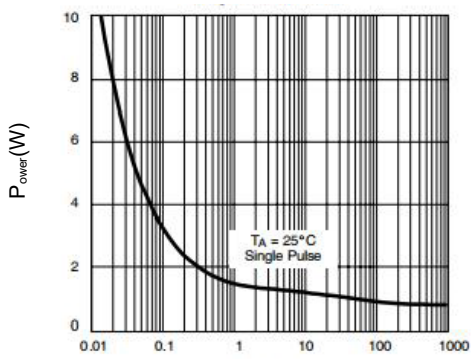
V_{GS} - Gate-to-Source Voltage (V)

On-Resistance vs. Gate-to-Source Voltage



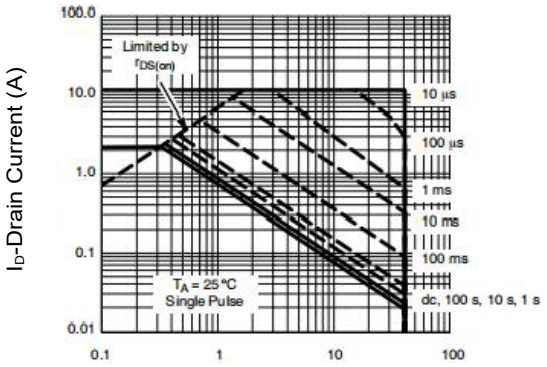
T_J - Temperature (°C)

Threshold Voltage



Time (sec)

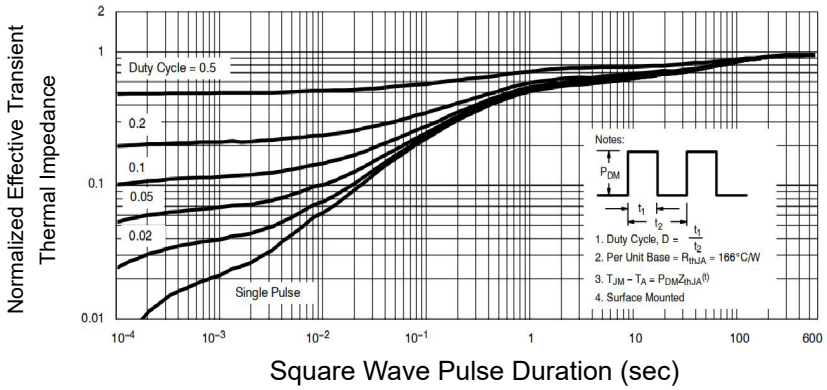
Single Pulse Power



V_{DS} - Drain-to-Source Voltage (V) Square Wave Pulse Duration (sec)

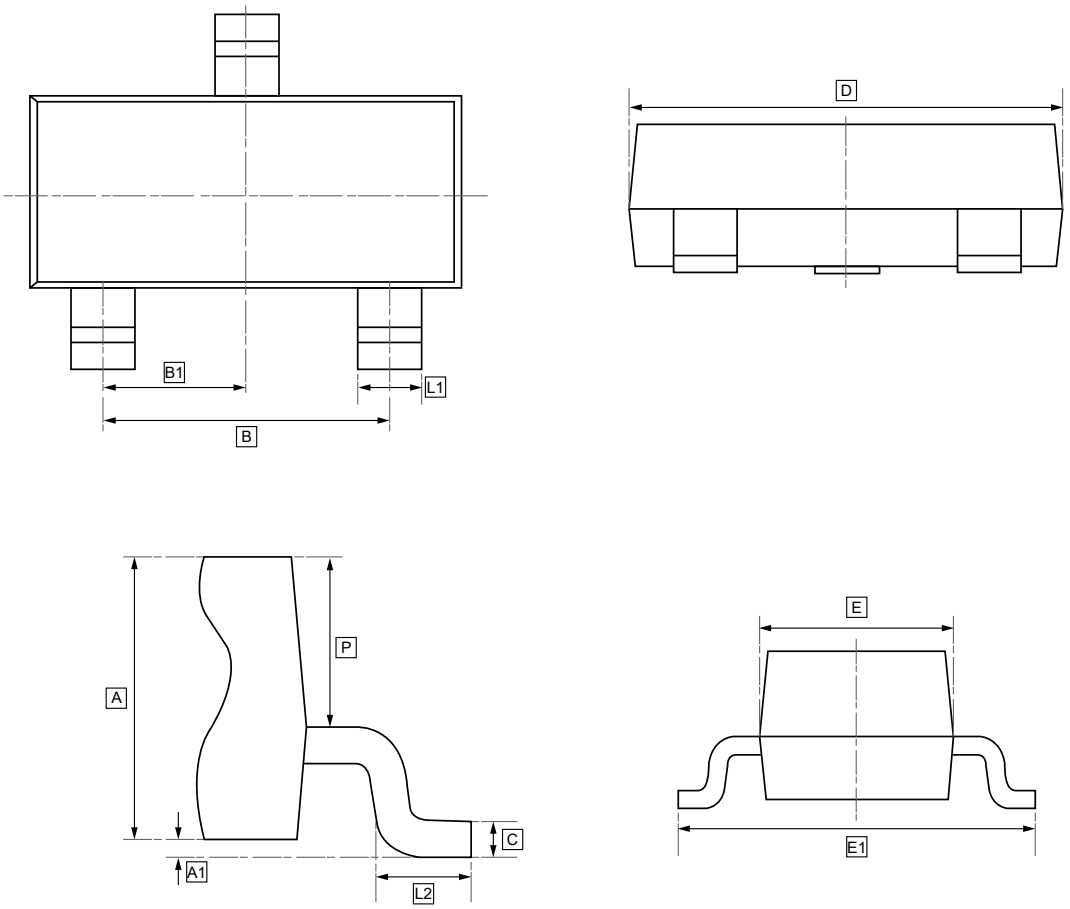
Safe Operating Area, Junction-to-Case

6.3Typical Characterisitics



Normalized Thermal Transient Impedance, Junction-to-Ambient

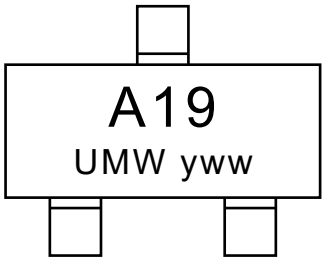
7.SOT-23 Package Outline Dimensions



DIMENSIONS (mm are the original dimensions)

Symbol	A	A1	L1	C	D	E	E1	B	B1	L2	P
Min	0.900	0.000	0.350	0.100	2.800	1.250	2.250	1.800	0.950	0.200	0.550
Max	1.100	0.100	0.550	0.120	3.000	1.350	2.550	2.000	TYP.	0.450	0.600

8.Ordering information



yww: Batch Code

Order Code	Package	Base QTY	Delivery Mode
UMW SI2319A	SOT-23	3000	Tape and reel

9.Disclaimer

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