

1.Description

The uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with gate voltages as low as 4.5V.

This device is suitable for use as a Battery protection or in other Switching application.

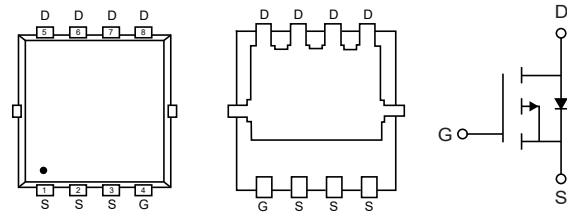
2.Features

- $V_{DS(V)} = -30V$
- $I_D = -30A$
- $R_{DS(ON)} < 11m\Omega (V_{GS} = 10V)$

3.Pinning information

Pin	Symbol	Description
1,2,3	S	SOURCE
4	G	GATE
5,6,7,8	D	DRAIN

PDFN3*3



4.Absolute Maximum Ratings $T_C = 25^\circ C$

Parameter		Symbol	Rating	Units
Drain-Source Voltage		V_{DS}	-30	V
Gate-Source Voltage		V_{GS}	± 20	V
Continuous Drain Current, $V_{GS} = -10V^1$	$T_C = 25^\circ C$	I_D	-30	A
	$T_C = 100^\circ C$		-27	A
Pulsed Drain Current ²		I_{DM}	-130	A
Single Pulse Avalanche Energy ³		E_{AS}	125	mJ
Avalanche Current		I_{AS}	-50	A
Total Power Dissipation ⁴		P_D	37	W
Storage Temperature Range		T_{STG}	-55 to 150	$^\circ C$
Junction Temperature Range		T_J	-55 to 150	$^\circ C$



5.Thermal Characteristics

Parameter	Symbol	Rating	Units
Thermal Resistance Junction-Ambient ¹	R _{θJA}	75	°C/W
Thermal Resistance Junction-Ambient ¹ (t ≤10s)		30	°C/W
Thermal Resistance Junction-Case ¹	R _{θJC}	3.36	°C/W



6. $T_J=25^{\circ}\text{C}$ unless otherwise noted

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Drain-Source Breakdown Voltage	BV_{DSS}	$I_D=-250\mu\text{A}$, $V_{GS}=0\text{V}$	-30			V
BV_{DSS} Temperature Coefficient	$\Delta BV_{DSS}/\Delta T_J$	$I_D=-1\text{mA}$, Reference to 25°C		-0.0232		$\text{V}/^{\circ}\text{C}$
Static Drain-to-Source On-Resistance ²	$R_{DS(ON)}$	$V_{GS}=-10\text{V}$, $I_D=-30\text{A}$			11	$\text{m}\Omega$
		$V_{GS}=-4.5\text{V}$, $I_D=-15\text{A}$			20	
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}$, $I_D=-250\mu\text{A}$	-1.2		-2.5	V
$V_{GS(th)}$ Temperature Coefficient	$\Delta V_{GS(th)}$	$V_{DS}=V_{GS}$, $I_D=-250\mu\text{A}$		4.6		$\text{mV}/^{\circ}\text{C}$
Drain-Source Leakage Current	I_{DSS}	$V_{DS}=-24\text{V}$, $V_{GS}=0\text{V}$, $T_J=25^{\circ}\text{C}$			-1	μA
		$V_{DS}=-24\text{V}$, $V_{GS}=0\text{V}$, $T_J=55^{\circ}\text{C}$			-5	
Gate-Source Leakage Current	I_{GSS}	$V_{GS}=\pm 20\text{V}$, $V_{DS}=0\text{V}$			± 100	nA
Forward Transconductance	g_{FS}	$V_{DS}=-5\text{V}$, $I_D=-30\text{A}$		30		S
Gate Resistance	R_g	$V_{DS}=0\text{V}$, $V_{GS}=0\text{V}$, $f=1\text{MHz}$		9		Ω
Total Gate Charge (-4.5V)	Q_g	$V_{DS}=-15\text{V}$, $V_{GS}=-4.5\text{V}$, $I_D=-15\text{A}$		22		nC
Gate-Source Charge	Q_{gs}			8.7		nC
Gate-Drain Charge	Q_{gd}			7.2		nC
Turn-On Delay Time	$t_{D(on)}$	$V_{DD}=-15\text{V}$, $V_{GS}=-10\text{V}$ $R_G=3.3\Omega$, $I_D=-15\text{A}$		8		ns
Rise Time	t_r			73.7		ns
Turn-Off Delay Time	$t_{D(off)}$			61.8		ns
Fall Time	t_f			24.4		ns
Input Capacitance	C_{iss}	$V_{DS}=-15\text{V}$, $V_{GS}=0\text{V}$, $f=1\text{MHz}$		2215		pF
Output Capacitance	C_{oss}			310		pF
Reverse Transfer Capacitance	C_{rss}			237		pF
Continuous Source Current ^{1,5}	I_S	$V_G=V_D=0\text{V}$, Force Current			-42	A
Pulsed Source Current ^{2,5}	I_{SM}				-130	A
Diode Forward Voltage ²	V_{SD}	$V_{GS}=0\text{V}$, $I_S=-1\text{A}$, $T_J=25^{\circ}\text{C}$			-1	V
Reverse Recovery Time	t_{rr}	$I_F=-15\text{A}$, $dI/dt=100\text{A}/\mu\text{s}$ $T_J=25^{\circ}\text{C}$		19		ns
Reverse Recovery Charge	Q_{rr}			9		nC

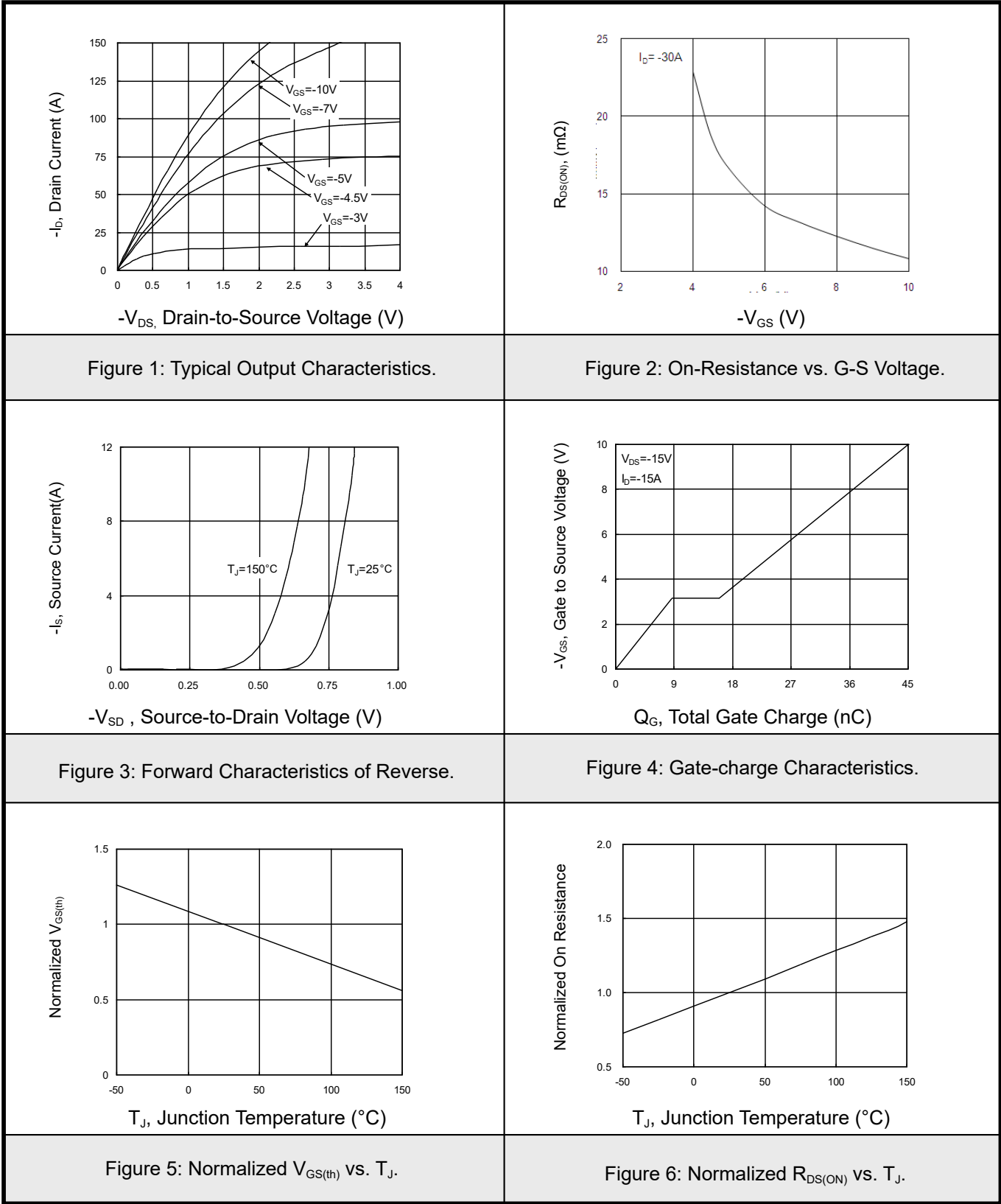


Note :

- 1.The data tested by surface mounted on a 1 inch² FR-4 board with 2OZ copper.
- 2.The data tested by pulsed , pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.
- 3.The E_{AS} data shows Max. rating . The test condition is $V_{DD}=-25V, V_{GS}=-10V, L=0.1mH, I_{AS}=-50A$.
- 4.The power dissipation is limited by 150°C junction temperature.
- 5.The data is theoretically the same as I_D and I_{DM} , in real applications , should be limited by total power dissipation.



7.1 Typical Characteristics





7.2 Typical Characteristics

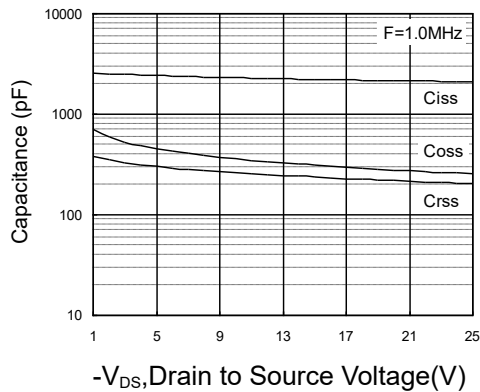


Figure 7: Capacitance.

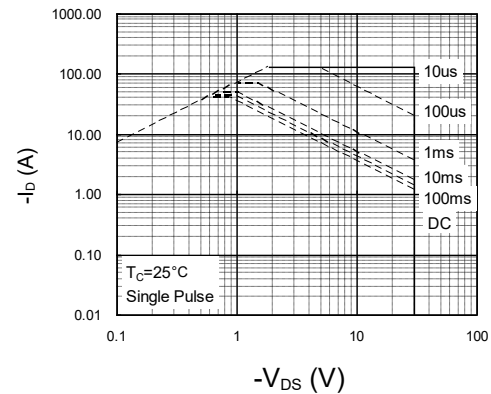


Figure 8: Safe Operating Area.

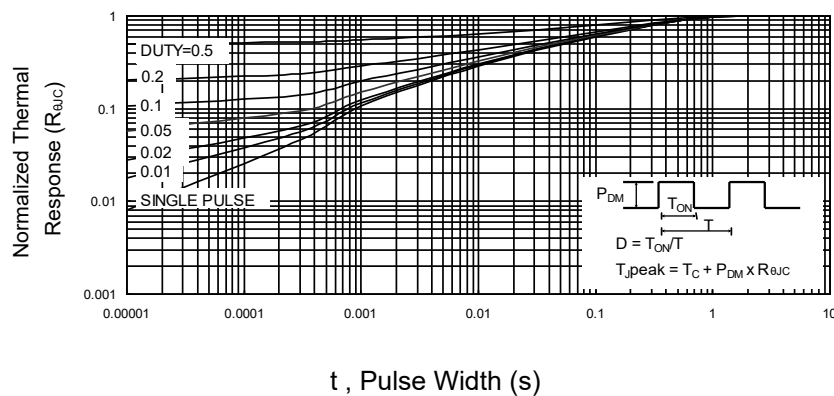


Figure 9: Normalized Maximum Transient Thermal Impedance.

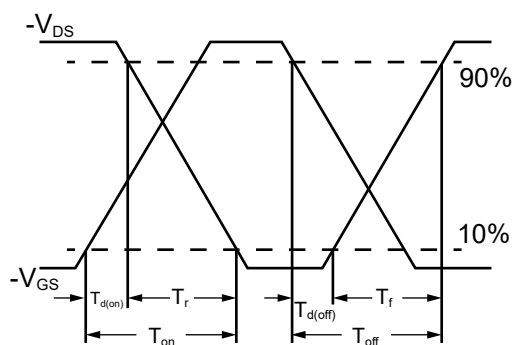


Figure 10: Switching Time Waveform

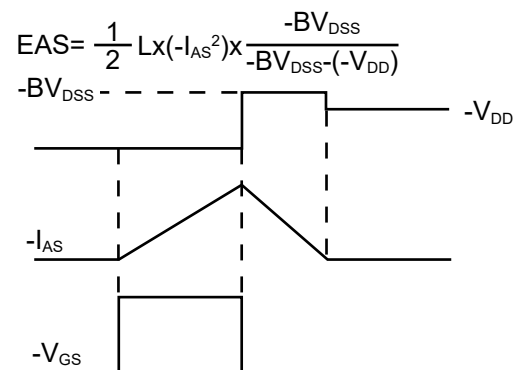
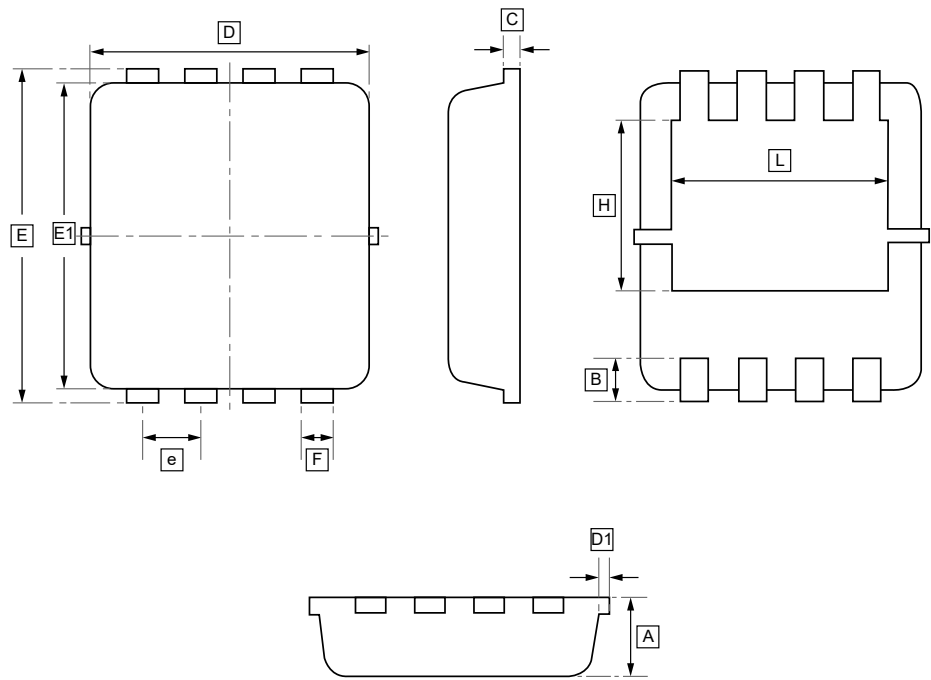


Figure 11: Unclamped Inductive Waveform



8.PDFN3*3 Package Outline Dimensions

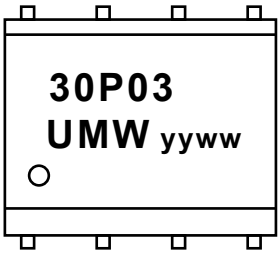


DIMENSIONS (mm are the original dimensions)

Symbol	A	B	C	D	D1	E	E1	e	F	H	L
Min	0.725	0.28	0.13	3.05	-	3.25	3.00	0.60	0.25	1.63	2.35
Max	0.825	0.48	0.20	3.25	0.10	3.45	3.20	0.70	0.35	1.83	2.55



9.Ordering information



yy: Year Code
ww: Week Code

Order Code	Package	Base QTY	Delivery Mode
UMW 30P03D	DFN3x3-8L	5000	Tape and reel



10.Disclaimer

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