

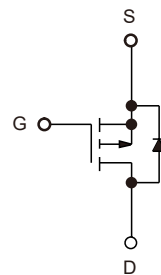
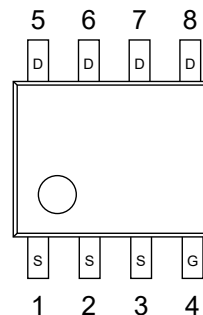
1.Features

- $V_{DS(V)} = -30V$, $Q_g = 22nC$
- $R_{DS(ON)} < 12.5m\Omega$ ($V_{GS} = -10V$), $I_D = -10A$
- $R_{DS(ON)} < 18m\Omega$ ($V_{GS} = -4.5V$), $I_D = -7A$

3.Pinning information

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

SOP-8



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

Parameter		Symbol	Maximum	Units
Drain-Source Voltage		V_{DS}	-30	V
Gate-Source Voltage		V_{GS}	± 20	
Continuous Drain Current ($T_J = 150^\circ C$)	$T_C = 25^\circ C$	I_D	-11.6	A
	$T_C = 70^\circ C$		-10.5	
	$T_A = 25^\circ C$		-8.7 ^{a,b}	
	$T_A = 70^\circ C$		-7.7 ^{a,b}	
Pulsed Drain Current		I_{DM}	-40	
Continuous Source-Drain Diode Current	$T_C = 25^\circ C$	I_S	-4.6	
	$T_A = 25^\circ C$		2 ^{a,b}	
Single Pulse Avalanche Current	L = 0.1 mH	I_{AS}	-20	mJ
Single Pulse Avalanche Energy		E_{AS}	20	
Maximum Power Dissipation	$T_C = 25^\circ C$	P_D	5.6	W
	$T_C = 70^\circ C$		3.6	W
	$T_A = 25^\circ C$		2.5 ^{a,b}	W
	$T_A = 70^\circ C$		1.6 ^{a,b}	W
Operating Junction and Storage Temperature Range		T_J, T_{STG}	-55 to 150	$^\circ C$



5.Thermal Resistance Rating

Parameter		Symbol	Typ	Max	Units
Maximum Junction-to-Ambient ^{a,c}	t ≤10s	R _{thJA}	39	50	°C/W
Maximum Junction-to-Foot	Steady-State	R _{thJF}	18	22	°C/W

- Notes:
- a. Surface Mounted on 1" x 1" FR4 board.
 - b. t=10s.
 - c. Maximum under Steady State conditions is 85 °C/W.
 - d. Based on T_C=25 °C.



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

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Static						
Drain-Source Breakdown Voltage	V_{DS}	$V_{DS}=0\text{V}$, $I_D=-250\mu\text{A}$	-30			V
V_{DS} Temperature Coefficient	$\Delta V_{DS}/T_J$	$I_D=-250\mu\text{A}$		-31		mV/ $^{\circ}\text{C}$
$V_{GS(th)}$ Temperature Coefficient	$\Delta V_{GS(th)}/T_J$			5.5		
Gate-Source Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}$, $I_D=-250\mu\text{A}$	-1		-3	V
Gate-Source Leakage	I_{GSS}	$V_{DS}=0\text{V}$, $V_{GS}=\pm 25\text{V}$			± 100	nA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=-30\text{V}$, $V_{GS}=0\text{V}$			-1	μA
		$V_{DS}=-30\text{V}$, $V_{GS}=0\text{V}$, $T_J=55^{\circ}\text{C}$			-5	
On-State Drain Current ^a	$I_{D(ON)}$	$V_{DS}\geq -10\text{V}$, $V_{GS}=-10\text{V}$	-30			A
Drain-Source On-State Resistance ^a	$R_{DS(ON)}$	$V_{GS}=-10\text{V}$, $I_D=-10\text{A}$		11	12.5	m Ω
		$V_{GS}=-4.5\text{V}$, $I_D=-7\text{A}$		12	18	
Forward Transconductance ^a	g_{FS}	$V_{DS}=-10\text{V}$, $I_D=-10\text{A}$		23		S
Dynamic^b						
Input Capacitance	C_{iss}	$V_{DS}=-15\text{V}$, $V_{GS}=0\text{V}$, $f=1\text{MHz}$		1960		pF
Output Capacitance	C_{oss}			380		
Reverse Transfer Capacitance	C_{rss}			325		
Total Gate Charge	Q_g	$V_{DS}=-15\text{V}$, $V_{GS}=-10\text{V}$, $I_D=-10\text{A}$		43	65	nC
		$V_{DS}=-15\text{V}$, $V_{GS}=-4.5\text{V}$		22	33	
Gate Source Charge	Q_{gs}	$I_D=-10\text{A}$		6		
Gate Drain Charge	Q_{gd}			11		
Gate Resistance	R_g	$f=1\text{MHz}$	0.3	1.3	2.5	Ω
Turn-On DelayTime	$t_{D(on)}$	$V_{DD}=-15\text{V}$, $R_L=3\Omega$ $I_D=-5\text{A}$, $V_{GEN}=-10\text{V}$ $R_g=1\Omega$		11	22	ns
Rise Time	t_r			13	25	
Turn-Off DelayTime	$t_{D(off)}$			32	50	
Fall Time	t_f			9	18	



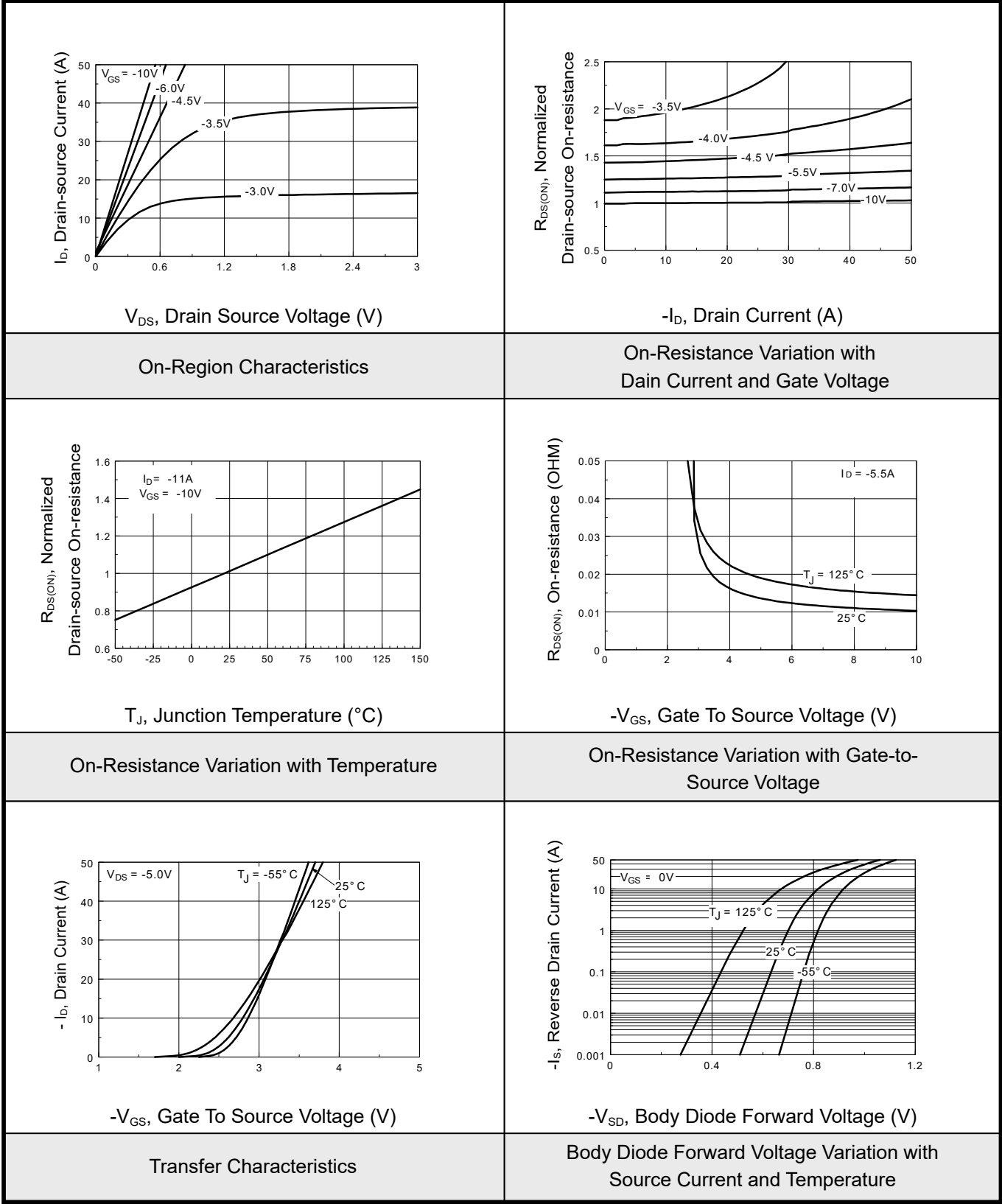
Turn-On DelayTime	$t_{D(on)}$	$V_{DD} = -15V, R_L = 3\Omega$ $I_D = -5A, V_{GEN} = -4.5V$ $R_g = 1\Omega$		44	70	ns
Rise Time	t_r			100	160	ns
Turn-Off DelayTime	$t_{D(off)}$			28	50	ns
Fall Time	t_f			15	30	ns
Drain-Source Body Diode Characteristics						
Continuous Source-Drain Diode Current	I_S	$T_C = 25^{\circ}C$			-4.6	A
Pulse Diode Forward Current	I_{SM}				-50	A
Body Diode Voltage	V_{SD}	$I_S = -2A, V_{GS} = 0V$		-0.75	-1.2	V
Body Diode Reverse Recovery Time	t_{rr}	$I_F = -2A, dI/dt = 100A/\mu s$ $T_J = 25^{\circ}C$		28	45	ns
Body Diode Reverse Recovery Charge	Q_{rr}			20	40	nC
Reverse Recovery Fall Time	t_a			13		ns
Reverse Recovery Rise Time	t_b			15		ns

Notes:

- Pulse test; pulse width $\leq 300 \mu s$, duty cycle $\leq 2 \%$.
- Guaranteed by design, not subject to production testing.

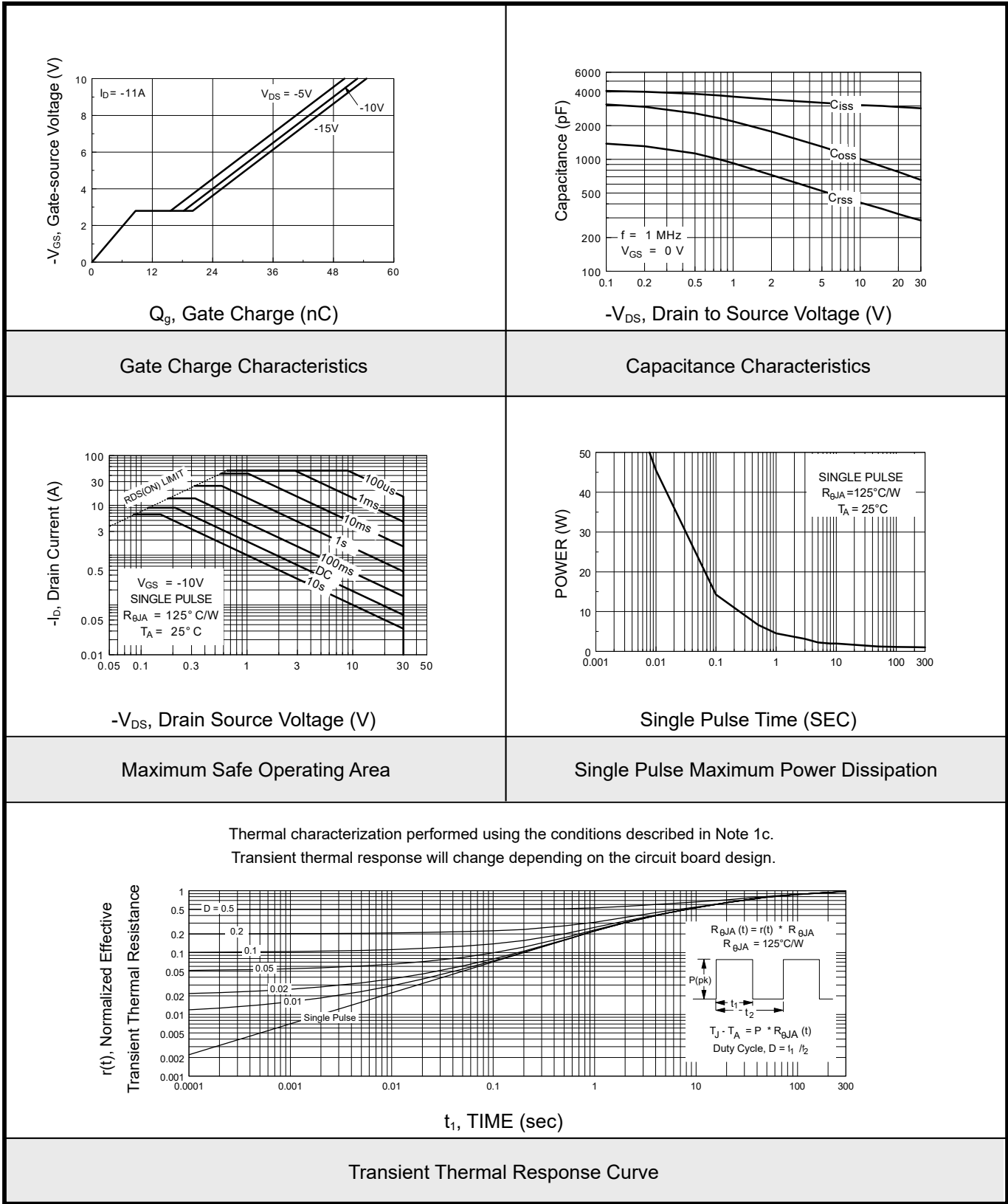


7.1 Typical Characteristics



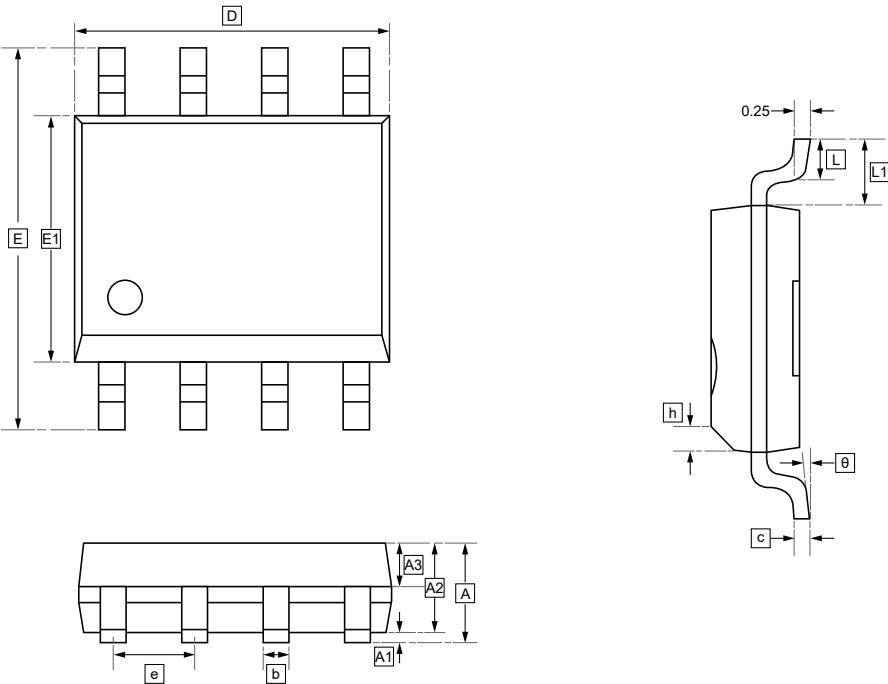


7.2Typical Characterisitics





8.SOP-8 Package Outline Dimensions



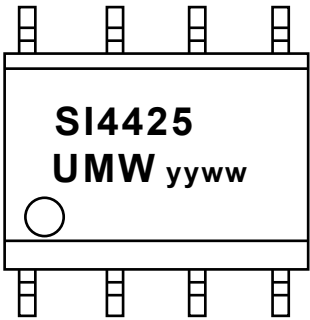
DIMENSIONS (mm are the original dimensions)

Symbol	A	A1	A2	A3	b	c	D	E	E1	e	h	L
Min	-	0.05	1.30	0.60	0.39	0.20	4.80	5.80	3.80	1.24	0.30	0.50
Max	1.75	0.20	1.50	0.70	0.47	0.24	5.00	6.20	4.00	1.30	0.50	0.80

Symbol	L1	θ
Min	1.00	0°
Max	1.10	8°



9.Ordering information



yy: Year Code
ww: Week Code

Order Code	Package	Base QTY	Delivery Mode
UMW SI4425DY	SOP-8	3000	Tape and reel



10.Disclaimer

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