UMW SI4435DY

-30V P-Channel MOSFET

1.Description

The SOP-8 has been modified through a customized eadframe for enhanced thermalcharacteristics and multiple-die capabilitymaking it ideal in a variety of powerapplications.With these improvements.multiple devices can be used in an appication with dramatically reduced board space. The package is designed for vapor phase, infrared, or wave sodering technique.

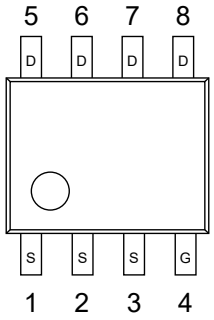
2.Features

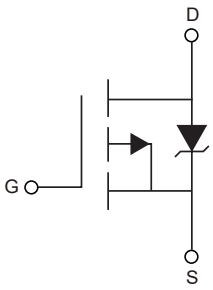
- $V_{DS\ (V)}$=-30V
- I_D=-8A
- $R_{DS(ON)}$<20mΩ(V_{GS}=-10V)
- $R_{DS(ON)}$<35mΩ(V_{GS}=-4.5V)

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°C unless otherwise noted

Parameter		Symbol	Rating	Units
Drain- Source Voltage		V_{DS}	-30	V
Continuous Drain Current, V_{GS}=-10V	T_A=25°C	I_D	-8	A
Continuous Drain Current, V_{GS}=-10V	T_A=70°C		-6.4	A
Pulsed Drain Current ①		I_{DM}	-50	A
Power Dissipation	T_A=25°C	P_D	2.5	W
Power Dissipation	T_A=70°C		1.6	W
Linear Derating Factor			0.02	W/°C
Gate-to-Source Voltage		V_{GS}	±20	V
Junction and Storage Temperature Range		T_J, T_{STG}	-55 to 150	°C

5.Thermal Resistance Rating

Parameter	Symbol	Typ	Max	Units
Maximum Junction-to-Ambient ③	$R_{\theta JA}$		50	°C/W

6.Electrical Characteristics T_J=25°C

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	I_D=-250μA, V_{GS}=0V	-30			V
Breakdown Voltage Temp. Coefficient	$\Delta V_{(BR)DSS}/\Delta T_J$	I_D=-1mA,Reference to 25°C		-0.019		V/°C
Static Drain-to-Source On-Resistance	$R_{DS(ON)}$	V_{GS}=-10V, I_D=-8A ②		15	20	mΩ
		V_{GS}=-4.5V, I_D=-5A ②		26	35	
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=-250μA	-1	-1.5	-2	V
Forward Transconductance	g_{FS}	V_{DS}=-15V, I_D=-8A		11		S
Drain-to-Source Leakage Current	I_{DSS}	V_{DS}=-24V, V_{GS}=0V			-10	μA
		V_{DS}=-15V,V_{GS}=0V,T_J=70°C			-10	
Gate-to-Source Forward Leakage	I_{GSS}	V_{GS}=-20V			-100	nA
Gate-to-Source Reverse Leakage		V_{GS}=20V			100	
Total Gate Charge	Q_g	I_D=-4.6A		40	60	nC
Gate-to-Source Charge	Q_{gs}	V_{DS}=-15V		7.1		
Gate-to-Drain ("Miller") Charge	Q_{gd}	V_{GS}=-10V ②		8		
Turn-On Delay Time	$t_{D(on)}$	V_{DD}=-15V, V_{GS}=-10V ②		16	24	ns
Rise Time	t_r	I_D=-1A		76	110	ns
Turn-Off Delay Time	$t_{D(off)}$	R_G=6Ω		130	200	ns
Fall Time	t_f	R_D=15Ω		90	140	ns
Input Capacitance	C_{iss}	V_{GS}=0V		2320		pF
Output Capacitance	C_{oss}	V_{DS}=-15V		390		pF
Reverse Transfer Capacitance	C_{rss}	f=1.0KHz		270		pF

Source-Drain Ratings and Characteristics						
Continuous Source Current (Body Diode)	I_S	MOSFET symbol showing the integral reverse p-n junction diode.			-2.5	A
Pulsed Source Current (Body Diode) ①	I_{SM}				-50	
Diode Forward Voltage	V_{SD}	T_J=25°C,I_S=-2.5A,V_{GS}=0V ②			-1.2	V
Reverse Recovery Time	t_{rr}	T_J=25°C, I_F=-2.5A		34	51	ns
Reverse Recovery Charge	Q_{rr}	dI/dt=-100A/μs ②		33	50	nC

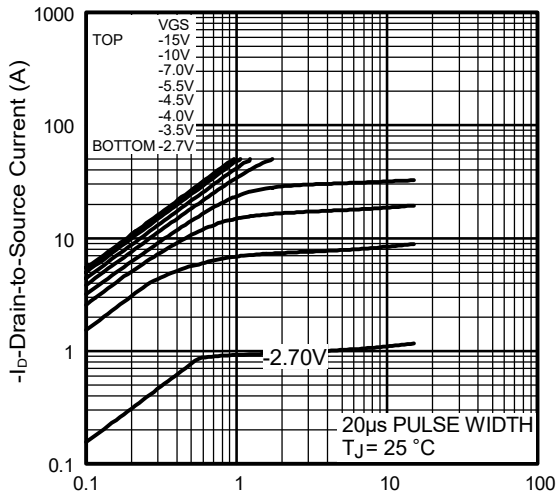
Notes:

① Repetitive rating; pulse width limited by max.junction temperature.

② Pulse width ≤ 300μs; duty cycle ≤ 2%.

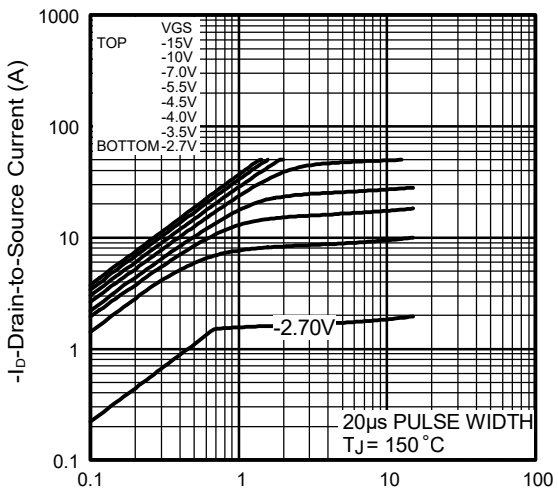
③ Surface mounted on FR-4 board, t ≤ 5sec.

7.1Typical Characterisitics



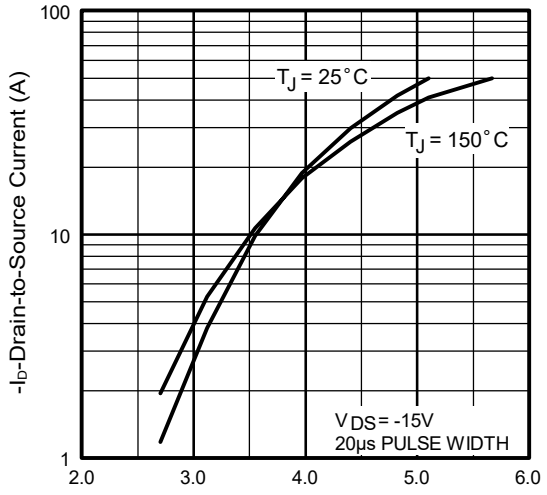
-V_{DS} - Drain-to-Source Voltage (V)

Fig 1. Typical Output Characteristics



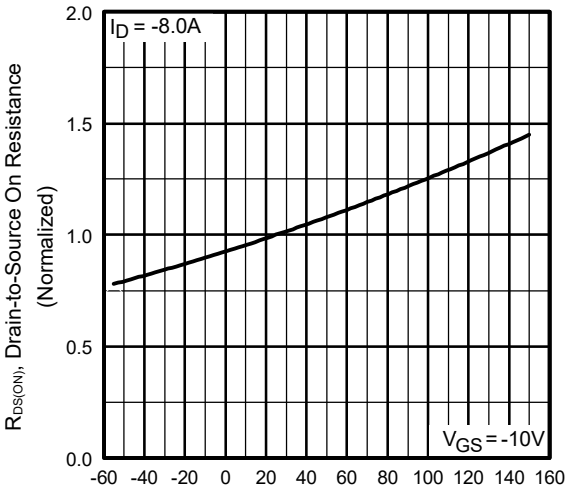
-V_{DS} - Drain-to-Source Voltage (V)

Fig 2. Typical Output Characteristics



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

Fig 3. Typical Transfer Characteristics



T_J, Junction Temperature (°C)

Fig 4. Normalized On-Resistance Vs. Temperature

7.2Typical Characterisitics

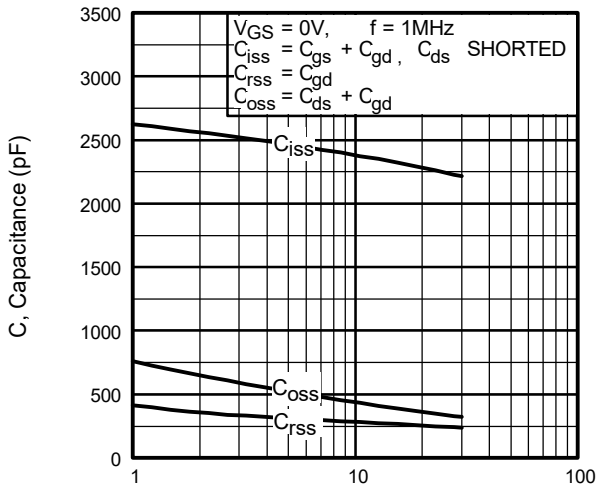


Fig 5. Typical capacitance Vs.Drain-to-Source Voltage

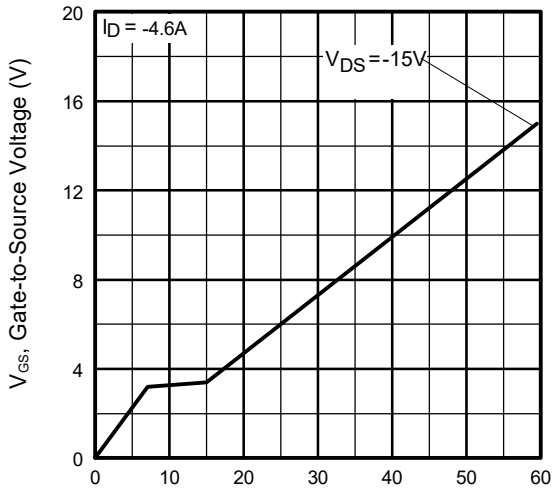


Fig 6. Typical Gate Charge Vs.Gate-to-Source Voltage

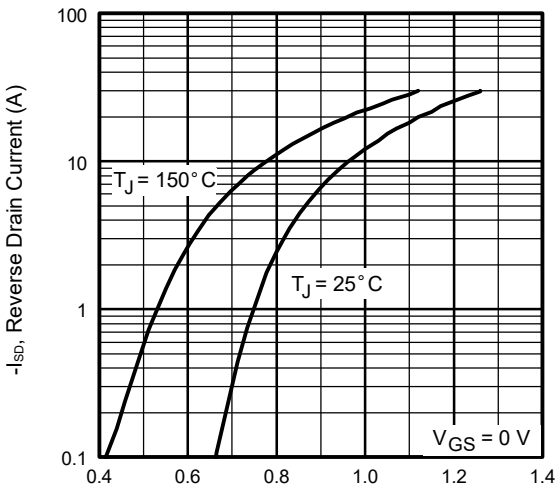


Fig 7. Typical Source-Drain Diode Forward Voltage

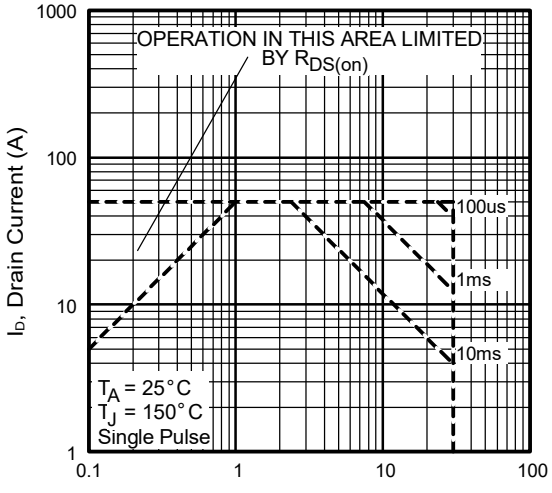


Fig 8. Maximum Safe Operating Area

7.3Typical Characterisitics

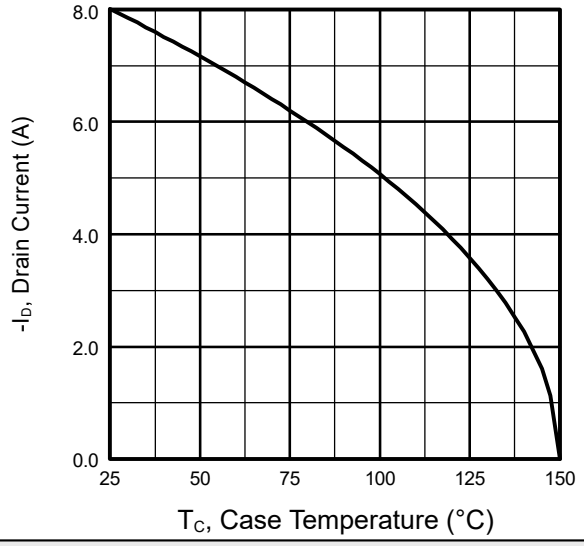


Fig 9. Maximum Drain Current Vs. Case Temperature

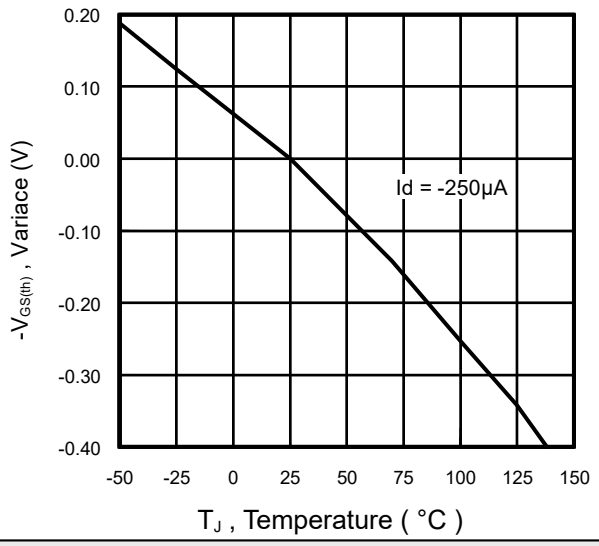


Fig 10. Typical $V_{GS(th)}$ Variance Vs. Juction Temperature

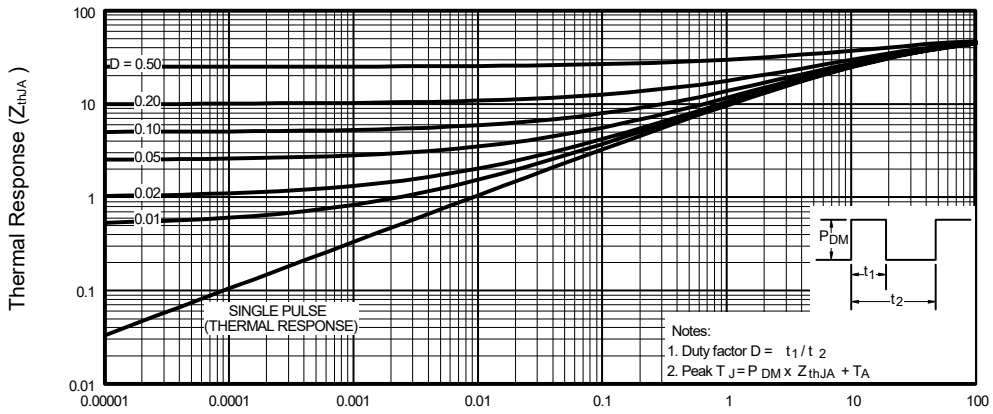


Fig 11. Maximum Effective Transient Themal Impedance, Junction-to-Ambient

7.4Typical Characterisitics

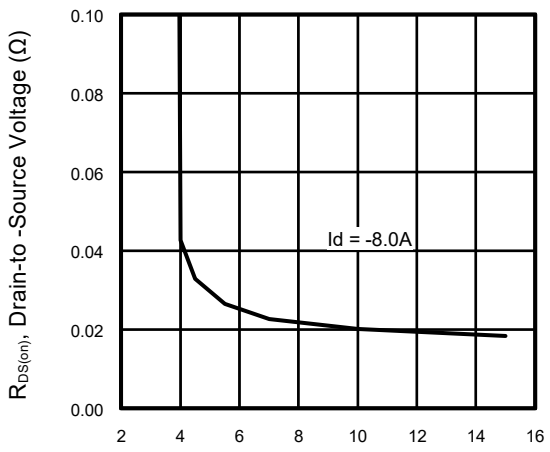


Fig 12. Typical On-Resistance Vs. Gate Voltage

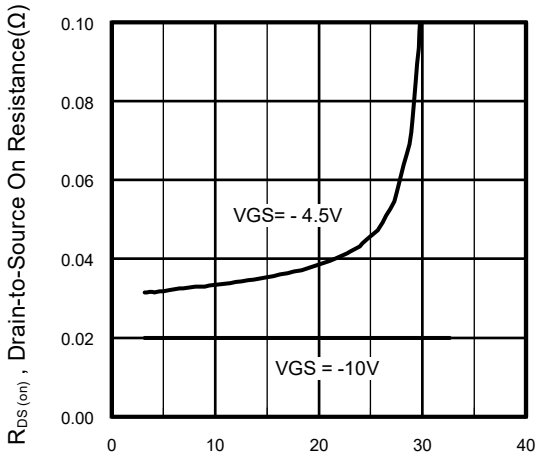
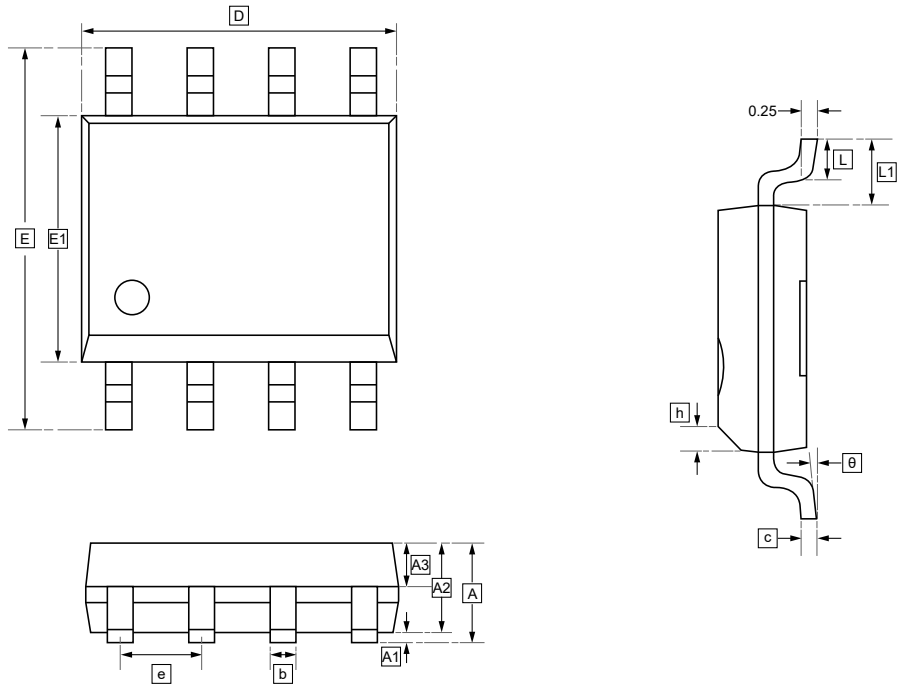


Fig 13. Typical On-Resistance Vs. Drain Current

8.SOP-8 Package Outline Dimensions

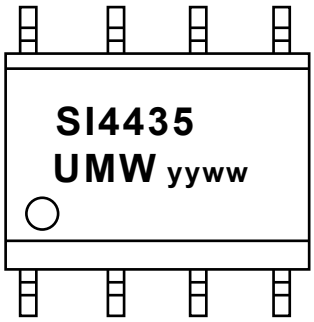


DIMENSIONS (mm are the original dimensions)

Symbol	A	A1	A2	A3	b	c	D	E	E1	e	h	L
Min	-	0.05	1.30	0.60	0.39	0.20	4.70	5.80	3.80	1.24	0.30	0.50
Max	1.75	0.20	1.50	0.70	0.47	0.24	5.10	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 SI4435DY	SOP-8	3000	Tape and reel

10.Disclaimer

UMW reserves the right to make changes to all products, specifications. Customers should obtain the latest version of product documentation and verify the completeness and currency of the information before placing an order.

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