UMW IRF7316TR

Dual 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 theseimprovements.multiple devices can be usedinanappication with dramatically reduced board space. The package is designed for vapor phase, infrared, or wave sodering technigues.

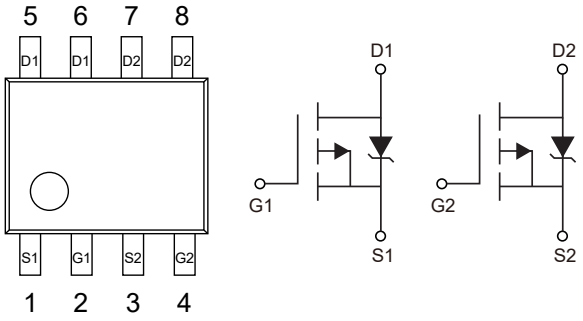
2.Features

- $V_{DS\ (V)}$=-30V
- I_D=-4.9A
- $R_{DS(ON)}$<42mΩ(V_{GS}=-10)
- $R_{DS(ON)}$<77mΩ(V_{GS}=-4.5V)
- Generation V Technolog
- Ultra Low On-Resistance
- Surface Mount
- Fully Avalanche Rated
- Lead-Free

3.Pinning information

Pin	Symbol	Description
2,4	G1,G2	GATE
1,3	S1,S2	SOURCE
5,6,7,8	D1,D2	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
Gate-Source Voltage		V_{GS}	±20	
Continuous Drain Current ⑤	T_A=25°C	I_D	-4.9	A
	T_A=70°C		-3.9	
Pulsed Drain Current		I_{DM}	-30	
Continuous Source Current (Diode Conduction)		I_S	-2.5	
Maximum Power Dissipation ⑤	T_A=25°C	P_D	2	W
	T_A=70°C		1.3	W
Single Pulse Avalanche Energy		E_{AS}	140	mJ
Avalanche Current		I_{AR}	-2.8	A
Repetitive Avalanche Energy		E_{AR}	0.2	mJ
Peak Diode Recovery dv/dt ③		dv/dt	-5	V/ns
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 ⑤	$R_{\theta JA}$		62.5	°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	$\Delta V_{(BR)DSS}/T_J$	I_D=-1mA,Reference to 25°C		0.022		V/°C
Static Drain-to-Source On-Resistance	$R_{DS(ON)}$	V_{GS}=-10V, I_D=-4.9A ④		42	60	mΩ
		V_{GS}=-4.5V, I_D=-3.6A ④		77	100	
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=-250μA	-1			V
Forward Transconductance	g_{FS}	V_{DS}=-15V, I_D=-4.9A		7.7		S
Drain-to-Source Leakage Current	I_{DSS}	V_{DS}=-24V, V_{GS}=0V			-1	μA
		V_{DS}=-24V,V_{GS}=0V,T_J=55°C			-25	
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=-4.9A		23	34	nC
Gate-to-Source Charge	Q_{gs}	V_{DS}=-15V, V_{GS}=-10V		3.8	5.7	
Gate-to-Drain ("Miller") Charge	Q_{gd}	See Fig. 10 ④		5.9	8.9	
Turn-On Delay Time	$t_{D(on)}$	V_{DD}=-15V		13	19	ns
Rise Time	t_r	I_D=-1A		13	20	ns
Turn-Off Delay Time	$t_{D(off)}$	R_G=6Ω		34	51	ns
Fall Time	t_f	R_D=15Ω ④		32	48	ns
Input Capacitance	C_{iss}	V_{GS}=0V		710		pF
Output Capacitance	C_{oss}	V_{DS}=-25V		380		pF
Reverse Transfer Capacitance	C_{rss}	f=1.0MHz, See Fig. 5		180		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}				-30	
Diode Forward Voltage	V_{SD}	T_J=25°C,I_S=1.7A,V_{GS}=0V③		-0.78	-1	V
Reverse Recovery Time	t_{rr}	T_J=25°C, I_F=1.7A		44	66	ns
Reverse Recovery Charge	Q_{rr}	dI/dt=100A/μs ③		42	63	nC

Notes:

① Repetitive rating; pulse width limited by max.junction temperature.(See fig.11)

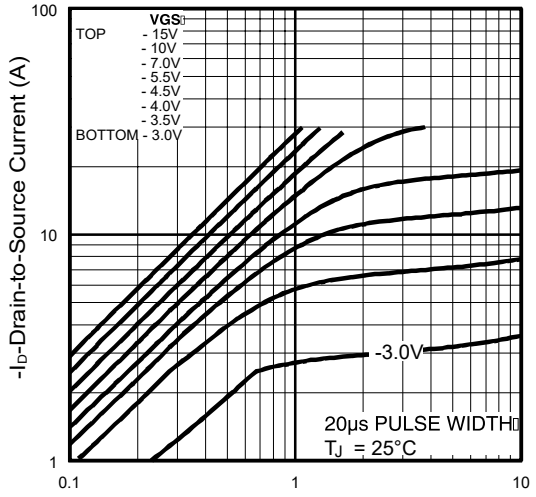
② Starting T_J= 25°C,L=35mH, R_G= 25Ω, I_{AS}=-2.8A.

③ I_{SD}≤ -2.8A, didt ≤150A/μs, V_{DD}≤ $V_{(BR)DSS}$,T_J≤ 150°C

④ Pulse width ≤ 300μs; duty cycle ≤ 2%.

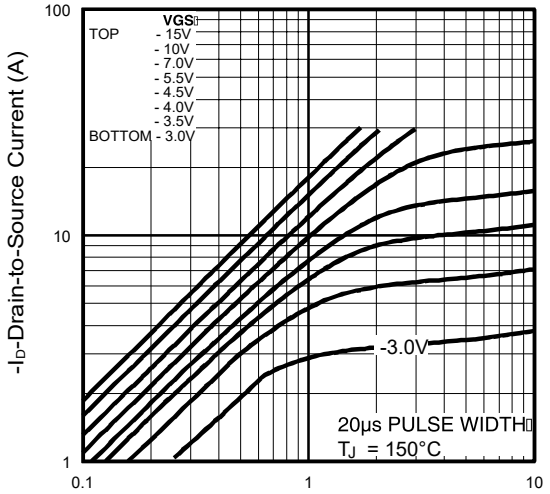
⑤ Surface mounted on FR-4 board, t ≤ 10sec.

7.1Typical Characterisitics



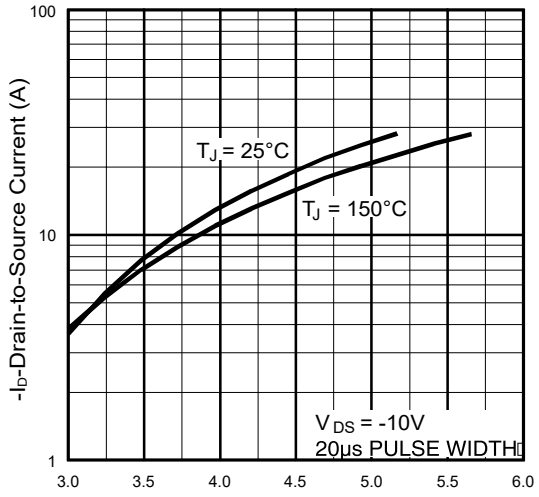
-V_{DS} - Drain-to-Source Voltage (V)

Fig 1. Typical Output Characteristics



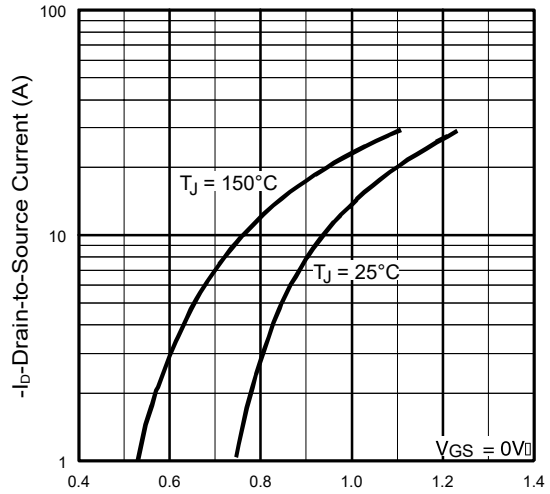
-V_{DS} - Drain-to-Source Voltage (V)

Fig 2. Typical Output Characteristics



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

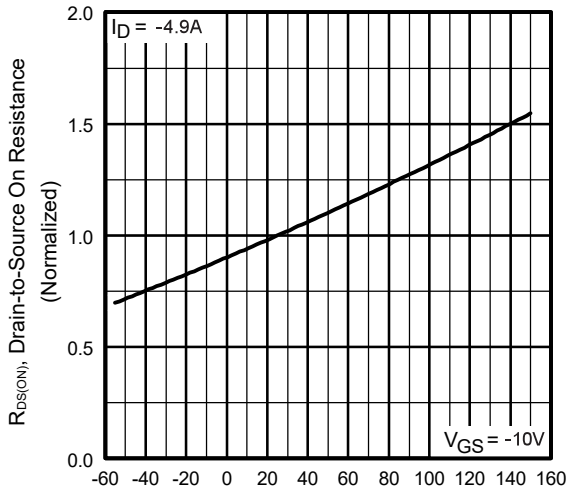
Fig 3. Typical Transfer Characteristics



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

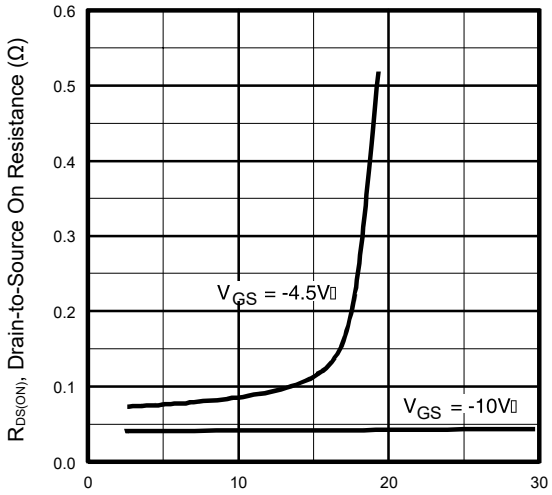
Fig 4. Typical Source-Drain DiodeForward Voltage

7.2Typical Characterisitics



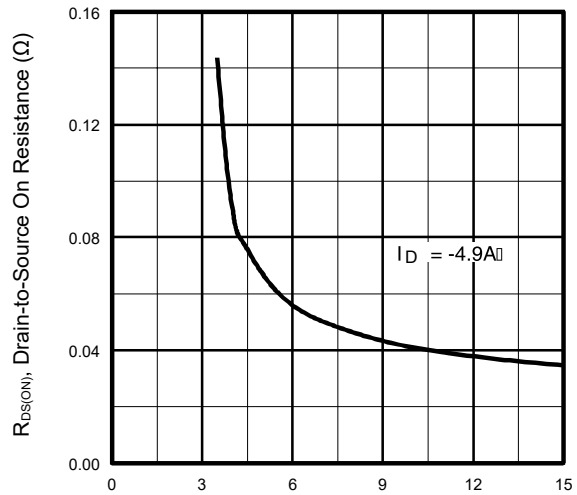
T_J, Junction Temperature (°C)

Fig 5. Nomalized On-ResistanceVs. Temperature



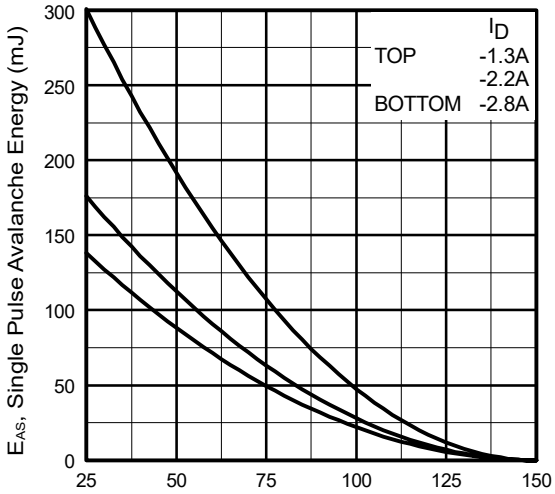
$-I_D$, Drain Current(A)

Fig 6. Typical On-Resistance Vs. DrainCurrent



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

Fig 7. Typical On-Resistance Vs. GateVoltage



Starting T_J, Junction Temperature (°C)

Fig 8. Maximum Avalanche EnergyVs. Drain Curent

7.3Typical Characterisitics

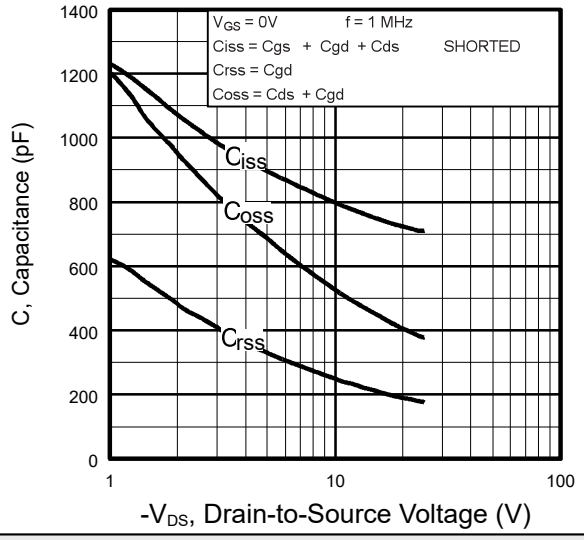


Fig 9. Typical capacitance Vs.Drain-to-Source Voltage

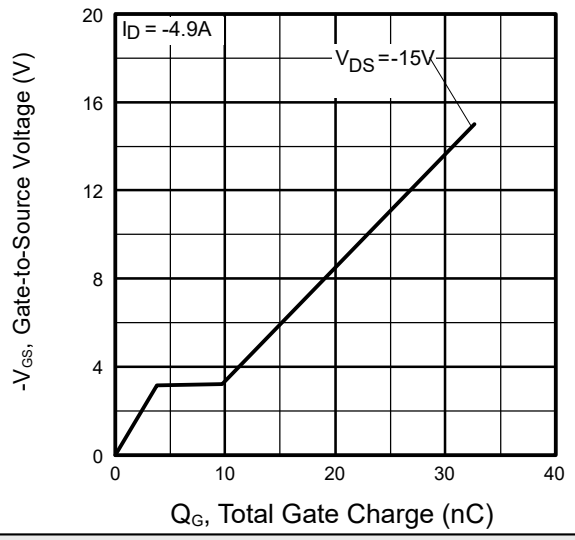


Fig 10. Typical Gate Charge Vs.Gate-to-Source Voltage

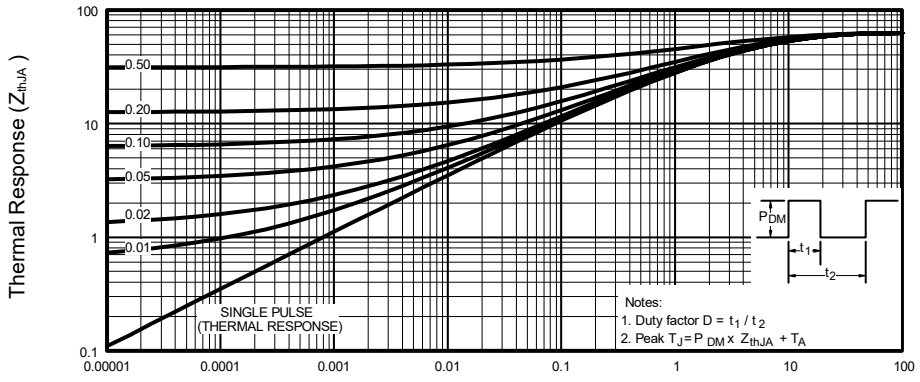
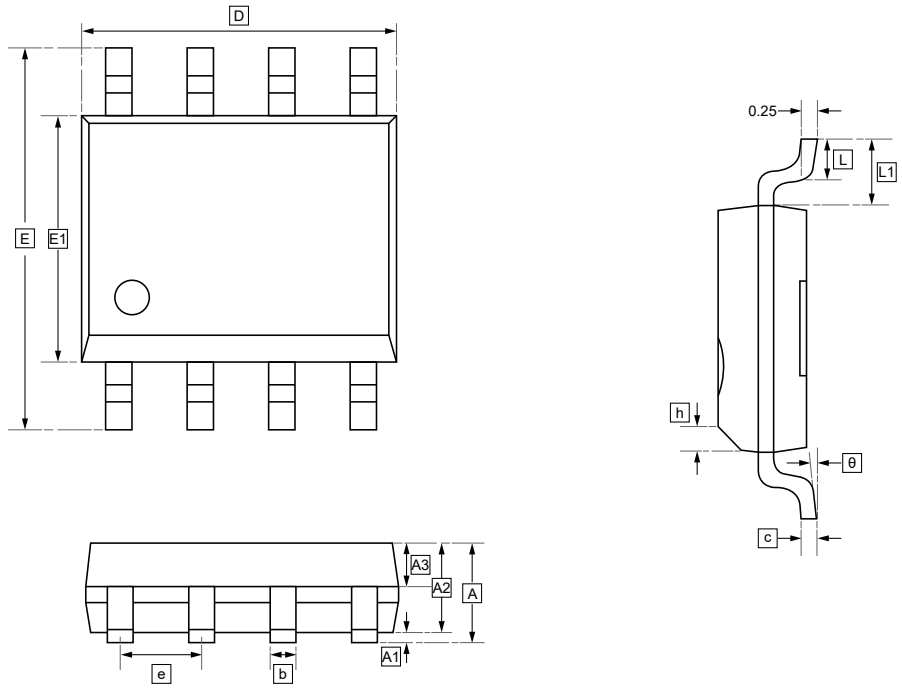


Fig 11. Maximum Effective Transient Themal Impedance, Junction-to-Ambient

8.SOP-8 Package Outline Dimensions

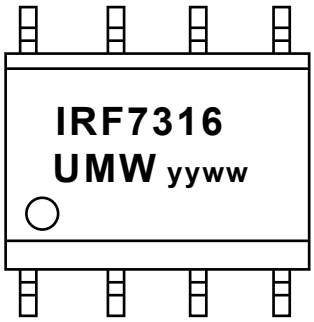


DIMENSIONS (mm are the original dimensions)

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 IRF7316TR	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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