UMW IRF7205TR

-30V P-Channel MOSFET

1.Description

The SOP-8 package is designed forvapor phase , infra red , or wave soldering techniquesPower dissipation of greater than 0.8W is possible ina typical PCB mount application.

2.1Features

- $V_{DS\ (V)}$=-30V
- I_D=-4.6A
- $R_{DS(ON)}$<70mΩ(V_{GS}=-10V)
- $R_{DS(ON)}$<100mΩ(V_{GS}=-4.5V)

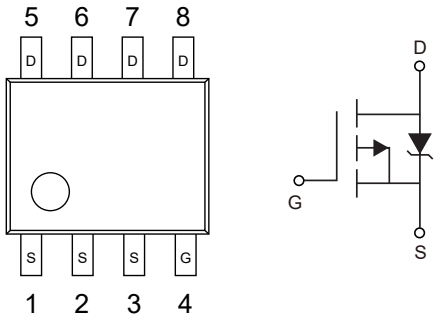
2.2Features

- Adavanced Process Technology
- Ultra Low On-Resistance
- Surface Mount
- Fast Switching
- Lead-Free

3.Pinning information

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

SOP-8



4.Absolute Maximum Ratings T_A=25°C unless otherwise noted

Parameter		Symbol	Rating	Units
Continuous Drain Current, V_{GS}=10V	T_A=25°C	I_D	-4.6	A
Continuous Drain Current, V_{GS}=10V	T_A=70°C		-3.7	A
Pulsed Drain Current ①		I_{DM}	-15	A
Power Dissipation	T_C=25°C	P_D	2.5	W
Linear Derating Factor			0.02	W/°C
Gate-to-Source Voltage		V_{GS}	±20	V
Peak Diode Recovery dv/dt ②		dv/dt	-3	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 ④	$R_{\theta JA}$		50	°C/W

6.Electrical Characteristics T_A=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		-0.024		V/°C
Static Drain-to-Source On-Resistance	$R_{DS(ON)}$	V_{GS}=-10V, I_D=-4.6A ③			70	mΩ
		V_{GS}=-4.5V, I_D=-2A ③			100	
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=-250μA	-1		-3	V
Forward Transconductance	g_{FS}	V_{DS}=-15V, I_D=-4.6A ③		6.6		S
Drain-to-Source Leakage Current	I_{DSS}	V_{DS}=-24V, V_{GS}=0V			-1	μA
		V_{DS}=-15V,V_{GS}=0V,T_J=70°C			-5	
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		27	40	nC
Gate-to-Source Charge	Q_{gs}	V_{DS}=-15V		5.2		
Gate-to-Drain ("Miller") Charge	Q_{gd}	V_{GS}=-10V ③		7.5		
Turn-On Delay Time	$t_{D(on)}$	V_{DD}=-15V		14	30	ns
Rise Time	t_r	I_D=-1A		21	60	ns
Turn-Off Delay Time	$t_{D(off)}$	R_G=6Ω		97	150	ns
Fall Time	t_f	R_D=10Ω ③		71	100	ns
Internal Drain inductance	L_D	Between lead,6mm (0.25in.) from package and centerof die contact		2.5		nH
Internal Source inductance	L_S			4		
Input Capacitance	C_{iss}	V_{GS}=0V		870		pF
Output Capacitance	C_{oss}	V_{DS}=-10V		720		pF
Reverse Transfer Capacitance	C_{rss}	f=1.0MHz		220		pF

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}				-15	
Diode Forward Voltage	V_{SD}	T_J=25°C,I_S=-1.25A,V_{GS}=0V ③			-1.2	V
Reverse Recovery Time	t_{rr}	T_J=25°C, I_F=-4.6A		70	100	ns
Reverse Recovery Charge	Q_{rr}	dI/dt=100A/μs ③		100	180	nC
Forward Turn-On Time	t_{on}	Intrinsic turn-on time is negligible (turn-on is dominated by L_S+L_D)				

Notes:

① Repetitive rating; pulse width limited bymax.junction temperature.

② I_{SD}≤-4.6A, di/dt ≤ 90A/μS, V_{DD}≤ $V_{(BR)DSS}$,T_J≤ 150°C.

③ Pulse width ≤ 300us; duty cycle ≤ 2%.

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

7.1Typical Characterisitics

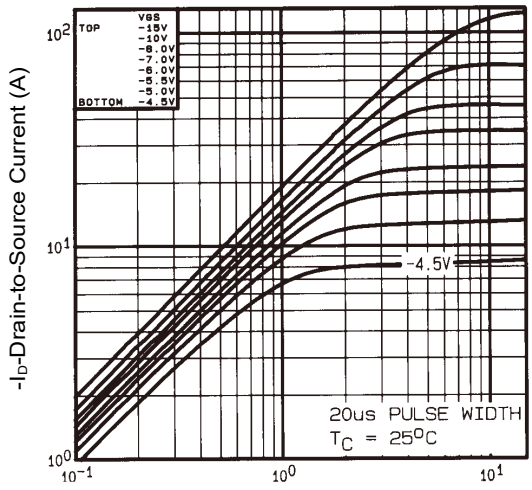


Fig 1. Typical Output Characteristics

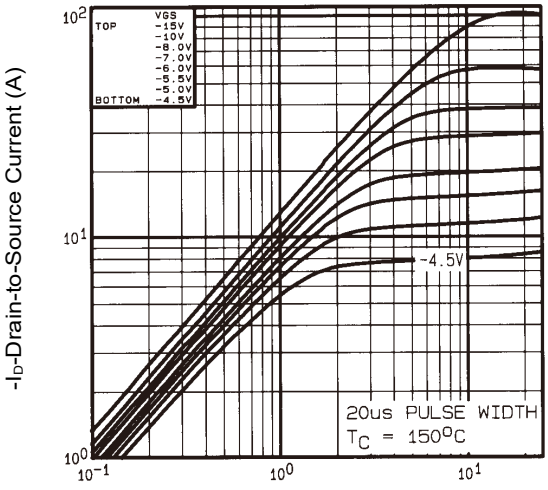


Fig 2. Typical Output Characteristics

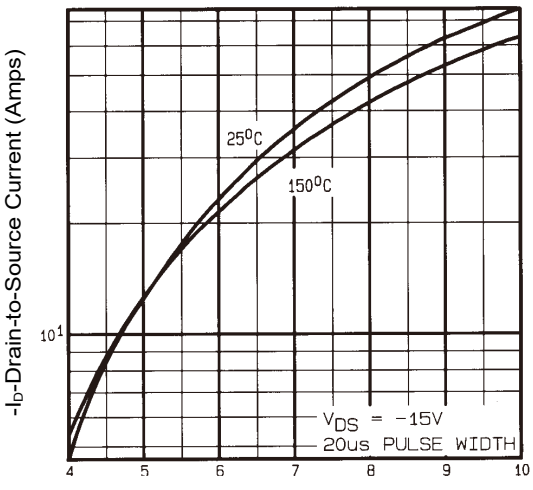


Fig 3. Typical Transfer Characteristics

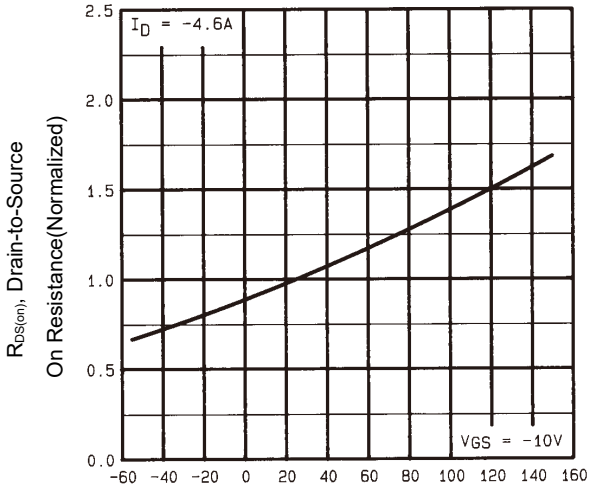
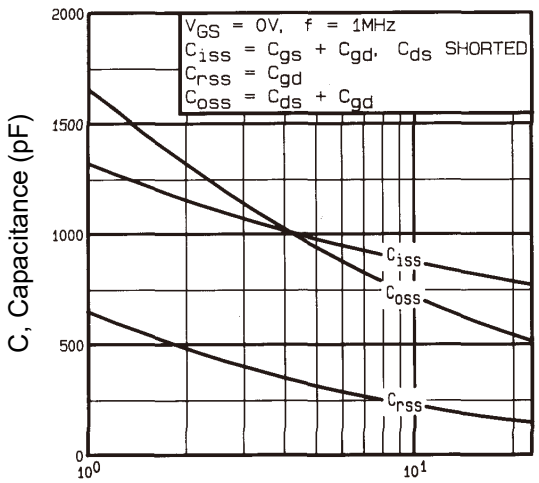


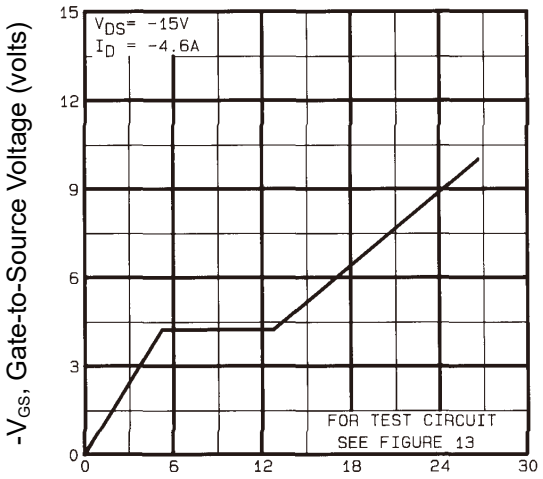
Fig 4. Nomalized On-ResistanceVs. Temperature

7.2Typical Characterisitics



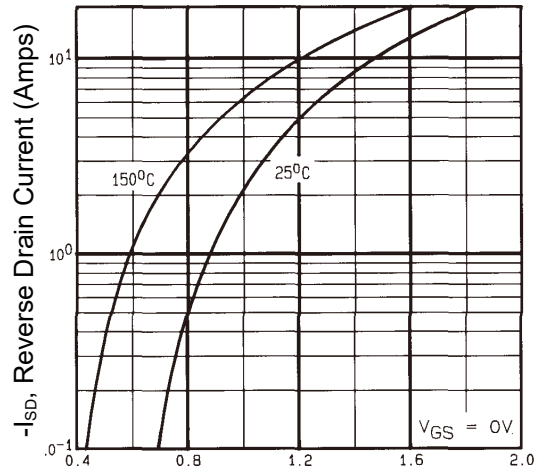
$-V_{DS}$,Drain-to-Source Voltage (volts)

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



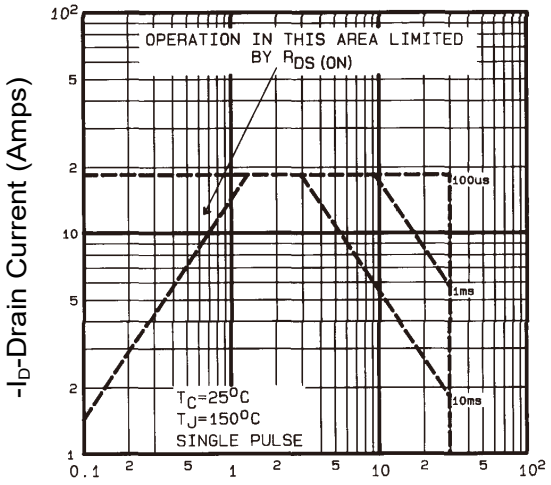
Q_G, Total Gate Charge (nC)

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



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

Fig 7. Typical Source-Drain Diode Forward Voltage



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

Fig 8. Maximum Safe Operating Area

7.3Typical Characterisitics

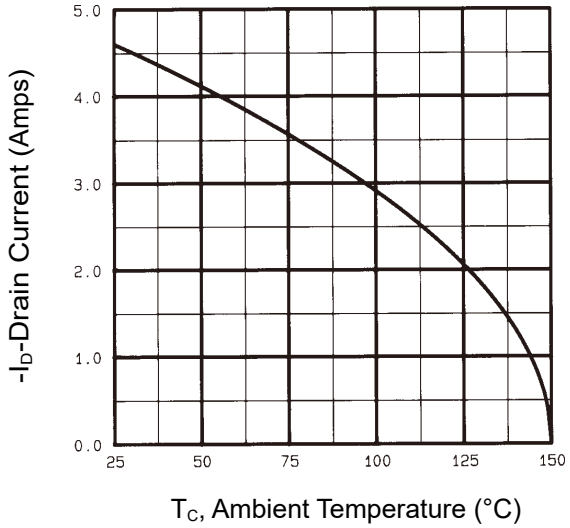


Fig 9. Maximum Drain Current Vs.AmbientTemperature

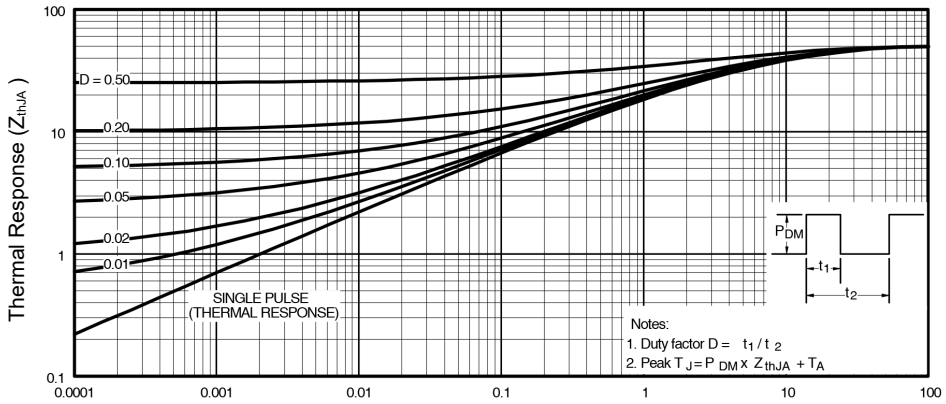


Fig 10. Maximum Effective Transient Themal Impedance, Junction-to-Ambient

7.4Typical Characterisitics

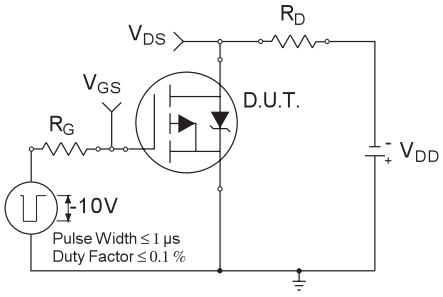


Fig 11a. Switching Time Test Circuit

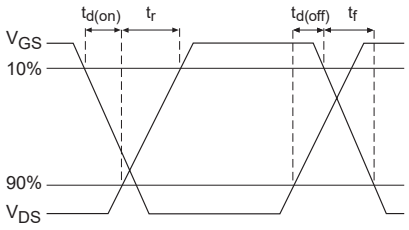
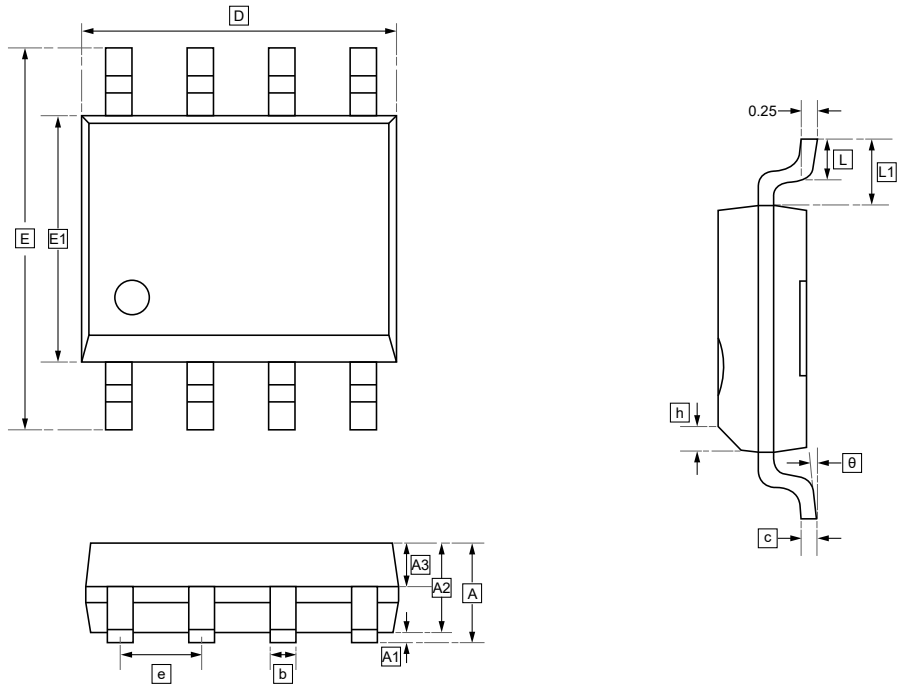


Fig 11b. Switching Time Waveforms

8.SOP-8 Package Outline Dimensions

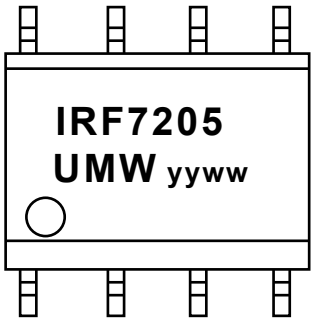


DIMENSIONS (mm are the original dimensions)

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 IRF7205TR	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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