UMW IRF7204TR

-30V P-Channel MOSFET

1.Description

The is the single P-Channel logic enhancement mode power field effect transistors to provide excellent $R_{DS(ON)}$, low gate charge and low gate resistance. It's up to -30V operation voltage is well suited in switching mode power supply, SMPS, notebook computer power management and other battery powered circuits.

2.Features

- $R_{DS(ON)}$<25mΩ(V_{GS}=10V)
- $R_{DS(ON)}$<40mΩ(V_{GS}=4.5V)
- Super high density cell design for extremely low
- $R_{DS(ON)}$ Exceptional on-resistance and maximum DC current

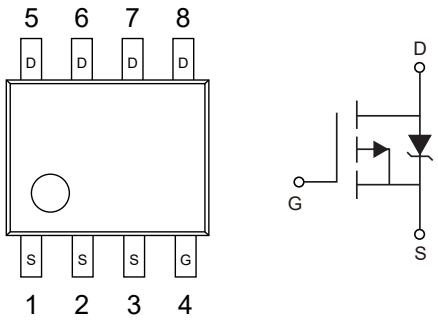
3.Applications

- Switching power supply, SMPS
- Battery Powered System
- DC/DC Converter
- DC/AC Converter
- Load Switch

4.Pinning information

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

SOP-8



5.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	V
Drain Curent-Continuous	I_D	-5.1	A
Drain Current-Pulsed (Note 1)	I_{DM}	-20	A
Maximum Power Dissipation	P_D	2.5	W
Storage Temperature Range	T_J,T_{STG}	-55 to 150	°C

6.Thermal resistance rating

Parameter	Symbol	Typ	Max	Units
Thermal Resistance,Junction-to-Ambient (Note 2)	$R_{\theta JA}$		50	°C/W

7.Electrical Characteristics T_J=25°C

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Static characteristics						
Drain-source breakdown voltage	BV_{DSS}	V_{GS}=0V, I_D=-250μA	-30	-33		V
Zero gate voltage drain current	I_{DSS}	V_{DS}=-24V, V_{GS}=0V			-1	μA
Gate-source leakage current	I_{GSS}	V_{DS}=±20V, V_{GS}=0V			±100	nA
On Characteristics (Note 3)						
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=-250μA	-1		-2	V
Drain-Source On-State Resistance	$R_{DS(ON)}$	V_{GS}=-10V, I_D=-5.1A		20	25	mΩ
		V_{GS}=-4.5V, I_D=-4.2A		25	40	mΩ
Forward Transconductance	g_{FS}	V_{DS}=-15V, I_D=-4.5A	4	7		S
Dynamic Characteristics (Note4)						
Input Capacitance	C_{iss}	V_{GS}=0V, V_{DS}=-15V, f =1MHz		520		pF
Output Capacitanc	C_{oss}			130		pF
Reverse Transfer Capacitance	C_{rss}			70		pF
Switching Characteristics (Note 4)						
Tum-on Delay Time	$t_{D(on)}$	V_{DD}=-15V, V_{GS}=-10V I_D=-1A, R_{GEN}=6Ω		7		ns
Tum-on Rise Time	t_r			13		ns
Tum-Off Delay Time	$t_{D(off)}$			14		ns
Tum-Off Fall Time	t_f			9		ns
Total Gate Charge	Q_g	V_{DS}=-15V, I_D=-5.1A, V_{GS}=-10V		11		nC
Gate-Source Charge	Q_{gs}			2.2		nC
Gate-Drain Charge	Q_{gd}			3		nC
Drain-Source Diode Characteristics						
Diode Forward Voltage (Note 3)	V_{SD}	V_{GS}=0V, I_D=-5.1A			-1.2	V

8.1 Typical Characterisitics

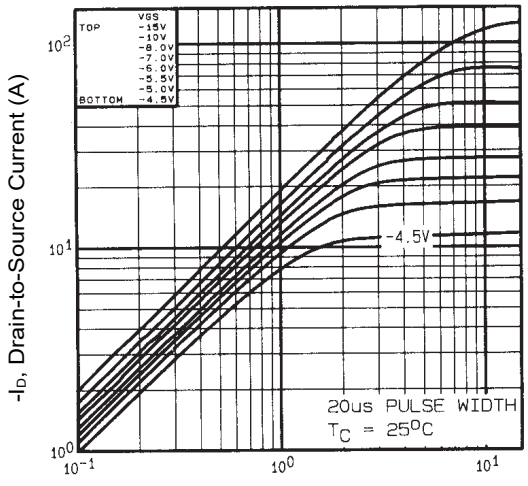


Fig 1. Typical Output Characteristics

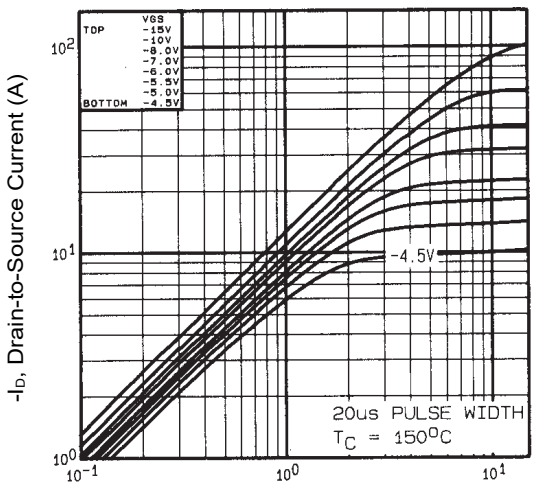


Fig 2. Typical Output Characteristics

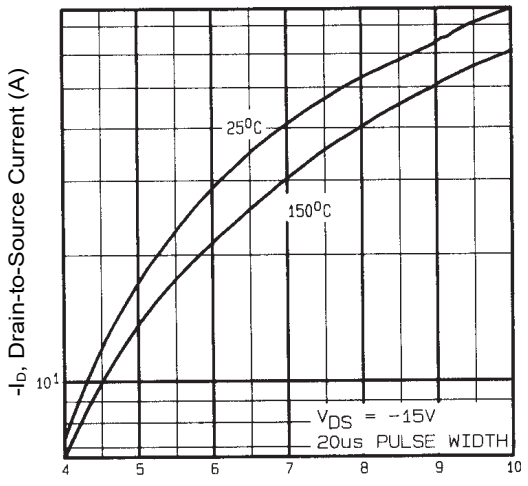


Fig 3. Typical Transfer Characteristics

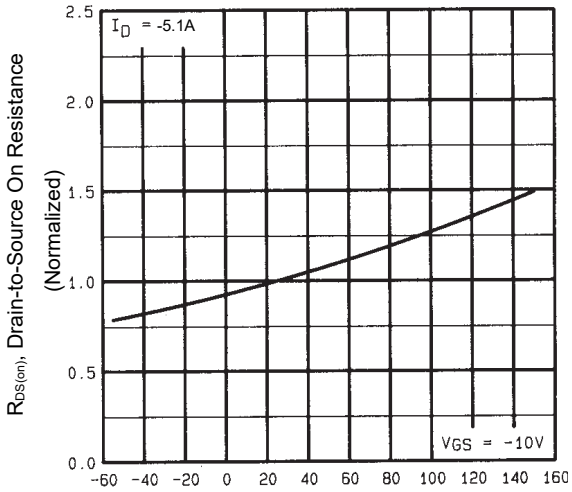
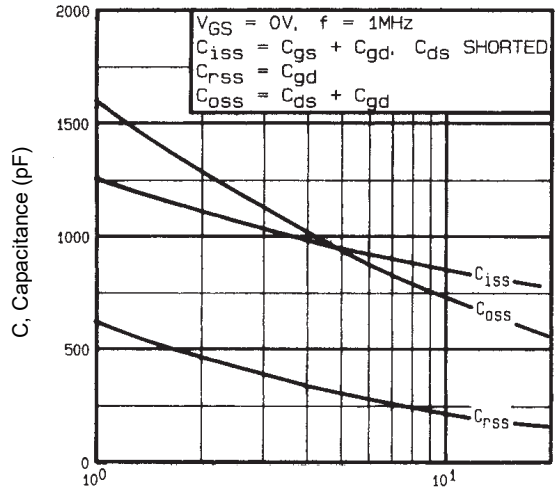


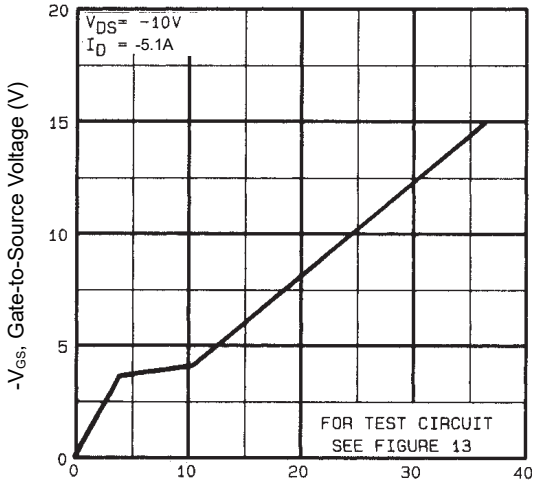
Fig 4. Nomalized On-ResistanceVs. Temperature

8.2 Typical Characterisitics



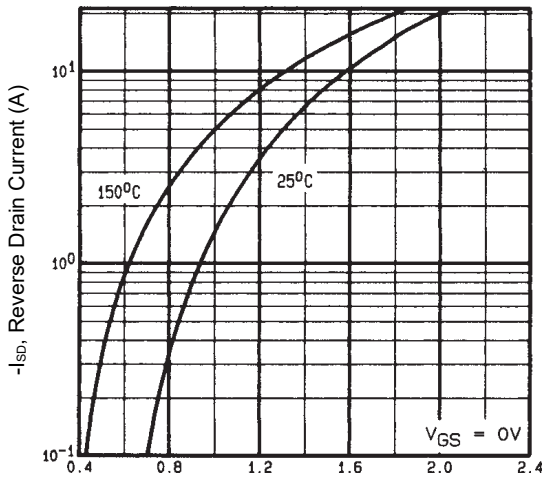
-V_{DS} ,Drain-to-Source Voltage (V)

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



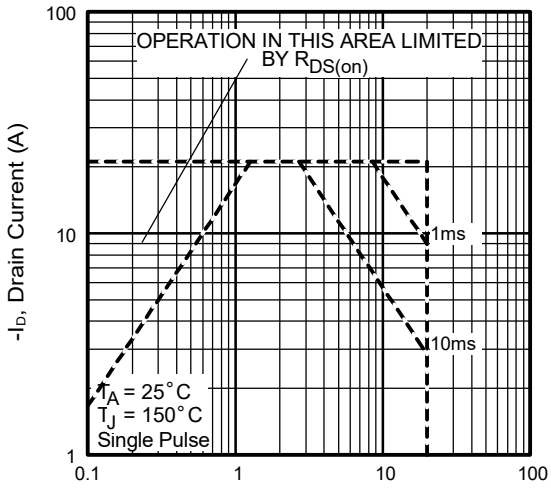
Q_G, Total Gate Charge (nC)

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



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

Fig 7. Typical Source-Drain Diode Forward Voltage



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

Fig 8. Maximum Safe Operating Area

8.3 Typical Characterisitics

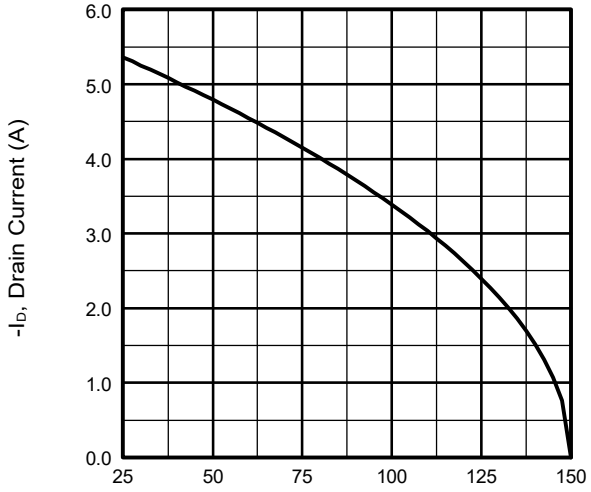


Fig 9. Maximum Drain Current Vs. AmbientTemperature

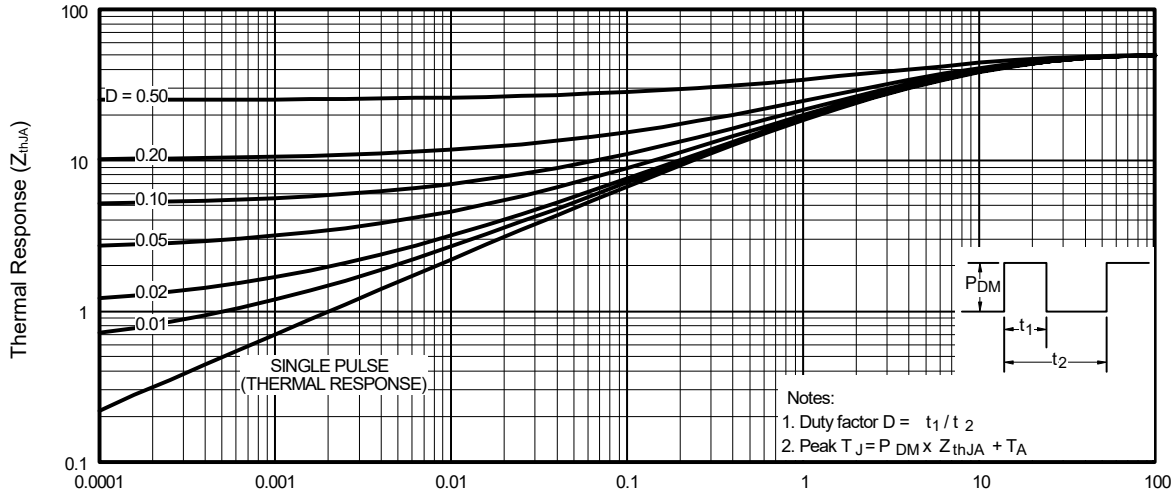
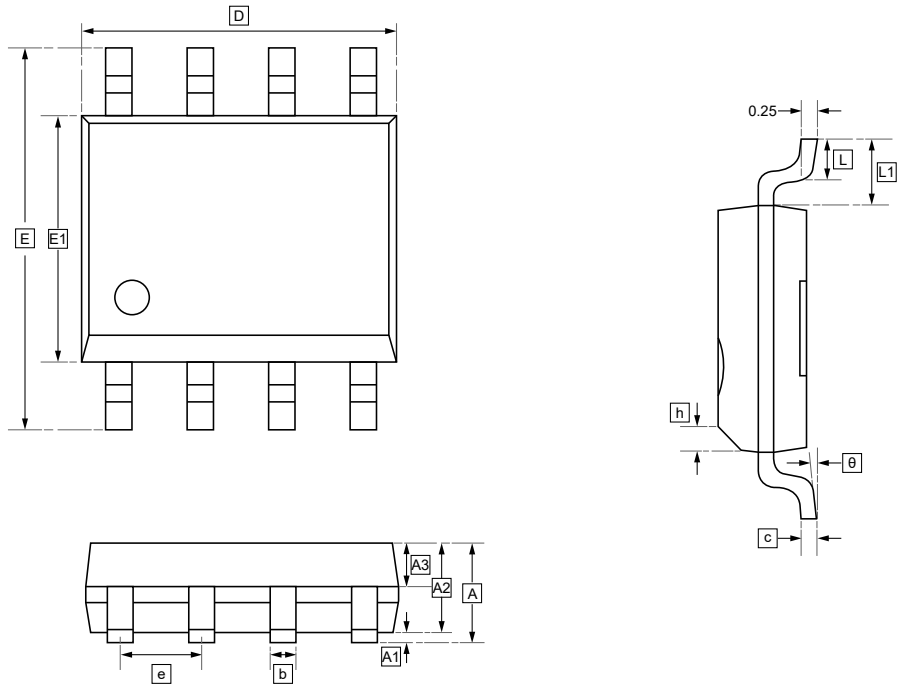


Fig 10. Maximum Effective Transient Themmal Impedance, Junction-to-Ambient

9.SOP-8 Package Outline Dimensions

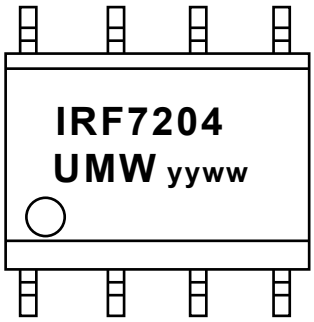


DIMENSIONS (mm are the original dimensions)

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°

10.Ordering information



yy: Year Code
ww: Week Code

Order Code	Package	Base QTY	Delivery Mode
UMW IRF7204TR	SOP-8	3000	Tape and reel

11.Disclaimer

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