UMW®

IRF7328
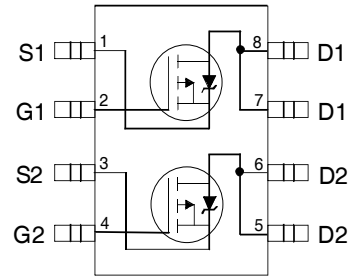## Dual P-Channel 30 V (D-S) MOSFET

Features
- Trench Technology
- Ultra Low On-Resistance
- Dual P-Channel MOSFET
- Available in Tape & Reel
- Lead-Free

Top View

V_{DSS}	$R_{DS(on)}$ max	I_D
-30V	$21m\Omega @ V_{GS} = -10V$	-8.0A
	$32m\Omega @ V_{GS} = -4.5V$	-6.8A

Absolute Maximum Ratings

	Parameter	Max.	Units
V_{DS}	Drain-Source Voltage	-30	V
I_D @ $T_A = 25°C$	Continuous Drain Current, V_{GS} @ -10V	-8.0	
I_D @ $T_A = 70°C$	Continuous Drain Current, V_{GS} @ -10V	-6.4	A
I_{DM}	Pulsed Drain Current①	-32	
P_D @$T_A = 25°C$	Maximum Power Dissipation③	2.0	W
P_D @$T_A = 70°C$	Maximum Power Dissipation③	1.3	W
	Linear Derating Factor	16	mW/°C
V_{GS}	Gate-to-Source Voltage	± 20	V
T_J , T_{STG}	Junction and Storage Temperature Range	-55 to + 150	°C

Thermal Resistance

	Parameter	Max.	Units
$R_{\theta JA}$	Maximum Junction-to-Ambient ③	62.5	°C/W

Electrical Characteristics @ T_J = 25°C (unless otherwise specified)

Parameter		Min.	Typ.	Max.	Units	Conditions
$V_{(BR)DSS}$	Drain-to-Source Breakdown Voltage	-30	——	——	V	V_{GS} = 0V, I_D = -250µA
$\Delta V_{(BR)DSS}/\Delta T_J$	Breakdown Voltage Temp. Coefficient	——	-0.018	——	V/°C	Reference to 25°C, I_D = -1mA
$R_{DS(on)}$	Static Drain-to-Source On-Resistance	——	17	21	mΩ	V_{GS} = -10V, I_D = -8.0A ②
		——	26.8	32		V_{GS} = -4.5V, I_D = -6.8A ②
$V_{GS(th)}$	Gate Threshold Voltage	-1.0	——	-2.5	V	V_{DS} = V_{GS}, I_D = -250µA
g_{fs}	Forward Transconductance	12	——	——	S	V_{DS} = -10V, I_D = -8.0A
I_{DSS}	Drain-to-Source Leakage Current	——	——	-15	µA	V_{DS} = -24V, V_{GS} = 0V
		——	——	-25		V_{DS} = -24V, V_{GS} = 0V, T_J = 70°C
I_{GSS}	Gate-to-Source Forward Leakage	——	——	-100	nA	V_{GS} = -20V
	Gate-to-Source Reverse Leakage	——	——	100		V_{GS} = 20V
Q_g	Total Gate Charge	——	52	78	nC	I_D = -8.0A
Q_{gs}	Gate-to-Source Charge	——	9.8	——		V_{DS} = -15V
Q_{gd}	Gate-to-Drain ("Miller") Charge	——	8.3	——		V_{GS} = -10V
$t_{d(on)}$	Turn-On Delay Time	——	13	20	ns	V_{DD} = -15V, V_{GS} = -10.0V
t_r	Rise Time	——	15	23		I_D = -1.0A
$t_{d(off)}$	Turn-Off Delay Time	——	198	297		R_G = 6.0Ω
t_f	Fall Time	——	98	147		R_D = 15Ω ②
C_{iss}	Input Capacitance	——	2675	——	pF	V_{GS} = 0V
C_{oss}	Output Capacitance	——	409	——		V_{DS} = -25V
C_{rss}	Reverse Transfer Capacitance	——	262	——		f = 1.0MHz

Source-Drain Ratings and Characteristics

Parameter		Min.	Typ.	Max.	Units	Conditions
I_S	Continuous Source Current (Body Diode)	——	——	-2.0	A	MOSFET symbol showing the integral reverse p-n junction diode.
I_{SM}	Pulsed Source Current (Body Diode) ①	——	——	-32		
V_{SD}	Diode Forward Voltage	——	——	-1.2	V	T_J = 25°C, I_S = -2.0A, V_{GS} = 0V ②
t_{rr}	Reverse Recovery Time	——	37	56	ns	T_J = 25°C, I_F = -2.0A
Q_{rr}	Reverse Recovery Charge	——	36	54	nC	di/dt = -100A/µs ②

Notes:

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

② Pulse width ≤ 400µs; duty cycle ≤ 2%.

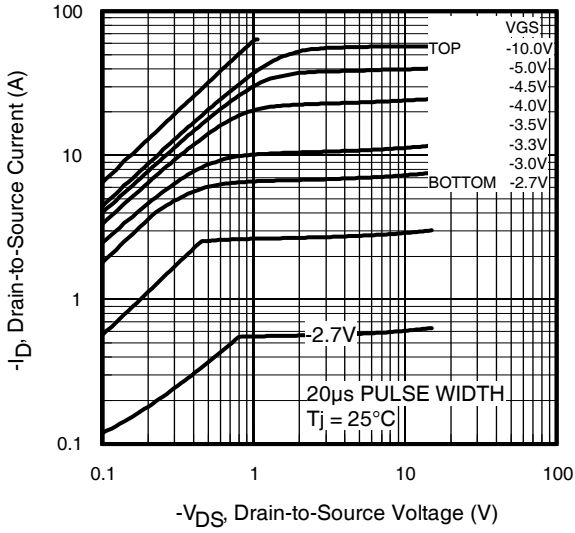③ Surface mounted on FR-4 board, t ≤ 10sec.

Fig 1. Typical Output Characteristics
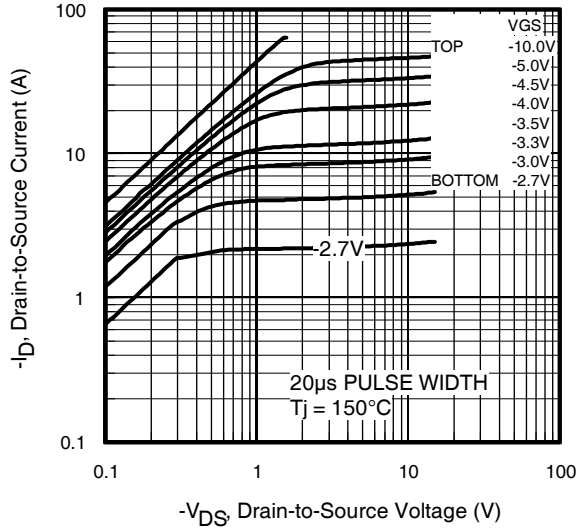

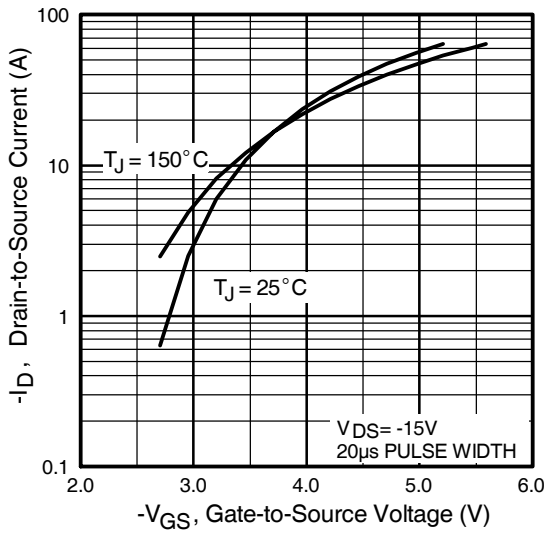**Fig 2.** Typical Output Characteristics

Fig 3. Typical Transfer Characteristics
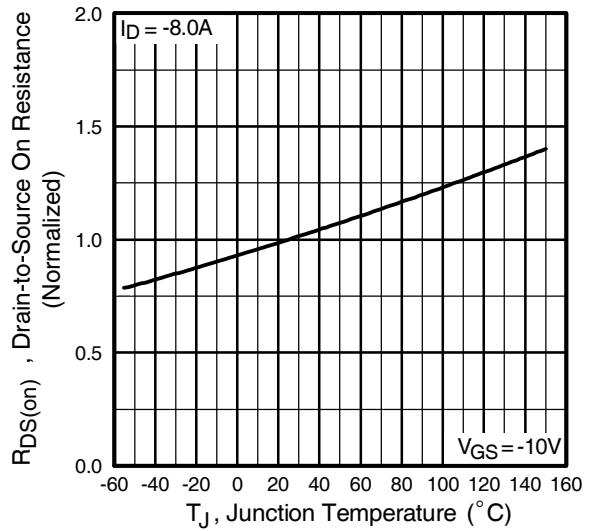

Fig 4. Normalized On-Resistance Vs. Temperature
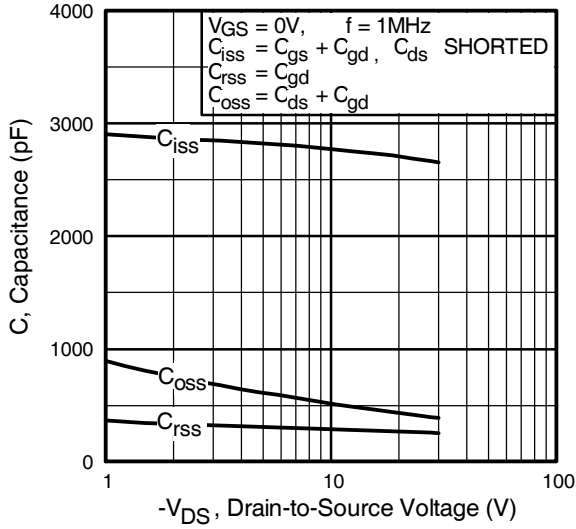
Fig 5. Typical Capacitance Vs. Drain-to-Source Voltage
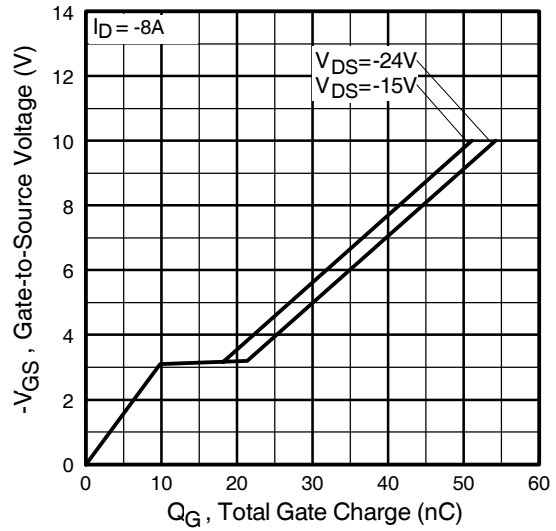

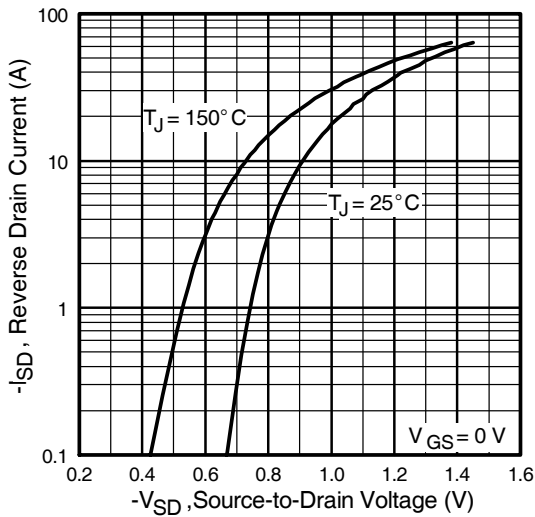**Fig 6.** Typical Gate Charge Vs. Gate-to-Source Voltage

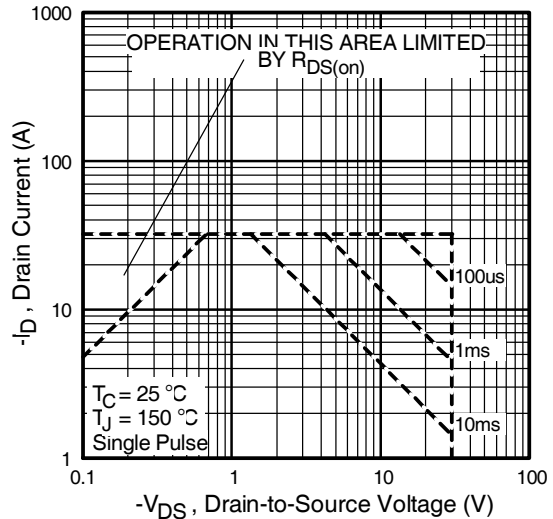**Fig 7.** Typical Source-Drain Diode Forward Voltage
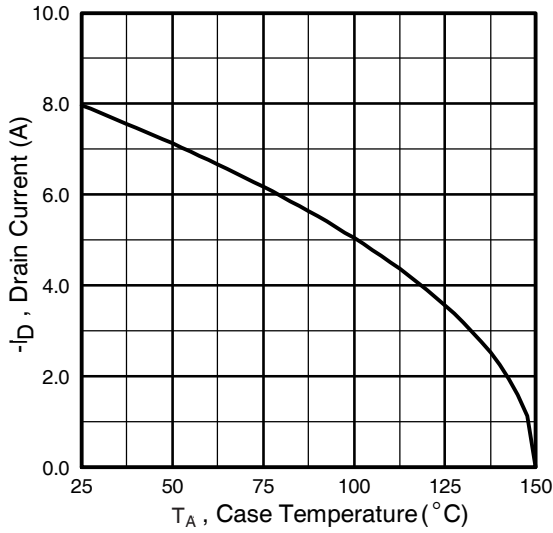

Fig 8. Maximum Safe Operating Area
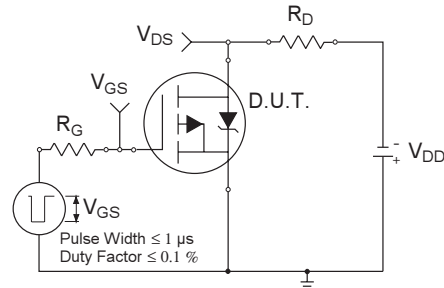
Fig 9. Maximum Drain Current Vs. Case Temperature
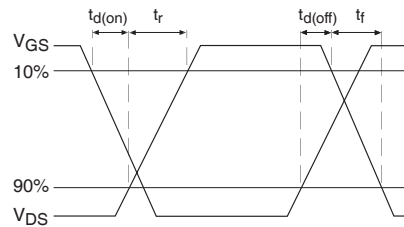

Fig 10a. Switching Time Test Circuit

Fig 10b. Switching Time Waveforms

Notes:
1. Duty factor $D = t_1 / t_2$
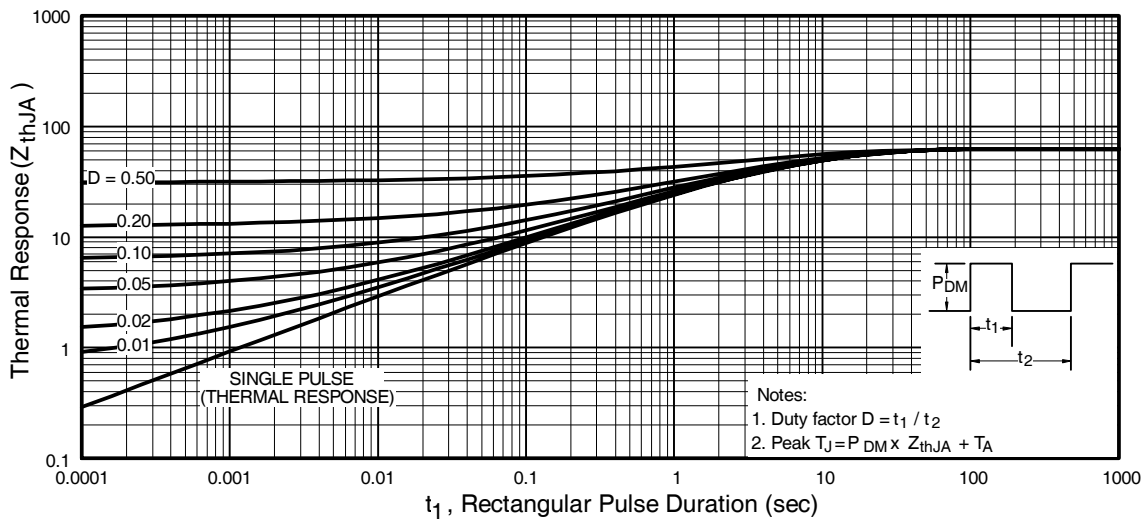2. Peak $T_J = P_{DM} \times Z_{thJA} + T_A$

Fig 11. Maximum Effective Transient Thermal Impedance, Junction-to-Ambient
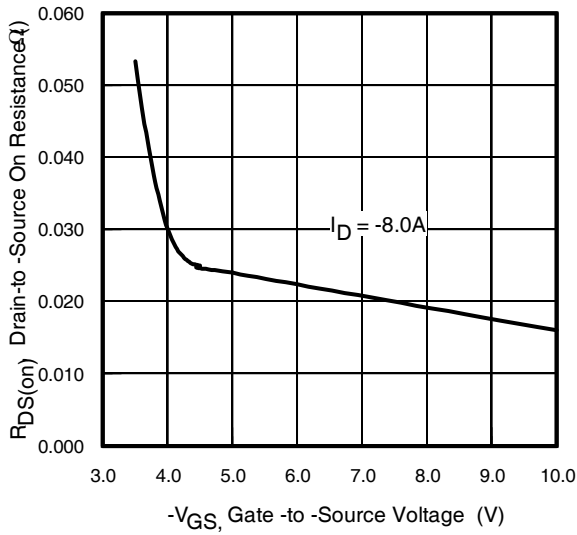
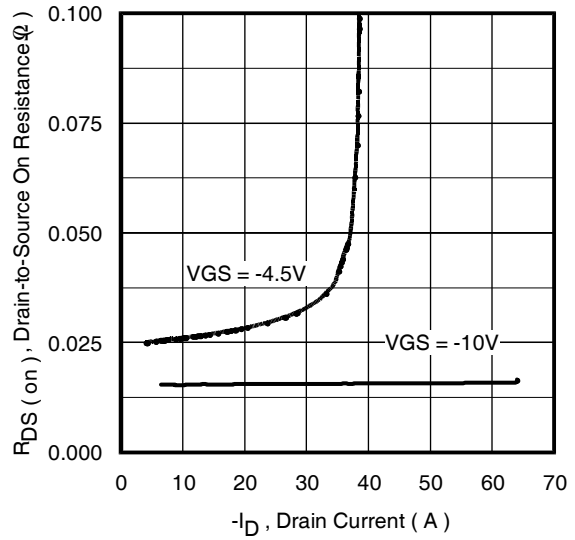**Fig 12.** Typical On-Resistance Vs.
Gate Voltage
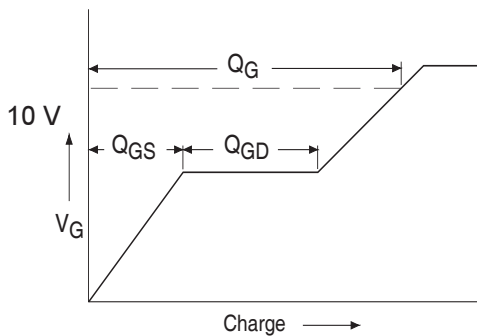

Fig 13. Typical On-Resistance Vs.
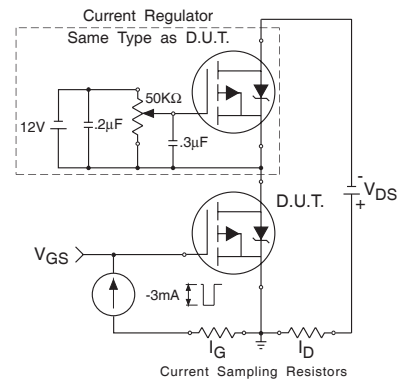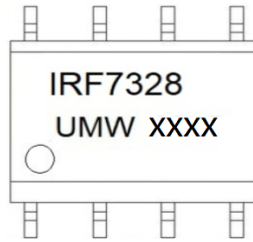Drain Current

Fig 14a. Basic Gate Charge Waveform

Fig 14b. Gate Charge Test Circuit

SOP-8

Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.350	1.750	0.053	0.069
A1	0.100	0.250	0.004	0.010
A2	1.350	1.550	0.053	0.061
b	0.330	0.510	0.013	0.020
c	0.170	0.250	0.006	0.010
D	4.700	5.100	0.185	0.200
E	3.800	4.000	0.150	0.157
E1	5.800	6.200	0.228	0.244
e	1.270(BSC)		0.050(BSC)	
L	0.400	1.270	0.016	0.050
θ	0°	8°	0°	8°

Marking


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IRF7328
UMW XXXX
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Ordering information

Order code	Package	Baseqty	Deliverymode
UMW IRF7328TR	SOP-8	3000	Tape and reel

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