

IRF7811WTR Datasheet



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DiGi Electronics Part Number	IRF7811WTR-DG
Manufacturer	Infineon Technologies
Manufacturer Product Number	IRF7811WTR
Description	MOSFET N-CH 30V 14A 8SO
Detailed Description	N-Channel 30 V 14A (Ta) 3.1W (Ta) Surface Mount 8-SO



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Purchase and inquiry

Manufacturer Product Number:

IRF7811WTR

Series:

HEXFET®

FET Type:

N-Channel

Drain to Source Voltage (Vdss):

30 V

Drive Voltage (Max Rds On, Min Rds On):

4.5V

Vgs(th) (Max) @ Id:

1V @ 250µA

Vgs (Max):

±12V

FET Feature:

-

Operating Temperature:

-55°C ~ 150°C (Tj)

Supplier Device Package:

8-SO

Manufacturer:

Infineon Technologies

Product Status:

Obsolete

Technology:

MOSFET (Metal Oxide)

Current - Continuous Drain (Id) @ 25°C:

14A (Ta)

Rds On (Max) @ Id, Vgs:

12mOhm @ 15A, 4.5V

Gate Charge (Qg) (Max) @ Vgs:

33 nC @ 5 V

Input Capacitance (Ciss) (Max) @ Vds:

2335 pF @ 16 V

Power Dissipation (Max):

3.1W (Ta)

Mounting Type:

Surface Mount

Package / Case:

8-SOIC (0.154", 3.90mm Width)

Environmental & Export classification

RoHS Status:

RoHS non-compliant

REACH Status:

REACH Unaffected

HTSUS:

8541.29.0095

Moisture Sensitivity Level (MSL):

1 (Unlimited)

ECCN:

EAR99

HEXFET® Power MOSFET for DC-DC Converters

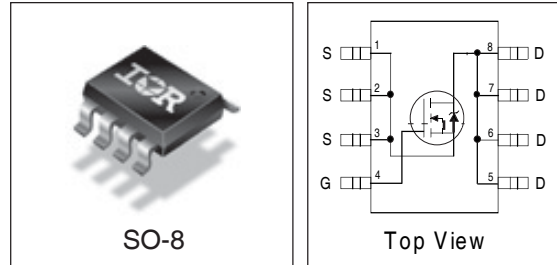
- N-Channel Application-Specific MOSFETs
- Ideal for CPU Core DC-DC Converters
- Low Conduction Losses
- Low Switching Losses
- 100% Tested for R_G

Description

This new device employs advanced HEXFET Power MOSFET technology to achieve an unprecedented balance of on-resistance and gate charge. The reduced conduction and switching losses make it ideal for high efficiency DC-DC converters that power the latest generation of microprocessors.

The IRF7811W has been optimized for all parameters that are critical in synchronous buck converters including $R_{DS(on)}$, gate charge and Cdv/dt -induced turn-on immunity. The IRF7811W offers particularly low $R_{DS(on)}$ and high Cdv/dt immunity for synchronous FET applications.

The package is designed for vapor phase, infra-red, convection, or wave soldering techniques. Power dissipation of greater than 3W is possible in a typical PCB mount application.



DEVICE CHARACTERISTICS^⑤

	IRF7811W
$R_{DS(on)}$	9.0m Ω
Q_G	22nC
Q_{sw}	10.1nC
Q_{oss}	12nC

Absolute Maximum Ratings

Parameter	Symbol	IRF7811W	Units
Drain-Source Voltage	V_{DS}	30	V
Gate-Source Voltage	V_{GS}	± 12	
Continuous Drain or Source Current ($V_{GS} \geq 4.5V$)	I_D	$T_A = 25^\circ C$	A
		$T_L = 90^\circ C$	
Pulsed Drain Current ^①	I_{DM}	109	
Power Dissipation	P_D	$T_A = 25^\circ C$	W
		$T_L = 90^\circ C$	
Junction & Storage Temperature Range	T_J, T_{STG}	-55 to 150	$^\circ C$
Continuous Source Current (Body Diode)	I_S	3.8	A
Pulsed Source Current ^①	I_{SM}	109	

Thermal Resistance

Parameter		Max.	Units
Maximum Junction-to-Ambient ^③	$R_{\theta JA}$	40	$^\circ C/W$
Maximum Junction-to-Lead	$R_{\theta JL}$	20	$^\circ C/W$

IRF7811W

International
 Rectifier

Electrical Characteristics

Parameter		Min	Typ	Max	Units	Conditions
Drain-to-Source Breakdown Voltage	BV_{DSS}	30	-	-	V	$V_{GS} = 0V, I_D = 250\mu A$
Static Drain-Source on Resistance	$R_{DS(on)}$		9.0	12	m Ω	$V_{GS} = 4.5V, I_D = 15A$ ②
Gate Threshold Voltage	$V_{GS(th)}$	1.0			V	$V_{DS} = V_{GS}, I_D = 250\mu A$
Drain-Source Leakage Current	I_{DSS}			30	μA	$V_{DS} = 24V, V_{GS} = 0$
				150		$V_{DS} = 24V, V_{GS} = 0,$ $T_j = 100^\circ C$
Gate-Source Leakage Current	I_{GSS}			± 100	nA	$V_{GS} = \pm 12V$
Total Gate Chg Cont FET	Q_G		22	33	nC	$V_{GS}=5.0V, I_D=15A, V_{DS}=16V$
Total Gate Chg Sync FET	Q_G		16.3			$V_{GS} = 5V, V_{DS} < 100mV$
Pre-Vth Gate-Source Charge	Q_{GS1}		3.5			$V_{DS} = 16V, I_D = 15A, V_{GS} = 5.0V$
Post-Vth Gate-Source Charge	Q_{GS2}		1.2			
Gate to Drain Charge	Q_{GD}		8.8			
Switch Chg($Q_{GS2} + Q_{GD}$)	Q_{sw}		10.1			
Output Charge	Q_{OSS}		12			$V_{DS} = 16V, V_{GS} = 0$
Gate Resistance	R_G		2.0	4.0	Ω	
Turn-on Delay Time	$t_{d(on)}$		11		ns	$V_{DD} = 16V, I_D = 15A$
Rise Time	t_r		11			$V_{GS} = 5.0V$
Turn-off Delay Time	$t_{d(off)}$		29			Clamped Inductive Load
Fall Time	t_f		9.9			
Input Capacitance	C_{ISS}	-	2335	-	pF	$V_{DS} = 16V, V_{GS} = 0$
Output Capacitance	C_{OSS}	-	400	-		
Reverse Transfer Capacitance	C_{RSS}	-	119	-		

Source-Drain Rating & Characteristics

Parameter		Min	Typ	Max	Units	Conditions
Diode Forward Voltage*	V_{SD}			1.25	V	$I_S = 15A$ ②, $V_{GS} = 0V$
Reverse Recovery Charge④	Q_{rr}		45		nC	$di/dt \sim 700A/\mu s$ $V_{DS} = 16V, V_{GS} = 0V, I_S = 15A$
Reverse Recovery Charge (with Parallel Schottky)④	$Q_{rr(s)}$		41		nC	$di/dt = 700A/\mu s$ (with 10BQ040) $V_{DS} = 16V, V_{GS} = 0V, I_S = 15A$

- Notes:**
- ① Repetitive rating; pulse width limited by max. junction temperature.
 - ② Pulse width $\leq 400 \mu s$; duty cycle $\leq 2\%$.
 - ③ When mounted on 1 inch square copper board
 - ④ Typ = measured - Q_{OSS}
 - ⑤ Typical values of $R_{DS(on)}$ measured at $V_{GS} = 4.5V$, Q_G , Q_{SW} and Q_{OSS} measured at $V_{GS} = 5.0V, I_F = 15A$.

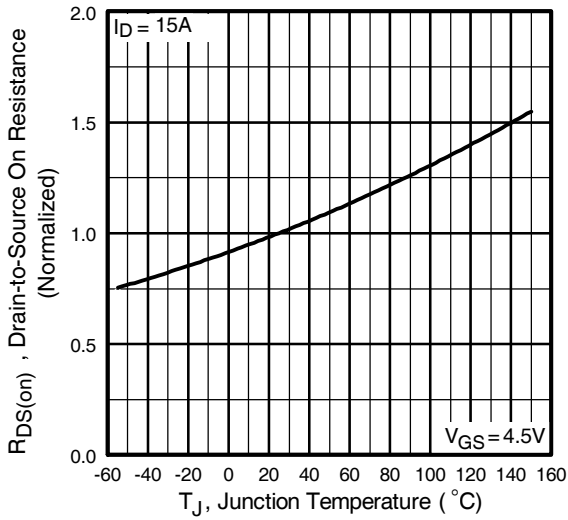


Fig 1. Normalized On-Resistance Vs. Temperature

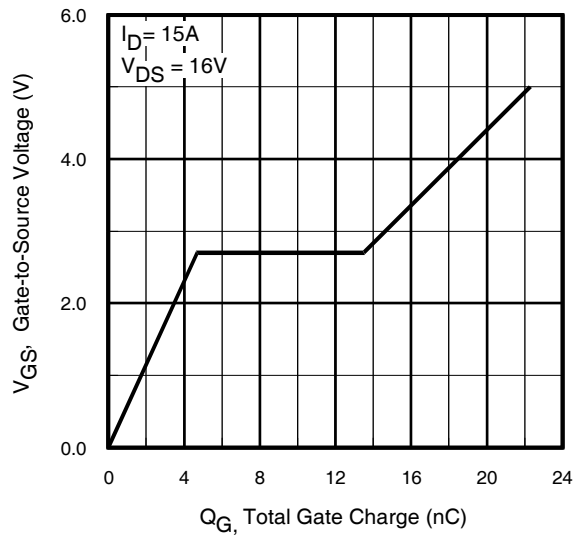


Fig 2. Typical Gate Charge Vs. Gate-to-Source Voltage

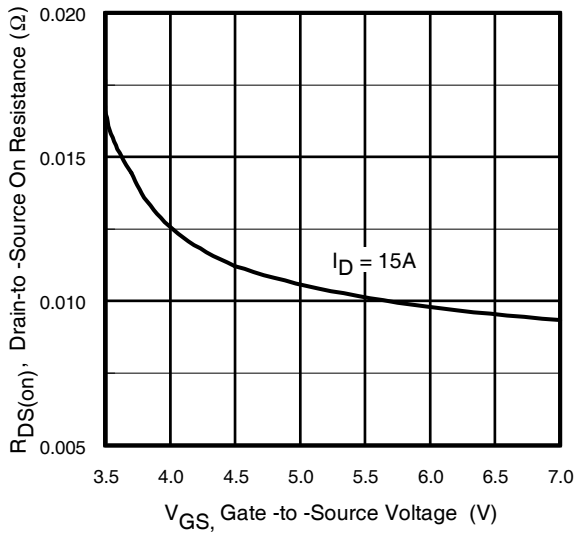


Fig 3. On-Resistance Vs. Gate Voltage

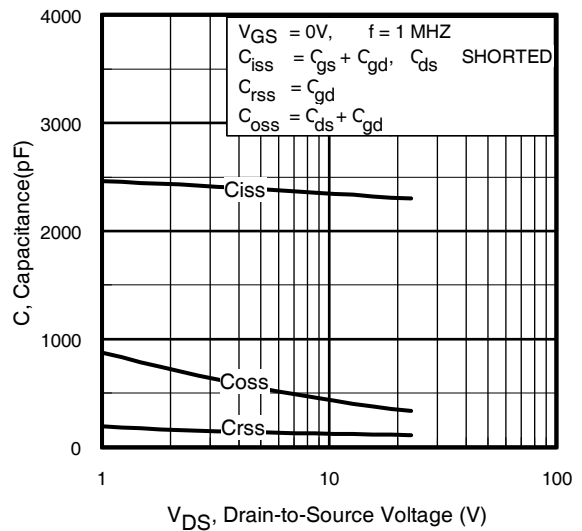


Fig 4. Typical Capacitance Vs. Drain-to-Source Voltage

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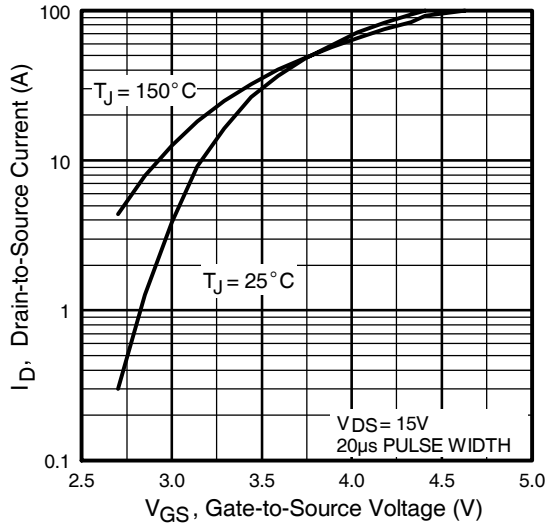


Fig 5. Typical Transfer Characteristics

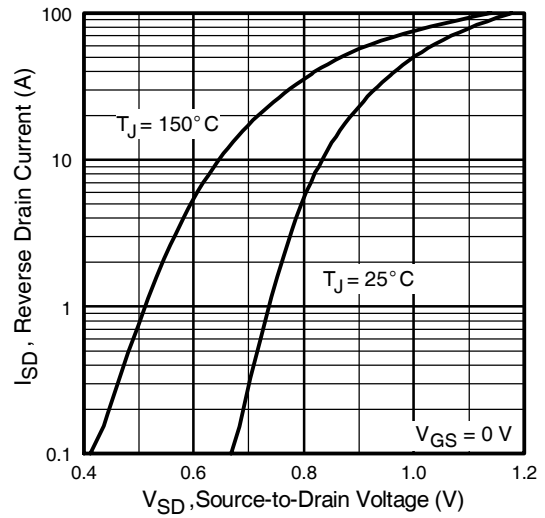


Fig 6. Typical Source-Drain Diode Forward Voltage

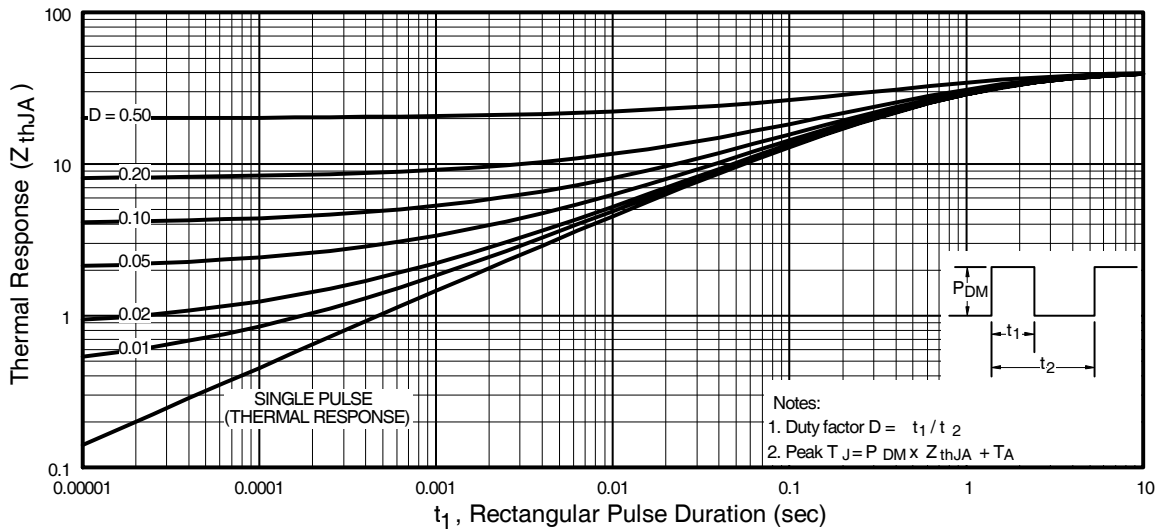
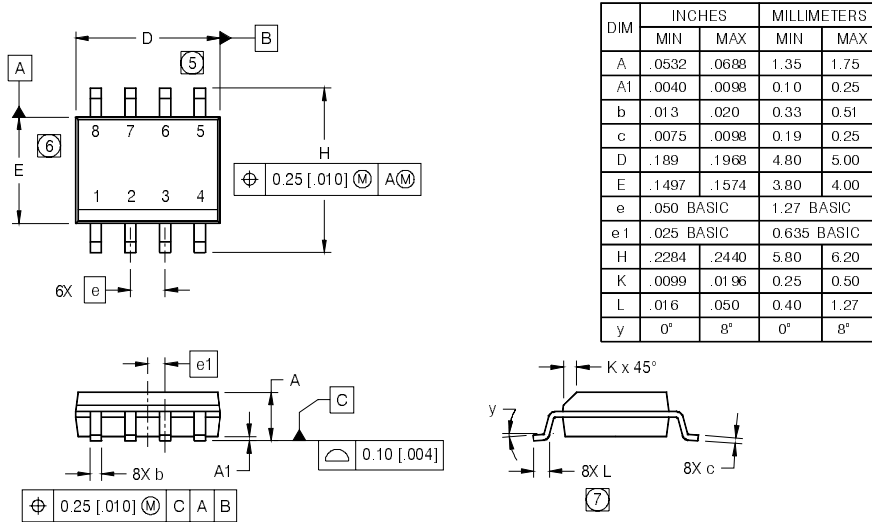


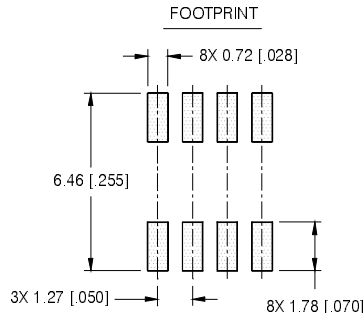
Figure 7. Maximum Effective Transient Thermal Impedance, Junction-to-Ambient

SO-8 Package Outline (MOSFET & Fetky)

Dimensions are shown in millimeters (inches)

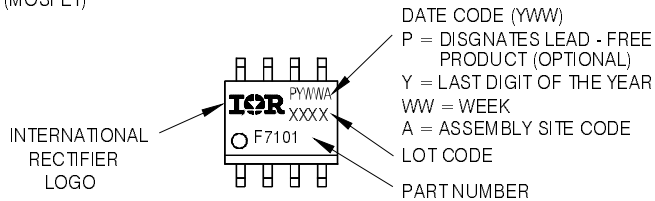


- NOTES:
1. DIMENSIONING & TOLERANCING PER ASME Y14.5M-1994.
 2. CONTROLLING DIMENSION: MILLIMETER
 3. DIMENSIONS ARE SHOWN IN MILLIMETERS (INCHES).
 4. OUTLINE CONFORMS TO JEDEC OUTLINE MS-012AA.
 5. DIMENSION DOES NOT INCLUDE MOLD PROTRUSIONS. MOLD PROTRUSIONS NOT TO EXCEED 0.15 [.006].
 6. DIMENSION DOES NOT INCLUDE MOLD PROTRUSIONS. MOLD PROTRUSIONS NOT TO EXCEED 0.25 [.010].
 7. DIMENSION IS THE LENGTH OF LEAD FOR SOLDERING TO A SUBSTRATE.



SO-8 Part Marking Information

EXAMPLE: THIS IS AN IRF7101 (MOSFET)



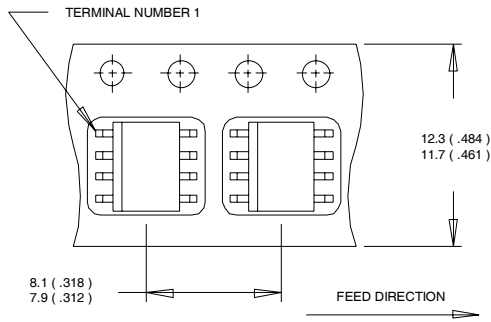
Note: For the most current drawing please refer to IR website at: <http://www.irf.com/package/>

IRF7811W

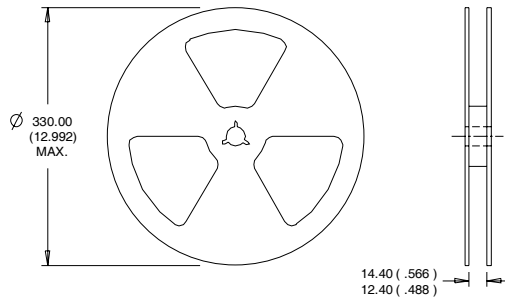
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SO-8 Tape and Reel

Dimensions are shown in millimeters (inches)



- NOTES:
1. CONTROLLING DIMENSION : MILLIMETER.
 2. ALL DIMENSIONS ARE SHOWN IN MILLIMETERS(INCHES).
 3. OUTLINE CONFORMS TO EIA-481 & EIA-541.



- NOTES :
1. CONTROLLING DIMENSION : MILLIMETER.
 2. OUTLINE CONFORMS TO EIA-481 & EIA-541.

Note: For the most current drawing please refer to IR website at: <http://www.irf.com/package/>

Data and specifications subject to change without notice.
This product has been designed and qualified for the Consumer market.
Qualification Standards can be found on IR's Web site.

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