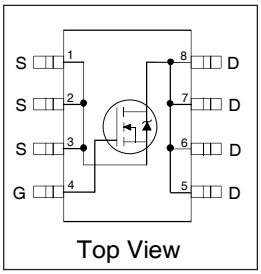
International
IOR Rectifier

IRF7811AVPbF-1

HEXFET® Power MOSFET

V_{DS}	30	V
$R_{DS(on)\ max}$ (@V_{GS} = 4.5V)	14	mΩ
$Q_{g\ (typical)}$	17	nC
I_D (@T_A = 25°C)	10.8	A


SO-8



Top View

Features	⇒	Benefits
Industry-standard pinout SO-8 Package	⇒	Multi-Vendor Compatibility
Compatible with Existing Surface Mount Techniques	⇒	Easier Manufacturing
RoHS Compliant, Halogen-Free	⇒	Environmentally Friendlier
MSL1, Industrial qualification	⇒	Increased Reliability

Base Part Number	Package Type	Standard Pack		Orderable Part Number
		Form	Quantity	
IRF7811AVPbF-1	SO-8	Tube/Bulk	95	IRF7811AVPbF-1
		Tape and Reel	4000	IRF7811AVTRPbF-1

Absolute Maximum Ratings

Parameter		Symbol	IRF7811AV	Units
Drain-to-Source Voltage		V_{DS}	30	V
Gate-to-Source Voltage		V_{GS}	±20	
Continuous Output Current (V_{GS} ≥ 4.5V)	T_A = 25°C	I_D	10.8	A
	T_L = 90°C		11.8	
Pulsed Drain Current ①		I_{DM}	100	
Power Dissipation ③	T_A = 25°C	P_D	2.5	W
	T_L = 90°C		3.0	
Junction & Storage Temperature Range		T_J , T_{STG}	-55 to 150	°C
Continuous Source Current (Body Diode)		I_S	2.5	A
Pulsed Source Current ①		I_{SM}	50	

Thermal Resistance

Parameter	Symbol	Typ	Max	Units
Maximum Junction-to-Ambient ③⑥	$R_{\theta JA}$	——	50	°C/W
Maximum Junction-to-Lead ⑥	$R_{\theta JL}$	——	20	

Electrical Characteristics

Parameter	Symbol	Min	Typ	Max	Units	Conditions
Drain-to-Source Breakdown Voltage	$V_{(BR)DSS}$	30	——	——	V	V_{GS} = 0V, I_D = 250µA
Static Drain-to-Source On-Resistance	$R_{DS(on)}$	——	11	14	mΩ	V_{GS} = 4.5V, I_D = 15A ②
Gate Threshold Voltage	$V_{GS(th)}$	1.0	——	3.0	V	V_{DS} = V_{GS}, I_D = 250µA
Drain-to-Source Leakage Current	I_{DSS}	——	——	50	µA	V_{DS} = 30V, V_{GS} = 0V
		——	——	20	µA	V_{DS} = 24V, V_{GS} = 0V
		——	——	100	mA	V_{DS} = 24V, V_{GS} = 0V, T_J = 100°C
Gate-to-Source Leakage Current	I_{GSS}	——	——	±100	nA	V_{GS} = ± 20V
Total Gate Charge, Control FET	Q_g	——	17	26	nC	V_{DS} = 24V, I_D = 15A, V_{GS} = 5.0V
Total Gate Charge, Synch FET	Q_g	——	14	21		V_{GS} = 5.0V, V_{DS} < 100mV
Pre-Vth Gate-to-Source Charge	Q_{gs1}	——	3.4	——		V_{DS} = 16V, I_D = 15A
Post-Vth Gate-to-Source Charge	Q_{gs2}	——	1.6	——		
Gate-to-Drain ("Miller") Charge	Q_{gd}	——	5.1	——		
Switch Charge (Q_{gs2} + Q_{gd})	Q_{SW}	——	6.7	——		
Output Charge	Q_{OSS}	——	8.1	12		V_{DS} = 16V, V_{GS} = 0
Gate Resistance	R_G	0.5	——	4.4	Ω	
Turn-On Delay Time	$t_{d(on)}$	——	8.6	——	ns	V_{DD} = 16V
Rise Time	t_r	——	21	——		I_D = 15A
Turn-Off Delay Time	$t_{d(off)}$	——	43	——		V_{GS} = 5.0V
Fall Time	t_f	——	10	——		Clamped Inductive Load
Input Capacitance	C_{iss}	——	1801	——	pF	V_{GS} = 0V
Output Capacitance	C_{oss}	——	723	——		V_{DS} = 10V
Reverse Transfer Capacitance	C_{rss}	——	46	——		

Diode Characteristics

Parameter	Symbol	Min	Typ	Max	Units	Conditions
Diode Forward Voltage	V_{SD}	——	——	1.3	V	T_J = 25°C, I_S = 15A ② ,V_{GS} = 0V
Reverse Recovery Charge ④	Q_{rr}	——	50	——	nC	di/dt = 700A/µs V_{DD} = 16V, V_{GS} = 0V, I_D = 15A
Reverse Recovery Charge (with Parallel Schottsky) ④	Q_{rr}	——	43	——	nC	di/dt = 700A/µs , (with 10BQ040) V_{DD} = 16V, V_{GS} = 0V, I_D = 15A

Notes:

① Repetitive rating; pulse width limited by max. junction temperature.
② Pulse width ≤ 400 µs; duty cycle ≤ 2%.
③ When mounted on 1 inch square copper board, t < 10 sec.
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.
⑥ R_θ is measured at T_J approximately 90°C

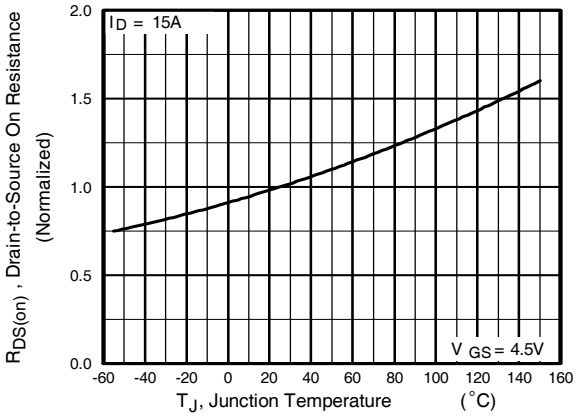


Figure 1. Normalized On-Resistance vs. Temperature

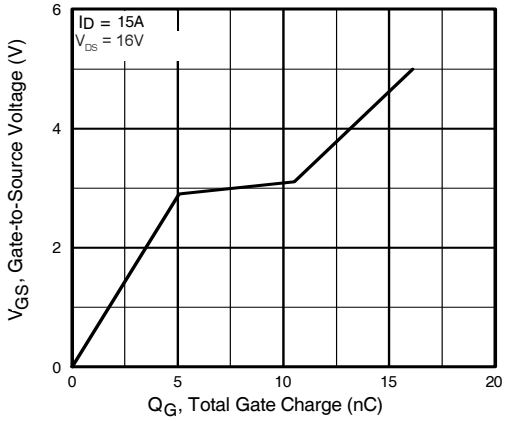


Figure 2. Gate-to-Source Voltage vs. Typical Gate Charge

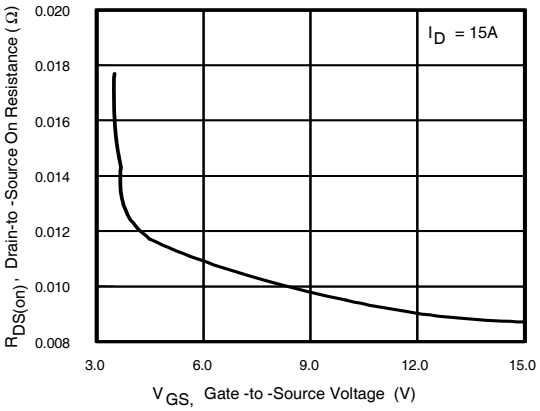


Figure 3. Typical Rds(on) vs. Gate-to-Source Voltage

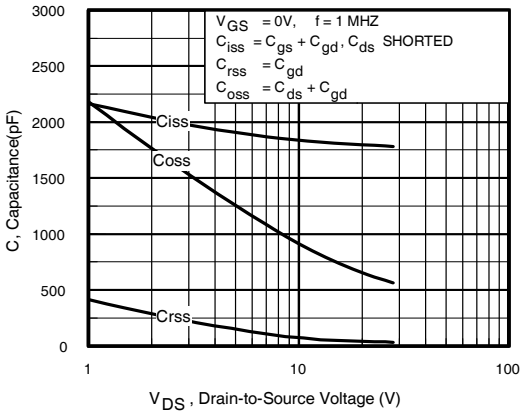


Figure 4. Typical Capacitance vs. Drain-to-Source Voltage

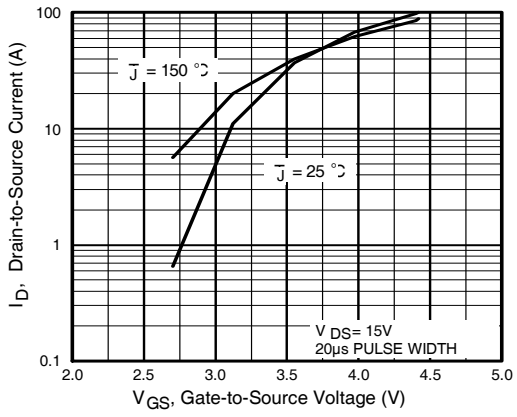


Figure 5. Typical Transfer Characteristics

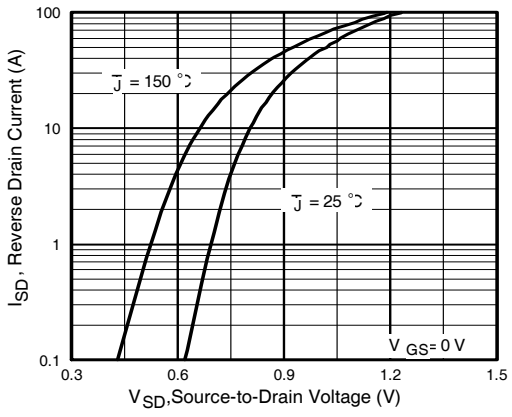


Figure 6. Typical Source-Drain Diode Forward Voltage

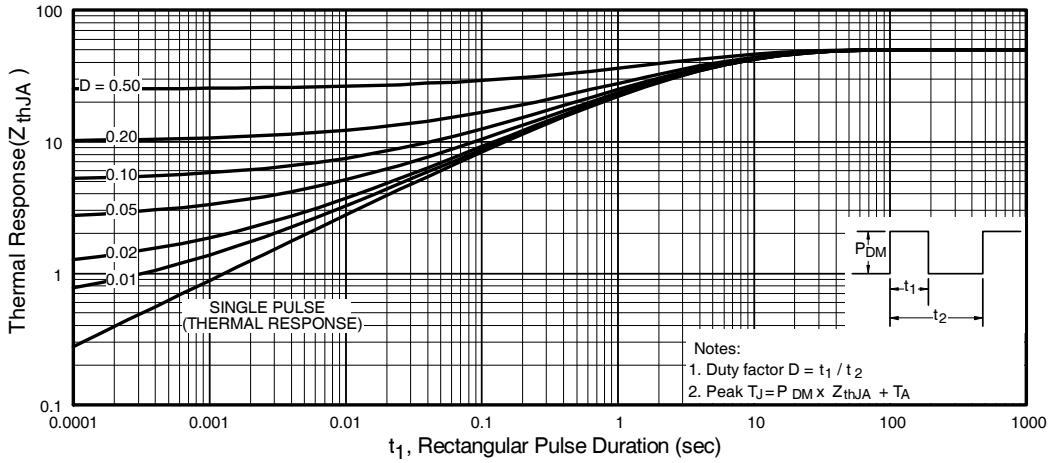


Figure 7. Maximum Effective Transient Thermal Impedance, Junction-to-Ambient

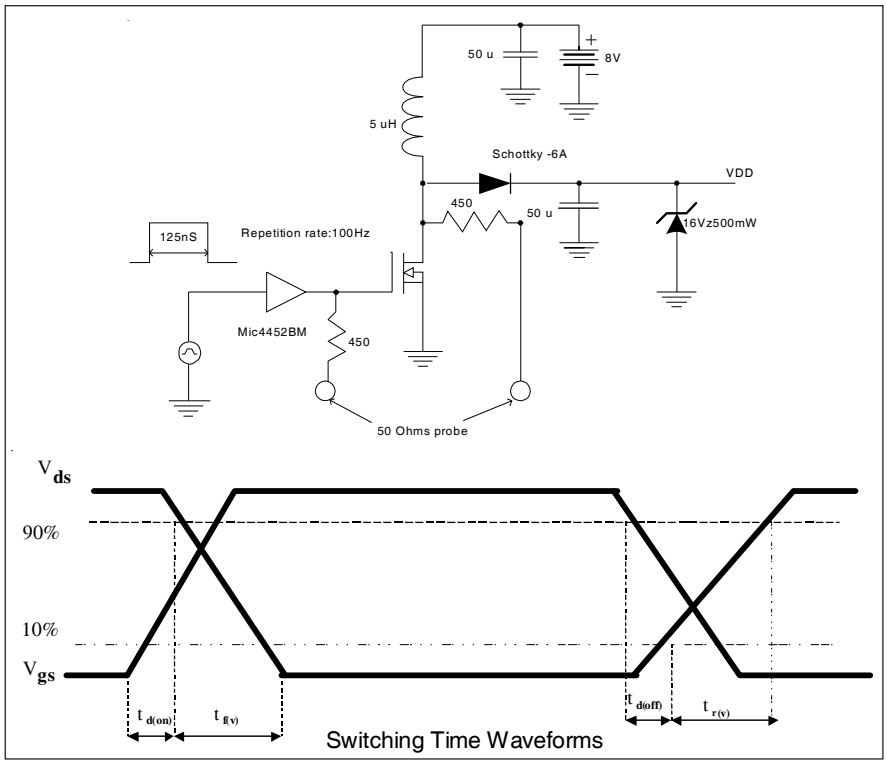
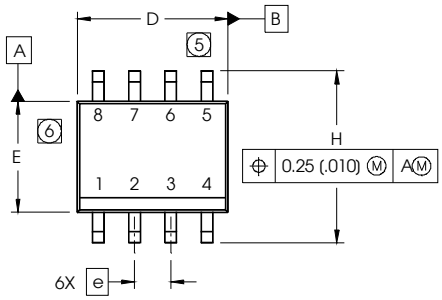


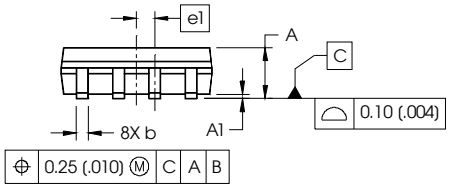
Figure 8. Clamped Inductive load test diagram and switching waveform

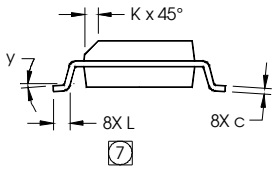
SO-8 Package Outline

Dimensions are shown in millimeters (inches)



DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	.0532	.0688	1.35	1.75
A1	.0040	.0098	0.10	0.25
b	.013	.020	0.33	0.51
c	.0075	.0098	0.19	0.25
D	.189	.1968	4.80	5.00
E	.1497	.1574	3.80	4.00
e	.050 BASIC		1.27 BASIC	
e1	.025 BASIC		0.635 BASIC	
H	.2284	.2440	5.80	6.20
K	.0099	.0196	0.25	0.50
L	.016	.050	0.40	1.27
y	0°	8°	0°	8°





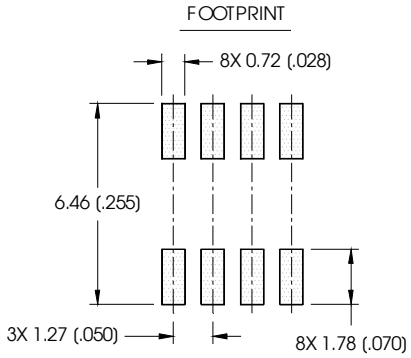
NOTES:

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).

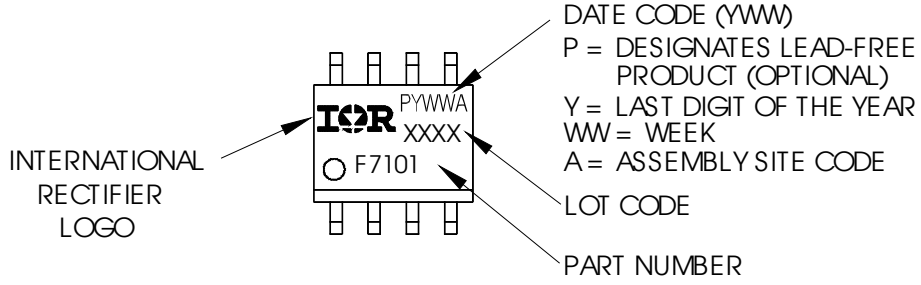
6 DIMENSION DOES NOT INCLUDE MOLD PROTRUSIONS. MOLD PROTRUSIONS NOT TO EXCEED 0.25 (.010).

7 DIMENSION IS THE LENGTH OF LEAD FOR SOLDERING TO A SUBSTRATE.



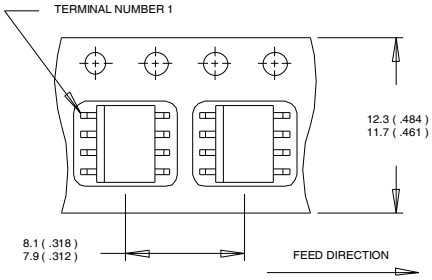
SO-8 Part Marking

EXAMPLE: THIS IS AN IRF7101 (MOSFET)

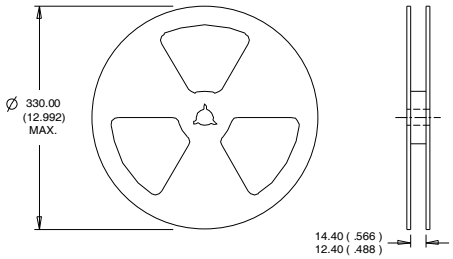


Note: For the most current drawing please refer to IR website at: http://www.irf.com/package/

SO-8 Tape and Reel



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



NOTES :
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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/

Qualification information†

Qualification level	Industrial (per JEDEC JESD47F†† guidelines)	
Moisture Sensitivity Level	SO-8	MSL1 (per JEDEC J-STD-020D††)
RoHS compliant	Yes	

† Qualification standards can be found at International Rectifier's web site: http://www.irf.com/product-info/reliability
†† Applicable version of JEDEC standard at the time of product release

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