



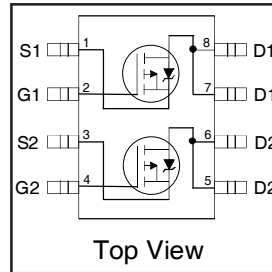
**THE DATASHEET OF
IRF7316QTRPBF**



IRF7316QPbF

HEXFET® Power MOSFET

- Advanced Process Technology
- Ultra Low On-Resistance
- Dual P- Channel MOSFET
- Surface Mount
- Available in Tape & Reel
- 150°C Operating Temperature
- Lead-Free

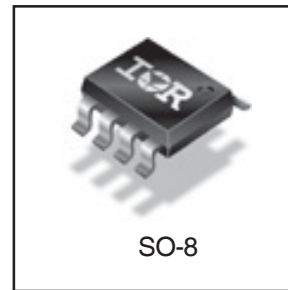


$V_{DSS} = -30V$
$R_{DS(on)} = 0.058\Omega$

Description

These HEXFET® Power MOSFET's in a Dual SO-8 package utilize the latest processing techniques to achieve extremely low on-resistance per silicon area. Additional features of these HEXFET Power MOSFET's are a 150°C junction operating temperature, fast switching speed and improved repetitive avalanche rating. These benefits combine to make this design an extremely efficient and reliable device for use in a wide variety of applications.

The efficient SO-8 package provides enhanced thermal characteristics and dual MOSFET die capability making it ideal in a variety of power applications. This dual, surface mount SO-8 can dramatically reduce board space and is also available in Tape & Reel.



Absolute Maximum Ratings ($T_A = 25^\circ C$ Unless Otherwise Noted)

		Symbol	Maximum	Units
Drain-Source Voltage		V_{DS}	-30	V
Gate-Source Voltage		V_{GS}	± 20	
Continuous Drain Current ^①	$T_A = 25^\circ C$	I_D	-4.9	A
	$T_A = 70^\circ C$		-3.9	
Pulsed Drain Current		I_{DM}	-30	
Continuous Source Current (Diode Conduction)		I_S	-2.5	
Maximum Power Dissipation ^②	$T_A = 25^\circ C$	P_D	2.0	W
	$T_A = 70^\circ C$		1.3	
Single Pulse Avalanche Energy		E_{AS}	140	mJ
Avalanche Current		I_{AR}	-2.8	A
Repetitive Avalanche Energy		E_{AR}	0.20	mJ
Peak Diode Recovery dv/dt ^③		dv/dt	-5.0	V/ ns
Junction and Storage Temperature Range		T_J, T_{STG}	-55 to + 150	$^\circ C$

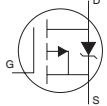
Thermal Resistance Ratings

Parameter	Symbol	Limit	Units
Maximum Junction-to-Ambient ^④	$R_{\theta JA}$	62.5	$^\circ C/W$

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
ΔV _{(BR)DSS} /ΔT _J	Breakdown Voltage Temp. Coefficient	—	0.022	—	V/°C	Reference to 25°C, I _D = -1mA
R _{DS(on)}	Static Drain-to-Source On-Resistance	—	0.042	0.058	Ω	V _{GS} = -10V, I _D = -4.9A ④
		—	0.076	0.098		V _{GS} = -4.5V, I _D = -3.6A ④
V _{GS(th)}	Gate Threshold Voltage	-1.0	—	—	V	V _{DS} = V _{GS} , I _D = -250μA
g _{fs}	Forward Transconductance	—	7.7	—	S	V _{DS} = -15V, I _D = -4.9A
I _{DSS}	Drain-to-Source Leakage Current	—	—	-1.0	μA	V _{DS} = -24V, V _{GS} = 0V
		—	—	-25		V _{DS} = -24V, V _{GS} = 0V, T _J = 55°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	—	23	34	nC	I _D = -4.9A
Q _{gs}	Gate-to-Source Charge	—	3.8	5.7		V _{DS} = -15V
Q _{gd}	Gate-to-Drain ("Miller") Charge	—	5.9	8.9		V _{GS} = -10V, See Fig. 10 ④
t _{d(on)}	Turn-On Delay Time	—	13	19	ns	V _{DD} = -15V
t _r	Rise Time	—	13	20		I _D = -1.0A
t _{d(off)}	Turn-Off Delay Time	—	34	51		R _G = 6.0Ω
t _f	Fall Time	—	32	48		R _D = 15Ω ④
C _{iss}	Input Capacitance	—	710	—	pF	V _{GS} = 0V
C _{oss}	Output Capacitance	—	380	—		V _{DS} = -25V
C _{rss}	Reverse Transfer Capacitance	—	180	—		f = 1.0MHz, See Fig. 5

Source-Drain Ratings and Characteristics

	Parameter	Min.	Typ.	Max.	Units	Conditions
I _S	Continuous Source Current (Body Diode)	—	—	-2.5	A	MOSFET symbol showing the integral reverse p-n junction diode. 
I _{SM}	Pulsed Source Current (Body Diode) ①	—	—	-30		
V _{SD}	Diode Forward Voltage	—	-0.78	-1.0	V	T _J = 25°C, I _S = -1.7A, V _{GS} = 0V ③
t _{rr}	Reverse Recovery Time	—	44	66	ns	T _J = 25°C, I _F = -1.7A
Q _{rr}	Reverse Recovery Charge	—	42	63	nC	di/dt = 100A/μs ③

Notes:

- ① Repetitive rating; pulse width limited by max. junction temperature. (See fig. 11)
- ② Starting T_J = 25°C, L = 35mH
R_G = 25Ω, I_{AS} = -2.8A.
- ③ I_{SD} ≤ -2.8A, di/dt ≤ 150A/μs, V_{DD} ≤ V_{(BR)DSS}, T_J ≤ 150°C
- ④ Pulse width ≤ 300μs; duty cycle ≤ 2%.
- ⑤ Surface mounted on FR-4 board, t ≤ 10sec.

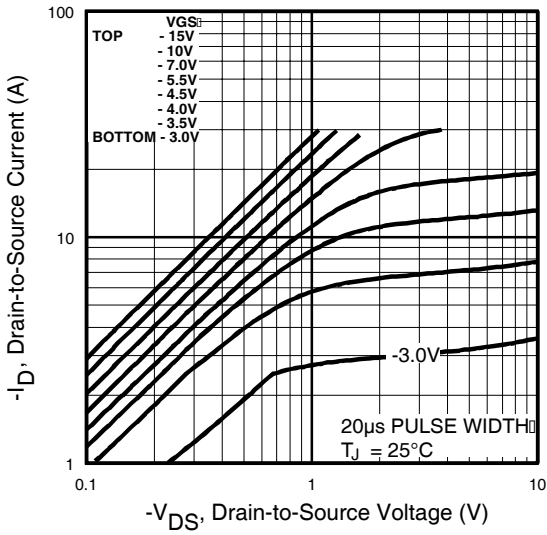


Fig 1. Typical Output Characteristics

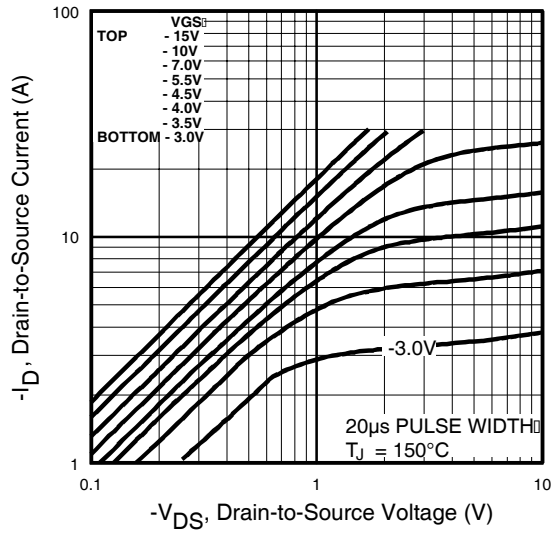


Fig 2. Typical Output Characteristics

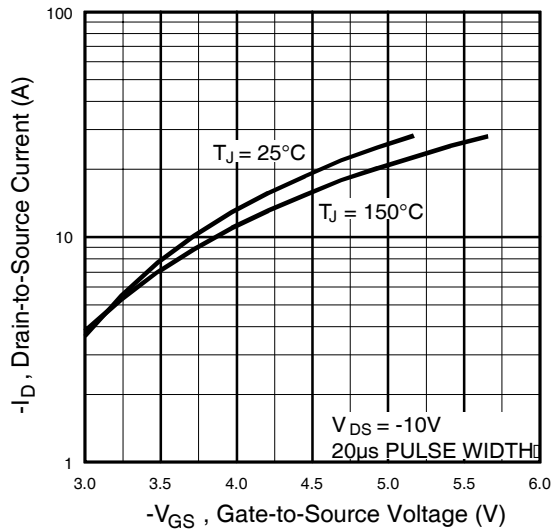


Fig 3. Typical Transfer Characteristics

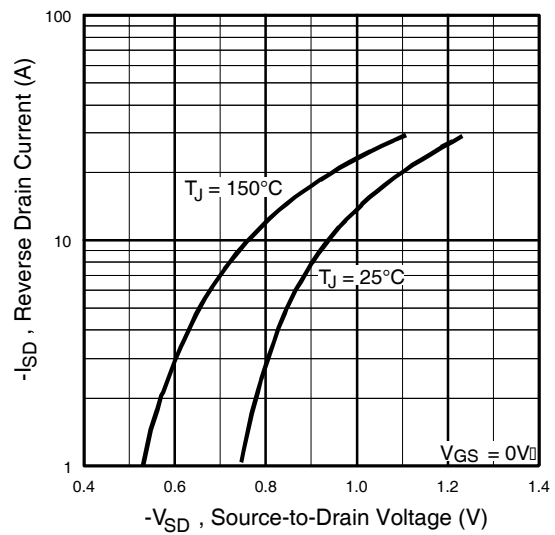


Fig 4. Typical Source-Drain Diode Forward Voltage

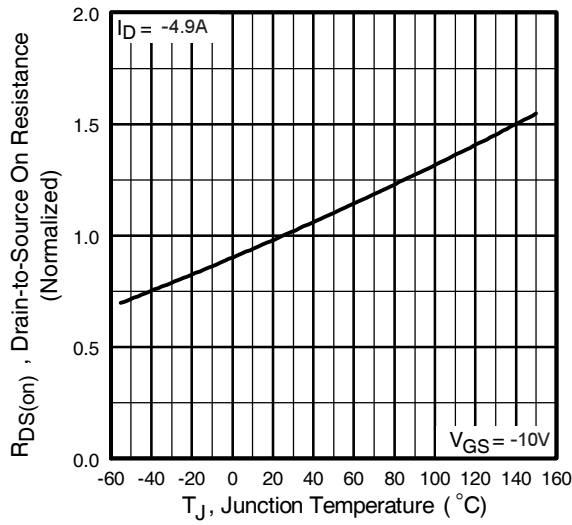


Fig 5. Normalized On-Resistance Vs. Temperature

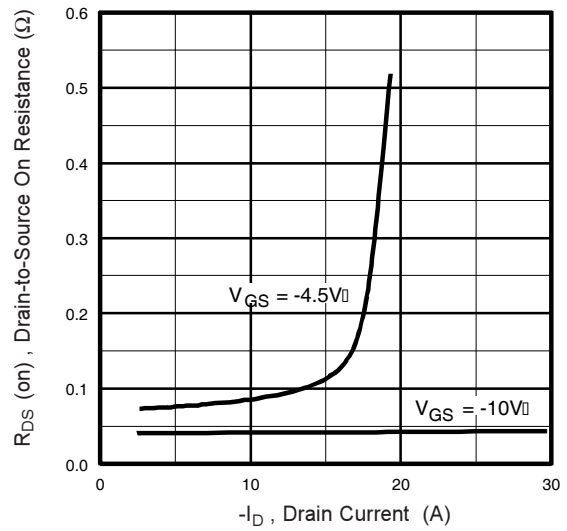


Fig 6. Typical On-Resistance Vs. Drain Current

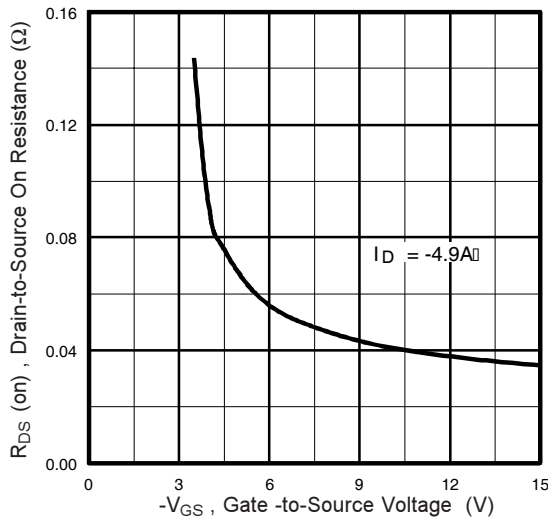


Fig 7. Typical On-Resistance Vs. Gate Voltage

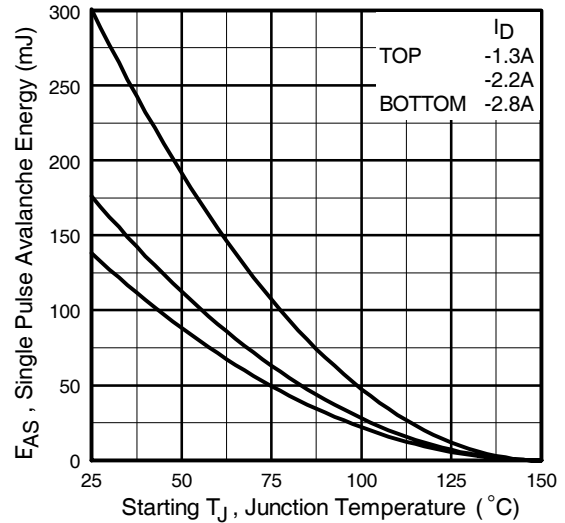


Fig 8. Maximum Avalanche Energy Vs. Drain Current

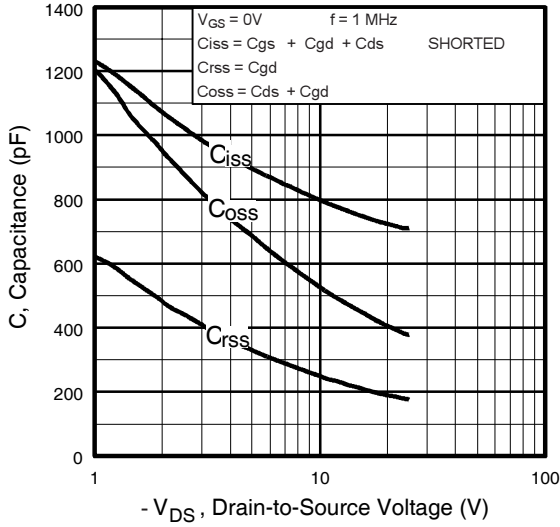


Fig 9. Typical Capacitance Vs. Drain-to-Source Voltage

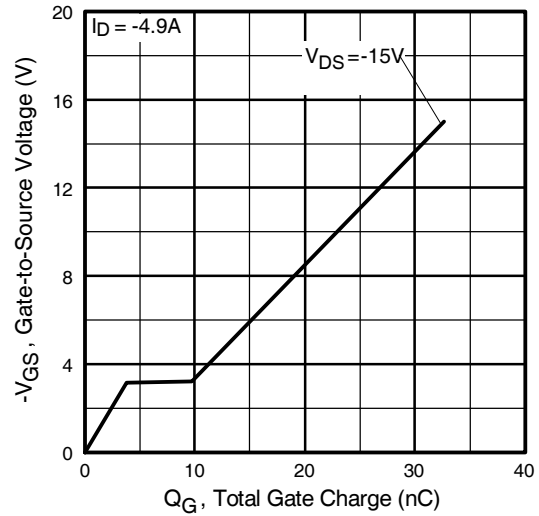


Fig 10. Typical Gate Charge Vs. Gate-to-Source Voltage

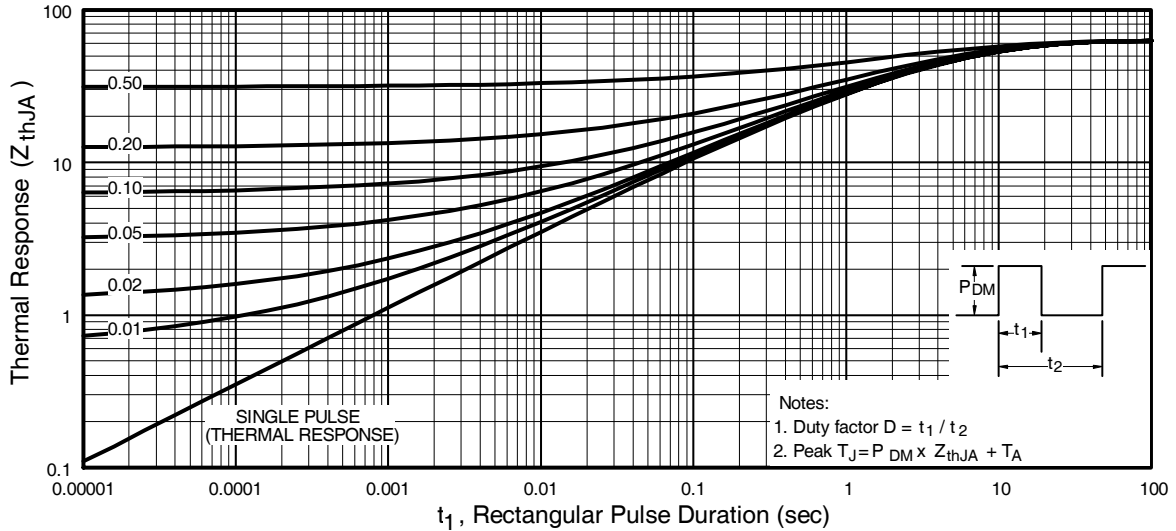


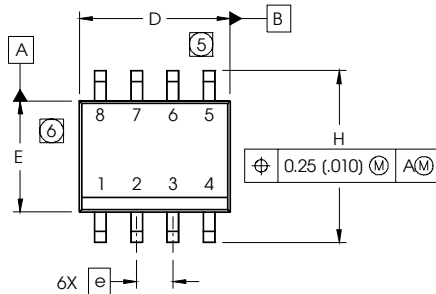
Fig 11. Maximum Effective Transient Thermal Impedance, Junction-to-Ambient

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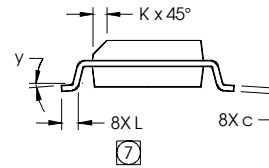
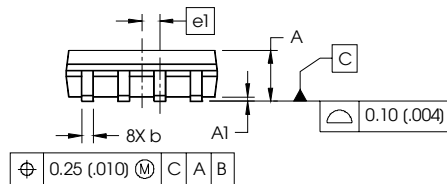
International
IR Rectifier

SO-8 Package Outline

Dimensions are shown in millimeters (inches)



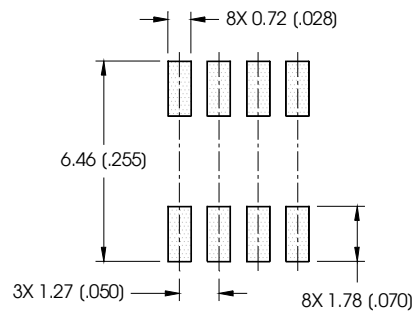
DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	.0532	.0688	1.35	1.75
A1	.0040	.0098	0.10	0.25
b	.013	.020	0.33	0.51
c	.0075	.0098	0.19	0.25
D	.189	.1968	4.80	5.00
E	.1497	.1574	3.80	4.00
e	.050 BASIC		1.27 BASIC	
e1	.025 BASIC		0.635 BASIC	
H	.2284	.2440	5.80	6.20
K	.0099	.0196	0.25	0.50
L	.016	.050	0.40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



NOTES:

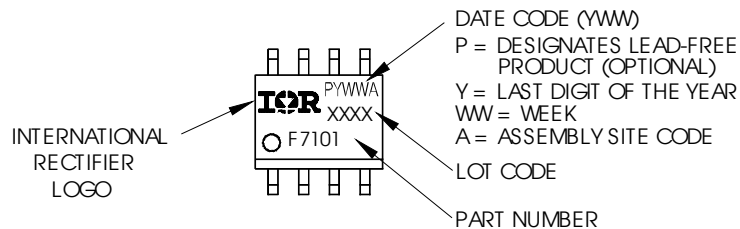
- DIMENSIONING & TOLERANCING PER ASME Y14.5M-1994.
- CONTROLLING DIMENSION: MILLIMETER
- DIMENSIONS ARE SHOWN IN MILLIMETERS (INCHES).
- OUTLINE CONFORMS TO JEDEC OUTLINE MS-012AA.
- 5** DIMENSION DOES NOT INCLUDE MOLD PROTRUSIONS. MOLD PROTRUSIONS NOT TO EXCEED 0.15 (.006).
- 6** DIMENSION DOES NOT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

FOOTPRINT



SO-8 Part Marking

EXAMPLE: THIS IS AN IRF7101 (MOSFET)



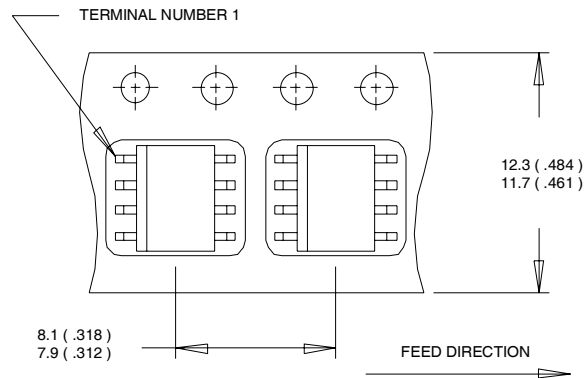
Notes:

- For an Automotive Qualified version of this part please see <http://www.irf.com/product-info/auto/>
- For the most current drawing please refer to IR website at <http://www.irf.com/package/>

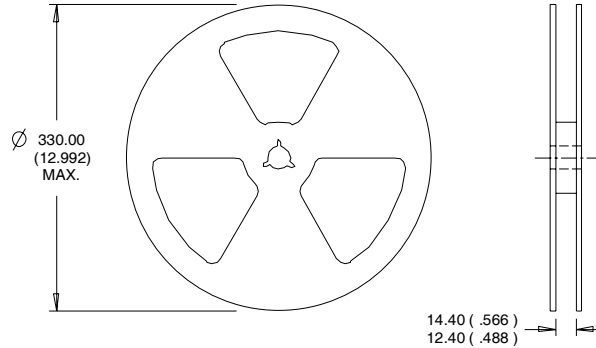
www.irf.com

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.

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

Looking for pricing, stock, or lifecycle information?

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