END OF LIFE

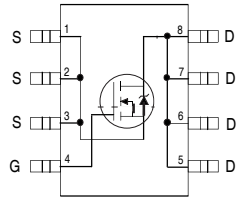
International
IOR Rectifier

PD – 96114C

IRF7805QPbF

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

SO-8



Top View

Description

These HEXFET® Power MOSFET's in package utilize the lastest 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 making it ideal in a variety of power applications. This surface mount SO-8 can dramatically reduce board space and is also available in Tape & Reel.

Device Features

	IRF7805Q
V_{DS}	30V
$R_{DS(on)}$	11mΩ
Qg	31nC
Qsw	11.5nC
Qoss	36nC

Base part number	Orderable part number	Package Type	Standard Pack		EOL Notice	Replacement Part Number
			Form	Quantity		
IRF7805QPbF	IRF7805QTRPbF	SO-8	Tape and Reel	4000	EOL 527	Please search the EOL part number on IR's website for guidance
	IRF7805QPbF	SO-8	Tube	95	EOL 529	

Absolute Maximum Ratings

	Parameter	Max.	Units
V_{DS}	Drain-to-Source Voltage	30	V
V_{GS}	Gate-to-Source Voltage	± 12	
I_D @ T_A = 25°C	Continuous Drain Current, V_{GS} @ 10V	13	A
I_D @ T_A = 70°C	Continuous Drain Current, V_{GS} @ 10V	10	
I_{DM}	Pulsed Drain Current ①	100	
P_D @T_A = 25°C	Power Dissipation ③	2.5	W
P_D @T_A = 70°C	Power Dissipation ③	1.6	
	Linear Derating Factor	0.02	W/°C
T_J T_{STG}	Operating Junction and Storage Temperature Range	-55 to + 150	°C

Thermal Resistance

	Parameter	Typ.	Max.	Units
$R_{\theta JL}$	Junction-to-Drain Lead ⑤	–––	20	°C/W
$R_{\theta JA}$	Junction-to-Ambient ③⑤	–––	50	

Static @ T_J = 25°C (unless otherwise specified)

	Parameter	Min.	Typ.	Max.	Units	Conditions
BV_{DSS}	Drain-to-Source Breakdown Voltage ⑥	30	—	—	V	V_{GS} = 0V, I_D = 250µA
$R_{DS(on)}$	Static Drain-to-Source On-Resistance ⑥	—	9.2	11	mΩ	V_{GS} = 4.5V, I_D = 7.0A ②
$V_{GS(th)}$	Gate Threshold Voltage ⑥	1.0	—	3.0	V	V_{DS} = V_{GS}, I_D = 250µA
I_{DSS}	Drain-to-Source Leakage Current	—	—	70	µA	V_{DS} = 30V, V_{GS} = 0V
		—	—	10		V_{DS} = 24V, V_{GS} = 0V
		—	—	150		V_{DS} = 24V, V_{GS} = 0V, T_J = 100°C
I_{GSS}	Gate-to-Source Forward Leakage	—	—	100	nA	V_{GS} = 12V
	Gate-to-Source Reverse Leakage	—	—	-100		V_{GS} = -12V
Q_g	Total Gate Charge	—	22	31	nC	V_{GS} = 5.0V
Q_{gs1}	Pre-Vth Gate-to-Source Charge	—	3.7	—		V_{DS} = 16V
Q_{gs2}	Post-Vth Gate-to-Source Charge	—	1.4	—		I_D = 7.0A
Q_{gd}	Gate-to-Drain Charge	—	6.8	—		
Q_{sw}	Switch Charge (Q_{gs2} + Q_{gd})	—	8.2	11.5		
Q_{oss}	Output Charge	—	3.0	3.6	nC	V_{DS} = 16V, V_{GS} = 0V
R_G	Gate Resistance	0.5	—	1.7	Ω	
$t_{d(on)}$	Turn-On Delay Time	—	16	—	ns	V_{DD} = 16V, V_{GS} = 4.5V ③
t_r	Rise Time	—	20	—		I_D = 7.0A
$t_{d(off)}$	Turn-Off Delay Time	—	38	—		R_G= 2Ω
t_f	Fall Time	—	16	—		Resistive Load

Diode Characteristics

	Parameter	Min.	Typ.	Max.	Units	Conditions
I_S	Continuous Source Current (Body Diode) ①	—	—	2.5	A	MOSFET symbol showing the integral reverse p-n junction diode.
I_{SM}	Pulsed Source Current (Body Diode)	—	—	106		
V_{SD}	Diode Forward Voltage ⑥	—	—	1.2	V	T_J = 25°C, I_S = 7.0A, V_{GS} = 0V
Q_{rr}	Reverse Recovery Charge ④	—	88	—	ns	di/dt = 700A/µs
						V_{DS} = 16V, V_{GS} = 0V, I_S = 7.0A
$Q_{rr(s)}$	Reverse Recovery Charge (with Parallel Schottky) ④	—	55	—	nC	di/dt = 700A/µs (with 10BQ040)
						V_{DS} = 16V, V_{GS} = 0V, I_S = 7.0A

Notes:

① Repetitive rating; pulse width limited by max. junction temperature.
② Pulse width ≤ 300 µs; duty cycle ≤ 2%.
③ When mounted on 1 inch square copper board, t < 10 sec.
④ Typ = measured - Q_{oss}
⑤ R_θ is measured at T_J of approximately 90°C.
⑥ Devices are 100% tested to these parameters.

Typical Characteristics

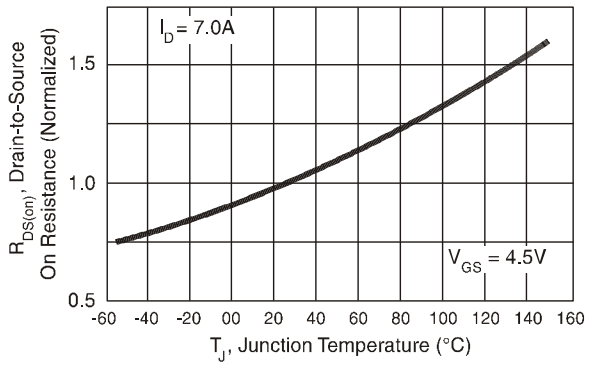


Fig 1. Normalized On-Resistance vs. Temperature

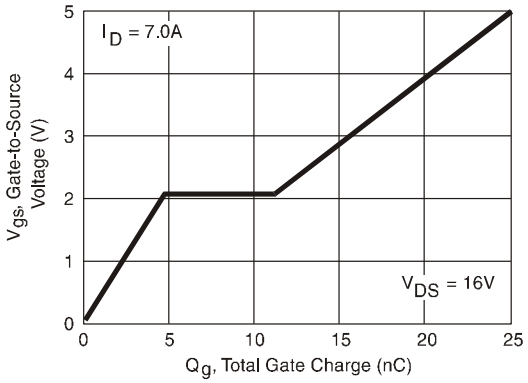


Fig 2. Typical Gate Charge vs. Gate-to-Source Voltage

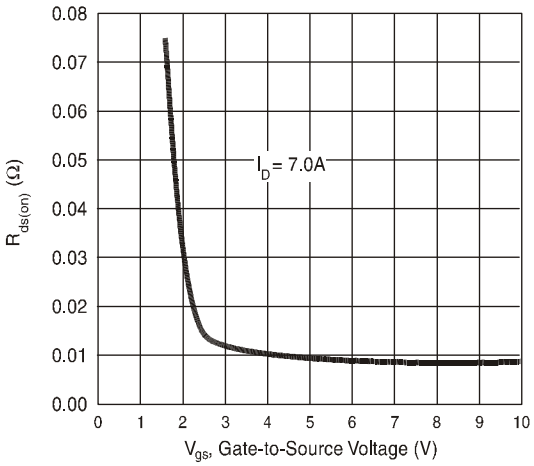


Fig 3. Typical Rds(on) vs. Gate-to-Source Voltage

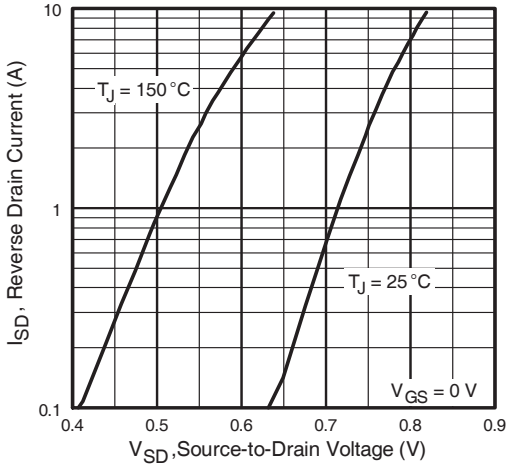


Fig 4. Typical Source-Drain Diode Forward Voltage

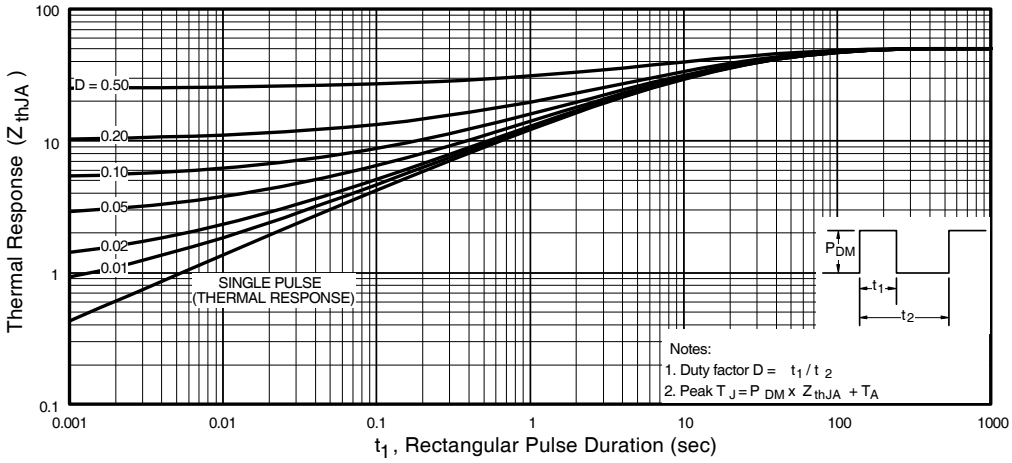


Figure 5. Maximum Effective Transient Thermal Impedance, Junction-to-Ambient

IRF7805QPbF

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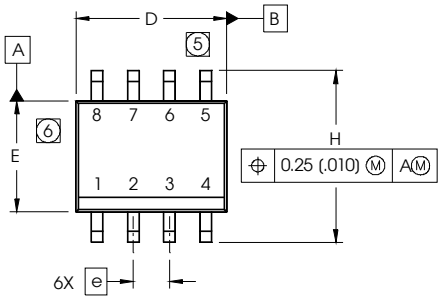
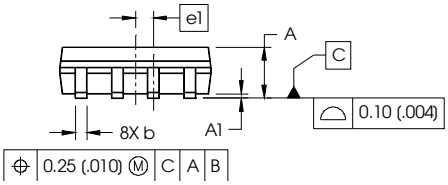
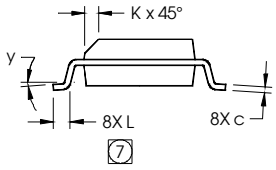
SO-8 Package Outline

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°





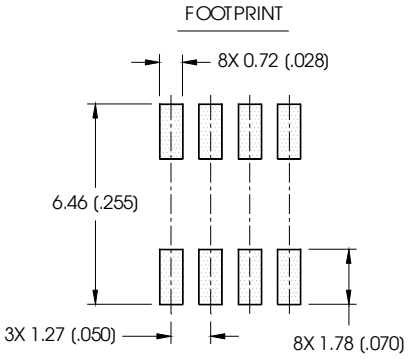
NOTES:

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).

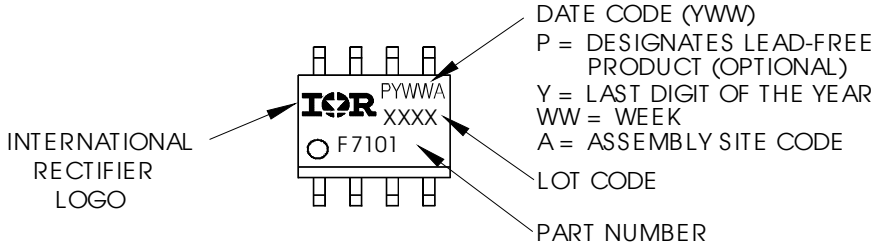
(6) DIMENSION DOES NOT INCLUDE MOLD PROTRUSIONS. MOLD PROTRUSIONS NOT TO EXCEED 0.25 (.010).

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



SO-8 Part Marking

EXAMPLE: THIS IS AN IRF7101 (MOSFET)



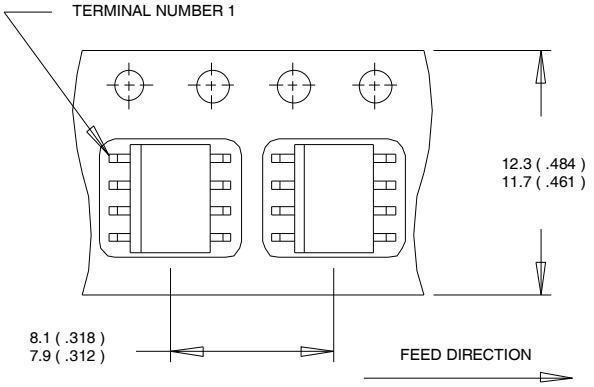
Notes:

1. For an Automotive Qualified version of this part please see : http://www.irf.com/product-info/auto/

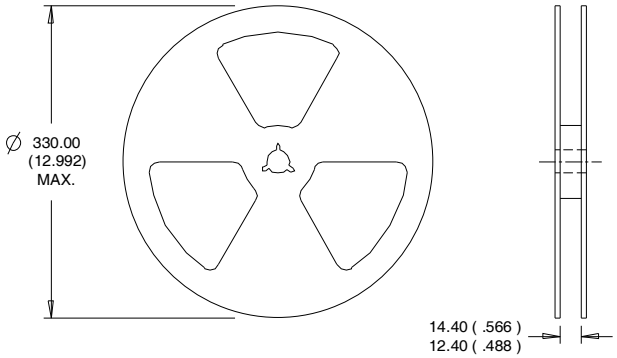
2. For the most current drawing please refer to IR website at http://www.irf.com/package/

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.

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.

Revision History

Date	Comments
8/19/2014	• Added ordering information to reflect the End-Of-life