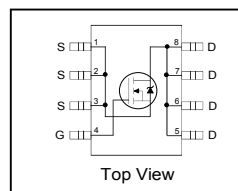


Features

- Advanced Planar Technology
- Low On-Resistance
- Logic Level
- N Channel MOSFET
- Surface Mount
- Available in Tape & Reel
- 150°C Operating Temperature
- Lead-Free, RoHS Compliant
- Automotive Qualified *

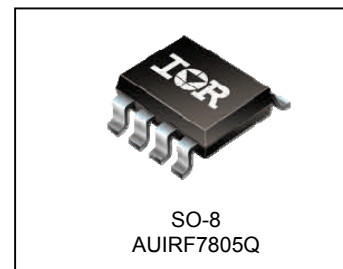


V_{DS}	30V
$R_{DS(on)}$ typ.	9.2mΩ
	max.
I_D	13A

Description

Specifically designed for Automotive applications, 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 Automotive qualified 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 Automotive applications and a wide variety of other 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.



G	D	S
Gate	Drain	Source

Base part number	Package Type	Standard Pack		Orderable Part Number
		Form	Quantity	
AUIRF7805Q	SO-8	Tape and Reel	4000	AUIRF7805QTR

Absolute Maximum Ratings

Stresses beyond those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. These are stress ratings only; and functional operation of the device at these or any other condition beyond those indicated in the specifications is not implied. Exposure to absolute-maximum-rated conditions for extended periods may affect device reliability. The thermal resistance and power dissipation ratings are measured under board mounted and still air conditions. Ambient temperature (TA) is 25°C, unless otherwise specified.

Symbol	Parameter	Max.	Units
V_{DS}	Drain-Source Voltage	30	V
V_{GS}	Gate-to-Source Voltage	± 12	
$I_D @ T_A = 25^\circ\text{C}$	Continuous Drain Current, $V_{GS} @ 10\text{V}$	13	A
$I_D @ T_A = 70^\circ\text{C}$	Continuous Drain Current, $V_{GS} @ 10\text{V}$	10	
I_{DM}	Pulsed Drain Current ①	100	
$P_D @ T_A = 25^\circ\text{C}$	Maximum Power Dissipation ③	2.5	W
$P_D @ T_A = 70^\circ\text{C}$	Maximum 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

Symbol	Parameter	Typ.	Max.	Units
$R_{\theta JL}$	Junction-to-Drain Lead⑤	—	20	°C/W
$R_{\theta JA}$	Junction-to-Ambient ③	—	50	

HEXFET® is a registered trademark of Infineon.

*Qualification standards can be found at www.infineon.com

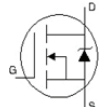
Static @ $T_J = 25^\circ\text{C}$ (unless otherwise specified)

	Parameter	Min.	Typ.	Max.	Units	Conditions
$V_{(BR)DSS}$	Drain-to-Source Breakdown Voltage	30	—	—	V	$V_{GS} = 0V, I_D = 250\mu A$
$R_{DS(on)}$	Static Drain-to-Source On-Resistance	—	9.2	11	m Ω	$V_{GS} = 4.5V, I_D = 7.0A$ ②
$V_{GS(th)}$	Gate Threshold Voltage ⑥	1.0	—	3.0	V	$V_{DS} = V_{GS}, I_D = 250\mu A$
I_{DSS}	Drain-to-Source Leakage Current	—	—	70	μA	$V_{DS} = 30V, V_{GS} = 0V$
		—	—	10		$V_{DS} = 24V, V_{GS} = 0V$
		—	—	150		$V_{DS} = 24V, V_{GS} = 0V, T_J = 100^\circ\text{C}$
I_{GSS}	Gate-to-Source Forward Leakage	—	—	100	nA	$V_{GS} = 12V$
	Gate-to-Source Reverse Leakage	—	—	-100		$V_{GS} = -12V$

Dynamic Electrical Characteristics @ $T_J = 25^\circ\text{C}$ (unless otherwise specified)

Q_g	Total Gate Charge	—	22	31	nC	$I_D = 7.0A$ $V_{DS} = 16V$ $V_{GS} = 5.0V$
Q_{gs1}	Pre -Vth Gate-to-Source Charge	—	3.7	—		
Q_{gs2}	Post-Vth Gate-to-Source Charge	—	1.4	—		
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	$V_{DD} = 16V, V_{GS} = 4.5V$ ② $I_D = 7.0A$ $R_G = 2\Omega$ Resistive Load
t_r	Rise Time	—	20	—		
$t_{d(off)}$	Turn-Off Delay Time	—	38	—		
t_f	Fall Time	—	16	—		

Diode 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	—	—	106		
V_{SD}	Diode Forward Voltage ⑥	—	—	1.2	V	$T_J = 25^\circ\text{C}, I_S = 7.0A, V_{GS} = 0V$
Q_{rr}	Reverse Recovery Charge ④	—	88	—	nC	$di/dt = 700A/\mu s$ $V_{DS} = 16V, V_{GS} = 0V, I_S = 7.0A$
Q_{rr}	Reverse Recovery Charge ④	—	55	—		$di/dt = 700A/\mu s$ (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 $\leq 300\mu s$; duty cycle $\leq 2\%$.
- ③ When mounted on 1" in 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.

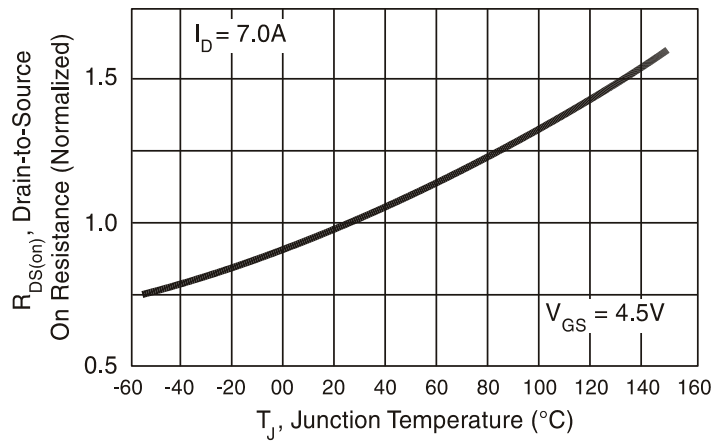


Fig. 1 Normalized On-Resistance vs. Temperature

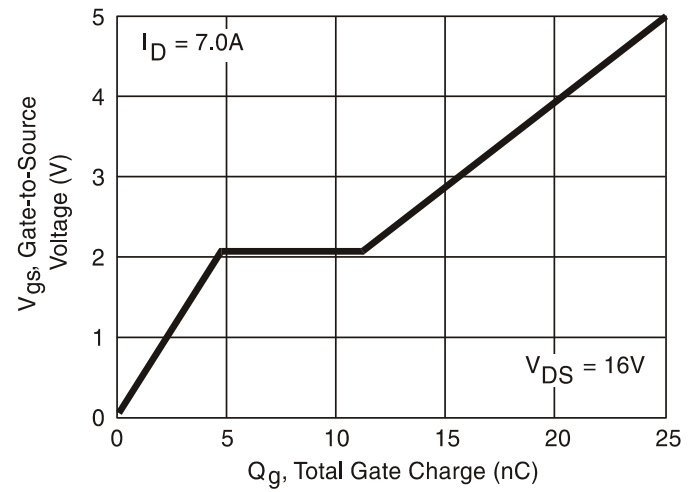


Fig. 2 Typical Gate Charge vs. Gate-to-Source Voltage

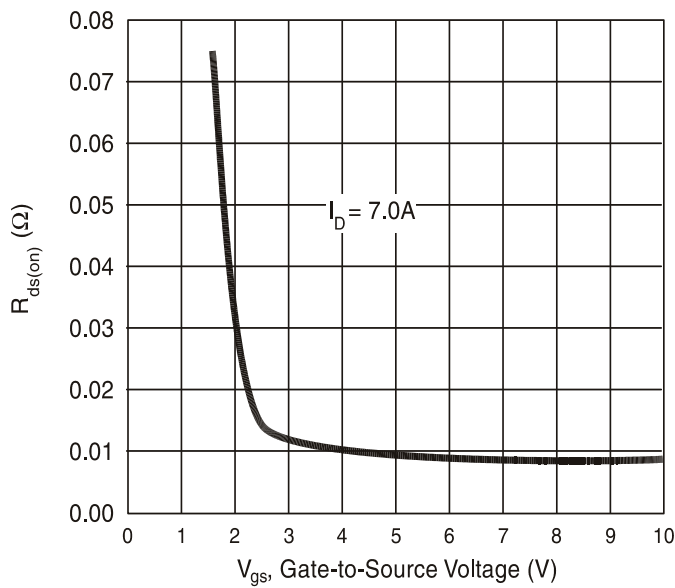


Fig. 3 Typical $R_{DS(on)}$ vs. Gate-to-Source Voltage

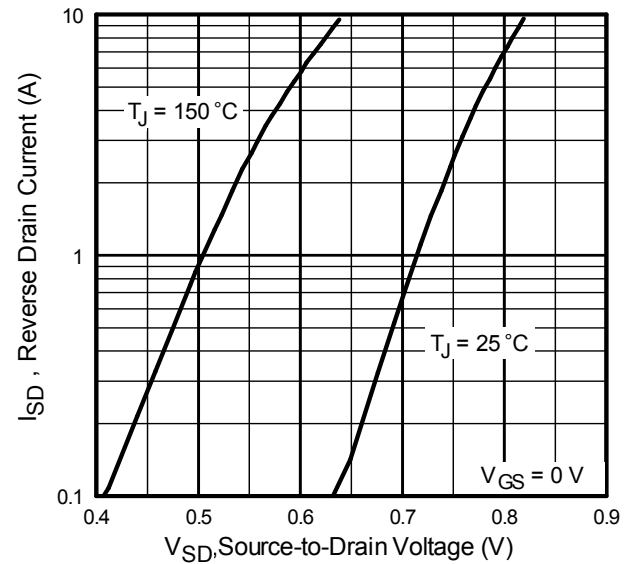


Fig. 4 Typical Source-Drain Diode Forward Voltage

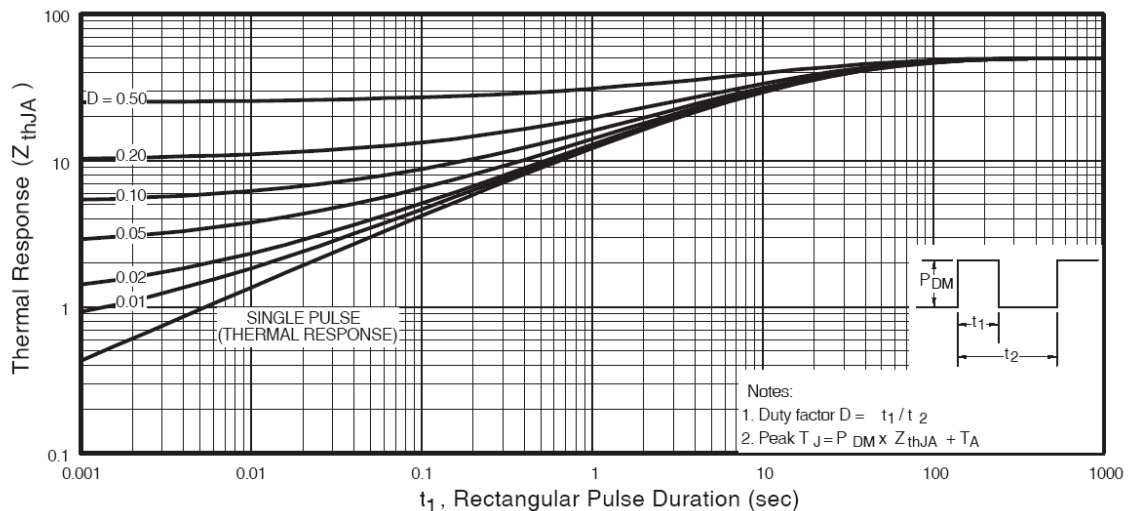
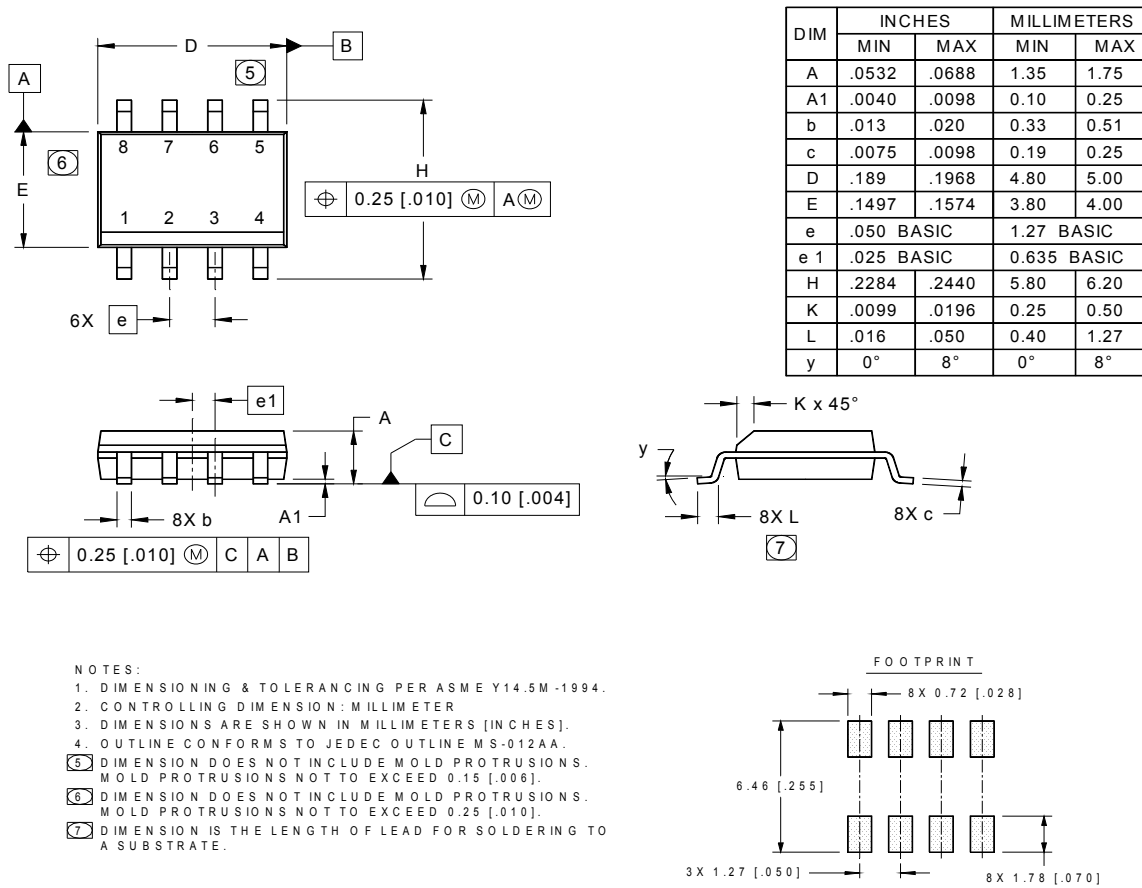
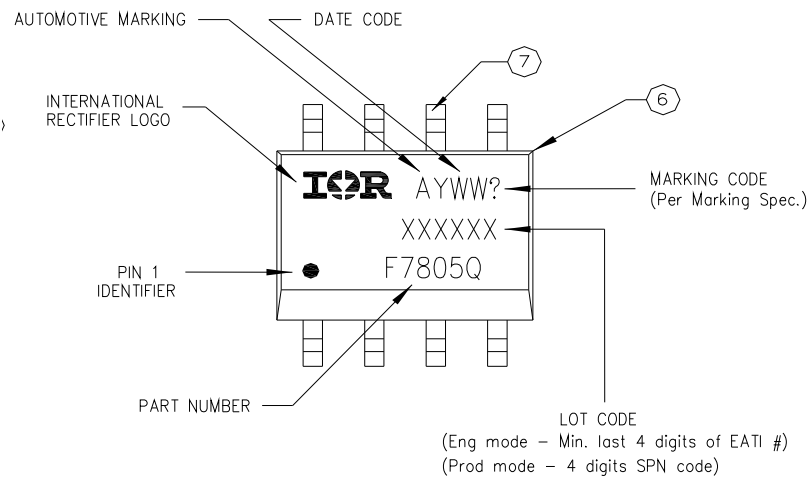


Fig. 5. Maximum Effective Transient Thermal Impedance, Junction-to-Ambient

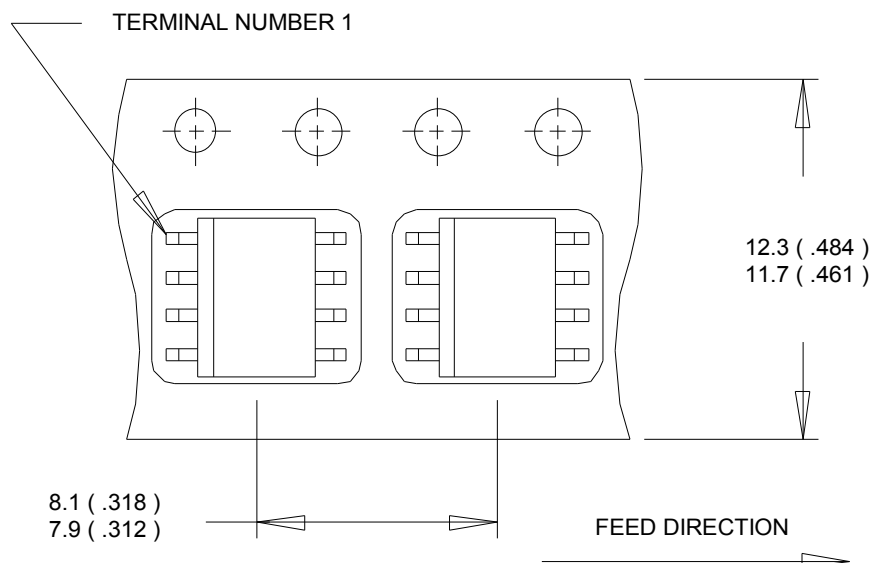
SO-8 Package Outline (Dimensions are shown in millimeters (inches))



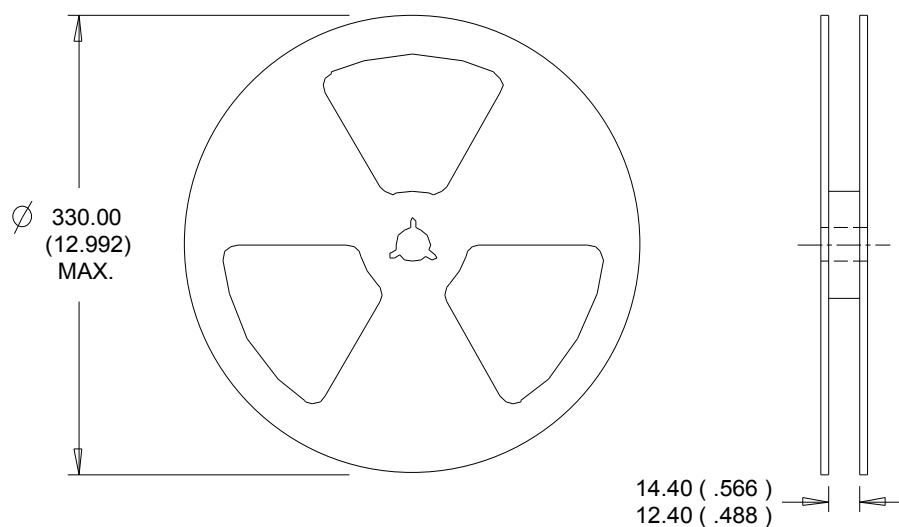
SO-8 Part Marking Information



Note: 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.

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

Qualification Information

Qualification Level		Automotive (per AEC-Q101)	
		Comments: This part number(s) passed Automotive qualification. Infineon's Industrial and Consumer qualification level is granted by extension of the higher Automotive level.	
Moisture Sensitivity Level		SO-8	MSL1
ESD	Machine Model	Class M3 (+/- 300V) [†] AEC-Q101-002	
	Human Body Model	Class H1B (+/- 1000V) [†] AEC-Q101-001	
	Charged Device Model	Class C5 (+/- 2000V) [†] AEC-Q101-005	
RoHS Compliant		Yes	

† Highest passing voltage.

Revision History

Date	Comments
10/5/2015	- Updated datasheet with corporate template - Corrected ordering table on page 1.

Published by
Infineon Technologies AG
81726 München, Germany
 © Infineon Technologies AG 2015
All Rights Reserved.

IMPORTANT NOTICE

The information given in this document shall in no event be regarded as a guarantee of conditions or characteristics ("Beschaffenheitsgarantie"). With respect to any examples, hints or any typical values stated herein and/or any information regarding the application of the product, Infineon Technologies hereby disclaims any and all warranties and liabilities of any kind, including without limitation warranties of non-infringement of intellectual property rights of any third party.

In addition, any information given in this document is subject to customer's compliance with its obligations stated in this document and any applicable legal requirements, norms and standards concerning customer's products and any use of the product of Infineon Technologies in customer's applications.

The data contained in this document is exclusively intended for technically trained staff. It is the responsibility of customer's technical departments to evaluate the suitability of the product for the intended application and the completeness of the product information given in this document with respect to such application.

For further information on the product, technology, delivery terms and conditions and prices please contact your nearest Infineon Technologies office (www.infineon.com).

WARNINGS

Due to technical requirements products may contain dangerous substances. For information on the types in question please contact your nearest Infineon Technologies office.

Except as otherwise explicitly approved by Infineon Technologies in a written document signed by authorized representatives of Infineon Technologies, Infineon Technologies' products may not be used in any applications where a failure of the product or any consequences of the use thereof can reasonably be expected to result in personal injury.