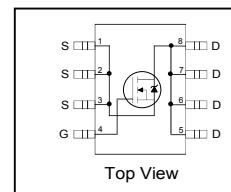


**Features**

- 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 \*



<b>V<sub>DSS</sub></b>	<b>30V</b>
<b>R<sub>DS(on)</sub></b> typ.	<b>9.2mΩ</b>
	<b>max.</b>
<b>I<sub>D</sub></b>	<b>13A</b>



<b>G</b>	<b>D</b>	<b>S</b>
Gate	Drain	Source

**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.

<b>Base part number</b>	<b>Package Type</b>	<b>Standard Pack</b>		<b>Orderable Part Number</b>
		<b>Form</b>	<b>Quantity</b>	
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.

<b>Symbol</b>	<b>Parameter</b>	<b>Max.</b>	<b>Units</b>
V <sub>DS</sub>	Drain-Source Voltage	30	V
V <sub>GS</sub>	Gate-to-Source Voltage	± 12	
I <sub>D</sub> @ T <sub>A</sub> = 25°C	Continuous Drain Current, V <sub>GS</sub> @ 10V	13	A
I <sub>D</sub> @ T <sub>A</sub> = 70°C	Continuous Drain Current, V <sub>GS</sub> @ 10V	10	
I <sub>DM</sub>	Pulsed Drain Current ①	100	
P <sub>D</sub> @ T <sub>A</sub> = 25°C	Maximum Power Dissipation ③	2.5	W
P <sub>D</sub> @ T <sub>A</sub> = 70°C	Maximum Power Dissipation ③	1.6	
	Linear Derating Factor	0.02	W/°C
T <sub>J</sub>	Operating Junction and	-55 to + 150	°C
T <sub>STG</sub>	Storage Temperature Range		

**Thermal Resistance**

<b>Symbol</b>	<b>Parameter</b>	<b>Typ.</b>	<b>Max.</b>	<b>Units</b>
R <sub>θJL</sub>	Junction-to-Drain Lead ⑤	—	20	°C/W
R <sub>θJA</sub>	Junction-to-Ambient ③	—	50	

HEXFET® is a registered trademark of Infineon.

\*Qualification standards can be found at [www.infineon.com](http://www.infineon.com)

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

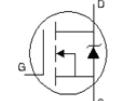
	Parameter	Min.	Typ.	Max.	Units	Conditions
$V_{(\text{BR})\text{DSS}}$	Drain-to-Source Breakdown Voltage	30	—	—	V	$V_{GS} = 0\text{V}$ , $I_D = 250\mu\text{A}$
$R_{DS(\text{on})}$	Static Drain-to-Source On-Resistance	—	9.2	11	$\text{m}\Omega$	$V_{GS} = 4.5\text{V}$ , $I_D = 7.0\text{A}$ ②
$V_{GS(\text{th})}$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

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

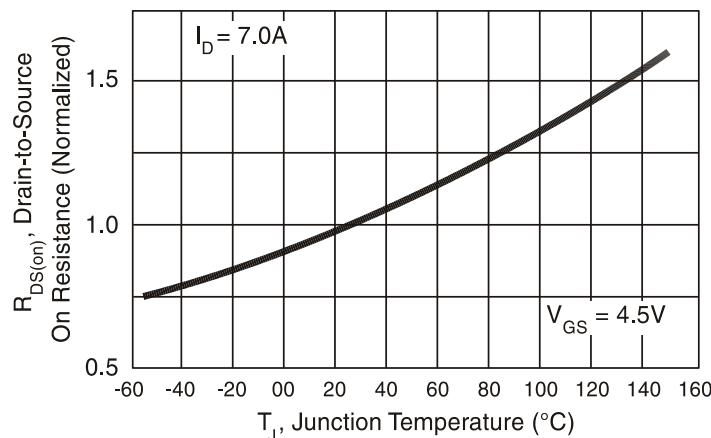
$Q_q$	Total Gate Charge	—	22	31	nC	$I_D = 7.0\text{A}$ $V_{DS} = 16\text{V}$ $V_{GS} = 5.0\text{V}$
$Q_{gs1}$	Pre - $V_{\text{th}}$ Gate-to-Source Charge	—	3.7	—		
$Q_{gs2}$	Post- $V_{\text{th}}$ Gate-to-Source Charge	—	1.4	—		
$Q_{qd}$	Gate-to-Drain Charge	—	6.8	—		
$Q_{sw}$	Switch Charge ( $Q_{gs2} + Q_{qd}$ )	—	8.2	11.5	ns	
$Q_{oss}$	Output Charge	—	3.0	3.6		$V_{DS} = 16\text{V}$ , $V_{GS} = 0\text{V}$
$R_G$	Gate Resistance	0.5	—	1.7		$\Omega$
$t_{d(\text{on})}$	Turn-On Delay Time	—	16	—		$V_{DD} = 16\text{V}$ , $V_{GS} = 4.5\text{V}$ ②
$t_r$	Rise Time	—	20	—		$I_D = 7.0\text{A}$ $R_G = 2\Omega$
$t_{d(\text{off})}$	Turn-Off Delay Time	—	38	—		Resistive Load
$t_f$	Fall Time	—	16	—		

**Diode Characteristics**

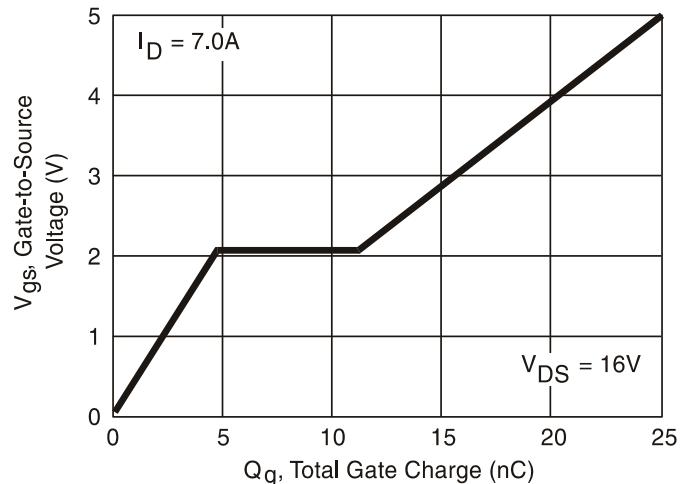
	Parameter	Min.	Typ.	Max.	Units	Conditions
$I_s$	Continuous Source Current (Body Diode)	—	—	2.5	A	MOSFET symbol showing the integral reverse p-n junction diode.
	Pulsed Source Current (Body Diode) ①	—	—	106		
$V_{SD}$	Diode Forward Voltage ⑥	—	—	1.2	V	$T_J = 25^\circ\text{C}$ , $I_s = 7.0\text{A}$ , $V_{GS}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


**Notes:**

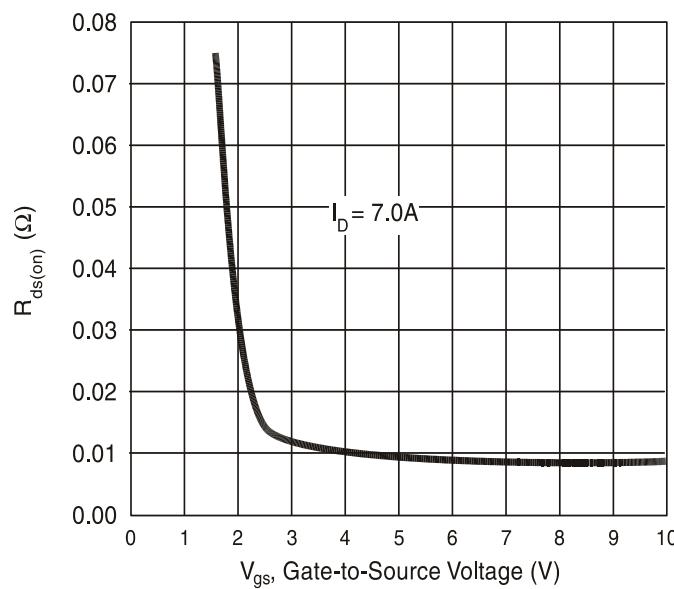
- ① Repetitive rating; pulse width limited by max. junction temperature.
- ② Pulse width  $\leq 300\mu\text{s}$ ; duty cycle  $\leq 2\%$ .
- ③ When mounted on 1" in square copper board,  $t < 10$  sec.
- ④ Typ = measured -  $Q_{oss}$
- ⑤  $R_\theta$  is measured at  $T_J$  of approximately  $90^\circ\text{C}$ .
- ⑥ Devices are 100% tested to these parameters.



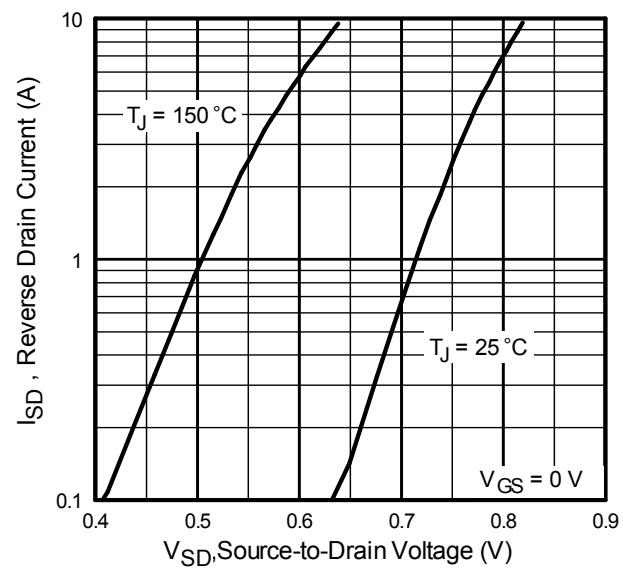
**Fig. 1** Normalized On-Resistance vs. Temperature



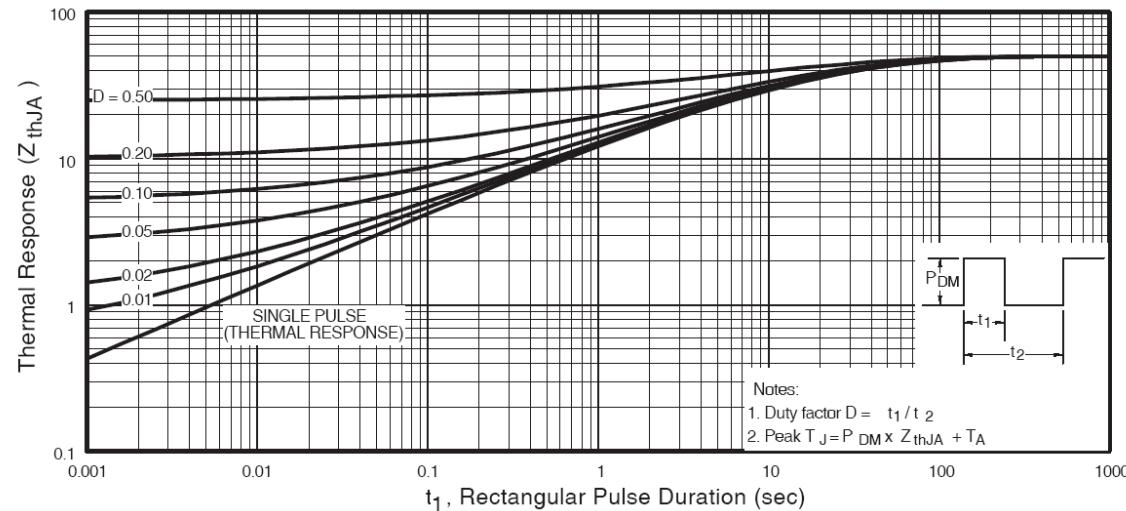
**Fig. 2** Typical Gate Charge vs. Gate-to-Source Voltage



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

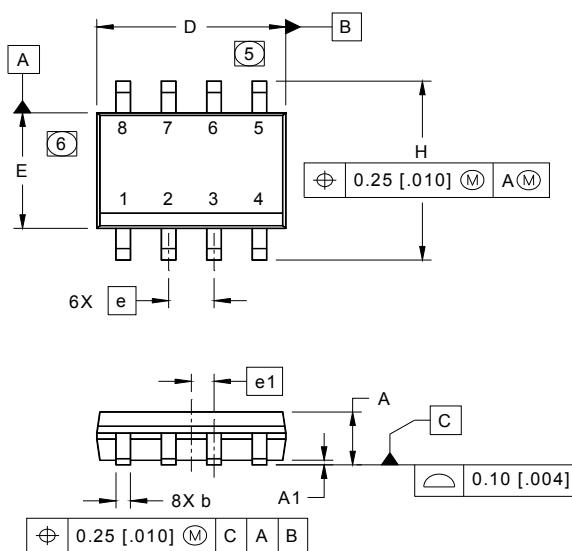


**Fig. 4** Typical Source-Drain Diode Forward Voltage

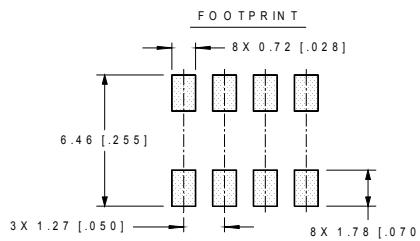
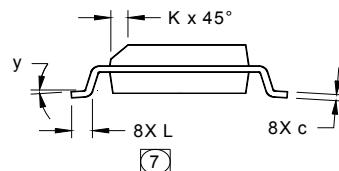


**Fig 5.** Maximum Effective Transient Thermal Impedance, Junction-to-Ambient

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



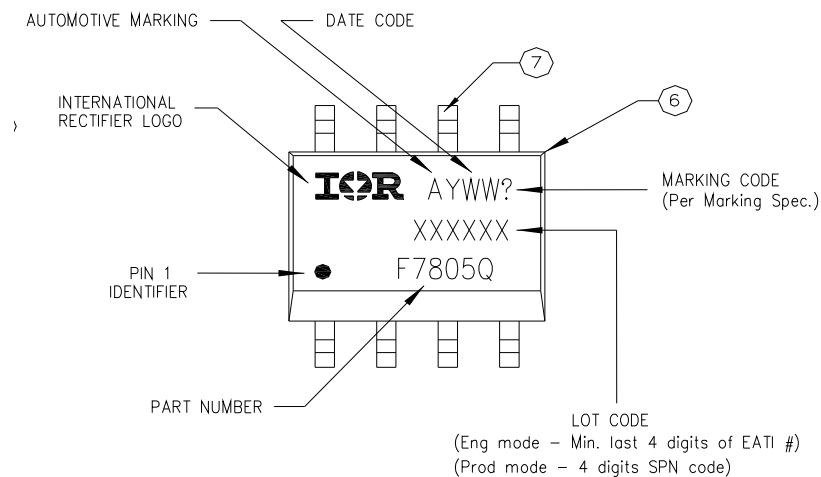
DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	.0532	.0688	1.35	1.75
A1	.0040	.0098	0.10	0.25
b	.013	.020	0.33	0.51
c	.0075	.0098	0.19	0.25
D	.189	.1968	4.80	5.00
E	.1497	.1574	3.80	4.00
e	.050	BASIC	1.27	BASIC
e 1	.025	BASIC	0.635	BASIC
H	.2284	.2440	5.80	6.20
K	.0099	.0196	0.25	0.50
L	.016	.050	0.40	1.27
y	0°	8°	0°	8°



NOTES:

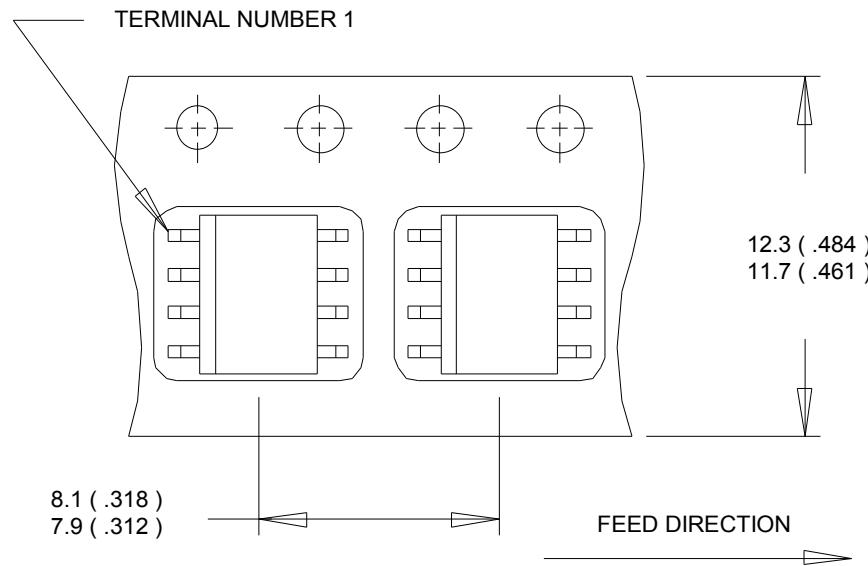
1. DIMENSIONING & TOLERANCING PER ASME Y14.5M-1994.
2. CONTROLLING DIMENSION: MILLIMETER
3. DIMENSIONS ARE SHOWN IN MILLIMETERS (INCHES).
4. OUTLINE CONFORMS TO JEDEC OUTLINE M S-012AA.
5. DIMENSION DOES NOT INCLUDE MOLD PROTRUSIONS. MOLD PROTRUSIONS NOT TO EXCEED 0.15 [.006].
6. DIMENSION DOES NOT INCLUDE 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



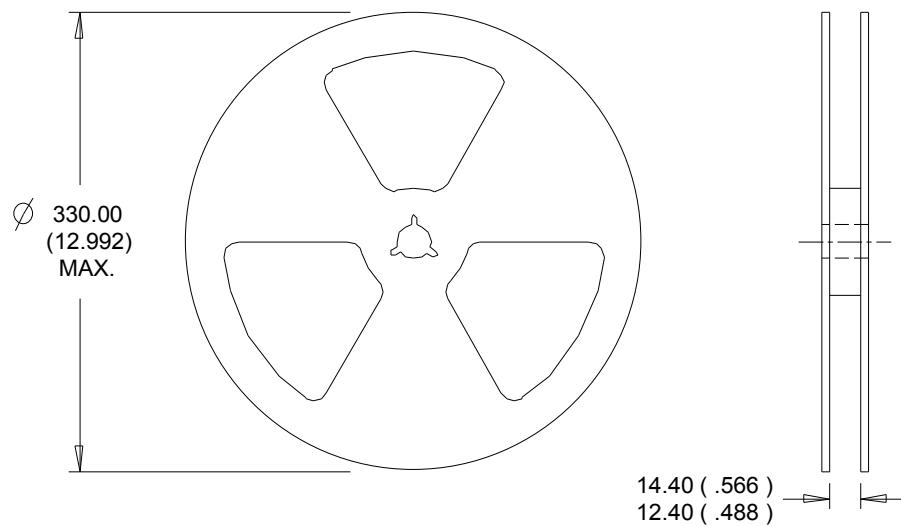
Note: For the most current drawing please refer to IR website at <http://www.irf.com/package/>

**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) <sup>†</sup> AEC-Q101-002	
	Human Body Model	Class H1B (+/- 1000V) <sup>†</sup> AEC-Q101-001	
	Charged Device Model	Class C5 (+/- 2000V) <sup>†</sup> AEC-Q101-005	
RoHS Compliant		Yes	

<sup>†</sup> Highest passing voltage.

## Revision History

Date	Comments
10/5/2015	<ul style="list-style-type: none"> <li>Updated datasheet with corporate template</li> <li>Corrected ordering table on page 1.</li> </ul>

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