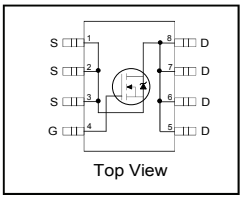
Features

- 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 *



Top View

V_{DSS}	30V
$R_{DS(on)}$ typ.	9.2mΩ
max.	11mΩ
I_D	13A

SO-8
AUIRF7805Q

G	D	S
Gate	Drain	Source

Description

Specifically designed for Automotive applications, these HEXFET® Power MOSFET's in a Dual SO-8 package utilize the lastest 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.

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°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	Maximum Power Dissipation ③	2.5	W
P_D @T_A = 70°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	

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

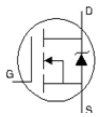
Static @ T_J = 25°C (unless otherwise specified)

	Parameter	Min.	Typ.	Max.	Units	Conditions
$V_{(BR)DSS}$	Drain-to-Source Breakdown Voltage	30	—	—	V	V_{GS} = 0V, I_D = 250µA
$R_{DS(on)}$	Static Drain-to-Source On-Resistance	—	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

Dynamic Electrical Characteristics @ T_J = 25°C (unless otherwise specified)

Q_g	Total Gate Charge	—	22	31	nC	I_D = 7.0A
Q_{gs1}	Pre -Vth Gate-to-Source Charge	—	3.7	—		V_{DS} = 16V
Q_{gs2}	Post-Vth Gate-to-Source Charge	—	1.4	—		V_{GS} = 5.0V
Q_{gd}	Gate-to-Drain Charge	—	6.8	—		
Q_{sw}	Switch Charge (Qgs2 + Qgd)	—	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
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)	—	—	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 Voltage⑥	—	—	1.2	V	T_J = 25°C,I_S = 7.0A,V_{GS} = 0V
Q_{rr}	Reverse Recovery Charge ④	—	88	—	nC	di/dt = 700A/µs V_{DS} =16V, V_{GS}= 0V, I_S= 7.0A
Q_{rr}	Reverse Recovery Charge ④	—	55	—		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 ≤ 300µs; duty cycle ≤ 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.

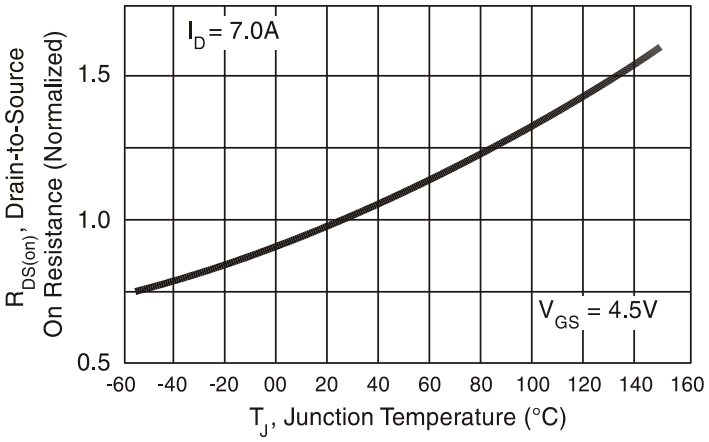


Fig. 1 Normalized On-Resistance vs. Temperature

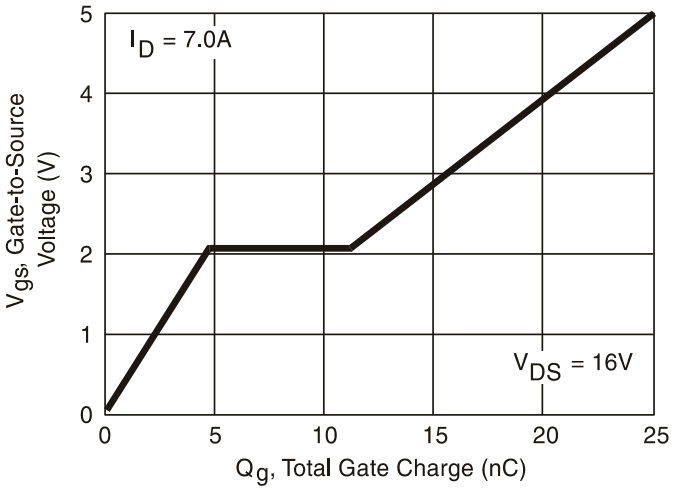


Fig. 2 Typical Gate Charge vs. Gate-to-Source Voltage

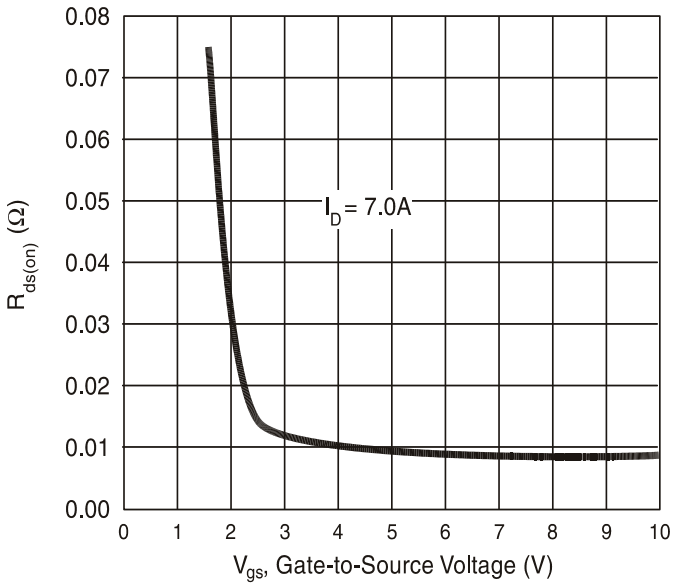


Fig. 3 Typical Rds(on) vs. Gate-to-Source Voltage

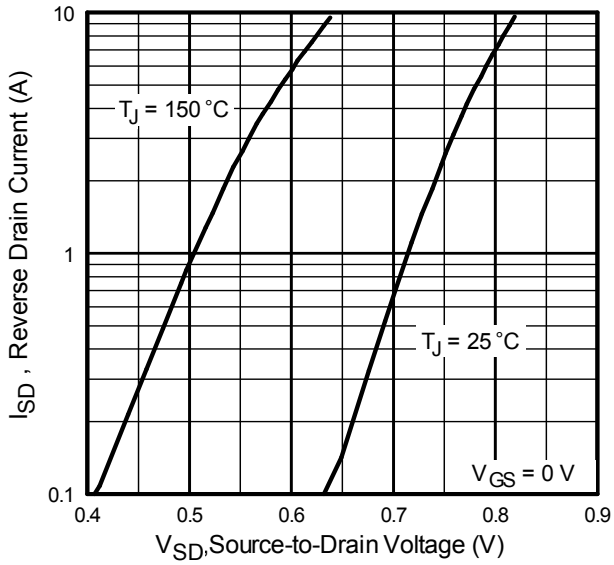


Fig. 4 Typical Source-Drain Diode Forward Voltage

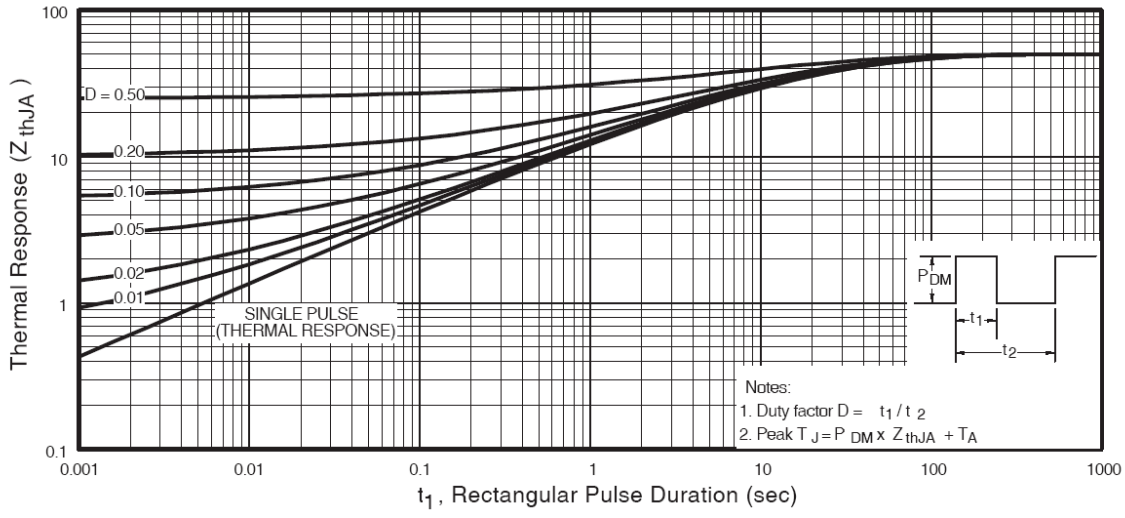
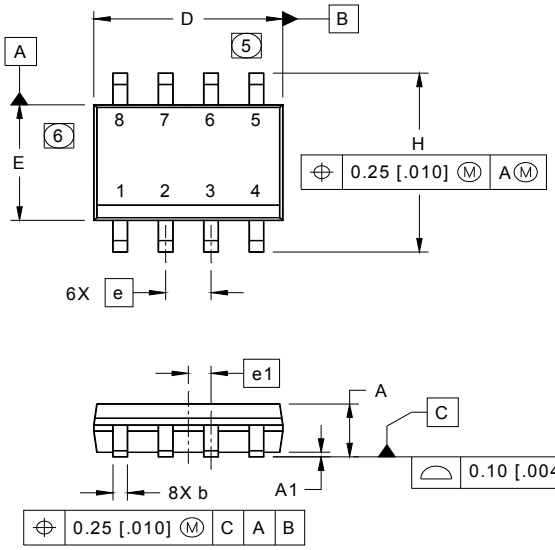


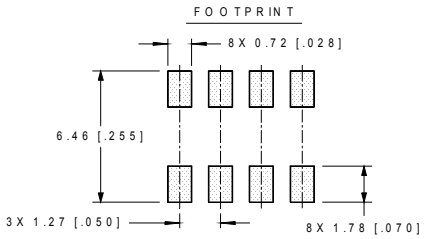
Fig 5. Maximum Effective Transient Thermal Impedance, Junction-to-Ambient

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

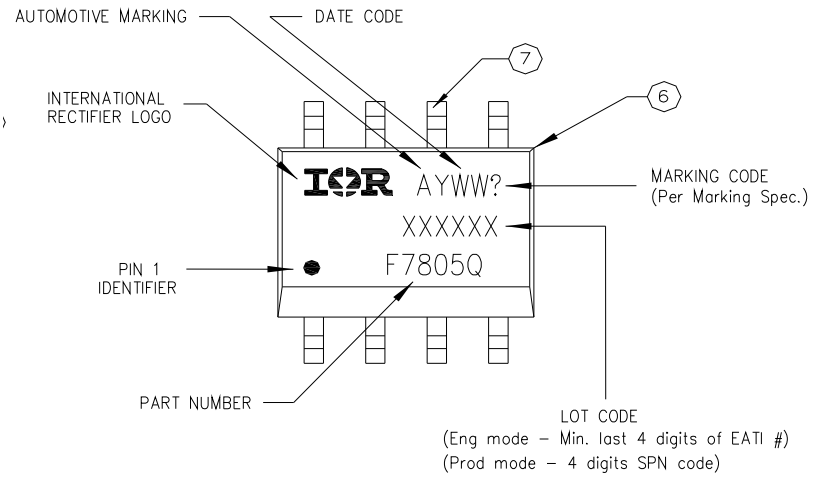


DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	.0532	.0688	1.35	1.75
A1	.0040	.0098	0.10	0.25
b	.013	.020	0.33	0.51
c	.0075	.0098	0.19	0.25
D	.189	.1968	4.80	5.00
E	.1497	.1574	3.80	4.00
e	.050 BASIC		1.27 BASIC	
e 1	.025 BASIC		0.635 BASIC	
H	.2284	.2440	5.80	6.20
K	.0099	.0196	0.25	0.50
L	.016	.050	0.40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

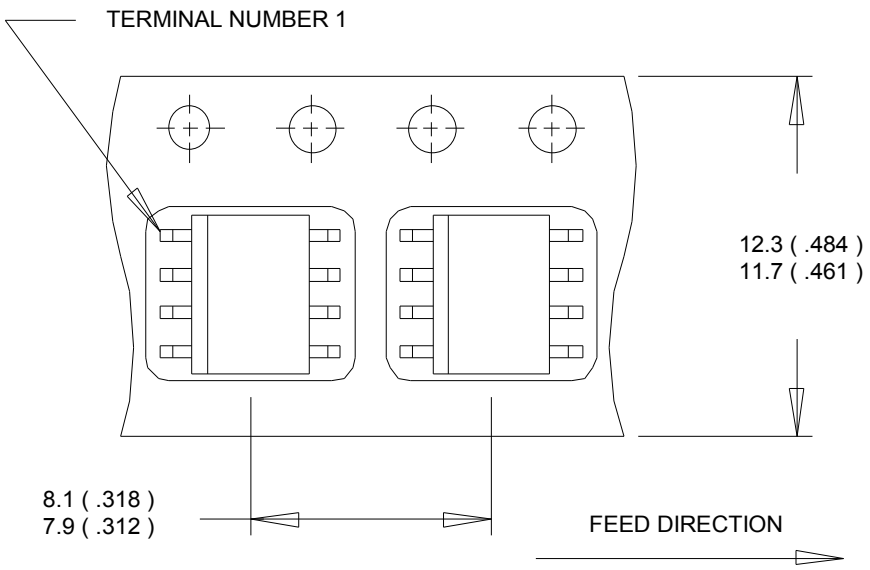


SO-8 Part Marking Information

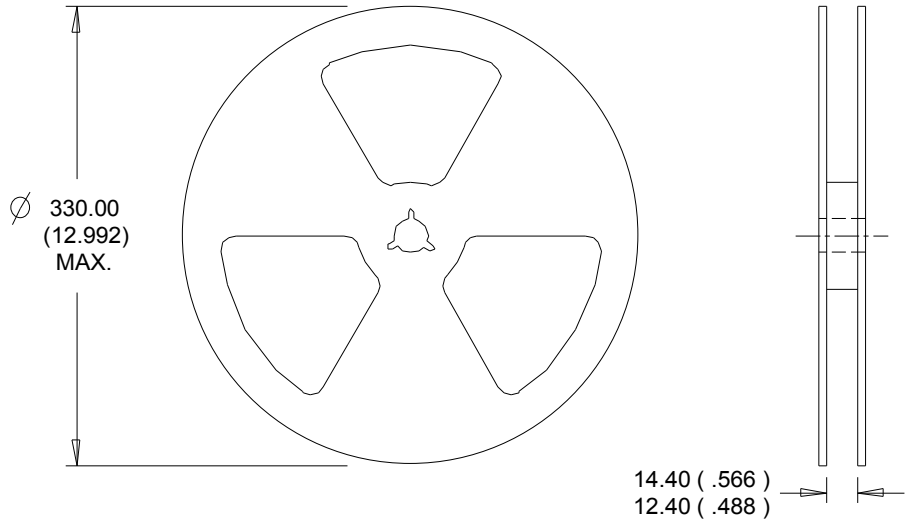


Note: For the most current drawing please refer to IR website at http://www.irf.com/package/

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.

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