Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!


## Contact us

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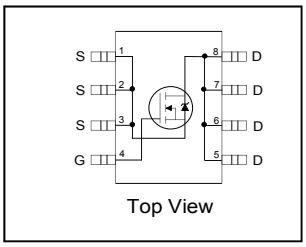
Address: A1208, Overseas Decoration Building, #122 Zhenhua RD., Futian, Shenzhen, China

**HEXFET® Chip-Set for DC-DC Converters**

- N Channel Application Specific MOSFETs
- Ideal for Mobile DC-DC Converters
- Low Conduction Losses
- Low Switching Losses
- Lead-Free



Top View


SO-8
IRF7805PbF

**Description**

This new device employs advanced HEXFET Power MOSFET technology to achieve an unprecedented balance of on-resistance and gate charge. The reduced conduction and switching losses make this device ideal for high efficiency DC-DC Converters that power the latest generation of mobile microprocessors.

The IRF7805PbF offers maximum efficiency for mobile CPU core DC-DC converters.

Devices Features

| | IRF7805PbF |
|---|---|
| $V_{DSS}$ | 30V |
| $R_{DS(on)}$ | 11mΩ |
| Qg | 31nC |
| $Q_{SW}$ | 11.5nC |
| $Q_{OSS}$ | 36nC |

| G | D | S |
|---|---|---|
| Gate | Drain | Source |

| Base part number | Package Type | Standard Pack | | Orderable Part Number |
|---|---|---|---|---|
| | | Form | Quantity | |
| IRF7805PbF | SO-8 | Tape and Reel | 4000 | IRF7805PbF |

| 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 ③ | 13 | A |
| $I_D$ @ $T_A$ = 70°C | Continuous Drain Current, $V_{GS}$ @ 10V ③ | 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 |
| $T_J$<br>$T_{STG}$ | Operating Junction and<br>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 | |

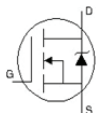
**Static @ $T_J$ = 25°C (unless otherwise specified)**

| | Parameter | Min. | Typ. | Max. | Units | Conditions |
|---|---|---|---|---|---|---|
| $V_{(BR)DSS}$ | 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 |

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

| | | | | | | |
|---|---|---|---|---|---|---|
| $Q_g$ | Total Gate Charge ⑥ | — | 22 | 31 | nC | $V_{GS}$ = 5.0V<br>$V_{DS}$ = 16V<br>$I_D$ = 7.0A |
| $Q_{gs1}$ | 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 (Qgs2 + Qgd) ⑥ | — | 8.2 | 11.5 | | |
| $Q_{oss}$ | Output Charge ⑥ | — | 30 | 36 | 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<br>$I_D$ = 7.0A<br>$R_G$ = 2Ω<br>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)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 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<br>$V_{DS}$ =16V, $V_{GS}$= 0V, $I_S$= 7.0A |
| $Q_{rr}$ | Reverse Recovery Charge ④ | — | 55 | — | | di/dt = 700A/µs (with 10BQ040)<br>$V_{DS}$ =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 $R_\theta$ is measured at $T_J$ of approximately 90°C.
⑥ Devices are 100% tested to these parameters.

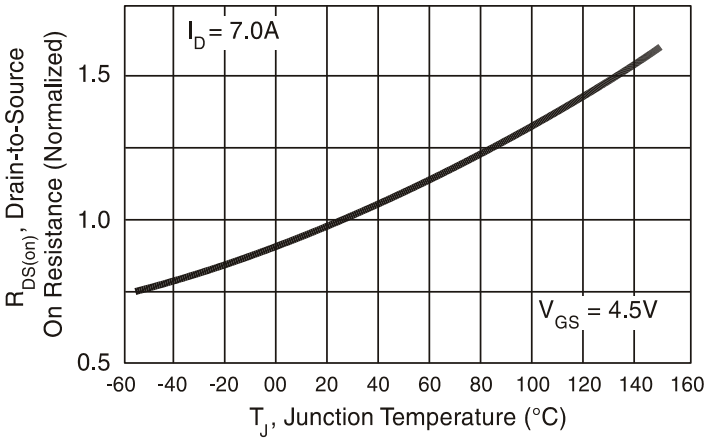



**Fig. 1** Normalized On-Resistance vs. Temperature

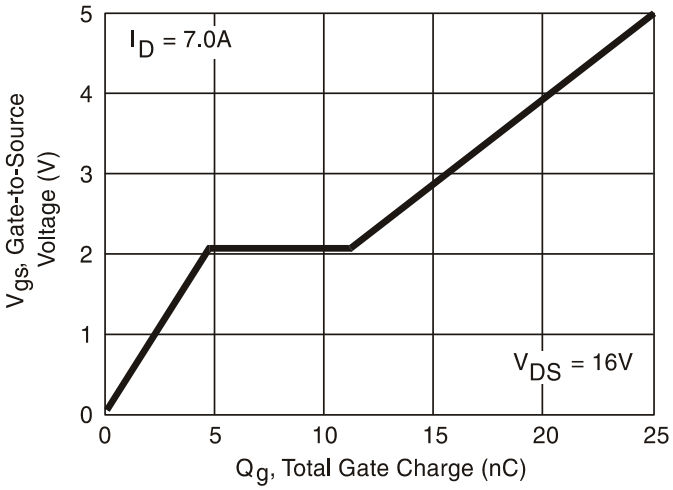



**Fig. 2** Typical Gate Charge vs. Gate-to-Source Voltage

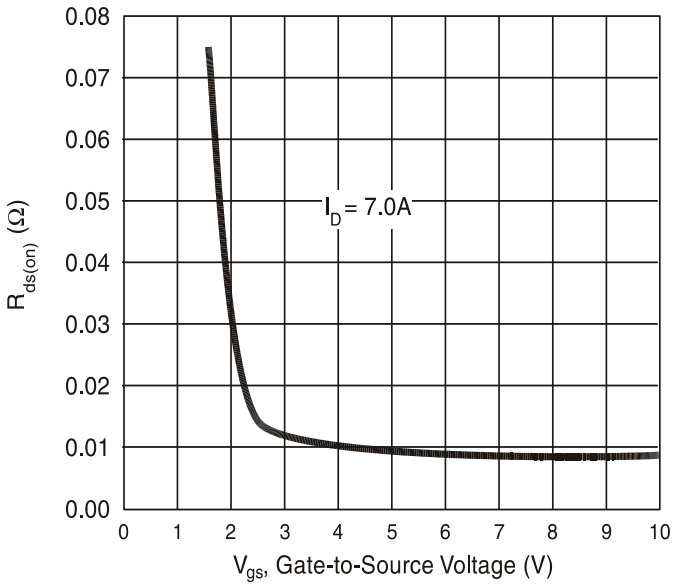



**Fig.** 3 Typical Rds(on) vs. Gate-to-Source Voltage

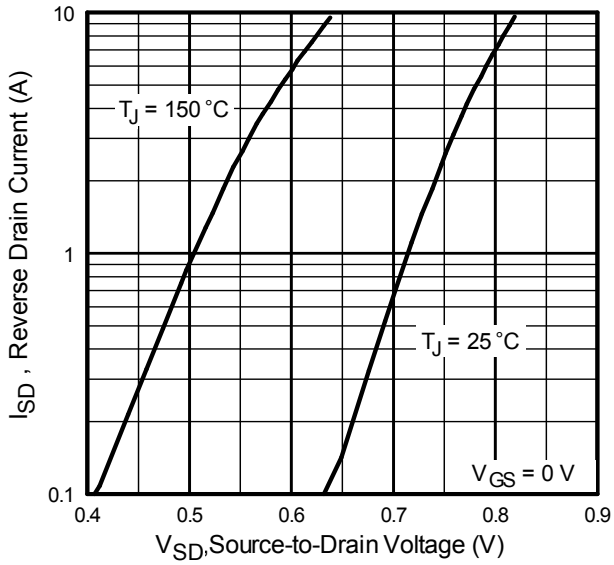



**Fig. 4** Typical Source-Drain Diode Forward Voltage

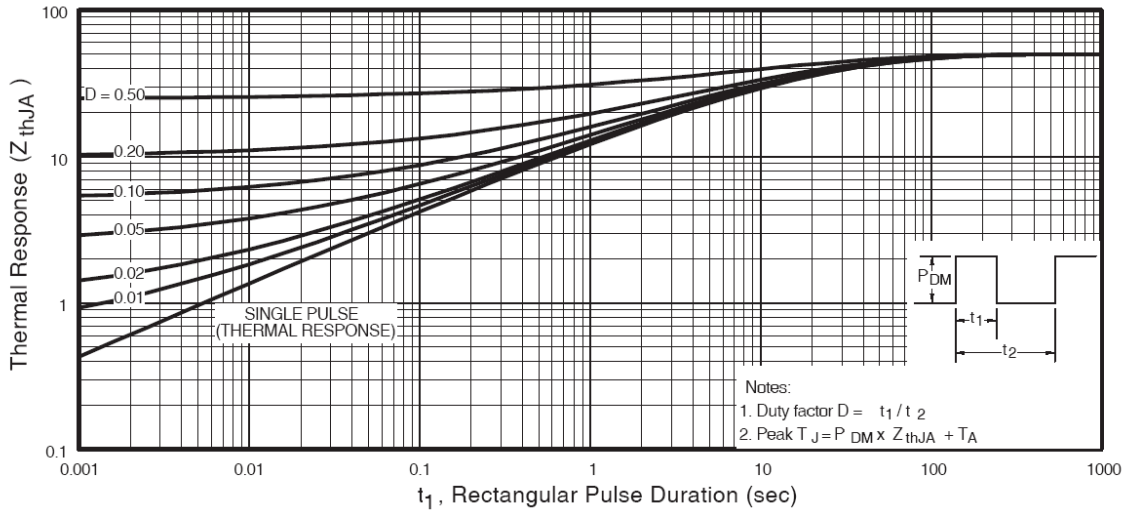
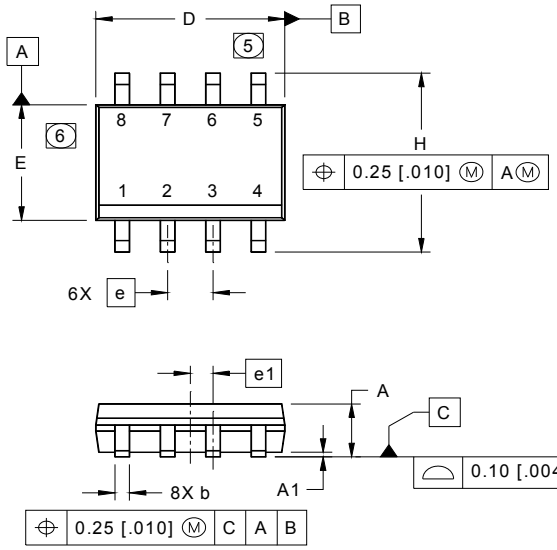


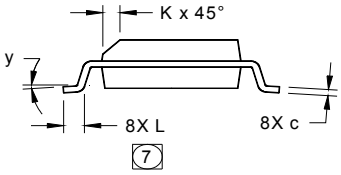

**Fig 5.** Maximum Effective Transient Thermal Impedance, Junction-to-Ambient

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

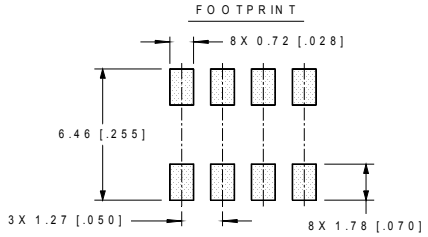



| DIM | INCHES | | MILLIMETERS | |
|---|---|---|---|---|
| | MIN | MAX | MIN | MAX |
| A | .0532 | .0688 | 1.35 | 1.75 |
| A1 | .0040 | .0098 | 0.10 | 0.25 |
| b | .013 | .020 | 0.33 | 0.51 |
| c | .0075 | .0098 | 0.19 | 0.25 |
| D | .189 | .1968 | 4.80 | 5.00 |
| E | .1497 | .1574 | 3.80 | 4.00 |
| 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° |



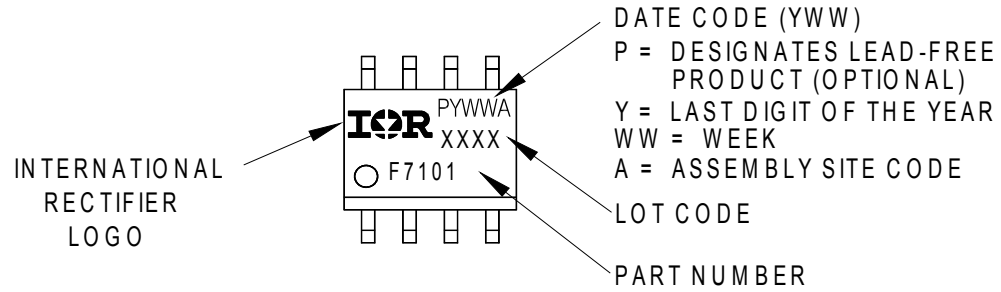




NOTES:
1. DIMENSIONING & TOLERANCING PER ASME Y14.5M-1994.
2. CONTROLLING DIMENSION: MILLIMETER
3. DIMENSIONS ARE SHOWN IN MILLIMETERS [INCHES].
4. OUTLINE CONFORMS TO JEDEC OUTLINE MS-012AA.
5. DIMENSION DOES NOT INCLUDE MOLD PROTRUSIONS. MOLD PROTRUSIONS NOT TO EXCEED 0.15 [.006].
6. DIMENSION DOES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

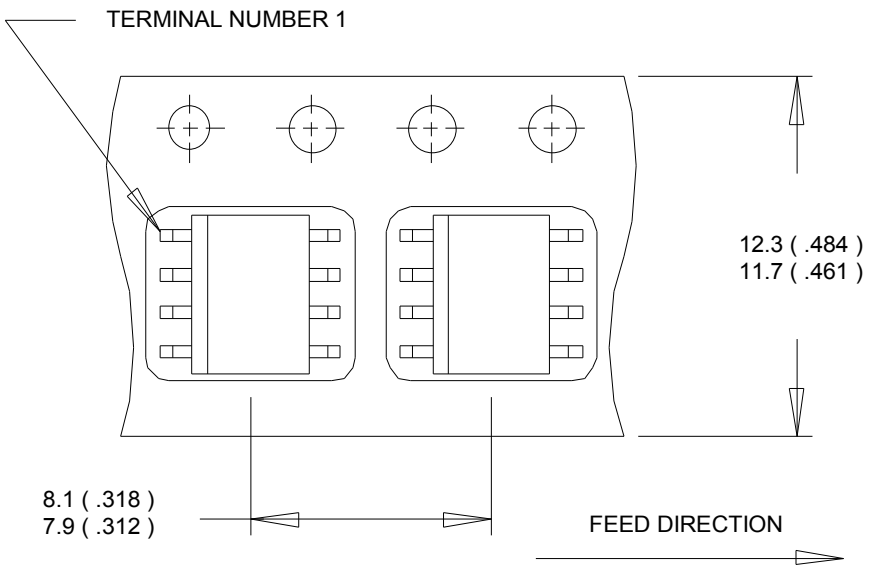



### SO-8 Part Marking Information

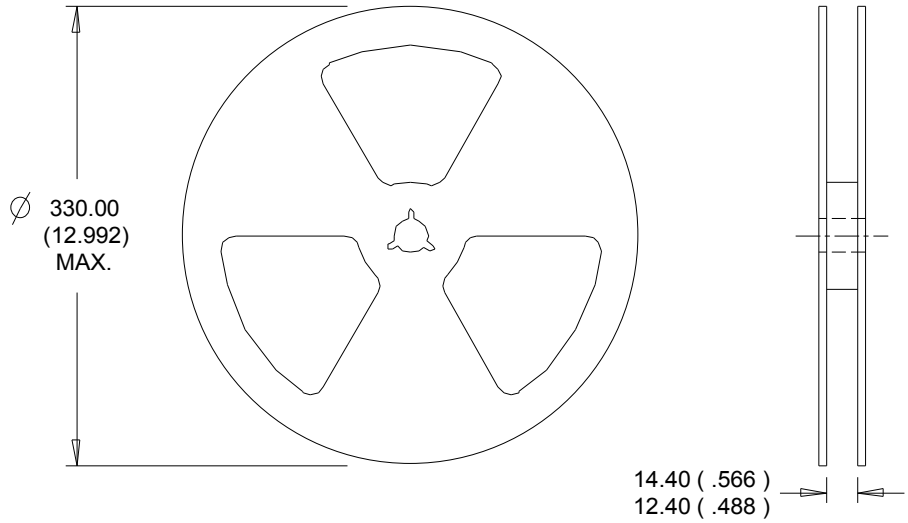
EXAMPLE: THIS IS AN IRF7101 (MOSFET)



**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.

## Qualification Information

| | | |
|---|---|---|
| **Qualification Level** | Consumer | |
| **Moisture Sensitivity Level** | SO-8 | MSL1<br>(per JEDEC J-STD-020D)† |
| **RoHS Compliant** | Yes | |

† Applicable version of JEDEC standard at the time of product release.

## Revision History

| Date | Comments |
|---|---|
| 08/23/2016 | • Changed datasheet with Infineon logo - all pages.<br>• Corrected typo Qoss from typ/max “3.0nC/3.6nC” to “30nC/36nC” on page 2.<br>• Added disclaimer on last page. |



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