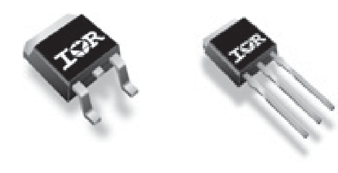
PD - 95091B

International
IOR Rectifier

# IRLR7821PbF
# IRLU7821PbF

HEXFET® Power MOSFET

| $V_{DSS}$ | $R_{DS(on)}$ max | Qg |
|---|---|---|
| 30V | 10mΩ | 10nC |



D-Pak IRLR7821PbF    I-Pak IRLU7821PbF

## Applications

- High Frequency Synchronous Buck Converters for Computer Processor Power
- High Frequency Isolated DC-DC Converters with Synchronous Rectification for Telecom and Industrial Use
- Lead-Free

## Benefits

- Very Low RDS(on) at 4.5V $V_{GS}$
- Ultra-Low Gate Impedance
- Fully Characterized Avalanche Voltage and Current

## Absolute Maximum Ratings

| | Parameter | Max. | Units |
|---|---|---|---|
| $V_{DS}$ | Drain-to-Source Voltage | 30 | V |
| $V_{GS}$ | Gate-to-Source Voltage | ± 20 | |
| $I_D$ @ $T_C$ = 25°C | Continuous Drain Current, $V_{GS}$ @ 10V | 65④ | A |
| $I_D$ @ $T_C$ = 100°C | Continuous Drain Current, $V_{GS}$ @ 10V | 47④ | |
| $I_{DM}$ | Pulsed Drain Current ① | 260 | |
| $P_D$ @$T_C$ = 25°C | Maximum Power Dissipation | 75 | W |
| $P_D$ @$T_C$ = 100°C | Maximum Power Dissipation | 37.5 | |
| | Linear Derating Factor | 0.50 | W/°C |
| $T_J$<br>$T_{STG}$ | Operating Junction and<br>Storage Temperature Range | -55 to + 175 | °C |

## Thermal Resistance

| | Parameter | Typ. | Max. | Units |
|---|---|---|---|---|
| $R_{\theta JC}$ | Junction-to-Case | ––– | 2.0 | °C/W |
| $R_{\theta JA}$ | Junction-to-Ambient (PCB Mount)⑤ | ––– | 50 | |
| $R_{\theta JA}$ | Junction-to-Ambient | ––– | 110 | |

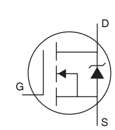
Notes ① through ⑤ are on page 11



10/02/06

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

| | Parameter | Min. | Typ. | Max. | Units | |
|---|---|---|---|---|---|---|
| $BV_{DSS}$ | Drain-to-Source Breakdown Voltage | 30 | ––– | ––– | V | |
| $\Delta BV_{DSS}/\Delta T_J$ | Breakdown Voltage Temp. Coefficient | ––– | 23 | ––– | mV/°C | |
| $R_{DS(on)}$ | Static Drain-to-Source On-Resistance | ––– | 7.5 | 10 | mΩ | |
| | | ––– | 9.5 | 12.5 | | |
| $V_{GS(th)}$ | Gate Threshold Voltage | 1.0 | ––– | ––– | V | |
| $\Delta V_{GS(th)}$ | Gate Threshold Voltage Coefficient | ––– | -5.3 | ––– | mV/°C | |
| $I_{DSS}$ | Drain-to-Source Leakage Current | ––– | ––– | 1.0 | μA | |
| | | ––– | ––– | 150 | | |
| $I_{GSS}$ | Gate-to-Source Forward Leakage | ––– | ––– | 100 | nA | |
| | Gate-to-Source Reverse Leakage | ––– | ––– | -100 | | |
| gfs | Forward Transconductance | 46 | ––– | ––– | S | |
| $Q_g$ | Total Gate Charge | ––– | 10 | 14 | | |
| $Q_{gs1}$ | Pre-Vth Gate-to-Source Charge | ––– | 2.0 | ––– | | |
| $Q_{gs2}$ | Post-Vth Gate-to-Source Charge | ––– | 1.2 | ––– | nC | |
| $Q_{gd}$ | Gate-to-Drain Charge | ––– | 2.5 | ––– | | |
| $Q_{godr}$ | Gate Charge Overdrive | ––– | 4.3 | ––– | | See Fig. 16 |
| $Q_{sw}$ | Switch Charge ($Q_{gs2}$ + $Q_{gd}$) | ––– | 3.7 | ––– | | |
| $Q_{oss}$ | Output Charge | ––– | 8.5 | ––– | nC | |
| $t_{d(on)}$ | Turn-On Delay Time | ––– | 11 | ––– | | |
| $t_r$ | Rise Time | ––– | 4.2 | ––– | | |
| $t_{d(off)}$ | Turn-Off Delay Time | ––– | 10 | ––– | ns | |
| $t_f$ | Fall Time | ––– | 3.2 | ––– | | |
| $C_{iss}$ | Input Capacitance | ––– | 1030 | ––– | | |
| $C_{oss}$ | Output Capacitance | ––– | 360 | ––– | pF | |
| $C_{rss}$ | Reverse Transfer Capacitance | ––– | 120 | ––– | | |



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