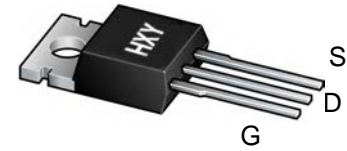




Description

The IRF3710PBF uses advanced trench technology and design to provide excellent $R_{DS(ON)}$ with low gate charge. It can be used in a wide variety of applications.



TO-220

General Features

$V_{DS} = 100V, I_D = 60A$

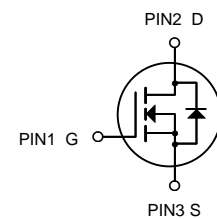
$R_{DS(ON)} < 17m\Omega @ V_{GS} = 10V$

Application

High efficiency switch mode power supplies

Power factor correction

Electronic lamp ballast



N-Channel MOSFET

Package Marking and Ordering Information

| Product ID | Pack | Marking | Units Tube |
|------------|--------|------------------|------------|
| IRF3710PBF | TO-220 | HXY IRF3710 YYYY | 50 |

Absolute Maximum Ratings@ $T_j = 25^\circ C$ (unless otherwise specified)

| Symbol | Parameter | Rating | Units |
|--------------------------------------|--------------------------------------|------------|-------|
| V _{DS} | Drain-Source Voltage | 100 | V |
| V _{GS} | Gate-Source Voltage | ± 20 | V |
| I _D @T _C =25°C | Drain Current | 60 | A |
| IDM | Pulsed Drain Current ¹ | 230 | A |
| P _D @T _C =25°C | Total Power Dissipation | 160 | W |
| TSTG | Storage Temperature Range | -55 to 150 | °C |
| T _J | Operating Junction Temperature Range | -55 to 150 | °C |



Electrical Characteristics (T_C=25°C unless otherwise noted)

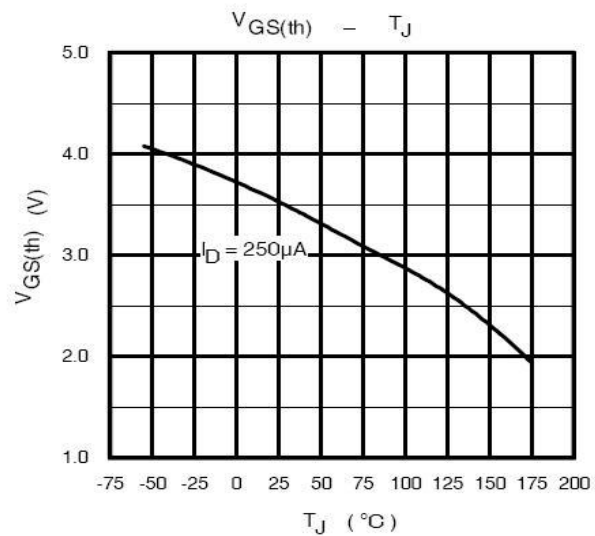
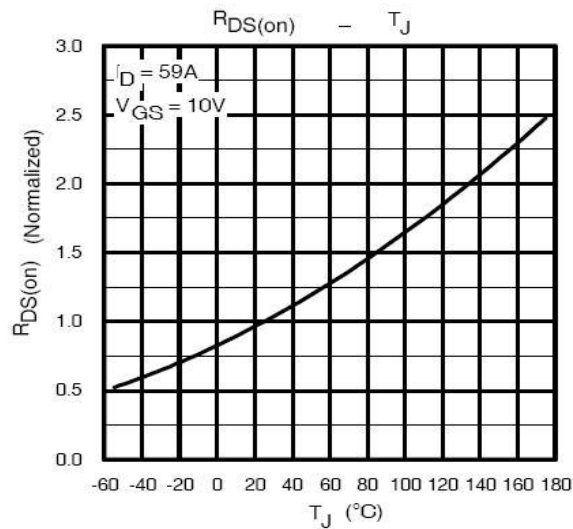
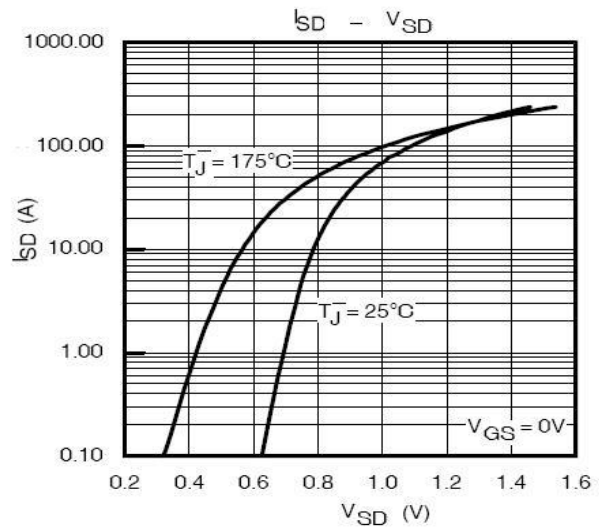
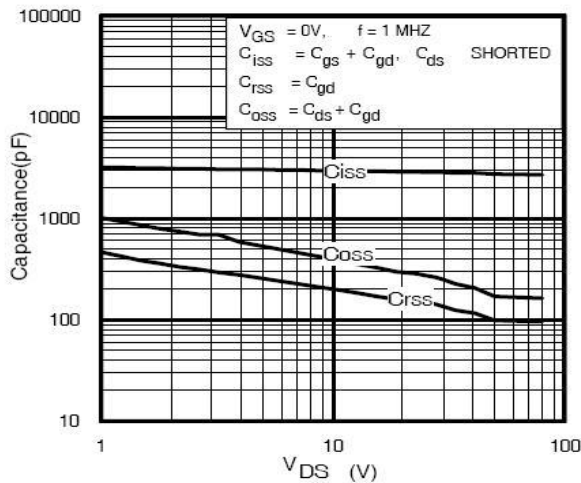
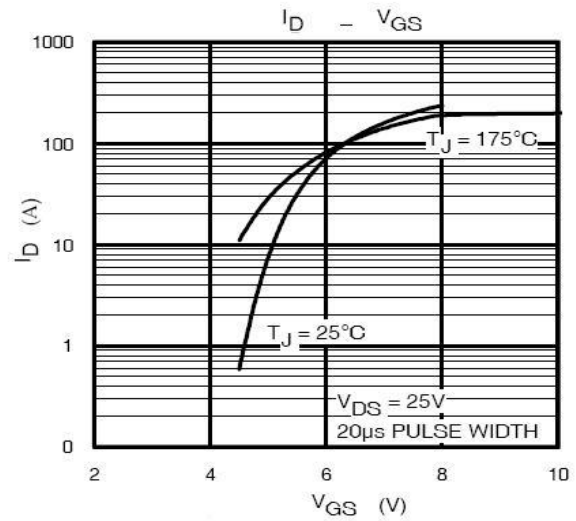
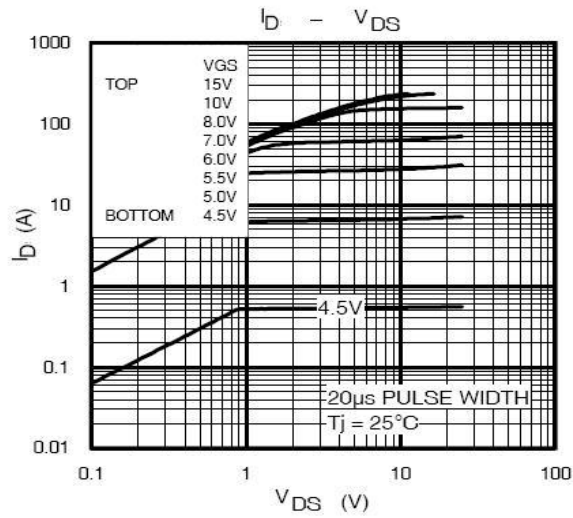
| Parameter | Symbol | Condition | Min | Typ | Max | Unit |
|--|---------------------|--|-----|------|------|------|
| Off Characteristics | | | | | | |
| Drain-Source Breakdown Voltage ^(Note 1) | BV _{DSS} | V _{GS} =0V, I _D =250μA | 100 | - | - | V |
| Zero Gate Voltage Drain Current | I _{DSS} | V _{DS} =100V, V _{GS} =0V | 1 | - | 100 | μA |
| Gate-Body Leakage Current | I _{GSS} | V _{GS} =±20V, V _{DS} =0V | - | - | ±100 | nA |
| On Characteristics | | | | | | |
| Gate Threshold Voltage | V _{GS(th)} | V _{DS} =V _{GS} , I _D =250μA | 2.0 | - | 4.0 | V |
| Drain-Source On-State Resistance | R _{DS(ON)} | V _{GS} =10V, I _D =10A | - | 14 | 17 | mΩ |
| Forward Transconductance | g _{FS} | V _{DS} =10V, I _D =15A | 8 | - | - | S |
| Dynamic Characteristics | | | | | | |
| Input Capacitance | C _{iss} | V _{DS} =50V, V _{GS} =0V, F=1.0MHz | - | 2780 | - | PF |
| Output Capacitance | C _{oss} | | - | 400 | - | PF |
| Reverse Transfer Capacitance | C _{rss} | | - | 35 | - | PF |
| Switching Characteristics | | | | | | |
| Turn-on Delay Time | t _{d(on)} | V _{DS} =50V, I _D =30A R _G =50Ω ^(Note 2) | - | 25 | - | nS |
| Turn-on Rise Time | t _r | | - | 7 | - | nS |
| Turn-Off Delay Time | t _{d(off)} | | - | 45 | - | nS |
| Turn-Off Fall Time | t _f | | - | 8 | - | nS |
| Total Gate Charge | Q _g | V _{DS} =80V, I _D =30A, V _{GS} =10V ^(Note 2) | - | 60 | - | nC |
| Gate-Source Charge | Q _{gs} | | - | 12 | - | nC |
| Gate-Drain Charge | Q _{gd} | | - | 15 | - | nC |
| Drain-Source Diode Characteristics | | | | | | |
| Diode Forward Voltage | V _{SD} | V _{GS} =0V, I _S =60A | - | - | 1.3 | V |
| Diode Forward Current ^(Note 2) | I _S | | - | - | 60 | A |

Notes:

1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.



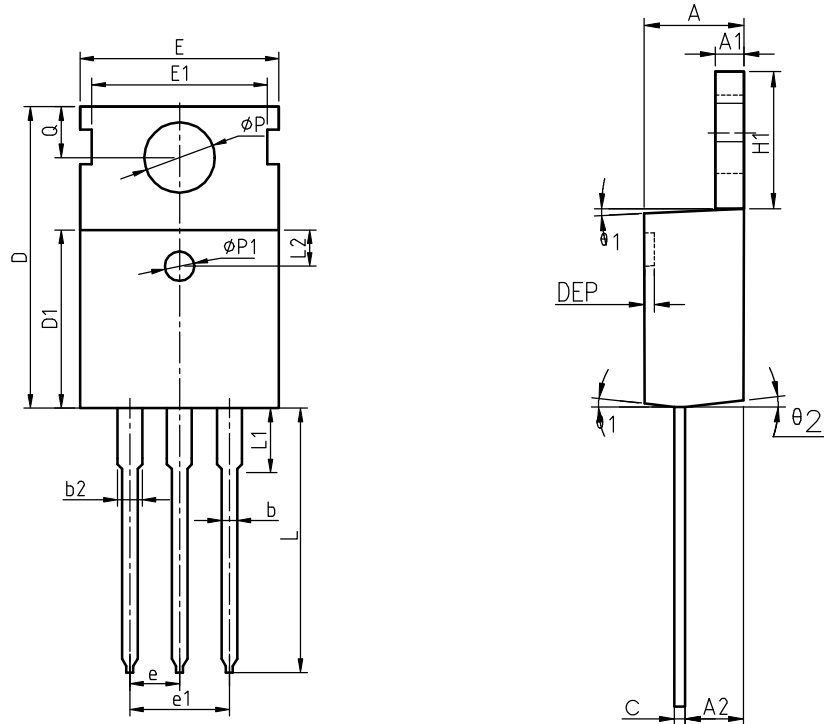
Typical Electrical





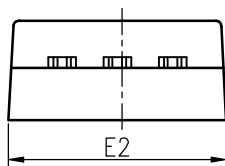
Package Information

TO-220



COMMON DIMENSIONS

| SYMBOL | MIN | NOM | MAX | MIN | NOM | MAX |
|---------|-------|-------|-------|-------|-------|-------|
| A | 4.40 | 4.57 | 4.70 | 0.173 | 0.180 | 0.185 |
| A1 | 1.27 | 1.30 | 1.33 | 0.050 | 0.051 | 0.052 |
| A2 | 2.35 | 2.40 | 2.50 | 0.093 | 0.094 | 0.098 |
| b | 0.77 | 0.80 | 0.90 | 0.030 | 0.031 | 0.035 |
| b2 | 1.17 | 1.27 | 1.36 | 0.046 | 0.050 | 0.054 |
| c | 0.48 | 0.50 | 0.56 | 0.019 | 0.020 | 0.022 |
| D | 15.40 | 15.60 | 15.80 | 0.606 | 0.614 | 0.622 |
| D1 | 9.00 | 9.10 | 9.20 | 0.354 | 0.358 | 0.362 |
| DEP | 0.05 | 0.10 | 0.20 | 0.002 | 0.004 | 0.008 |
| E | 9.80 | 10.00 | 10.20 | 0.386 | 0.394 | 0.402 |
| E1 | - | 8.70 | - | - | 0.343 | - |
| E2 | 9.80 | 10.00 | 10.20 | 0.386 | 0.394 | 0.402 |
| e | | 2.54 | BSC | | 0.100 | BSC |
| e1 | | 5.08 | BSC | | 0.200 | BSC |
| H1 | 6.40 | 6.50 | 6.60 | 0.252 | 0.256 | 0.260 |
| L | 12.75 | 13.50 | 13.65 | 0.502 | 0.531 | 0.537 |
| L1 | - | 3.10 | 3.30 | - | 0.122 | 0.130 |
| L2 | | 2.50 | REF | | 0.098 | REF |
| P | 3.50 | 3.60 | 3.63 | 0.138 | 0.142 | 0.143 |
| P1 | 3.50 | 3.60 | 3.63 | 0.138 | 0.142 | 0.143 |
| Q | 2.73 | 2.80 | 2.87 | 0.107 | 0.110 | 0.113 |
| theta 1 | 5° | 7° | 9° | 5° | 7° | 9° |
| theta 2 | 1° | 3° | 5° | 1° | 3° | 5° |
| theta 3 | 1° | 3° | 5° | 1° | 3° | 5° |





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