

International IOR Rectifier

HEXFET® TRANSISTOR

IRFI260

N-CHANNEL

200 Volt, 0.060Ω, HEXFET

HEXFET technology is the key to International Rectifier's advanced line of power MOSFET transistors. The efficient geometry design achieves very low on-state resistance combined with high transconductance.

HEXFET transistors also feature all of the well-established advantages of MOSFETs, such as voltage control, very fast switching, ease of paralleling and electrical parameter temperature stability. They are well-suited for applications such as switching power supplies, motor controls, inverters, choppers, audio amplifiers, high energy pulse circuits and virtually any application where high reliability is required.

The HEXFET transistor's totally isolated package eliminates the need for additional isolating material between the device and the heatsink. This improves thermal efficiency and reduces drain capacitance.

Product Summary

| Part Number | BV _{DS} | R _{DS(on)} | I _D |
|-------------|------------------|---------------------|----------------|
| IRFI260 | 200V | 0.060Ω | 45A* |

Features:

- Hermetically Sealed
- Electrically Isolated
- Simple Drive Requirements
- Ease of Paralleling
- Ceramic Eyelets

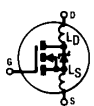
Absolute Maximum Ratings

| | Parameter | IRFI260 | Units |
|----------------------------------------------------------------|---------------------------------|-----------------------------------------------|-------|
| I _D @ V _{GS} = 10V, T _C = 25°C | Continuous Drain Current | 45* | A |
| I _D @ V _{GS} = 10V, T _C = 100°C | Continuous Drain Current | 29 | |
| I _{DM} | Pulsed Drain Current ① | 180 | |
| P _D @ T _C = 25°C | Max. Power Dissipation | 300 | W |
| | Linear Derating Factor | 2.4 | W/K ⑤ |
| V _{GS} | Gate-to-Source Voltage | ±20 | V |
| EAS | Single Pulse Avalanche Energy ② | 700 | mJ |
| I _{AR} | Avalanche Current ① | 45 | A |
| EAR | Repetitive Avalanche Energy ① | 30 | mJ |
| dv/dt | Peak Diode Recovery dv/dt ③ | 4.3 | V/ns |
| T _J | Operating Junction | -55 to 150 | °C |
| T _{STG} | Storage Temperature Range | | |
| | Lead Temperature | 300 (0.063 in. (1.6mm) from case for 10 sec.) | |
| | Weight | 10.9 (typical) | |


* I_D current limited by pin diameter

IRFI260 Device

Electrical Characteristics @ $T_j = 25^\circ\text{C}$ (Unless Otherwise Specified)

| Parameter | | Min. | Typ. | Max. | Units | Test Conditions | |
|------------------------------|----------------------------------------|------|------|-------|--------------------|-----------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|
| BV_{DSS} | Drain-to-Source Breakdown Voltage | 200 | — | — | V | $V_{GS} = 0V, I_D = 1.0\text{ mA}$ | |
| $\Delta BV_{DSS}/\Delta T_j$ | Temp. Coefficient of Breakdown Voltage | — | 0.24 | — | $V/^\circ\text{C}$ | Reference to 25°C , $I_D = 1.0\text{ mA}$ | |
| $R_{DS(on)}$ | Static Drain-to-Source | — | — | 0.060 | Ω | $V_{GS} = 10V, I_D = 29A$ ④ | |
| | On-State Resistance | — | — | 0.068 | | $V_{GS} = 10V, I_D = 45A$ | |
| $V_{GS(th)}$ | Gate Threshold Voltage | 2.0 | — | 4.0 | V | $V_{DS} = V_{GS}, I_D = 250\mu\text{A}$ | |
| g_{fs} | Forward Transconductance | 22 | — | — | S (τ_j) | $V_{DS} \geq 15V, I_{DS} = 29A$ ④ | |
| I_{DSS} | Zero Gate Voltage Drain Current | — | — | 25 | μA | $V_{DS} = 0.8 \times \text{Max Rating}, V_{GS} = 0V$ | |
| | | — | — | 250 | | $V_{DS} = 0.8 \times \text{Max Rating}$ $V_{GS} = 0V, T_j = 125^\circ\text{C}$ | |
| I_{GSS} | Gate-to-Source Leakage Forward | — | — | 100 | nA | $V_{GS} = 20V$ | |
| I_{GSS} | Gate-to-Source Leakage Reverse | — | — | -100 | | $V_{GS} = -20V$ | |
| Q_g | Total Gate Charge | — | — | 230 | nC | $V_{GS} = 10V, I_D = 45A$ | |
| Q_{gs} | Gate-to-Source Charge | — | — | 40 | | $V_{DS} = \text{Max. Rating} \times 0.5$ | |
| Q_{gd} | Gate-to-Drain ("Miller") Charge | — | — | 110 | | | |
| $t_{d(on)}$ | Turn-On Delay Time | — | — | 29 | ns | $V_{DD} = 100V, I_D = 45A,$ $R_G = 2.35\Omega, V_{GS} = 10V$ | |
| t_r | Rise Time | — | — | 120 | | | |
| $t_{d(off)}$ | Turn-Off Delay Time | — | — | 110 | | | |
| t_f | Fall Time | — | — | 92 | | | |
| LD | Internal Drain Inductance | — | 8.7 | — | nH | Measured from the drain lead, 6mm (0.25 in.) from package to center of die. | Modified MOSFET symbol showing the internal inductances.  |
| LS | Internal Source Inductance | — | 8.7 | — | | Measured from the source lead, 6mm (0.25 in.) from package to source bonding pad. | |
| C_{iss} | Input Capacitance | — | 5100 | — | pF | $V_{GS} = 0V, V_{DS} = 25V$ $f = 1.0\text{ MHz}$ | |
| C_{oss} | Output Capacitance | — | 1100 | — | | | |
| C_{rss} | Reverse Transfer Capacitance | — | 280 | — | | | |

Source-Drain Diode Ratings and Characteristics

| Parameter | | Min. | Typ. | Max. | Units | Test Conditions |
|-----------------|----------------------------------------|----------------------------------------------------------------------------------------------------------------------|------|------|-------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| I _S | Continuous Source Current (Body Diode) | — | — | 45* | A | Modified MOSFET symbol showing the integral reverse p-n junction rectifier.  |
| I _{SM} | Pulse Source Current (Body Diode) ① | — | — | 180 | | |
| V _{SD} | Diode Forward Voltage | — | — | 1.8 | V | T _J = 25°C, I _S = 45A, V _{GS} = 0V ④ |
| t _{rr} | Reverse Recovery Time | — | — | 420 | ns | T _J = 25°C, I _F = 45A, di/dt ≤ 100A/μs V _{DD} ≤ 50V ④ |
| Q _{RR} | Reverse Recovery Charge | — | — | 4.9 | μC | |
| t _{on} | Forward Turn-On Time | Intrinsic turn-on time is negligible. Turn-on speed is substantially controlled by L _S + L _D . | | | | |

Thermal Resistance

| | Parameter | Min. | Typ. | Max. | Units | Test Conditions |
|-------------------|---------------------|------|------|------|-------|-------------------------------|
| R _{thJC} | Junction-to-Case | — | — | 0.42 | K/W ⑤ | |
| R _{thJA} | Junction-to-Ambient | — | — | 30 | | typical socket mount |
| R _{thCS} | Case-to-Sink | — | 0.21 | — | | mounting surface flat, smooth |

① Repetitive Rating; Pulse width limited by maximum junction temperature.

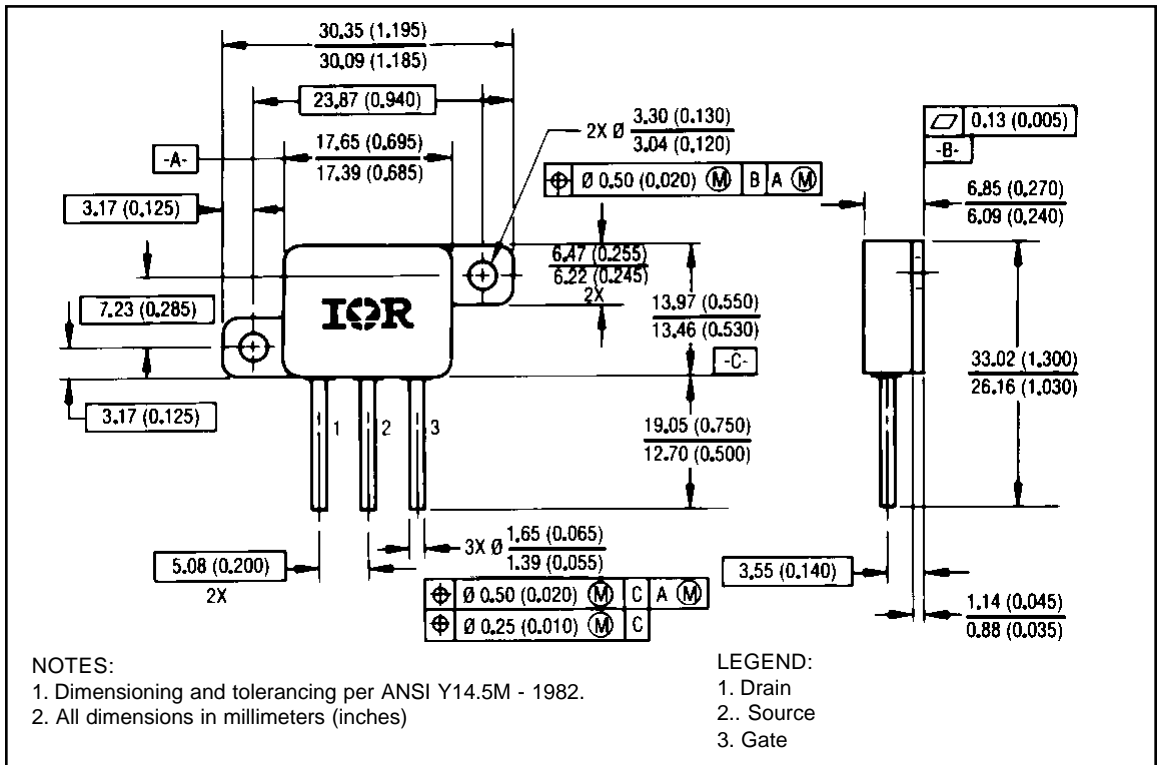
② @ V_{DD} = 50V, Starting T_J = 25°C,
EAS = [0.5 * L * (I_L²) * [BV_{DSS}/(BV_{DSS}-V_{DD})]
Peak I_L = 45A, V_{GS} = 10V, 25 ≤ R_G ≤ 200Ω

③ I_{SD} ≤ 45A, di/dt ≤ 130 A/μs,
V_{DD} ≤ BV_{DSS}, T_J ≤ 150°C
Suggested R_G = 2.35Ω

④ Pulse width ≤ 300 μs; Duty Cycle ≤ 2%

⑤ K/W = °C/W
W/K = W/°C

Case Outline and Dimensions — TO-259AA



CAUTION

BERYLLIA WARNING PER MIL-PRF-19500

Packages containing beryllia shall not be ground, sandblasted, machined, or have other operations performed on them which will produce beryllia or beryllium dust. Furthermore, beryllium oxides packages shall not be placed in acids that will produce fumes containing beryllium.

International
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