

International
 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

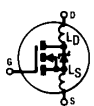
Absolute Maximum Ratings

	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
Q _{RR}	Reverse Recovery Charge	—	—	4.9	μC	V _{DD} ≤ 50V ④
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.

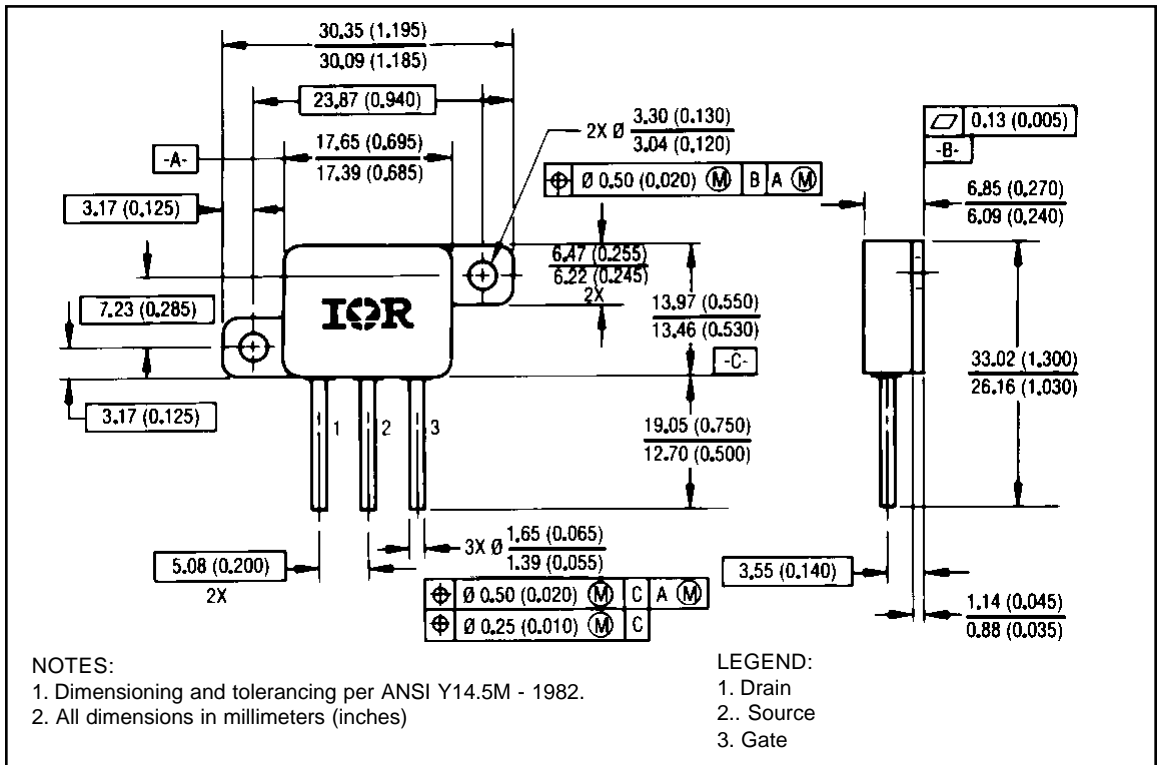
② @ V_{DD} = 50V, Starting T_J = 25°C,
EAS = [0.5 * L * (I_L²) * [BV_{DSS}/(BV_{DSS}-V_{DD})]
Peak I_L = 45A, V_{GS} = 10V, 25 ≤ R_G ≤ 200Ω

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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