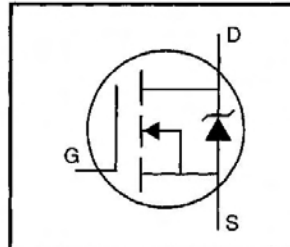


IRFD210PbF

HEXFET® Power MOSFET

- Dynamic dv/dt Rating
- Repetitive Avalanche Rated
- For Automatic Insertion
- End Stackable
- Fast Switching
- Ease of Paralleling
- Simple Drive Requirements
- Lead-Free



$$V_{DSS} = 200V$$

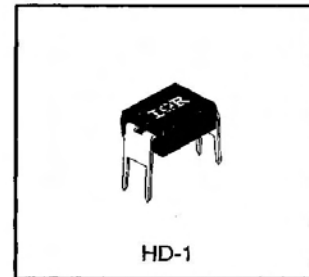
$$R_{DS(on)} = 1.5\Omega$$

$$I_D = 0.60A$$

Description

Third Generation HEXFETs from International Rectifier provide the designer with the best combination of fast switching, ruggedized device design, low on-resistance and cost-effectiveness.

The 4-pin DIP package is a low cost machine-insertable case style which can be stacked in multiple combinations on standard 0.1 inch pin centers. The dual drain serves as a thermal link to the mounting surface for power dissipation levels up to 1 watt.



Absolute Maximum Ratings

	Parameter	Max.	Units
$I_D @ T_C = 25^\circ C$	Continuous Drain Current, $V_{GS} @ 10 V$	0.60	A
$I_D @ T_C = 100^\circ C$	Continuous Drain Current, $V_{GS} @ 10 V$	0.38	
I_{DM}	Pulsed Drain Current ①	4.8	
$P_D @ T_C = 25^\circ C$	Power Dissipation	1.0	W
	Linear Derating Factor	0.0083	W/°C
V_{GS}	Gate-to-Source Voltage	± 20	V
E_{AS}	Single Pulse Avalanche Energy ②	79	mJ
I_{AR}	Avalanche Current ①	0.60	A
E_{AR}	Repetitive Avalanche Energy ①	0.10	mJ
dv/dt	Peak Diode Recovery dv/dt ③	5.0	V/ns
T_J	Operating Junction and	-55 to +150	°C
T_{STG}	Storage Temperature Range		
	Soldering Temperature, for 10 seconds	300 (1.6mm from case)	

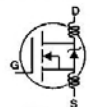
Thermal Resistance

	Parameter	Min.	Typ.	Max.	Units
$R_{\theta JA}$	Junction-to-Ambient	—	—	120	°C/W

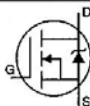
IRFD210PbF

International
IR Rectifier

Electrical Characteristics @ $T_J = 25^\circ\text{C}$ (unless otherwise specified)

	Parameter	Min.	Typ.	Max.	Units	Test Conditions
$V_{(BR)DSS}$	Drain-to-Source Breakdown Voltage	200	—	—	V	$V_{GS}=0V$, $I_D=250\mu A$
$\Delta V_{(BR)DSS}/\Delta T_J$	Breakdown Voltage Temp. Coefficient	—	0.30	—	V/ $^\circ\text{C}$	Reference to 25°C , $I_D=1mA$
$R_{DS(on)}$	Static Drain-to-Source On-Resistance	—	—	1.5	Ω	$V_{GS}=10V$, $I_D=0.36A$ ④
$V_{GS(th)}$	Gate Threshold Voltage	2.0	—	4.0	V	$V_{DS}=V_{GS}$, $I_D=250\mu A$
g_{fs}	Forward Transconductance	0.10	—	—	S	$V_{DS}=50V$, $I_D=0.36A$ ④
I_{DSS}	Drain-to-Source Leakage Current	—	—	25	μA	$V_{DS}=200V$, $V_{GS}=0V$
		—	—	250		$V_{DS}=160V$, $V_{GS}=0V$, $T_J=125^\circ\text{C}$
I_{GSS}	Gate-to-Source Forward Leakage	—	—	100	nA	$V_{GS}=20V$
	Gate-to-Source Reverse Leakage	—	—	-100		$V_{GS}=-20V$
Q_g	Total Gate Charge	—	—	8.2	nC	$I_D=3.3A$
Q_{gs}	Gate-to-Source Charge	—	—	1.8		$V_{DS}=160V$
Q_{gd}	Gate-to-Drain ("Miller") Charge	—	—	4.5		$V_{GS}=10V$ See Fig. 6 and 13 ④
$t_{d(on)}$	Turn-On Delay Time	—	8.2	—	ns	$V_{DD}=100V$
t_r	Rise Time	—	17	—		$I_D=3.3A$
$t_{d(off)}$	Turn-Off Delay Time	—	14	—		$R_G=24\Omega$
t_f	Fall Time	—	8.9	—		$R_D=30\Omega$ See Figure 10 ④
L_D	Internal Drain Inductance	—	4.0	—	nH	Between lead, 6 mm (0.25in.) from package and center of die contact 
L_S	Internal Source Inductance	—	6.0	—		
C_{iss}	Input Capacitance	—	140	—	pF	$V_{GS}=0V$
C_{oss}	Output Capacitance	—	53	—		$V_{DS}=25V$
C_{rss}	Reverse Transfer Capacitance	—	15	—		$f=1.0MHz$ See Figure 5

Source-Drain Ratings and Characteristics

	Parameter	Min.	Typ.	Max.	Units	Test Conditions
I_S	Continuous Source Current (Body Diode)	—	—	0.60	A	MOSFET symbol showing the integral reverse p-n junction diode. 
I_{SM}	Pulsed Source Current (Body Diode) ①	—	—	4.8		
V_{SD}	Diode Forward Voltage	—	—	2.0	V	$T_J=25^\circ\text{C}$, $I_S=0.60A$, $V_{GS}=0V$ ④
t_{rr}	Reverse Recovery Time	—	150	310	ns	$T_J=25^\circ\text{C}$, $I_F=3.3A$
Q_{rr}	Reverse Recovery Charge	—	0.60	1.4	μC	$di/dt=100A/\mu s$ ④
t_{on}	Forward Turn-On Time	Intrinsic turn-on time is negligible (turn-on is dominated by L_S+L_D)				

Notes:

① Repetitive rating; pulse width limited by max. junction temperature (See Figure 11)

② $V_{DD}=50V$, starting $T_J=25^\circ\text{C}$, $L=82mH$
 $R_G=25\Omega$, $I_{AS}=1.2A$ (See Figure 12)

③ $I_{SD}\leq 3.3A$, $di/dt\leq 70A/\mu s$, $V_{DD}\leq V_{(BR)DSS}$,
 $T_J\leq 150^\circ\text{C}$

④ Pulse width $\leq 300\mu s$; duty cycle $\leq 2\%$.

Dimensions are shown in millimeters (inches)

NOTES:

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- Technical drawing of a 2x4 stud connector. The drawing shows a side view of the connector with dimensions in inches and millimeters. The top flange has a width of 5.02 (0.198) inches and 4.78 (0.188) inches. The height of the flange is 4.57 (0.180) inches. The height of the main body is 4.07 (0.160) inches. The height of the bottom flange is 4.06 (0.160) inches. The height of the bottom flange is 3.56 (0.140) inches. The width of the bottom flange is 1.14 (0.045) inches. The width of the bottom flange is 0.89 (0.035) inches. The width of the bottom flange is 2.67 (0.105) inches. The width of the bottom flange is 2.41 (0.095) inches. The width of the bottom flange is 0.60 (0.024) inches. The width of the bottom flange is 0.51 (0.020) inches.

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