

New Jersey Semi-Conductor Products, Inc.

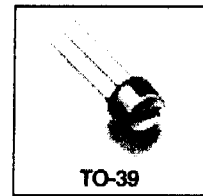
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IRFF9230
200V, P-CHANNEL
REPETITIVE AVALANCHE AND dv/dt RATED
HEXFET[®] TRANSISTORS
THRU-HOLE - TO-205AF (TO-39)

Product Summary

Part Number	BVDSS	R _{DS(on)}	I _D
IRFF9230	-200V	0.80Ω	-4.0A



The HEXFET[®] technology is the key to International Rectifier's advanced line of power MOSFET transistors. The efficient geometry and unique processing of this latest "State of the Art" design achieves: very low on-state resistance combined with high transconductance. The HEXFET transistors also feature all of the well established advantages of MOSFETs such as voltage control, very fast switching, ease of paralleling and temperature stability of the electrical parameters.

They are well suited for applications such as switching power supplies, motor controls, inverters, choppers, audio amplifiers and high energy pulse circuits.

Features:

- Repetitive Avalanche Ratings
- Dynamic dv/dt Rating
- Hermetically Sealed
- Simple Drive Requirements
- Ease of Paralleling
- ESD Rating: Class 1C per MIL-STD-750, Method 1020

Absolute Maximum Ratings

	Parameter		Units
I _D @ V _{GS} = -10V, T _C = 25°C	Continuous Drain Current	-4.0	A
I _D @ V _{GS} = -10V, T _C = 100°C	Continuous Drain Current	-2.4	
I _{DM}	Pulsed Drain Current ①	-16	
P _D @ T _C = 25°C	Max. Power Dissipation	25	W
	Linear Derating Factor	0.20	W/°C
V _{GS}	Gate-to-Source Voltage	±20	V
E _{AS}	Single Pulse Avalanche Energy ②	75	mJ
I _{AR}	Avalanche Current ③	-4.0	A
E _{AR}	Repetitive Avalanche Energy ④	2.5	mJ
dv/dt	Peak Diode Recovery dv/dt ⑤	-5.0	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 10s)	
	Weight	0.98 (typical)	g



Quality Semi-Conductors

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Electrical Characteristics @ T_J = 25°C (Unless Otherwise Specified)

	Parameter	Min	Typ	Max	Units	Test Conditions
BVDSS	Drain-to-Source Breakdown Voltage	-200	—	—	V	V _{GS} = 0V, I _D = -1.0mA
ΔBVDSS/ΔT _J	Temperature Coefficient of Breakdown Voltage	—	-0.22	—	V/°C	Reference to 25°C, I _D = -1.0mA
RDS(on)	Static Drain-to-Source On-State Resistance	—	—	0.80 1.68	Ω	V _{GS} = -10V, I _D = -2.4A ⑥ V _{GS} = -10V, I _D = -4.0A ⑥
VGS(th)	Gate Threshold Voltage	-2.0	—	-4.0	V	V _{DS} = V _{GS} , I _D = -250μA
gfs	Forward Transconductance	2.2	—	—	S	V _{DS} = -15V, I _{DS} = -2.4A ④
I _{DSS}	Zero Gate Voltage Drain Current	—	—	-25 -250	μA	V _{DS} = -160V, V _{GS} = 0V V _{DS} = -160V V _{GS} = 0V, T _J = 125°C
I _{GSS}	Gate-to-Source Leakage Forward	—	—	-100	nA	V _{GS} = -20V
I _{GSS}	Gate-to-Source Leakage Reverse	—	—	100	nA	V _{GS} = 20V
Q _g	Total Gate Charge	14.7	—	34.8	nC	V _{GS} = -10V, I _D = -4.0A
Q _{gs}	Gate-to-Source Charge	0.8	—	7.0	nC	V _{DS} = -100V
Q _{gd}	Gate-to-Drain ('Miller') Charge	5.0	—	17	nC	
t _{d(on)}	Turn-On Delay Time	—	—	50	ns	V _{DD} = -100V, I _D = -4.0A, V _{GS} = -10V, R _G = 7.5Ω
t _r	Rise Time	—	—	100	ns	
t _{d(off)}	Turn-Off Delay Time	—	—	100	ns	
t _f	Fall Time	—	—	80	ns	
L _S + L _D	Total Inductance	—	7.0	—	nH	Measured from drain lead (6mm/0.25in. from package) to source lead (6mm/0.25in. from package)
C _{iss}	Input Capacitance	—	700	—	pF	V _{GS} = 0V, V _{DS} = -25V
C _{oss}	Output Capacitance	—	200	—	pF	f = 1.0MHz
C _{rss}	Reverse Transfer Capacitance	—	40	—	pF	

Source-Drain Diode Ratings and Characteristics

	Parameter	Min	Typ	Max	Units	Test Conditions
I _S	Continuous Source Current (Body Diode)	—	—	-4.0	A	
I _{SM}	Pulse Source Current (Body Diode) ①	—	—	-20	A	
V _{SD}	Diode Forward Voltage	—	—	-6.0	V	T _J = 25°C, I _S = -4.0A, V _{GS} = 0V ④
t _{rr}	Reverse Recovery Time	—	—	400	ns	T _J = 25°C, I _F = -4.0A, di/dt ≤ -100A/μs
Q _{RR}	Reverse Recovery Charge	—	—	4.0	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	—	—	5.0	°C/W	
R _{thJA}	Junction-to-Ambient	—	—	175	°C/W	Typical socket mount



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