

**REPETITIVE AVALANCHE AND dv/dt RATED
HEXFET® TRANSISTORS
THRU-HOLE (TO-204AA/AE)**

**IRF9240
200V, P-CHANNEL**

Product Summary

Part Number	BVDSS	RDS(on)	Id
IRF9240	-200V	0.5Ω	-11A

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

Absolute Maximum Ratings

	Parameter		Units
ID @ VGS = 0V, TC = 25°C	Continuous Drain Current	-11	A
ID @ VGS = 0V, TC = 100°C	Continuous Drain Current	-7.0	
IDM	Pulsed Drain Current ①	-44	
PD @ TC = 25°C	Max. Power Dissipation	125	W
	Linear Derating Factor	1.0	W/°C
VGS	Gate-to-Source Voltage	±20	V
EAS	Single Pulse Avalanche Energy ②	500	mJ
IAR	Avalanche Current ①	-11	A
EAR	Repetitive Avalanche Energy ①	12.5	mJ
dv/dt	Peak Diode Recovery dv/dt ③	-5.0	V/ns
TJ	Operating Junction	-55 to 150	°C
TSTG	Storage Temperature Range		
	Lead Temperature	300 (0.063 in. (1.6mm) from case for 10s)	
	Weight	11.5(typical)	g

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IRF9240

Electrical Characteristics @ T_j = 25°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 = -1.0mA
ΔBV _{DSS} /ΔT _J	Temperature Coefficient of Breakdown Voltage	—	-0.20	—	V/°C	Reference to 25°C, I _D = -1.0mA
R _{DSS(on)}	Static Drain-to-Source On-State Resistance	—	—	0.5	Ω	V _{GS} = -10V, I _D = -7.0A ^④
		—	—	0.58		V _{GS} = -10V, I _D = -11A ^④
V _{GS(th)}	Gate Threshold Voltage	-2.0	—	-4.0	V	V _{DS} = V _{GS} , I _D = -250μA
g _{fs}	Forward Transconductance	4.0	—	—	S ^③	V _{DS} > -15V, I _{DS} = -7.0A ^④
I _{DSS}	Zero Gate Voltage Drain Current	—	—	-25	μA	V _{DS} = -160V, V _{GS} = 0V
		—	—	-250		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		V _{GS} = 20V
Q _g	Total Gate Charge	28	—	60	nC	V _{GS} = -10V, I _D = -11A
Q _{gs}	Gate-to-Source Charge	3.0	—	15		V _{DS} = -100V
Q _{gd}	Gate-to-Drain ('Miller') Charge	4.5	—	38		
t _{d(on)}	Turn-On Delay Time	—	—	35	ns	V _{DD} = -100V, I _D = -11A, R _G = 9.1Ω
t _r	Rise Time	—	—	85		
t _{d(off)}	Turn-Off Delay Time	—	—	85		
t _f	Fall Time	—	—	65		
L _S + L _D	Total Inductance	—	6.1	—	nH	Measured from drain lead (6mm/0.25in. from package) to source lead (6mm/0.25in. from package)
C _{iss}	Input Capacitance	—	1200	—	pF	V _{GS} = 0V, V _{DS} = -25V f = 1.0MHz
C _{oss}	Output Capacitance	—	570	—		
C _{rss}	Reverse Transfer Capacitance	—	81	—		

Source-Drain Diode Ratings and Characteristics

	Parameter	Min	Typ	Max	Units	Test Conditions
I _S	Continuous Source Current (Body Diode)	—	—	-11	A	
I _{SM}	Pulse Source Current (Body Diode) ^①	—	—	-44		
V _{SD}	Diode Forward Voltage	—	—	-4.6	V	T _j = 25°C, I _S = -11A, V _{GS} = 0V ^④
t _{rr}	Reverse Recovery Time	—	270	440	nS	T _j = 25°C, I _F = -11A, di/dt ≤ -100A/μs
Q _{RR}	Reverse Recovery Charge	—	—	7.2	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	—	—	1.0	°C/W	soldered to a 2" square copper-clad board
R _{thJA}	Junction-to-Ambient	—	—	30		