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REPETITIVE AVALANCHE AND dv/dt RATED

HEXFET® TRANSISTORS THRU-HOLE (TO-204AA/AE)

IRF240
200V, N-CHANNEL

Product Summary

Part Number	BVDSS	RDS(on)	ID
IRF240	200V	0.18Ω	18A

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; superior reverse energy and diode recovery dv/dt capability.

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
I_D @ V_{GS} = 0V, T_C = 25°C	Continuous Drain Current	18	A
I_D @ V_{GS} = 0V, T_C = 100°C	Continuous Drain Current	11	
I_{DM}	Pulsed Drain Current ①	72	
P_D @ T_C = 25°C	Max. Power Dissipation	125	W
	Linear Derating Factor	1.0	W/°C
V_{GS}	Gate-to-Source Voltage	±20	V
E_{AS}	Single Pulse Avalanche Energy ②	450	mJ
I_{AR}	Avalanche Current ①	18	A
E_{AR}	Repetitive Avalanche Energy ①	12.5	mJ
dv/dt	Peak Diode Recovery dv/dt ③	5.0	V/ns
T_J T_{STG}	Operating Junction Storage Temperature Range	-55 to 150	°C
	Lead Temperature	300 (0.063 in. (1.6mm) from case for 10s)	
	Weight	11.5(typical)	g

Electrical Characteristics @ Tj = 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
$\Delta BV_{DSS}/\Delta T_J$	Temperature Coefficient of Breakdown Voltage	—	0.29	—	V/°C	Reference to 25°C, I_D = 1.0mA
$R_{DS(on)}$	Static Drain-to-Source On-State Resistance	—	—	0.18	Ω	V_{GS} = 10V, I_D = 11A④
		—	—	0.21		V_{GS} = 10V, I_D =18A ④
$V_{GS(th)}$	Gate Threshold Voltage	2.0	—	4.0	V	V_{DS} = V_{GS}, I_D =250μA
g_{fs}	Forward Transconductance	6.1	—	—	S (℧)	V_{DS} > 15V, I_{DS} = 11A 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	32	—	60	nC	V_{GS} =10V, ID =18A V_{DS} = 100V
Q_{gs}	Gate-to-Source Charge	2.2	—	10.6		
Q_{gd}	Gate-to-Drain ('Miller') Charge	14	—	38		
$t_{d(on)}$	Turn-On Delay Time	—	—	20	ns	V_{DD} =100V, I_D =18A, R_G =9.1Ω
t_r	Rise Time	—	—	152		
$t_{d(off)}$	Turn-Off Delay Time	—	—	58		
t_f	Fall Time	—	—	67		
$L_S + L_D$	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	—	1300		pF	V_{GS} = 0V, V_{DS} = 25V f = 1.0MHz
C_{oss}	Output Capacitance	—	400	—		
C_{rss}	Reverse Transfer Capacitance	—	130	—		

Source-Drain Diode Ratings and Characteristics

	Parameter	Min	Typ	Max	Units	Test Conditions
I_S	Continuous Source Current (Body Diode)	—	—	18	A	
I_{SM}	Pulse Source Current (Body Diode) ①	—	—	72		
V_{SD}	Diode Forward Voltage	—	—	1.5	V	T_j = 25°C, I_S = 18A, V_{GS} = 0V ④
t_{rr}	Reverse Recovery Time	—	—	500	nS	T_j = 25°C, I_F = 18A, di/dt ≤ 100A/μs V_{DD} ≤ 50V ④
Q_{RR}	Reverse Recovery Charge	—	—	5.3	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	—	—	1.0	°C/W	
R_{thJA}	Junction to Ambient	—	—	30		Typical socket mount