

**REPETITIVE AVALANCHE AND  $dv/dt$  RATED  
HEXFET<sup>®</sup> 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<sup>®</sup> 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.

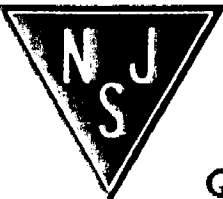
**Features:**

- Repetitive Avalanche Ratings
- Dynamic  $dv/dt$  Rating
- Hermetically Sealed
- Simple Drive Requirements
- Ease of Paralleling

**Absolute Maximum Ratings**

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

NJ Semi-Conductors reserves the right to change test conditions, parameter limits and package dimensions without notice. Information furnished by NJ Semi-Conductors is believed to be both accurate and reliable at the time of going to press. However, NJ Semi-Conductors assumes no responsibility for any errors or omissions discovered in its use. NJ Semi-Conductors encourages customers to verify that datasheets are current before placing orders.



## IRF240

### Electrical Characteristics @ $T_j = 25^\circ\text{C}$ (Unless Otherwise Specified)

	Parameter	Min	Typ	Max	Units	Test Conditions
BVDSS	Drain-to-Source Breakdown Voltage	200	—	—	V	$V_{GS} = 0V, I_D = 1.0mA$
$\Delta BVDSS/\Delta T_j$	Temperature Coefficient of Breakdown Voltage	—	0.29	—	V/°C	Reference to $25^\circ\text{C}, I_D = 1.0mA$
RDS(on)	Static Drain-to-Source On-State Resistance	—	—	0.18	$\Omega$	$V_{GS} = 10V, I_D = 11A$ ④
		—	—	0.21		$V_{GS} = 10V, I_D = 18A$ ④
VGS(th)	Gate Threshold Voltage	2.0	—	4.0	V	$V_{DS} = V_{GS}, I_D = 250\mu A$
$g_{fs}$	Forward Transconductance	6.1	—	—	S (③)	$V_{DS} > 15V, I_{DS} = 11A$ ④
$I_{DSS}$	Zero Gate Voltage Drain Current	—	—	25	$\mu A$	$V_{DS} = 160V, V_{GS} = 0V$
		—	—	250		$V_{DS} = 160V$ $V_{GS} = 0V, T_j = 125^\circ\text{C}$
$I_{GSS}$	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	32	—	60	nC	$V_{GS} = 10V, I_D = 18A$ $V_{DS} = 100V$
$Q_{gs}$	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		
$t_r$	Rise Time	—	—	152	ns	$V_{DD} = 100V, I_D = 18A,$ $R_G = 9.1\Omega$
$t_{d(off)}$	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		
VSD	Diode Forward Voltage	—	—	1.5	V	$T_j = 25^\circ\text{C}, I_S = 18A, V_{GS} = 0V$ ④
$t_{rr}$	Reverse Recovery Time	—	—	500	nS	$T_j = 25^\circ\text{C}, I_F = 18A, di/dt \leq 100A/\mu s$
QRR	Reverse Recovery Charge	—	—	5.3	$\mu C$	$V_{DD} \leq 50V$ 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	Typical socket mount
$R_{thJA}$	Junction to Ambient	—	—	30		