International
IOR Rectifier

PD - 94927A

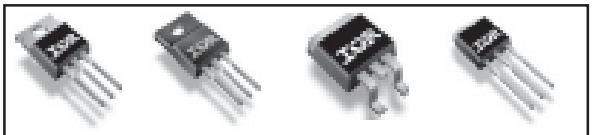
IRFB41N15DPbF
IRFIB41N15DPbF
IRFS41N15DPbF
IRFSL41N15DPbF

HEXFET® Power MOSFET

V_{DSS}	$R_{DS(on)}$ max	I_D
150V	0.045Ω	41A

Applications
- High frequency DC-DC converters
- Lead-Free

Benefits
- Low Gate-to-Drain Charge to Reduce Switching Losses
- Fully Characterized Capacitance Including Effective C_{OSS} to Simplify Design, (See App. Note AN1001)
- Fully Characterized Avalanche Voltage and Current



TO-220AB IRFB41N15D | TO-220 FullPak IRFIB41N15D | D^2Pak IRFS41N15D | TO-262 IRFSL41N15D

Absolute Maximum Ratings

	Parameter	Max.	Units
I_D @ T_C = 25°C	Continuous Drain Current, V_{GS} @ 10V	41	A
I_D @ T_C = 100°C	Continuous Drain Current, V_{GS} @ 10V	29	
I_{DM}	Pulsed Drain Current ①	164	
P_D @T_A = 25°C	Power Dissipation, D^2Pak	3.1	W
P_D @T_C = 25°C	Power Dissipation, TO-220	200	
P_D @T_C = 25°C	Power Dissipation, Fullpak	48	
	Linear Derating Factor, TO-220	1.3	W/°C
	Linear Derating Factor, Fullpak	0.32	
V_{GS}	Gate-to-Source Voltage	± 30	V
dv/dt	Peak Diode Recovery dv/dt ③	2.7	V/ns
T_J	Operating Junction and	-55 to + 175	°C
T_{STG}	Storage Temperature Range		
	Soldering Temperature, for 10 seconds	300 (1.6mm from case)	
	Mounting torque, 6-32 or M3 screw	1.1(10)	N•m (lbf•in)

Thermal Resistance

	Parameter	Typ.	Max.	Units
$R_{\theta JC}$	Junction-to-Case	—	0.75	°C/W
$R_{\theta JC}$	Junction-to-Case, Fullpak	—	3.14	
$R_{\theta cs}$	Case-to-Sink, Flat, Greased Surface ⑥	0.50	—	
$R_{\theta JA}$	Junction-to-Ambient, TO-220 ⑥	—	62	
$R_{\theta JA}$	Junction-to-Ambient, D^2Pak ⑦	—	40	
$R_{\theta JA}$	Junction-to-Ambient, Fullpak	—	65	

Notes ① through ⑦ are on page 12

Static @ T_J = 25°C (unless otherwise specified)

	Parameter	Min.	Typ.	Max.	Units	Conditions
$V_{(BR)DSS}$	Drain-to-Source Breakdown Voltage	150	—	—	V	V_{GS} = 0V, I_D = 250µA
$\Delta V_{(BR)DSS}/\Delta T_J$	Breakdown Voltage Temp. Coefficient	—	0.17	—	V/°C	Reference to 25°C, I_D = 1mA
$R_{DS(on)}$	Static Drain-to-Source On-Resistance	—	—	0.045	Ω	V_{GS} = 10V, I_D = 25A ④
$V_{GS(th)}$	Gate Threshold Voltage	3.0	—	5.5	V	V_{DS} = V_{GS}, I_D = 250µA
I_{DSS}	Drain-to-Source Leakage Current	—	—	25	µA	V_{DS} = 150V, V_{GS} = 0V
		—	—	250		V_{DS} = 120V, V_{GS} = 0V, T_J = 150°C
I_{GSS}	Gate-to-Source Forward Leakage	—	—	100	nA	V_{GS} = 30V
	Gate-to-Source Reverse Leakage	—	—	-100		V_{GS} = -30V

Dynamic @ T_J = 25°C (unless otherwise specified)

	Parameter	Min.	Typ.	Max.	Units	Conditions
gfs	Forward Transconductance	18	—	—	S	V_{DS} = 50V, I_D = 25A
Q_g	Total Gate Charge	—	72	110		I_D = 25A
Q_{gs}	Gate-to-Source Charge	—	21	31	nC	V_{DS} = 120V
Q_{gd}	Gate-to-Drain ("Miller") Charge	—	35	52		V_{GS} = 10V ④
$t_{d(on)}$	Turn-On Delay Time	—	16	—		V_{DD} = 75V
t_r	Rise Time	—	63	—		I_D = 25A
$t_{d(off)}$	Turn-Off Delay Time	—	25	—	ns	R_G = 2.5Ω
t_f	Fall Time	—	14	—		V_{GS} = 10V ④
C_{iss}	Input Capacitance	—	2520	—		V_{GS} = 0V
C_{oss}	Output Capacitance	—	510	—		V_{DS} = 25V
C_{rss}	Reverse Transfer Capacitance	—	110	—	pF	f = 1.0MHz
C_{oss}	Output Capacitance	—	3090	—		V_{GS} = 0V, V_{DS} = 1.0V, f = 1.0MHz
C_{oss}	Output Capacitance	—	230	—		V_{GS} = 0V, V_{DS} = 120V, f = 1.0MHz
C_{oss} eff.	Effective Output Capacitance	—	250	—		V_{GS} = 0V, V_{DS} = 0V to 120V ⑤

Avalanche Characteristics

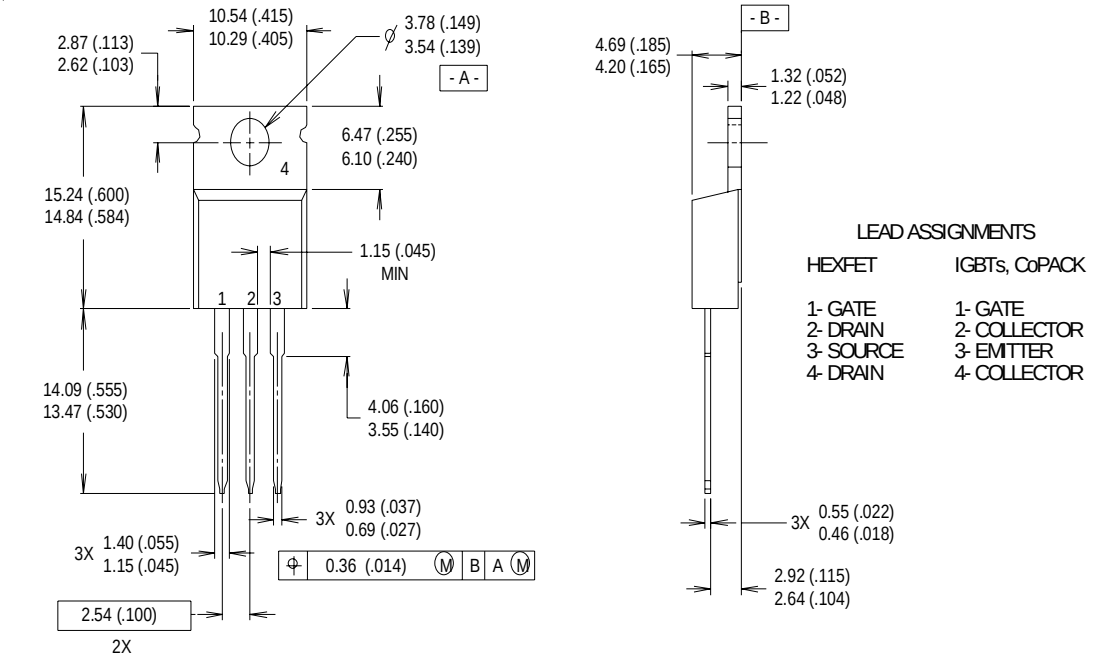
	Parameter	Typ.	Max.	Units
E_{AS}	Single Pulse Avalanche Energy②	—	470	mJ
I_{AR}	Avalanche Current ①	—	25	A
E_{AR}	Repetitive Avalanche Energy ①	—	20	mJ

Diode Characteristics

	Parameter	Min.	Typ.	Max.	Units	Conditions
I_S	Continuous Source Current (Body Diode)	—	—	41	A	MOSFET symbol showing the integral reverse p-n junction diode.
I_{SM}	Pulsed Source Current (Body Diode) ①	—	—	164		
V_{SD}	Diode Forward Voltage	—	—	1.3	V	T_J = 25°C, I_S = 25A, V_{GS} = 0V ④
t_{rr}	Reverse Recovery Time	—	170	260	ns	T_J = 25°C, I_F = 25A
Q_{rr}	Reverse Recovery Charge	—	1.3	1.9	µC	di/dt = 100A/µs ④
t_{on}	Forward Turn-On Time	Intrinsic turn-on time is negligible (turn-on is dominated by LS+LD)				

TO-220AB Package Outline

Dimensions are shown in millimeters (inches)



NOTES:

1 DIMENSIONING & TOLERANCING PER ANSI Y14.5M, 1982.

2 CONTROLLING DIMENSION : INCH

3 OUTLINE CONFORMS TO JEDEC OUTLINE TO-220AB.

4 HEATSINK & LEAD MEASUREMENTS DO NOT INCLUDE BURRS.

TO-220AB Part Marking Information

EXAMPLE: THIS IS AN IRF1010
LOT CODE 1789
ASSEMBLED ON WW 19, 1997
IN THE ASSEMBLY LINE "C"

Note: "P" in assembly line position indicates "Lead-Free"