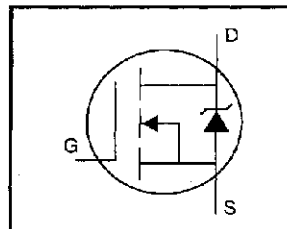


IRFIBC30GPbF

HEXFET® Power MOSFET

- Isolated Package
- High Voltage Isolation= 2.5KVRMS ⑤
- Sink to Lead Creepage Dist.= 4.8mm
- Dynamic dv/dt Rating
- Low Thermal Resistance
- Lead-Free



$$V_{DSS} = 600V$$

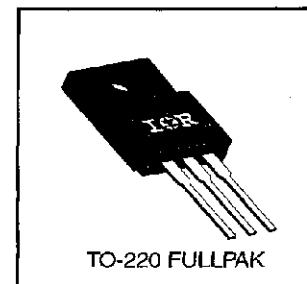
$$R_{DS(on)} = 2.2\Omega$$

$$I_D = 2.5A$$

Description

Third Generation HEXFETs from International Rectifier provide the designer with the best combination of fast switching, ruggedized device design, low on-resistance and cost-effectiveness.

The TO-220 Fullpak eliminates the need for additional insulating hardware in commercial-industrial applications. The moulding compound used provides a high isolation capability and a low thermal resistance between the tab and external heatsink. This isolation is equivalent to using a 100 micron mica barrier with standard TO-220 product. The Fullpak is mounted to a heatsink using a single clip or by a single screw fixing.



Absolute Maximum Ratings

	Parameter	Max.	Units
I_D @ $T_C = 25^\circ C$	Continuous Drain Current, V_{GS} @ 10 V	2.5	A
I_D @ $T_C = 100^\circ C$	Continuous Drain Current, V_{GS} @ 10 V	1.6	
I_{DM}	Pulsed Drain Current ①	10	
P_D @ $T_C = 25^\circ C$	Power Dissipation	35	W
	Linear Derating Factor	0.28	W/°C
V_{GS}	Gate-to-Source Voltage	±20	V
E_{AS}	Single Pulse Avalanche Energy ②	250	mJ
I_{AR}	Avalanche Current ①	2.5	A
E_{AR}	Repetitive Avalanche Energy ①	3.5	mJ
dv/dt	Peak Diode Recovery dv/dt ③	3.0	V/ns
T_J	Operating Junction and	-55 to +150	°C
T_{STG}	Storage Temperature Range		
	Soldering Temperature, for 10 seconds	300 (1.6mm from case)	
	Mounting Torque, 6-32 or M3 screw	10 lbf•in (1.1 N•m)	

Thermal Resistance

	Parameter	Min.	Typ.	Max.	Units
$R_{\theta JC}$	Junction-to-Case	—	—	3.6	°C/W
$R_{\theta JA}$	Junction-to-Ambient	—	—	65	

IRFIBC30GPbF

International
IR Rectifier

Electrical Characteristics @ $T_J = 25^\circ\text{C}$ (unless otherwise specified)

	Parameter	Min.	Typ.	Max.	Units	Test Conditions
$V_{(BR)DSS}$	Drain-to-Source Breakdown Voltage	600	—	—	V	$V_{GS}=0V$, $I_D=250\mu A$
$\Delta V_{(BR)DSS}/\Delta T_J$	Breakdown Voltage Temp. Coefficient	—	0.62	—	V/ $^\circ\text{C}$	Reference to 25°C , $I_D=1\text{mA}$
$R_{DS(on)}$	Static Drain-to-Source On-Resistance	—	—	2.2	Ω	$V_{GS}=10V$, $I_D=1.5A$ ④
$V_{GS(th)}$	Gate Threshold Voltage	2.0	—	4.0	V	$V_{DS}=V_{GS}$, $I_D=250\mu A$
g_{fs}	Forward Transconductance	2.2	—	—	S	$V_{DS}=50V$, $I_D=1.5A$ ④
I_{DSS}	Drain-to-Source Leakage Current	—	—	100	μA	$V_{DS}=600V$, $V_{GS}=0V$
		—	—	500		$V_{DS}=480V$, $V_{GS}=0V$, $T_J=125^\circ\text{C}$
I_{GSS}	Gate-to-Source Forward Leakage	—	—	100	nA	$V_{GS}=20V$
	Gate-to-Source Reverse Leakage	—	—	-100		$V_{GS}=-20V$
Q_g	Total Gate Charge	—	—	31	nC	$I_D=3.6A$
Q_{gs}	Gate-to-Source Charge	—	—	4.6		$V_{DS}=360V$
Q_{gd}	Gate-to-Drain ("Miller") Charge	—	—	17		$V_{GS}=10V$ See Fig. 6 and 13 ④
$t_{d(on)}$	Turn-On Delay Time	—	11	—	ns	$V_{DD}=300V$ $I_D=3.6A$ $R_G=12\Omega$ $R_D=82\Omega$ See Figure 10 ④
t_r	Rise Time	—	13	—		
$t_{d(off)}$	Turn-Off Delay Time	—	35	—		
t_f	Fall Time	—	14	—	nH	Between lead, 6 mm (0.25in.) from package and center of die contact
L_D	Internal Drain Inductance	—	4.5	—		
L_S	Internal Source Inductance	—	7.5	—		
C_{iss}	Input Capacitance	—	660	—	pF	$V_{GS}=0V$ $V_{DS}=25V$ $f=1.0\text{MHz}$ See Figure 5
C_{oss}	Output Capacitance	—	86	—		
C_{rss}	Reverse Transfer Capacitance	—	19	—		
C	Drain to Sink Capacitance	—	12	—	pF	$f=1.0\text{MHz}$

Source-Drain Ratings and Characteristics

	Parameter	Min.	Typ.	Max.	Units	Test Conditions
I_S	Continuous Source Current (Body Diode)	—	—	2.5	A	MOSFET symbol showing the integral reverse p-n junction diode.
I_{SM}	Pulsed Source Current (Body Diode) ①	—	—	10		
V_{SD}	Diode Forward Voltage	—	—	1.6	V	$T_J=25^\circ\text{C}$, $I_S=2.5A$, $V_{GS}=0V$ ④
t_{rr}	Reverse Recovery Time	—	400	810	ns	$T_J=25^\circ\text{C}$, $I_F=3.6A$
Q_{rr}	Reverse Recovery Charge	—	2.1	4.2	μC	$di/dt=100A/\mu s$ ④
t_{on}	Forward Turn-On Time	Intrinsic turn-on time is negligible (turn-on is dominated by L_S+L_D)				

Notes:

① Repetitive rating; pulse width limited by max. junction temperature (See Figure 11)

③ $I_{SD} \leq 3.6A$, $di/dt \leq 60A/\mu s$, $V_{DD} \leq V_{(BR)DSS}$, $T_J \leq 150^\circ\text{C}$

⑤ $t=60s$, $f=60\text{Hz}$

② $V_{DD}=50V$, starting $T_J=25^\circ\text{C}$, $L=73\text{mH}$
 $R_G=25\Omega$, $I_{AS}=2.5A$ (See Figure 12)

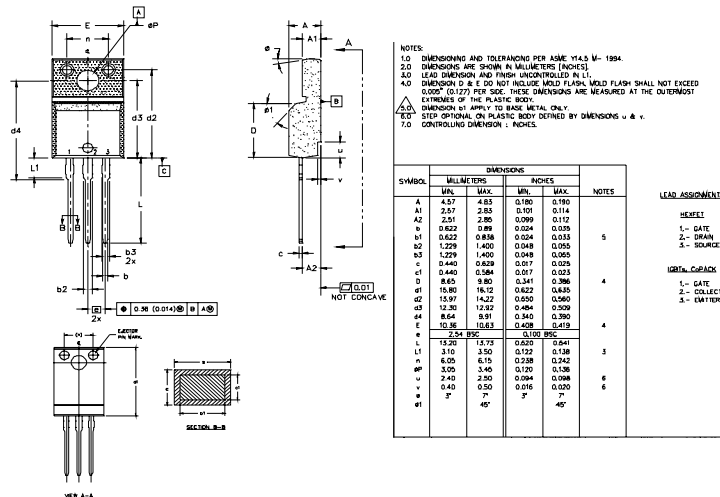
④ Pulse width $\leq 300\mu s$; duty cycle $\leq 2\%$.

IRFIBC30GPbF

International
IOR Rectifier

TO-220 Full-Pak Package Outline

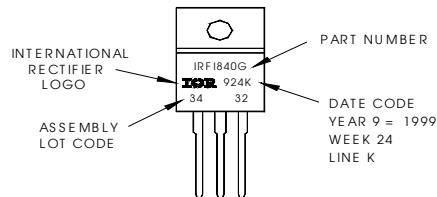
Dimensions are shown in millimeters (inches)



TO-220 Full-Pak Part Marking Information

EXAMPLE: THIS IS AN IRF1840G
WITH ASSEMBLY
LOT CODE 3432
ASSEMBLED ON WW 24 1999
IN THE ASSEMBLY LINE "K"

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



International
IOR Rectifier