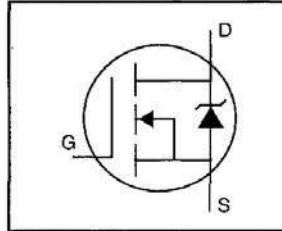


IRFP240PbF

HEXFET® Power MOSFET

- Dynamic dv/dt Rating
- Repetitive Avalanche Rated
- Isolated Central Mounting Hole
- Fast Switching
- Ease of Paralleling
- Simple Drive Requirements
- Lead-Free



$$V_{DSS} = 200V$$

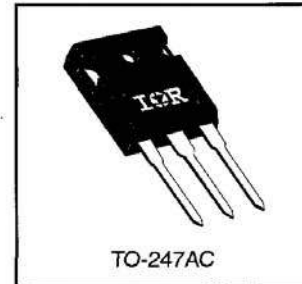
$$R_{DS(on)} = 0.18\Omega$$

$$I_D = 20A$$

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-247 package is preferred for commercial–industrial applications where higher power levels preclude the use of TO-220 devices. The TO-247 is similar but superior to the earlier TO-218 package because of its isolated mounting hole. It also provides greater creepage distance between pins to meet the requirements of most safety specifications.




Absolute Maximum Ratings

	Parameter	Max.	Units
I_D @ $T_C = 25^\circ C$	Continuous Drain Current, $V_{GS} @ 10 V$	20	A
I_D @ $T_C = 100^\circ C$	Continuous Drain Current, $V_{GS} @ 10 V$	12	
I_{DM}	Pulsed Drain Current ①	80	
P_D @ $T_C = 25^\circ C$	Power Dissipation	150	W
	Linear Derating Factor	1.2	W/°C
V_{GS}	Gate-to-Source Voltage	± 20	V
E_{AS}	Single Pulse Avalanche Energy ②	510	mJ
I_{AR}	Avalanche Current ①	20	A
E_{AR}	Repetitive Avalanche Energy ①	15	mJ
dv/dt	Peak Diode Recovery dv/dt ③	5.0	V/ns
T_J T_{STG}	Operating Junction and Storage Temperature Range	-55 to +150	°C
	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	—	—	0.83	°C/W
$R_{\theta CS}$	Case-to-Sink, Flat, Greased Surface	—	0.24	—	
$R_{\theta JA}$	Junction-to-Ambient	—	—	40	

Electrical Characteristics @ T_J = 25°C (unless otherwise specified)

	Parameter	Min.	Typ.	Max.	Units	Test Conditions
V _{(BR)DSS}	Drain-to-Source Breakdown Voltage	200	—	—	V	V _{GS} =0V, I _D = 250μA
ΔV _{(BR)DSS/ΔT_J}	Breakdown Voltage Temp. Coefficient	—	0.29	—	V/°C	Reference to 25°C, I _D = 1mA
R _{DS(on)}	Static Drain-to-Source On-Resistance	—	—	0.18	Ω	V _{GS} =10V, I _D =12A ④
V _{GS(th)}	Gate Threshold Voltage	2.0	—	4.0	V	V _{DS} =V _{GS} , I _D = 250μA
g _{fs}	Forward Transconductance	6.9	—	—	S	V _{DS} =50V, I _D =12A ④
I _{DSS}	Drain-to-Source Leakage Current	—	—	25	μA	V _{DS} =200V, V _{GS} =0V
		—	—	250		V _{DS} =160V, V _{GS} =0V, T _J =125°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	—	—	70	nC	I _D =18A
Q _{gs}	Gate-to-Source Charge	—	—	13		V _{DS} =160V
Q _{gd}	Gate-to-Drain ("Miller") Charge	—	—	39		V _{GS} =10V See Fig. 6 and 13 ④
t _{d(on)}	Turn-On Delay Time	—	14	—	ns	V _{DD} =100V
t _r	Rise Time	—	51	—		I _D =18A
t _{d(off)}	Turn-Off Delay Time	—	45	—		R _G =9.1Ω
t _f	Fall Time	—	36	—		R _D =5.4Ω See Figure 10 ④
L _D	Internal Drain Inductance	—	5.0	—	nH	Between lead, 6 mm (0.25in.) from package and center of die contact
L _S	Internal Source Inductance	—	13	—		
C _{iss}	Input Capacitance	—	1300	—	pF	V _{GS} =0V
C _{oss}	Output Capacitance	—	400	—		V _{DS} = 25V
C _{rss}	Reverse Transfer Capacitance	—	130	—		f=1.0MHz See Figure 5

Source-Drain Ratings and Characteristics

	Parameter	Min.	Typ.	Max.	Units	Test Conditions
I _S	Continuous Source Current (Body Diode)	—	—	20	A	MOSFET symbol showing the integral reverse p-n junction diode. 
I _{SM}	Pulsed Source Current (Body Diode) ①	—	—	80		
V _{SD}	Diode Forward Voltage	—	—	2.0	V	T _J =25°C, I _S =20A, V _{GS} =0V ④
t _{rr}	Reverse Recovery Time	—	300	610	ns	T _J =25°C, I _F =18A
Q _{rr}	Reverse Recovery Charge	—	3.4	7.1	μC	di/dt=100A/μs 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)

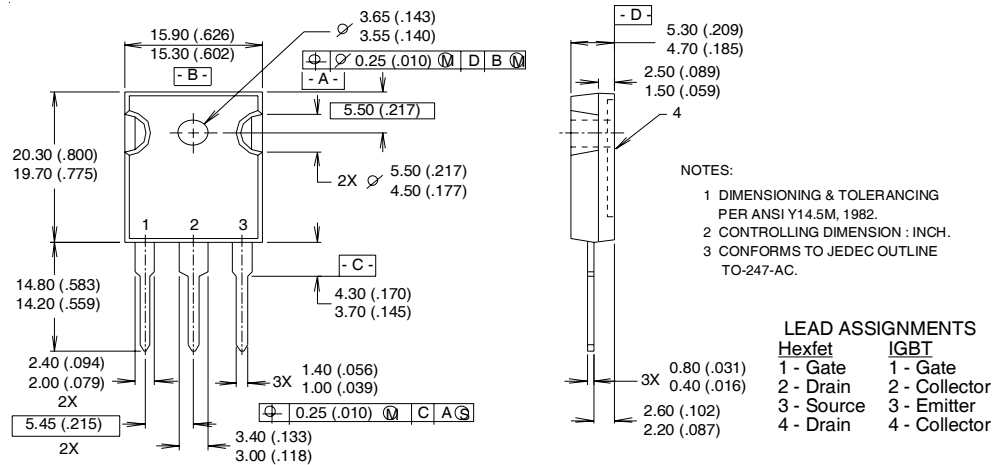
③ I_{SD}≤18A, di/dt≤150A/μs, V_{DD}≤V_{(BR)DSS}, T_J≤150°C

② V_{DD}=50V, starting T_J=25°C, L=1.9mH R_G=25Ω, I_{AS}=20A (See Figure 12)

④ Pulse width ≤ 300 μs; duty cycle ≤2%.

TO-247AC Package Outline

Dimensions are shown in millimeters (inches)



TO-247AC Part Marking Information

EXAMPLE: THIS IS AN IRFPE30
 WITH ASSEMBLY
 LOT CODE 5657
 ASSEMBLED ON WW 35, 2000
 IN THE ASSEMBLY LINE "H"

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

