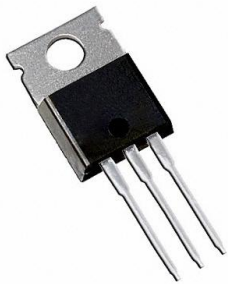


IRLZ34NPBF Datasheet

www.digi-electronics.com



<https://www.DiGi-Electronics.com>

DiGi Electronics Part Number	IRLZ34NPBF-DG
Manufacturer	Infineon Technologies
Manufacturer Product Number	IRLZ34NPBF
Description	MOSFET N-CH 55V 30A TO220AB
Detailed Description	N-Channel 55 V 30A (Tc) 68W (Tc) Through Hole TO-220AB



Tel: +00 852-30501935

RFQ Email: Info@DiGi-Electronics.com

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Purchase and inquiry

Manufacturer Product Number:

IRLZ34NPBF

Series:

HEXFET®

FET Type:

N-Channel

Drain to Source Voltage (Vdss):

55 V

Drive Voltage (Max Rds On, Min Rds On):

4V, 10V

Vgs(th) (Max) @ Id:

2V @ 250µA

Vgs (Max):

±16V

FET Feature:

-

Operating Temperature:

-55°C ~ 175°C (Tj)

Supplier Device Package:

TO-220AB

Base Product Number:

IRLZ34

Manufacturer:

Infineon Technologies

Product Status:

Active

Technology:

MOSFET (Metal Oxide)

Current - Continuous Drain (Id) @ 25°C:

30A (Tc)

Rds On (Max) @ Id, Vgs:

35mOhm @ 16A, 10V

Gate Charge (Qg) (Max) @ Vgs:

25 nC @ 5 V

Input Capacitance (Ciss) (Max) @ Vds:

880 pF @ 25 V

Power Dissipation (Max):

68W (Tc)

Mounting Type:

Through Hole

Package / Case:

TO-220-3

Environmental & Export classification

RoHS Status:

ROHS3 Compliant

REACH Status:

REACH Unaffected

HTSUS:

8541.29.0095

Moisture Sensitivity Level (MSL):

1 (Unlimited)

ECCN:

EAR99

International
IR Rectifier

PD - 94830

IRLZ34NPbF

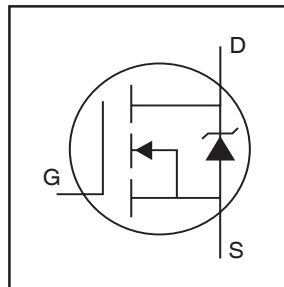
HEXFET® Power MOSFET

- Logic-Level Gate Drive
- Advanced Process Technology
- Dynamic dv/dt Rating
- 175°C Operating Temperature
- Fast Switching
- Fully Avalanche Rated
- Lead-Free

Description

Fifth Generation HEXFETs from International Rectifier utilize advanced processing techniques to achieve the lowest possible on-resistance per silicon area. This benefit, combined with the fast switching speed and ruggedized device design that HEXFET Power MOSFETs are well known for, provides the designer with an extremely efficient device for use in a wide variety of applications.

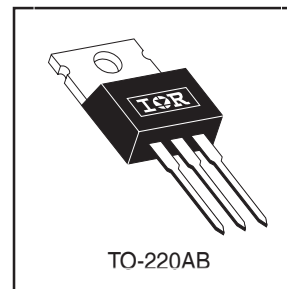
The TO-220 package is universally preferred for all commercial-industrial applications at power dissipation levels to approximately 50 watts. The low thermal resistance and low package cost of the TO-220 contribute to its wide acceptance throughout the industry.



$$V_{DSS} = 55V$$

$$R_{DS(on)} = 0.035\Omega$$

$$I_D = 30A$$



Absolute Maximum Ratings

	Parameter	Max.	Units
$I_D @ T_C = 25^\circ\text{C}$	Continuous Drain Current, $V_{GS} @ 10V$	30	A
$I_D @ T_C = 100^\circ\text{C}$	Continuous Drain Current, $V_{GS} @ 10V$	21	
I_{DM}	Pulsed Drain Current $\text{\textcircled{D}}$	110	
$P_D @ T_C = 25^\circ\text{C}$	Power Dissipation	68	W
	Linear Derating Factor	0.45	W/°C
V_{GS}	Gate-to-Source Voltage	± 16	V
E_{AS}	Single Pulse Avalanche Energy $\text{\textcircled{2}}$	110	mJ
I_{AR}	Avalanche Current $\text{\textcircled{D}}$	16	A
E_{AR}	Repetitive Avalanche Energy $\text{\textcircled{D}}$	6.8	mJ
dv/dt	Peak Diode Recovery dv/dt $\text{\textcircled{3}}$	5.0	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.	10 lbf•in (1.1N•m)	

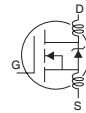
Thermal Resistance

	Parameter	Min.	Typ.	Max.	Units
$R_{\theta JC}$	Junction-to-Case	---	---	2.2	°C/W
$R_{\theta CS}$	Case-to-Sink, Flat, Greased Surface	---	0.50	---	
$R_{\theta JA}$	Junction-to-Ambient	---	---	62	

IRLZ34NPbF

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

	Parameter	Min.	Typ.	Max.	Units	Conditions
$V_{(BR)DSS}$	Drain-to-Source Breakdown Voltage	55	—	—	V	$V_{GS} = 0V, I_D = 250\mu A$
$\Delta V_{(BR)DSS}/\Delta T_J$	Breakdown Voltage Temp. Coefficient	—	0.065	—	V/°C	Reference to $25^\circ\text{C}, I_D = 1\text{mA}$
$R_{DS(on)}$	Static Drain-to-Source On-Resistance	—	—	0.035	Ω	$V_{GS} = 10V, I_D = 16A$ ④
		—	—	0.046		$V_{GS} = 5.0V, I_D = 16A$ ④
		—	—	0.060		$V_{GS} = 4.0V, I_D = 14A$ ④
$V_{GS(th)}$	Gate Threshold Voltage	1.0	—	2.0	V	$V_{DS} = V_{GS}, I_D = 250\mu A$
g_{fs}	Forward Transconductance	11	—	—	S	$V_{DS} = 25V, I_D = 16A$
I_{DSS}	Drain-to-Source Leakage Current	—	—	25	μA	$V_{DS} = 55V, V_{GS} = 0V$
		—	—	250		$V_{DS} = 44V, V_{GS} = 0V, T_J = 150^\circ\text{C}$
I_{GSS}	Gate-to-Source Forward Leakage	—	—	100	nA	$V_{GS} = 16V$
	Gate-to-Source Reverse Leakage	—	—	-100		$V_{GS} = -16V$
Q_g	Total Gate Charge	—	—	25	nC	$I_D = 16A$
Q_{gs}	Gate-to-Source Charge	—	—	5.2		$V_{DS} = 44V$
Q_{gd}	Gate-to-Drain ("Miller") Charge	—	—	14		$V_{GS} = 5.0V$, See Fig. 6 and 13 ④
$t_{d(on)}$	Turn-On Delay Time	—	8.9	—	ns	$V_{DD} = 28V$
t_r	Rise Time	—	100	—		$I_D = 16A$
$t_{d(off)}$	Turn-Off Delay Time	—	21	—		$R_G = 6.5\Omega, V_{GS} = 5.0V$
t_f	Fall Time	—	29	—		$R_D = 1.8\Omega$, See Fig. 10 ④
L_D	Internal Drain Inductance	—	4.5	—	nH	Between lead, 6mm (0.25in.) from package and center of die contact
L_S	Internal Source Inductance	—	7.5	—		
C_{iss}	Input Capacitance	—	880	—	pF	$V_{GS} = 0V$
C_{oss}	Output Capacitance	—	220	—		$V_{DS} = 25V$
C_{rss}	Reverse Transfer Capacitance	—	94	—		$f = 1.0\text{MHz}$, See Fig. 5



Source-Drain Ratings and Characteristics

	Parameter	Min.	Typ.	Max.	Units	Conditions
I_S	Continuous Source Current (Body Diode)	—	—	30	A	MOSFET symbol showing the integral reverse p-n junction diode.
I_{SM}	Pulsed Source Current (Body Diode) ①	—	—	110		
V_{SD}	Diode Forward Voltage	—	—	1.3	V	$T_J = 25^\circ\text{C}, I_S = 16A, V_{GS} = 0V$ ②
t_{rr}	Reverse Recovery Time	—	76	110	ns	$T_J = 25^\circ\text{C}, I_F = 16A$
Q_{rr}	Reverse Recovery Charge	—	190	290	nC	$di/dt = 100A/\mu s$ ③
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 fig. 11)
 ② $V_{DD} = 25V$, starting $T_J = 25^\circ\text{C}$, $L = 610\mu H$
 $R_G = 25\Omega, I_{AS} = 16A$. (See Figure 12)

- ③ $I_{SD} \leq 16A, di/dt \leq 270A/\mu s, V_{DD} \leq V_{(BR)DSS}$,
 $T_J \leq 175^\circ\text{C}$
 ④ Pulse width $\leq 300\mu s$; duty cycle $\leq 2\%$.

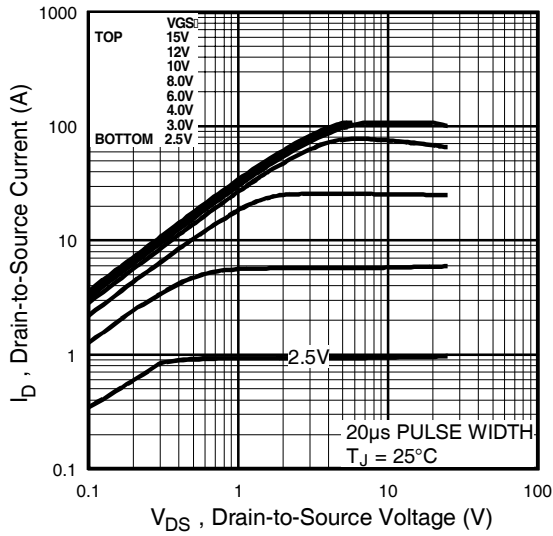


Fig 1. Typical Output Characteristics

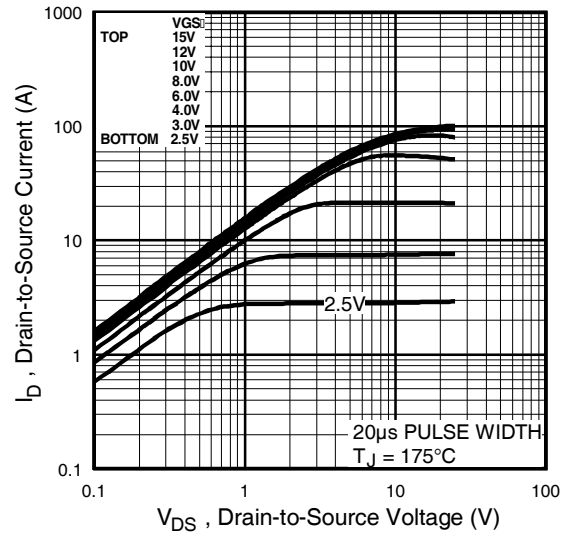


Fig 2. Typical Output Characteristics

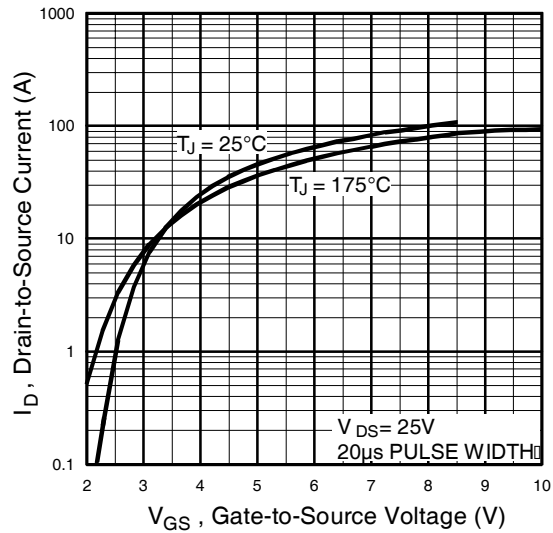


Fig 3. Typical Transfer Characteristics

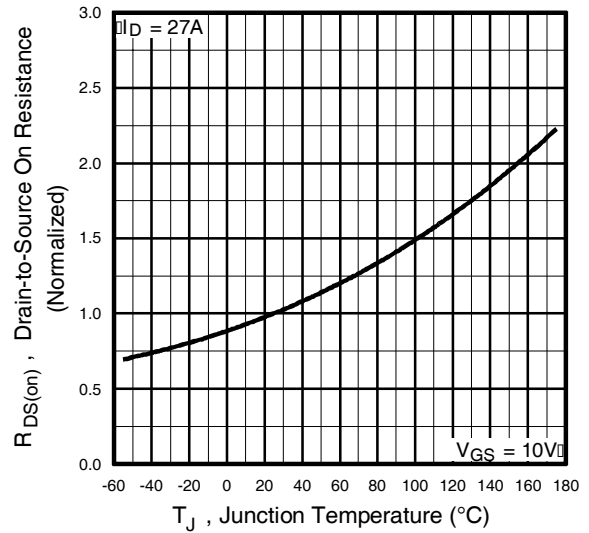


Fig 4. Normalized On-Resistance Vs. Temperature

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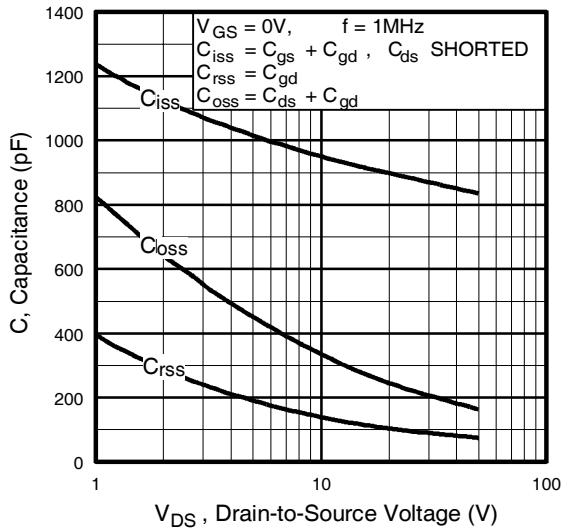


Fig 5. Typical Capacitance Vs. Drain-to-Source Voltage

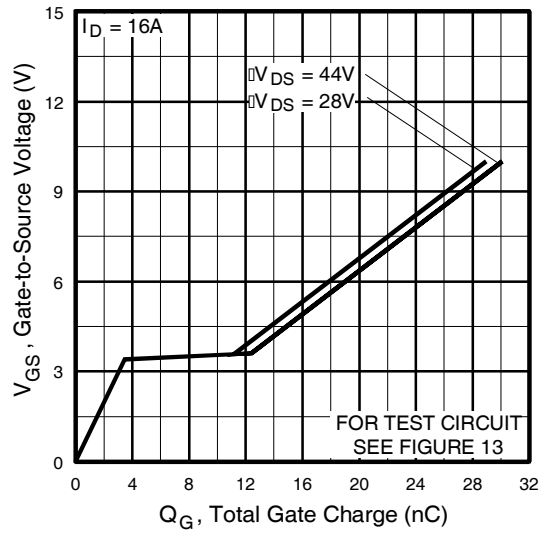


Fig 6. Typical Gate Charge Vs. Gate-to-Source Voltage

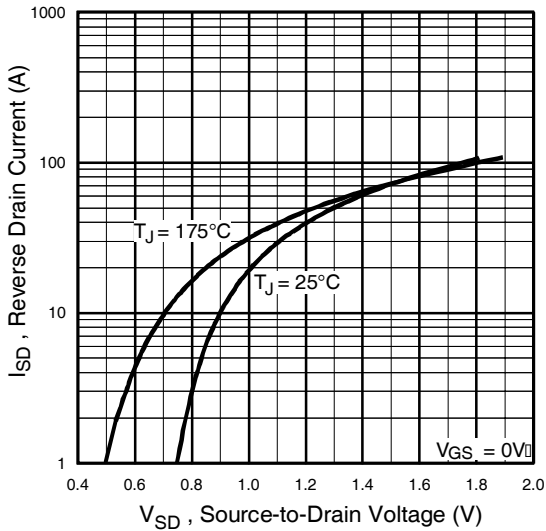


Fig 7. Typical Source-Drain Diode Forward Voltage

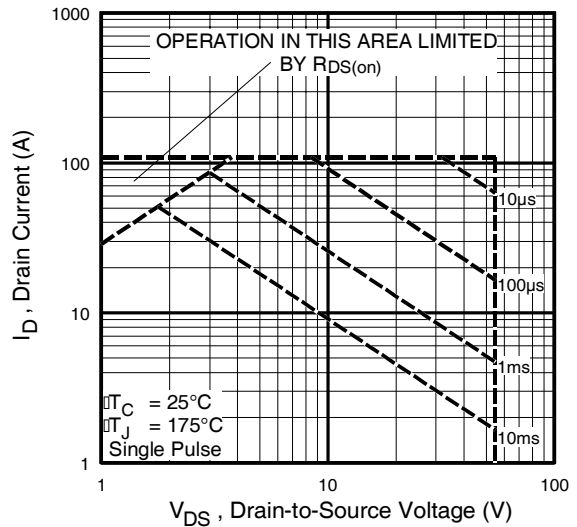


Fig 8. Maximum Safe Operating Area

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IOR Rectifier

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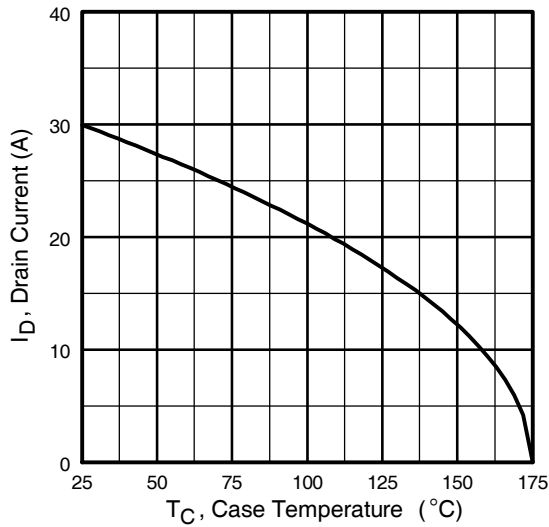


Fig 9. Maximum Drain Current Vs. Case Temperature

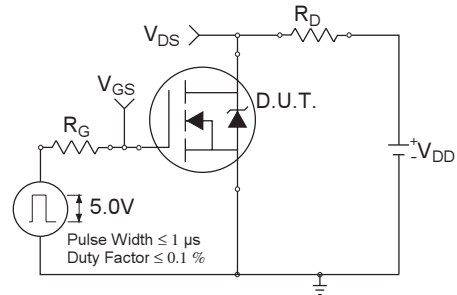


Fig 10a. Switching Time Test Circuit

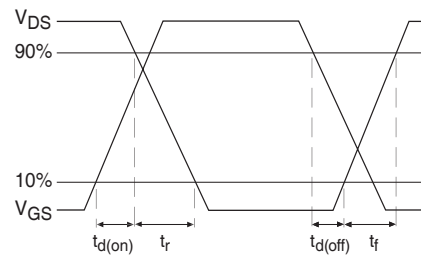


Fig 10b. Switching Time Waveforms

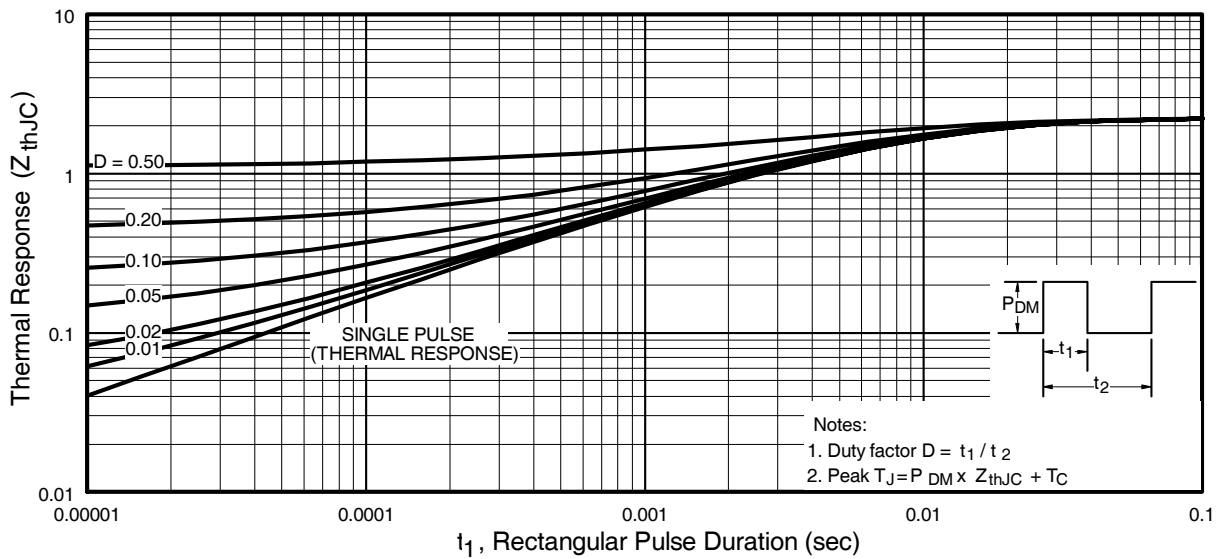


Fig 11. Maximum Effective Transient Thermal Impedance, Junction-to-Case

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IR Rectifier

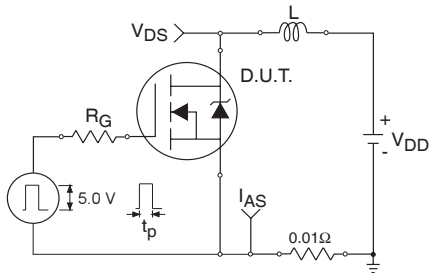


Fig 12a. Unclamped Inductive Test Circuit

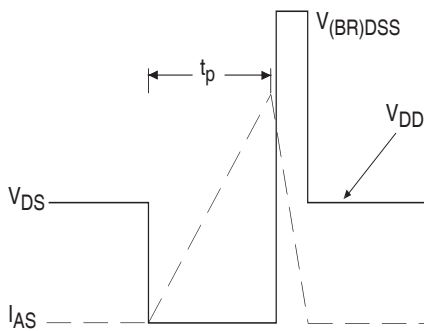


Fig 12b. Unclamped Inductive Waveforms

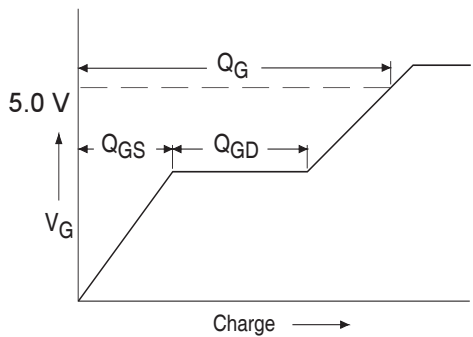


Fig 13a. Basic Gate Charge Waveform

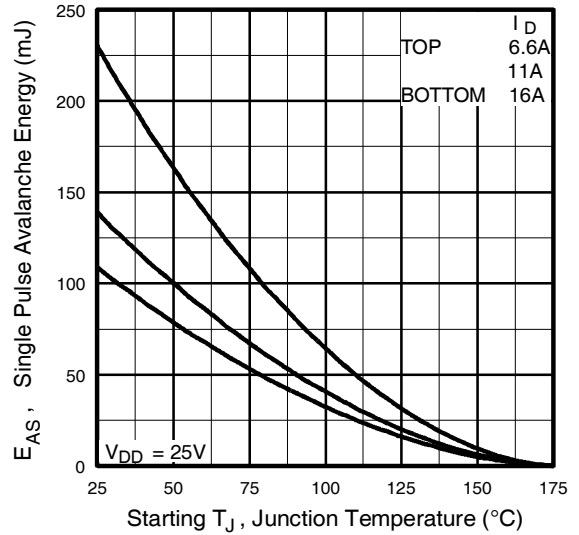


Fig 12c. Maximum Avalanche Energy Vs. Drain Current

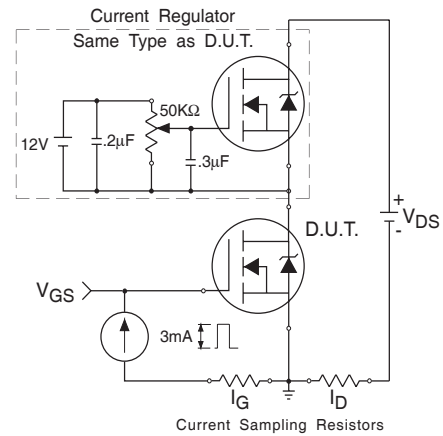
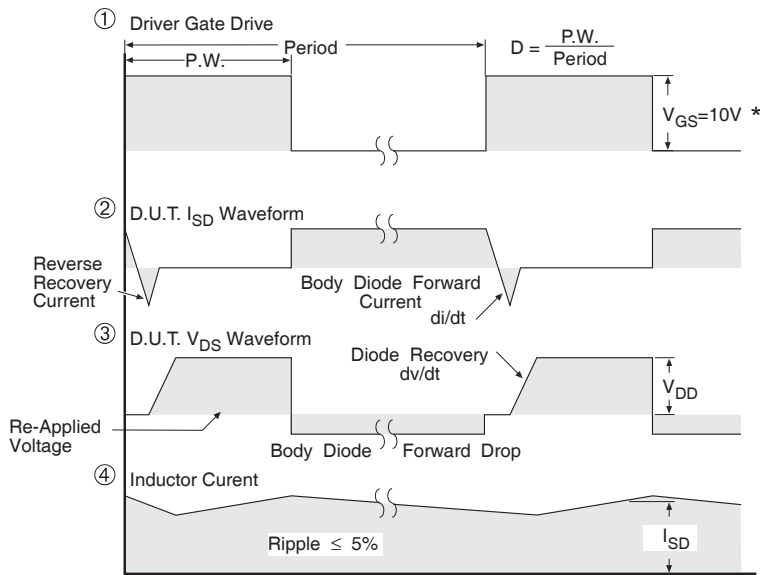
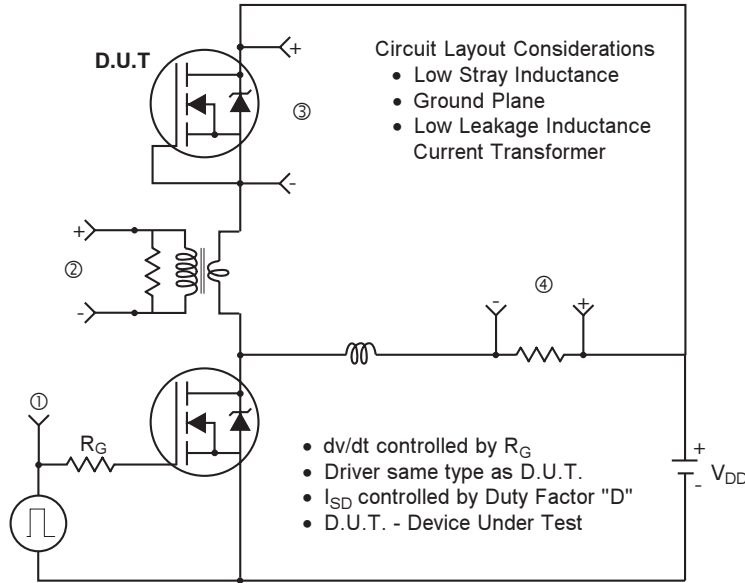


Fig 13b. Gate Charge Test Circuit

Peak Diode Recovery dv/dt Test Circuit



* $V_{GS} = 5V$ for Logic Level Devices

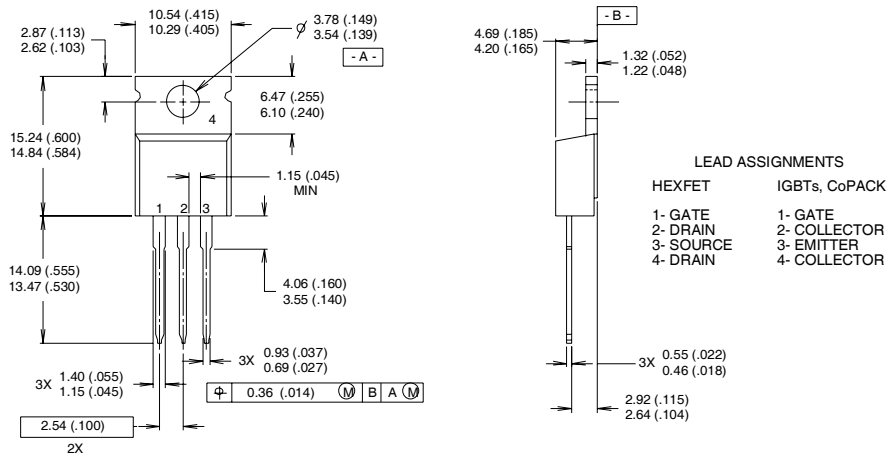
Fig 14. For N-Channel HEXFETS

IRLZ34NPbF



TO-220AB Package Outline

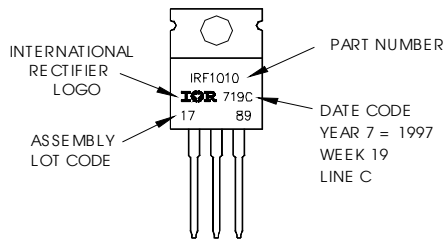
Dimensions are shown in millimeters (inches)



- 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"



Data and specifications subject to change without notice.



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 TAC Fax: (310) 252-7903

Visit us at www.irf.com for sales contact information.11/03

Note: For the most current drawings please refer to the IR website at:
<http://www.irf.com/package/>

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