



گروه فنی مهندسی جوش و برش مقدم

اعتماد از شما کیفیت و تخصص از ما



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051-37581400



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مشهد خیام شمالی 63 خیابان پردیس 3

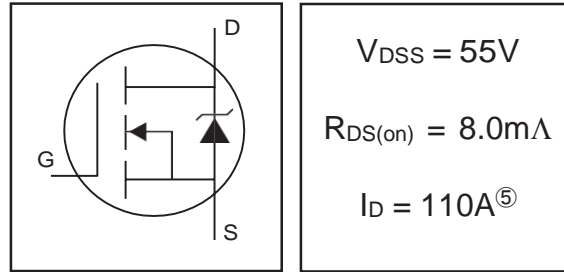
برای کسب اطلاعات بیشتر بر روی لینک ها کلیک کنید

- 7 سال سابقه آموزش تعمیرات تخصصی دستگاه های جوش اینورتری تک فاز و 3 فاز
- 7 سال سابقه فروش قطعات الکترونیکی دستگاه جوش تک فاز و 3 فاز
- آموزش تخصصی تحلیل دستگاه های جوش اینورتری مختص ابراز فروشان
- آموزش تخصصی ابراز آلات شارژی

IRF3205PbF

HEXFET® Power MOSFET

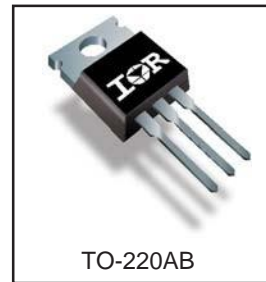
- Advanced Process Technology
- Ultra Low On-Resistance
- Dynamic dv/dt Rating
- 175°C Operating Temperature
- Fast Switching
- Fully Avalanche Rated
- Lead-Free



Description

Advanced HEXFET® Power MOSFETs from International Rectifier utilize advanced processing techniques to achieve extremely low 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 and reliable 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.



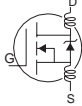
Absolute Maximum Ratings

	Parameter	Max.	Units
$I_D @ T_C = 25^\circ C$	Continuous Drain Current, $V_{GS} @ 10V$	110	A
$I_D @ T_C = 100^\circ C$	Continuous Drain Current, $V_{GS} @ 10V$	80	
I_{DM}	Pulsed Drain Current ⁽¹⁾	390	
$P_D @ T_C = 25^\circ C$	Power Dissipation	200	W
	Linear Derating Factor	1.3	W/°C
V_{GS}	Gate-to-Source Voltage	± 20	V
I_{AR}	Avalanche Current ⁽¹⁾	62	A
E_{AR}	Repetitive Avalanche Energy ⁽¹⁾	20	mJ
dv/dt	Peak Diode Recovery dv/dt ⁽³⁾	5.0	V/ns
T_J	Operating Junction and	-55 to + 175	°C
T_{STG}	Storage Temperature Range		
	Soldering Temperature, for 10 seconds		
	Mounting torque, 6-32 or M3 screw	10 lbf•in (1.1N•m)	

Thermal Resistance

	Parameter	Typ.	Max.	Units
$R_{\theta JC}$	Junction-to-Case	—	0.75	°C/W
$R_{\theta CS}$	Case-to-Sink, Flat, Greased Surface	0.50	—	
$R_{\theta JA}$	Junction-to-Ambient	—	62	

Electrical Characteristics @ T_J = 25°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 = 250μA
ΔV _{(BR)DSS/ΔT_J}	Breakdown Voltage Temp. Coefficient	—	0.057	—	V/°C	Reference to 25°C, I _D = 1mA
R _{DS(on)}	Static Drain-to-Source On-Resistance	—	—	8.0	mΩ	V _{GS} = 10V, I _D = 62A ④
V _{GS(th)}	Gate Threshold Voltage	2.0	—	4.0	V	V _{DS} = V _{GS} , I _D = 250μA
g _{fs}	Forward Transconductance	44	—	—	S	V _{DS} = 25V, I _D = 62A ④
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°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	—	—	146	nA	I _D = 62A
Q _{gs}	Gate-to-Source Charge	—	—	35		V _{DS} = 44V
Q _{gd}	Gate-to-Drain ("Miller") Charge	—	—	54		V _{GS} = 10V, See Fig. 6 and 13
t _{d(on)}	Turn-On Delay Time	—	14	—		ns
t _r	Rise Time	—	101	—	I _D = 62A	
t _{d(off)}	Turn-Off Delay Time	—	50	—	R _G = 4.5Ω	
t _f	Fall Time	—	65	—	V _{GS} = 10V, 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	—	3247	—	pF	V _{GS} = 0V
C _{oss}	Output Capacitance	—	781	—		V _{DS} = 25V
C _{rss}	Reverse Transfer Capacitance	—	211	—		f = 1.0MHz, See Fig. 5
E _{AS}	Single Pulse Avalanche Energy ①	—	1050 ⑥	264 ⑦		mJ

Source-Drain Ratings and Characteristics

	Parameter	Min.	Typ.	Max.	Units	Conditions
I _S	Continuous Source Current (Body Diode)	—	—	110	A	MOSFET symbol showing the integral reverse p-n junction diode.
I _{SM}	Pulsed Source Current (Body Diode) ①	—	—	390		
V _{SD}	Diode Forward Voltage	—	—	1.3	V	T _J = 25°C, I _S = 62A, V _{GS} = 0V ④
t _{rr}	Reverse Recovery Time	—	69	104	ns	T _J = 25°C, I _F = 62A
Q _{rr}	Reverse Recovery Charge	—	143	215	nC	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 fig. 11)

② Starting T_J = 25°C, L = 138μH
R_G = 25Ω, I_{AS} = 62A. (See Figure 12)

③ I_{SD} ≤ 62A, di/dt ≤ 207A/μs, V_{DD} ≤ V_{(BR)DSS},
T_J ≤ 175°C

④ Pulse width ≤ 400μs; duty cycle ≤ 2%.

Calculated continuous current based on maximum allowable junction temperature. Package limitation current is 75A.

⑥ This is a typical value at device destruction and represents operation outside rated limits.

⑦ This is a calculated value limited to T_J = 175°C.

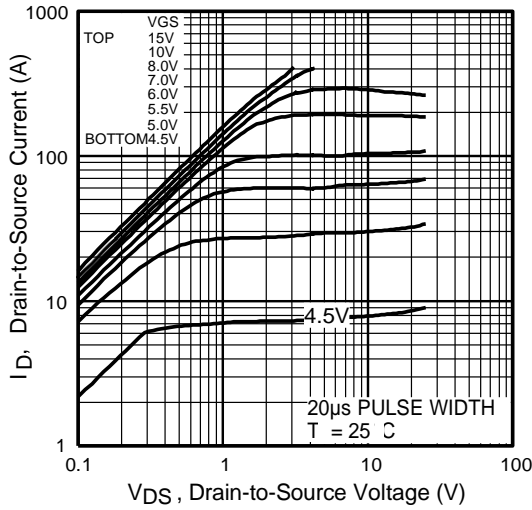


Fig 1. Typical Output Characteristics

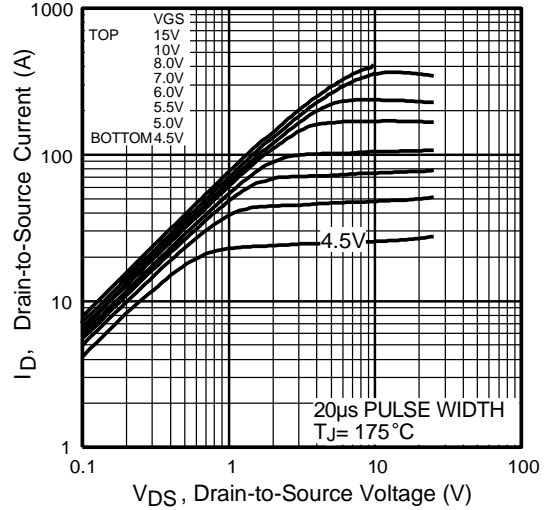


Fig 2. Typical Output Characteristics

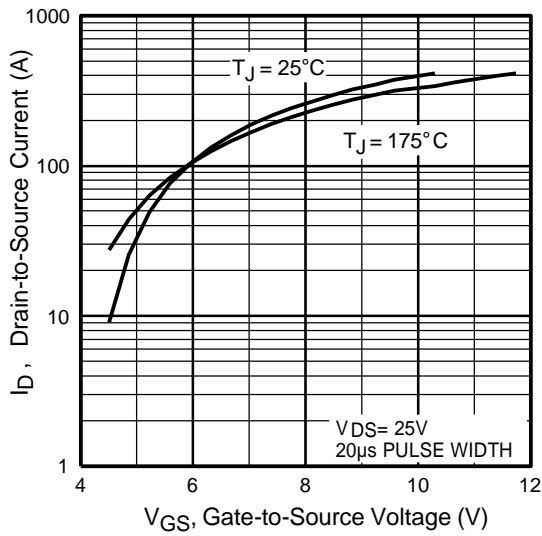


Fig 3. Typical Transfer Characteristics

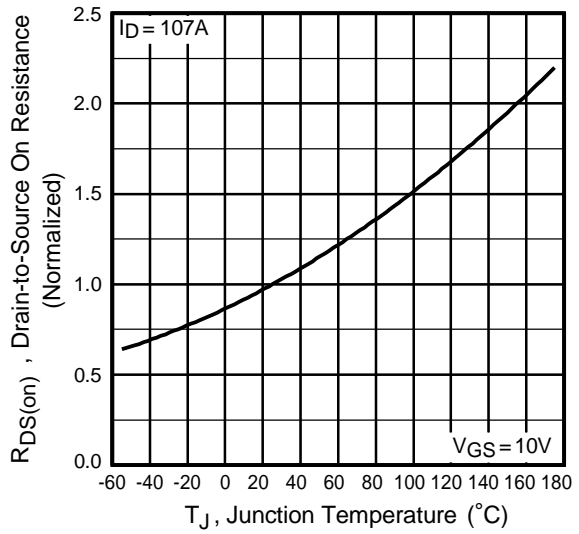


Fig 4. Normalized On-Resistance Vs. Temperature

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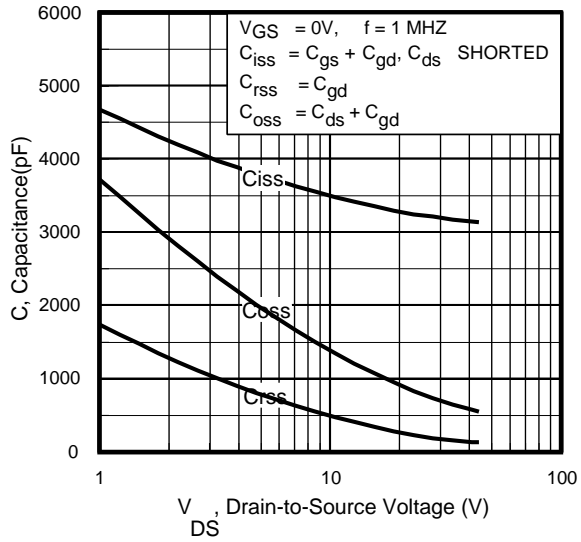


Fig 5. Typical Capacitance Vs. Drain-to-Source Voltage

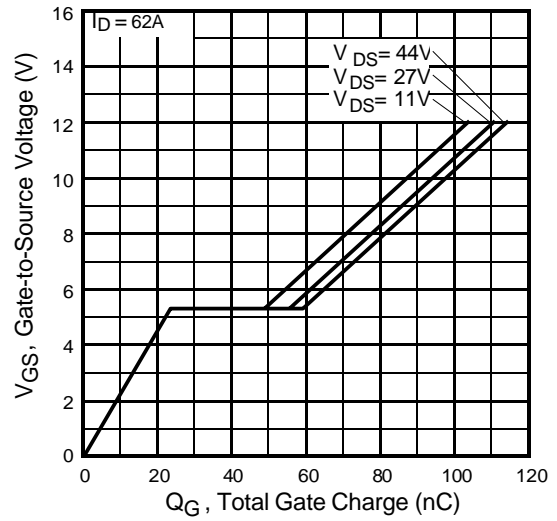


Fig 6. Typical Gate Charge Vs. Gate-to-Source Voltage

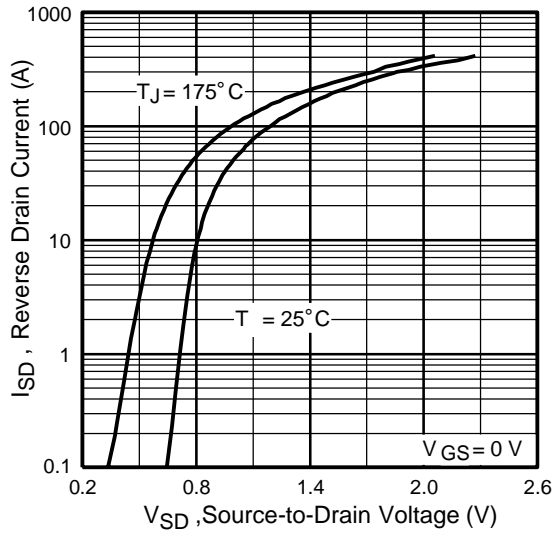


Fig 7. Typical Source-Drain Diode Forward Voltage

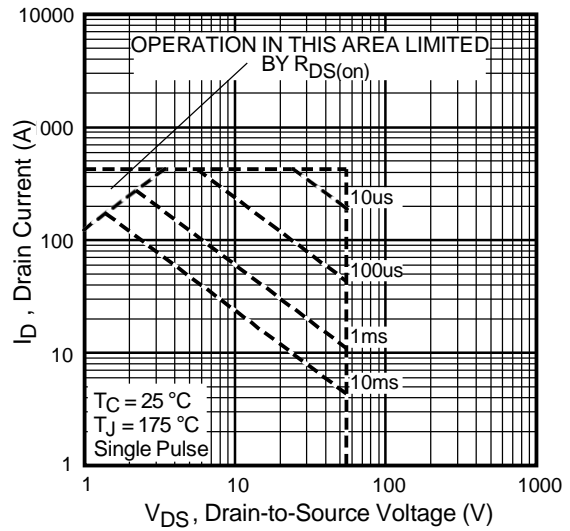


Fig 8. Maximum Safe Operating Area

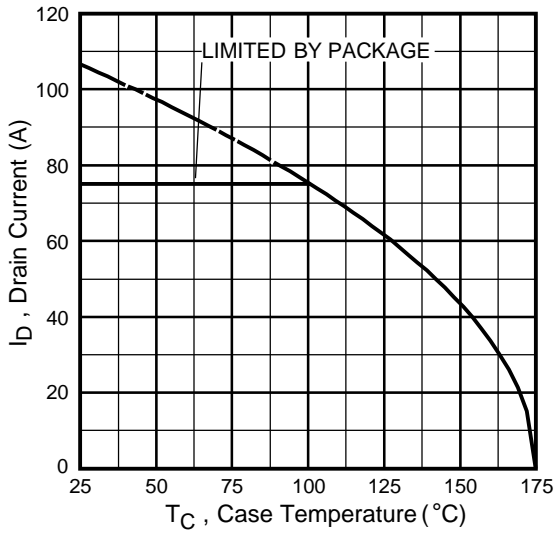


Fig 9. Maximum Drain Current Vs. Case Temperature

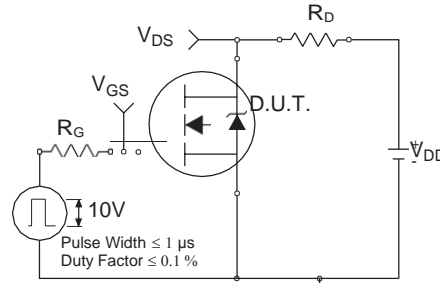


Fig 10a. Switching Time Test Circuit

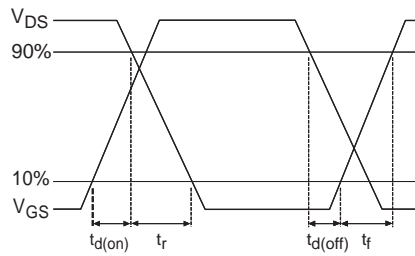


Fig 10b. Switching Time Waveforms

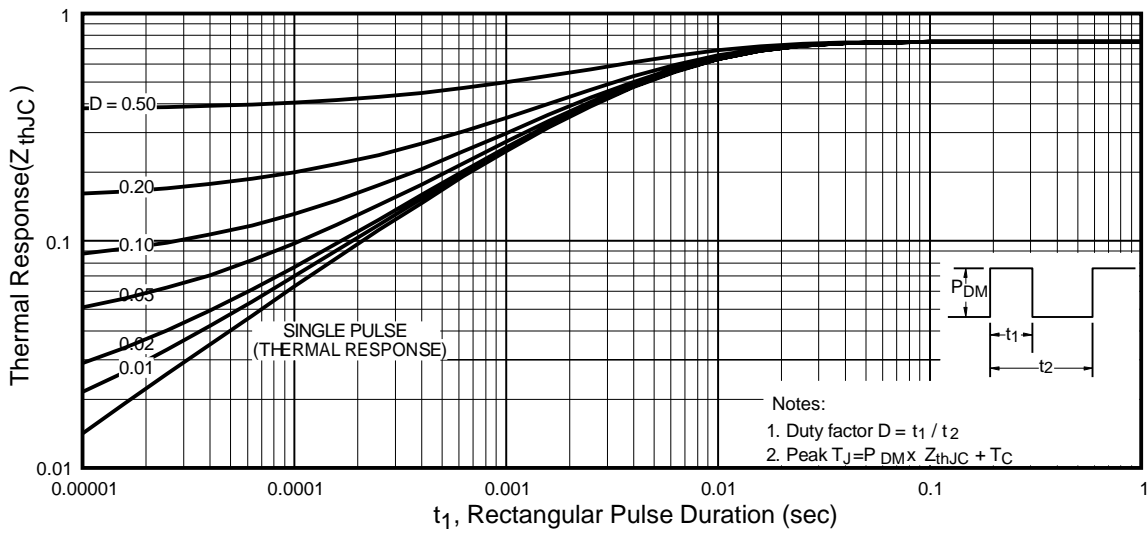


Fig 11. Maximum Effective Transient Thermal Impedance, Junction-to-Case

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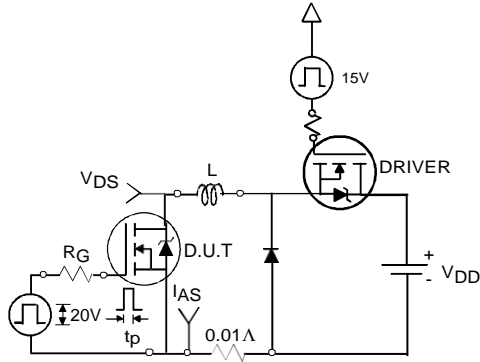


Fig 12a. Unclamped Inductive Test Circuit

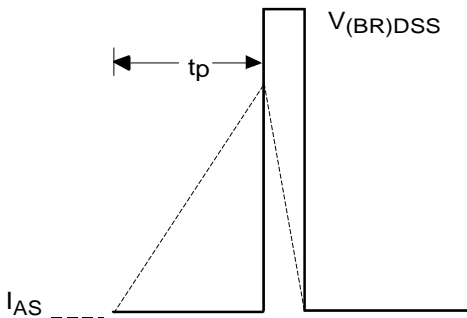


Fig 12b. Unclamped Inductive Waveforms

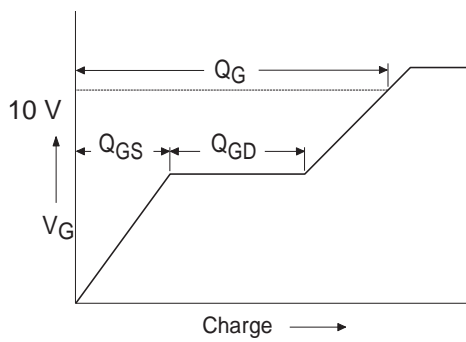


Fig 13a. Basic Gate Charge Waveform

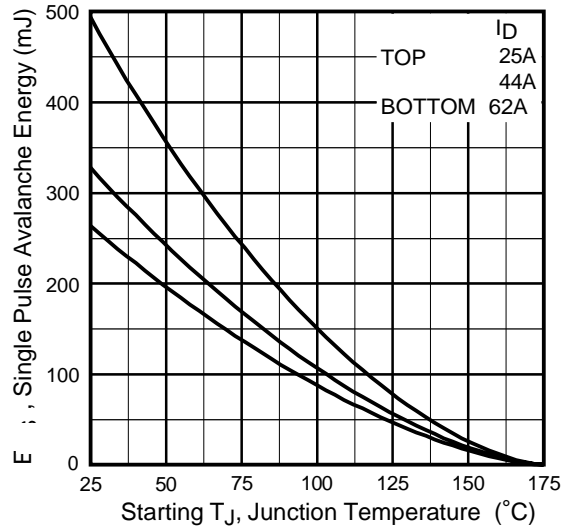


Fig 12c. Maximum Avalanche Energy Vs. Drain Current

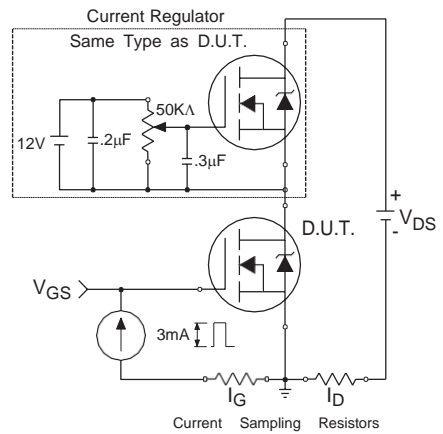
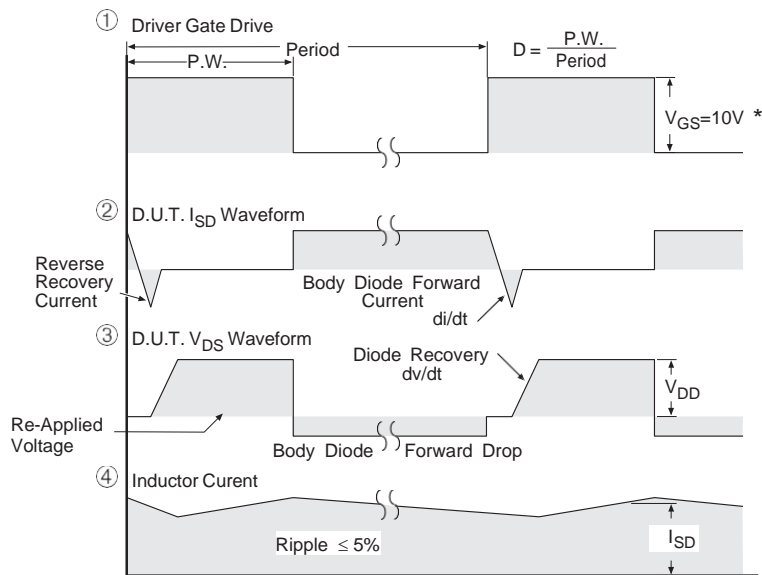
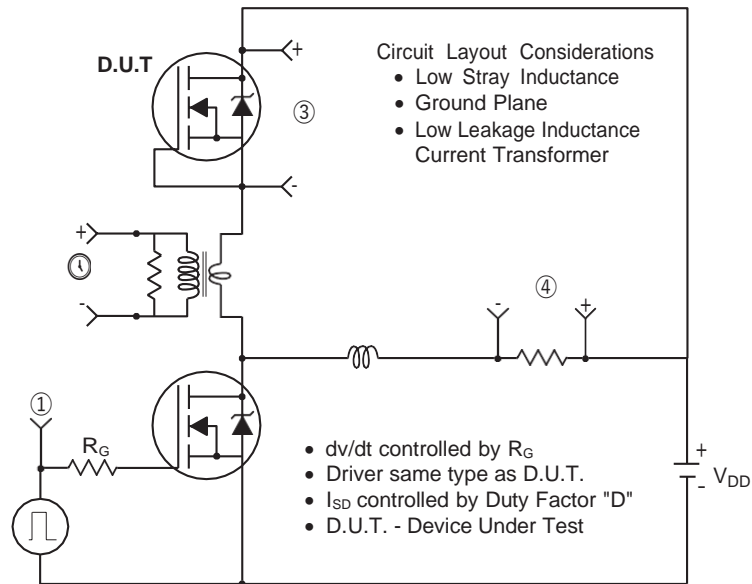


Fig 13b. Gate Charge Test Circuit

Peak Diode Recovery dv/dt Test Circuit



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

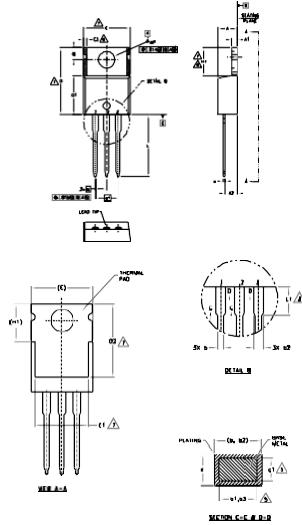
Fig 14. For N-Channel HEXFETS

IRF3205PbF



TO-220AB Package Outline

Dimensions are shown in millimeters (inches)



NOTES

1. DIMENSIONS AND TOLERANCING AS PER ASME Y14.5 M - 1994
2. DIMENSIONS ARE SHOWN IN MILLIMETERS (INCHES)
3. LEAD DIMENSIONS AND PITCH UNLESS OTHERWISE NOTED IN L1
4. DIMENSION D IS A 2X 90° INCLUDE MOD 15.88 MOD 1.43H SHALL NOT EXCEED 0.025 (0.012) PER SIDE. THESE DIMENSIONS ARE MEASURED AT THE OUTERMOST EXTREMITY OF THE METAL BODY
5. DIMENSION M1, M2 & C1 APPLY TO BASE METAL ONLY
6. DIMENSION M1, M2 & C1 APPLY TO BASE METAL ONLY
7. INTERNAL AND CENTER OPTIMUM BONDING DIMENSIONS (EXCEPT A 11)
8. DIMENSION L1 IS FOR BEZEL, A 250μm BEZEL STAMPING AND PRODUCTION PRODUCTIONS ARE ALLOWED
9. DIMENSION (C) IS PER JEDEC TO-220 (EXCEPT A2 (M1) AND C2 (M2))
10. MINIMUM DIMENSIONS ARE DERIVED FROM THE ACTUAL PACKAGE DATA

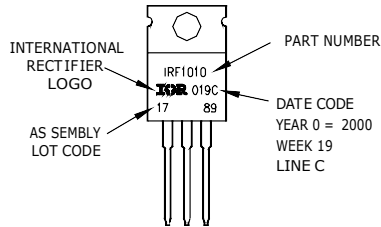
SYMBOL	DIMENSIONS				NOTES
	MILLIMETERS		INCHES		
	MIN.	MAX.	MIN.	MAX.	
A	3.56	4.83	.140	.190	
A1	0.91	1.40	.035	.055	
A2	2.03	2.92	.080	.115	
B	0.38	1.01	.015	.040	
B1	0.38	0.97	.015	.038	5
B2	1.14	1.78	.045	.070	
B3	1.14	1.73	.045	.068	5
C	0.38	0.91	.014	.034	
C1	0.38	0.96	.014	.037	5
D	14.22	16.51	.560	.650	4
D1	8.38	8.02	.330	.295	
D2	11.68	12.89	.460	.507	
E	3.85	10.67	.150	.420	4, 7
E1	6.88	8.88	.270	.350	7
E2	-	0.18	-	.007	8
F	2.54	2.54	.100	.100	
F1	2.54	2.54	.100	.100	
H1	3.81	4.86	.150	.190	7, 8
L	17.70	14.75	.700	.580	
L1	1.68	4.06	.065	.160	5
M1	2.54	4.08	.100	.160	
M2	2.54	4.07	.100	.159	

UNITS: MILLIMETERS
 1 - GAUGE
 2 - DIMS
 3 - DIMS
 4 - DIMS
 5 - DIMS
 6 - DIMS
 7 - DIMS
 8 - DIMS

TO-220AB Part Marking Information

EXAMPLE: THIS IS AN IRF1010
 LOT CODE 1789
 ASSEMBLED ON WW 19, 2000
 IN THE ASSEMBLY LINE "C"

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



TO-220AB package is not recommended for Surface Mount Application

Notes:

1. For an Automotive Qualified version of this part please see <http://www.irf.com/product-info/automotive/>
2. For the most current drawing please refer to IR website at <http://www.irf.com/package/>

Data and specifications subject to change without notice.
 This product has been designed and qualified for the Industrial market.
 Qualification Standards can be found on IR's Web site.



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