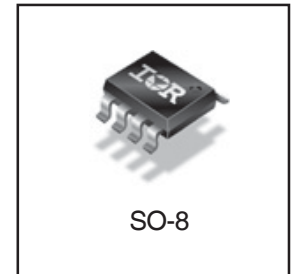
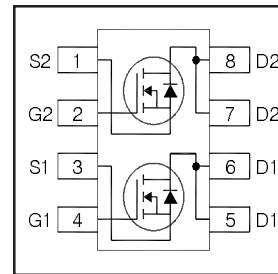


# IRL6372PbF

HEXFET® Power MOSFET

$V_{DS}$	<b>30</b>	<b>V</b>
$V_{GS}$	<b>±12</b>	<b>V</b>
$R_{DS(on) max}$ (@ $V_{GS} = 4.5V$ )	<b>17.9</b>	<b>mΩ</b>
$Q_g$ (typical)	<b>11</b>	<b>nC</b>
$I_D$ (@ $T_A = 25°C$ )	<b>8.1</b>	<b>A</b>



## Applications

- Battery operated DC motor inverter MOSFET
- System/Load Switch
- Charge and Discharge Switches for Battery Application

## Features and Benefits

### Features

Industry-Standard SO-8 Package
RoHS Compliant Containing no Lead, no Bromide and no Halogen
MSL1, Consumer Qualification

### Resulting Benefits

Multi-Vendor Compatibility
Environmentally Friendlier
Increased Reliability

⇒

Orderable part number	Package Type	Standard Pack		Note
		Form	Quantity	
IRL6372PBF	SO-8	Tube/Bulk	95	
IRL6372TRPBF	SO-8	Tape and Reel	4000	

## Absolute Maximum Ratings

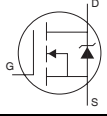
	Parameter	Max.	Units
$V_{DS}$	Drain-to-Source Voltage	30	V
$V_{GS}$	Gate-to-Source Voltage	±12	
$I_D @ T_A = 25°C$	Continuous Drain Current, $V_{GS} @ 4.5V$	8.1	A
$I_D @ T_A = 70°C$	Continuous Drain Current, $V_{GS} @ 4.5V$	6.5	
$I_{DM}$	Pulsed Drain Current ①	65	
$P_D @ T_A = 25°C$	Power Dissipation ③	2.0	W
$P_D @ T_A = 70°C$	Power Dissipation ③	1.3	
	Linear Derating Factor	0.02	W/°C
$T_J$	Operating Junction and	-55 to + 150	°C
$T_{STG}$	Storage Temperature Range		

Notes ① through ④ are on page 2

### Static @ T<sub>J</sub> = 25°C (unless otherwise specified)

	Parameter	Min.	Typ.	Max.	Units	Conditions
B <sub>V</sub> DSS	Drain-to-Source Breakdown Voltage	30	—	—	V	V <sub>GS</sub> = 0V, I <sub>D</sub> = 250μA
ΔB <sub>V</sub> DSS/ΔT <sub>J</sub>	Breakdown Voltage Temp. Coefficient	—	23	—	mV/°C	Reference to 25°C, I <sub>D</sub> = 1mA
R <sub>DS(on)</sub>	Static Drain-to-Source On-Resistance	—	14.0	17.9	mΩ	V <sub>GS</sub> = 4.5V, I <sub>D</sub> = 8.1A ②
		—	17.0	23.0		V <sub>GS</sub> = 2.5V, I <sub>D</sub> = 6.5A ②
V <sub>GS(th)</sub>	Gate Threshold Voltage	0.5	—	1.1	V	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = 10μA
ΔV <sub>GS(th)</sub>	Gate Threshold Voltage Coefficient	—	-4.0	—	mV/°C	
I <sub>DSS</sub>	Drain-to-Source Leakage Current	—	—	1.0	μA	V <sub>DS</sub> = 24V, V <sub>GS</sub> = 0V
		—	—	150		V <sub>DS</sub> = 24V, V <sub>GS</sub> = 0V, T <sub>J</sub> = 125°C
I <sub>GSS</sub>	Gate-to-Source Forward Leakage	—	—	100	nA	V <sub>GS</sub> = 12V
	Gate-to-Source Reverse Leakage	—	—	-100		V <sub>GS</sub> = -12V
g <sub>fs</sub>	Forward Transconductance	30	—	—	S	V <sub>DS</sub> = 10V, I <sub>D</sub> = 6.5A
Q <sub>g</sub>	Total Gate Charge	—	11	—	nC	V <sub>GS</sub> = 4.5V V <sub>DS</sub> = 15V I <sub>D</sub> = 6.5A
Q <sub>gs1</sub>	Pre-V <sub>th</sub> Gate-to-Source Charge	—	0.01	—		
Q <sub>gs2</sub>	Post-V <sub>th</sub> Gate-to-Source Charge	—	0.50	—		
Q <sub>gd</sub>	Gate-to-Drain Charge	—	4.8	—		
Q <sub>godr</sub>	Gate Charge Overdrive	—	5.69	—		
Q <sub>sw</sub>	Switch Charge (Q <sub>gs2</sub> + Q <sub>gd</sub> )	—	5.3	—		
R <sub>G</sub>	Gate Resistance	—	2.2	—	Ω	
t <sub>d(on)</sub>	Turn-On Delay Time	—	5.9	—	ns	V <sub>DD</sub> = 15V, V <sub>GS</sub> = 4.5V ③ I <sub>D</sub> = 6.5A R <sub>G</sub> = 6.8Ω See Figs. 18
t <sub>r</sub>	Rise Time	—	13	—		
t <sub>d(off)</sub>	Turn-Off Delay Time	—	34	—		
t <sub>f</sub>	Fall Time	—	15	—		
C <sub>iss</sub>	Input Capacitance	—	1020	—	pF	V <sub>GS</sub> = 0V V <sub>DS</sub> = 25V f = 1.0MHz
C <sub>oss</sub>	Output Capacitance	—	98	—		
C <sub>rss</sub>	Reverse Transfer Capacitance	—	68	—		

### Diode Characteristics

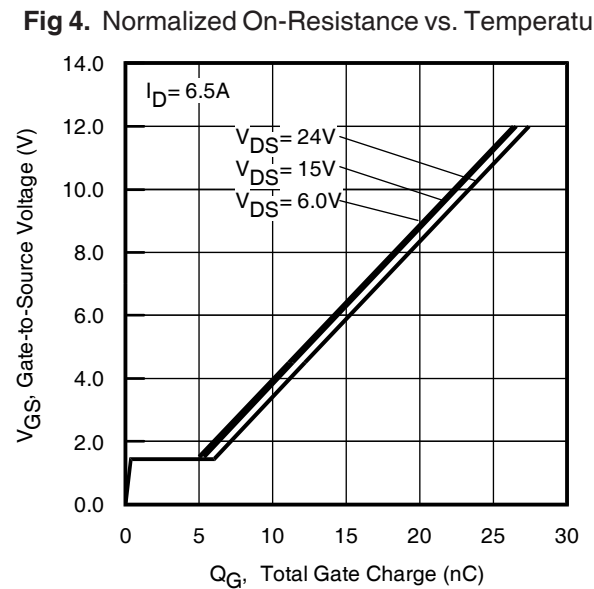
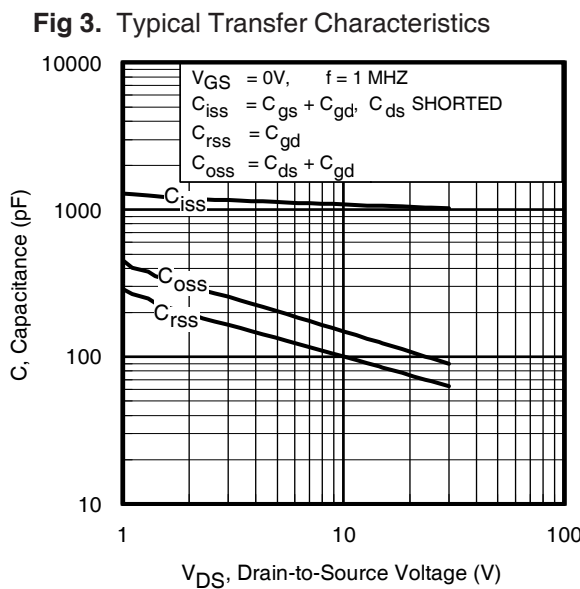
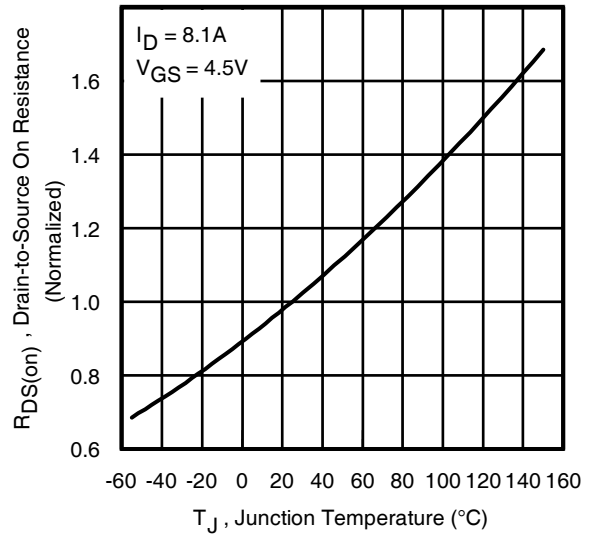
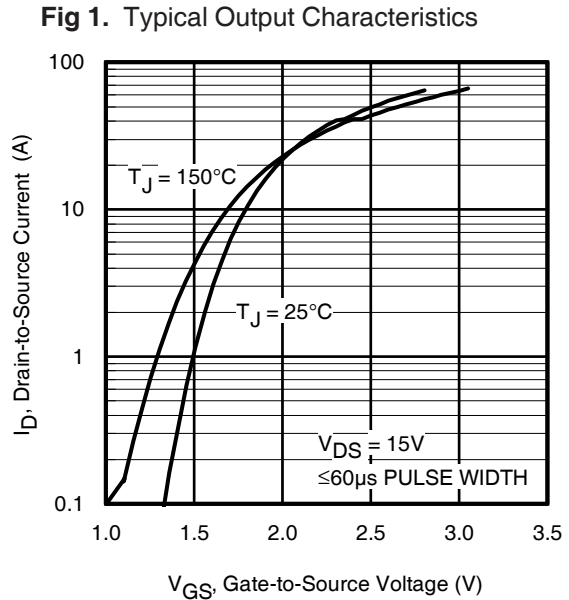
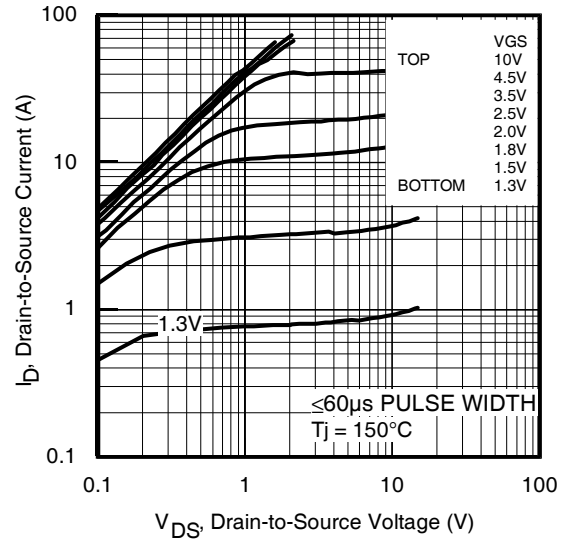
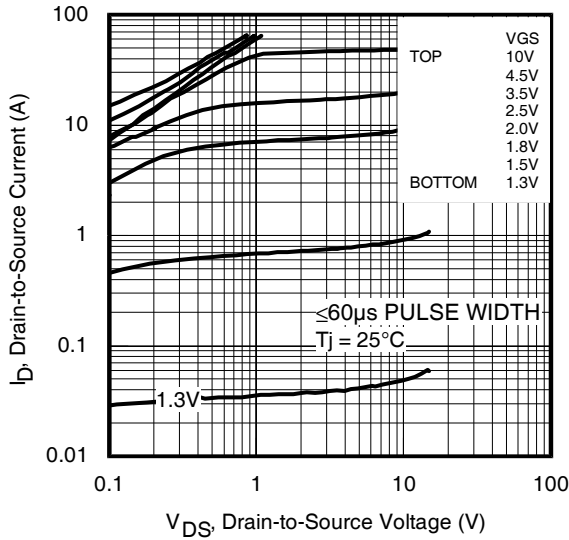
	Parameter	Min.	Typ.	Max.	Units	Conditions
I <sub>S</sub>	Continuous Source Current (Body Diode)	—	—	2.0	A	MOSFET symbol showing the integral reverse p-n junction diode. 
I <sub>SM</sub>	Pulsed Source Current (Body Diode) ①	—	—	65		
V <sub>SD</sub>	Diode Forward Voltage	—	—	1.2	V	T <sub>J</sub> = 25°C, I <sub>S</sub> = 6.5A, V <sub>GS</sub> = 0V ②
t <sub>rr</sub>	Reverse Recovery Time	—	13	20	ns	T <sub>J</sub> = 25°C, I <sub>F</sub> = 6.5A, V <sub>DD</sub> = 24V
Q <sub>rr</sub>	Reverse Recovery Charge	—	5.3	8.0	nC	di/dt = 100/μs ②

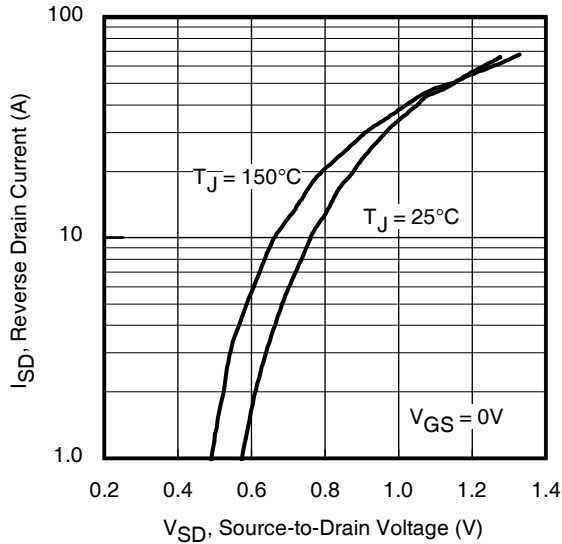
### Thermal Resistance

	Parameter	Typ.	Max.	Units
R <sub>θJL</sub>	Junction-to-Drain Lead ④	—	20	°C/W
R <sub>θJA</sub>	Junction-to-Ambient ③	—	62.5	

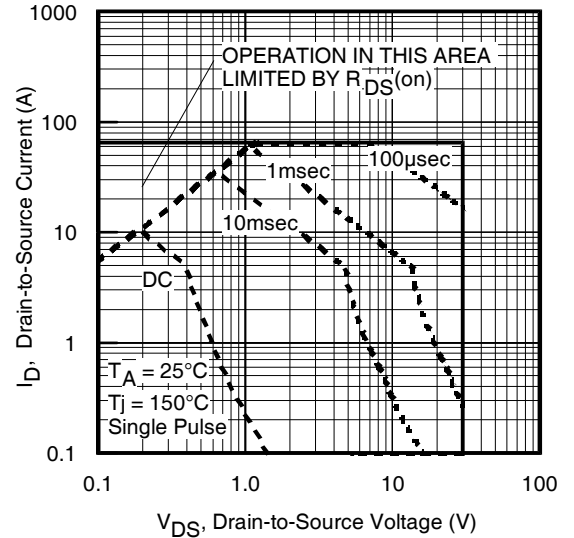
#### Notes:

- ① Repetitive rating; pulse width limited by max. junction temperature.
- ② Pulse width ≤ 400μs; duty cycle ≤ 2%.
- ③ When mounted on 1 inch square copper board.
- ④ R<sub>θ</sub> is measured at T<sub>J</sub> of approximately 90°C.

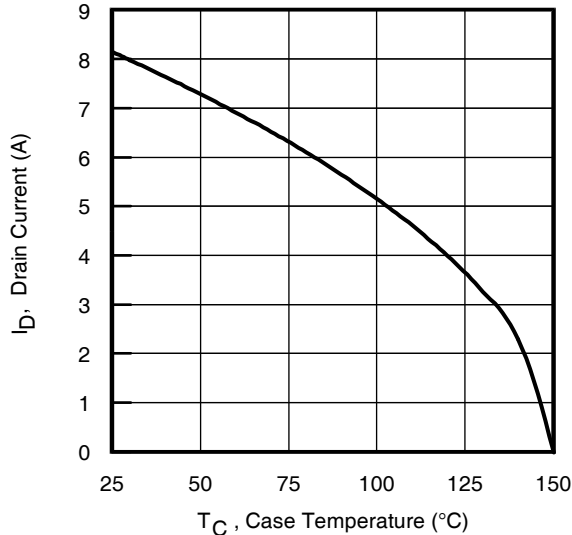




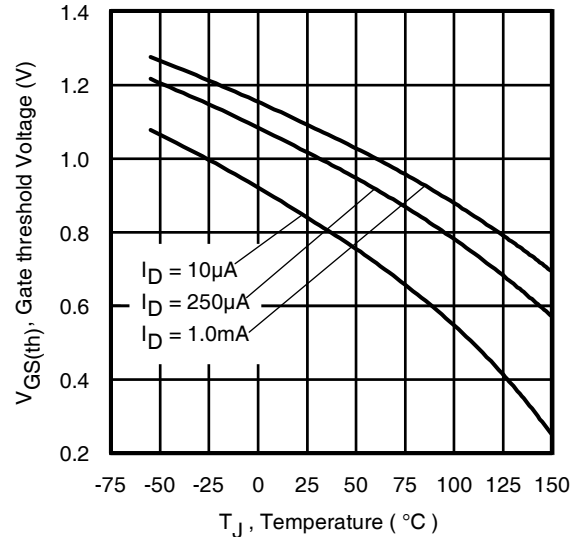
**Fig 7.** Typical Source-Drain Diode Forward Voltage



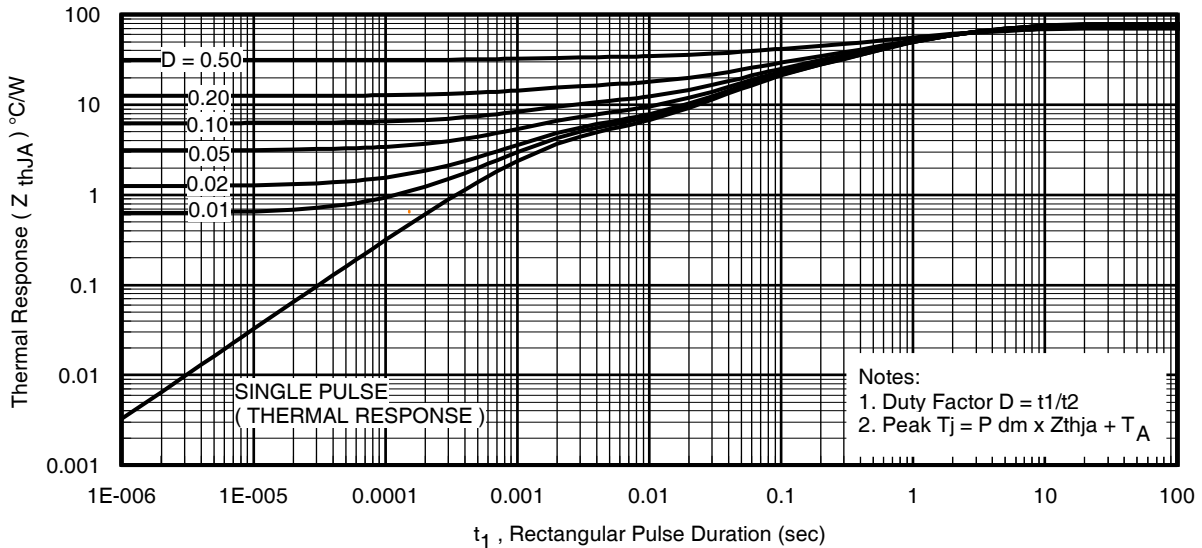
**Fig 8.** Maximum Safe Operating Area



**Fig 9.** Maximum Drain Current vs. Case (Bottom) Temperature



**Fig 10.** Threshold Voltage vs. Temperature



**Fig 11.** Maximum Effective Transient Thermal Impedance, Junction-to-Case (Bottom)

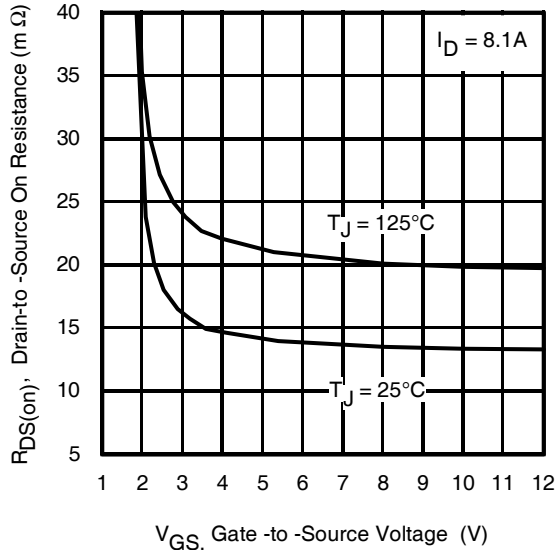


Fig 12. On-Resistance vs. Gate Voltage

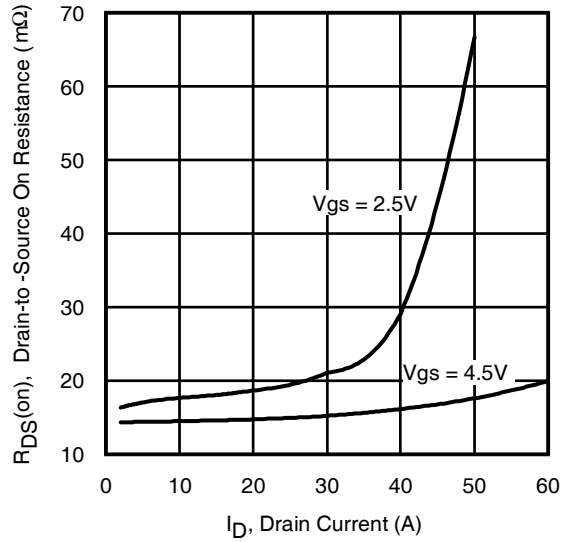


Fig 13. Typical On-Resistance vs. Drain Current

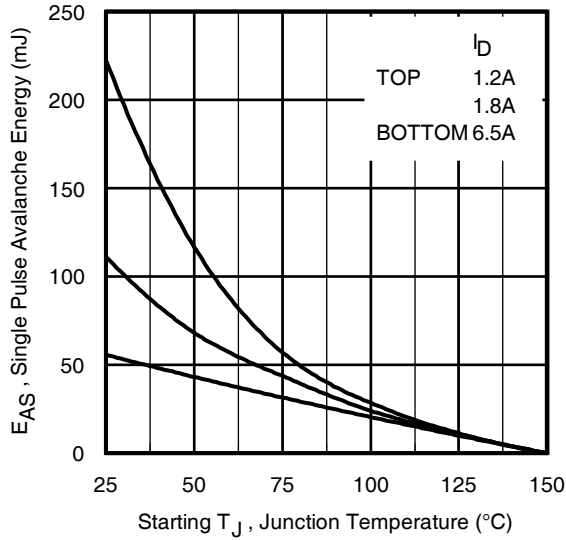


Fig 14. Maximum Avalanche Energy vs. Drain Current

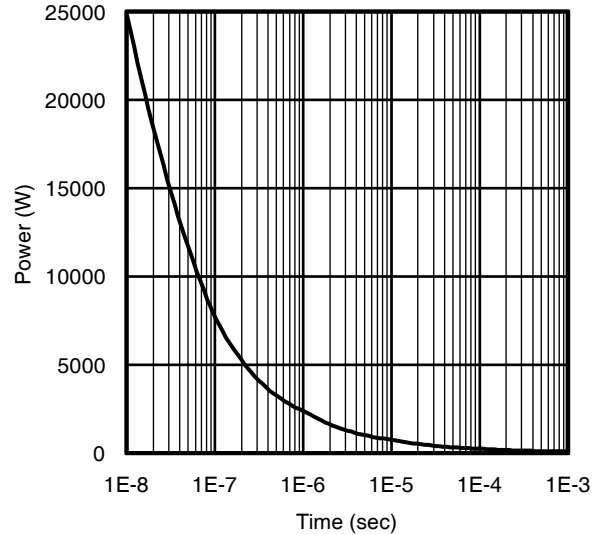
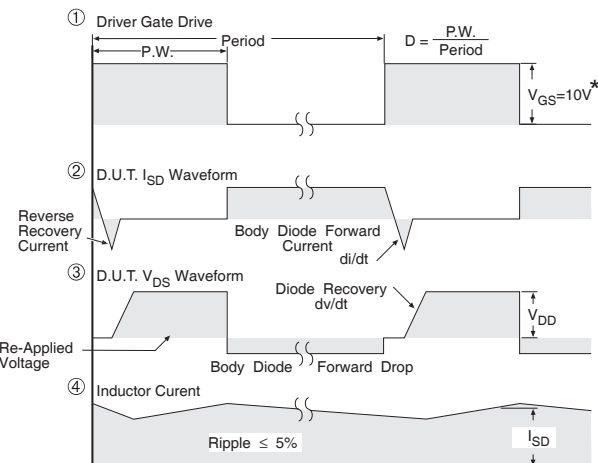
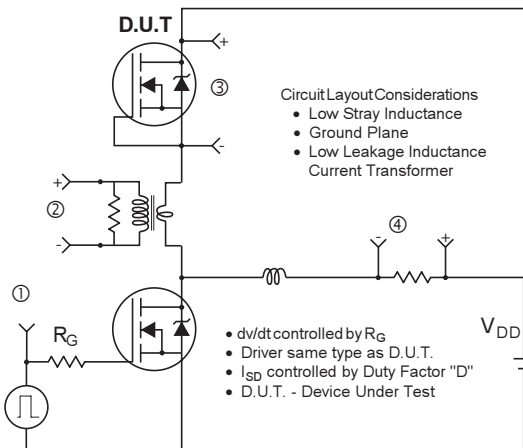
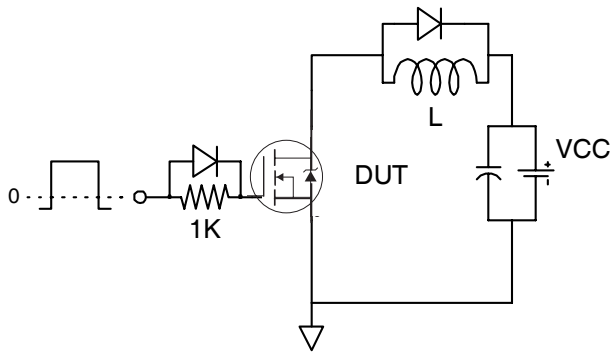


Fig 15. Typical Power vs. Time

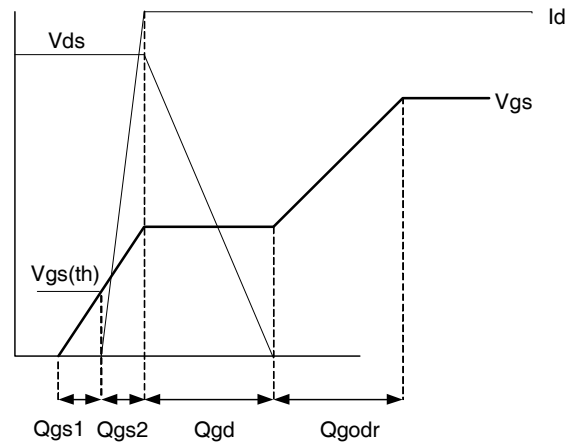


\*  $V_{GS} = 5V$  for Logic Level Devices

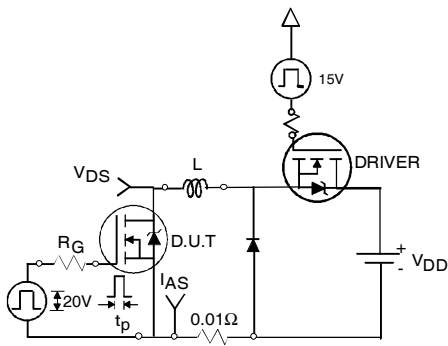
Fig 16. Peak Diode Recovery  $dv/dt$  Test Circuit for N-Channel  
HEXFET® Power MOSFETs



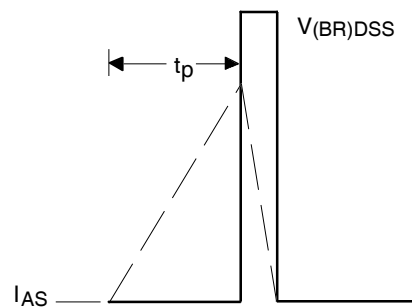
**Fig 17a.** Gate Charge Test Circuit



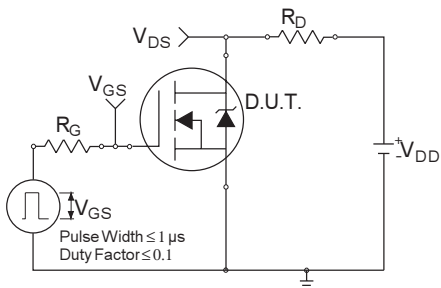
**Fig 17b.** Gate Charge Waveform



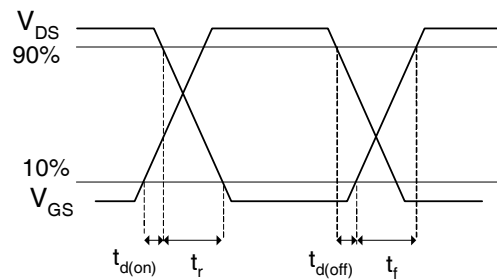
**Fig 18a.** Unclamped Inductive Test Circuit



**Fig 18b.** Unclamped Inductive Waveforms



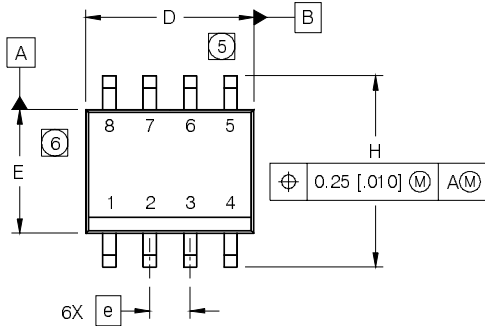
**Fig 19a.** Switching Time Test Circuit



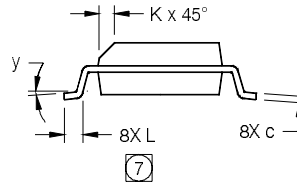
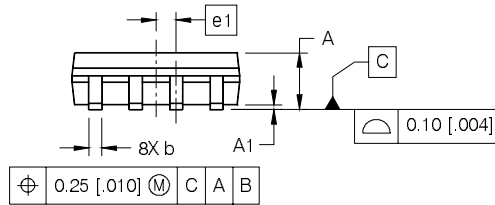
**Fig 19b.** Switching Time Waveforms

## SO-8 Package Outline (Mosfet & Fetky)

Dimensions are shown in millimeters (inches)



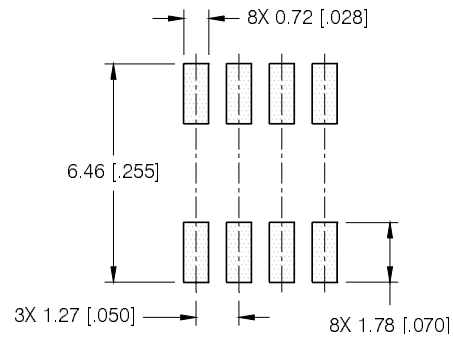
DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	.0532	.0688	1.35	1.75
A1	.0040	.0098	0.10	0.25
b	.013	.020	0.33	0.51
c	.0075	.0098	0.19	0.25
D	.189	.1968	4.80	5.00
E	.1497	.1574	3.80	4.00
e	.050 BASIC		1.27 BASIC	
e1	.025 BASIC		0.635 BASIC	
H	.2284	.2440	5.80	6.20
K	.0099	.0196	0.25	0.50
L	.016	.050	0.40	1.27
y	0°	8°	0°	8°



**NOTES:**

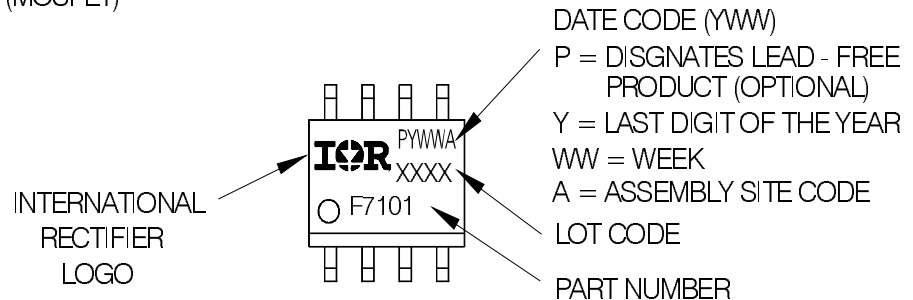
1. DIMENSIONING & TOLERANCING PER ASME Y14.5M-1994.
2. CONTROLLING DIMENSION: MILLIMETER
3. DIMENSIONS ARE SHOWN IN MILLIMETERS [INCHES].
4. OUTLINE CONFORMS TO JEDEC OUTLINE MS-012AA.
5. DIMENSION DOES NOT INCLUDE MOLD PROTRUSIONS. MOLD PROTRUSIONS NOT TO EXCEED 0.15 [.006].
6. DIMENSION DOES NOT INCLUDE MOLD PROTRUSIONS. MOLD PROTRUSIONS NOT TO EXCEED 0.25 [.010].
7. DIMENSION IS THE LENGTH OF LEAD FOR SOLDERING TO A SUBSTRATE.

**FOOTPRINT**



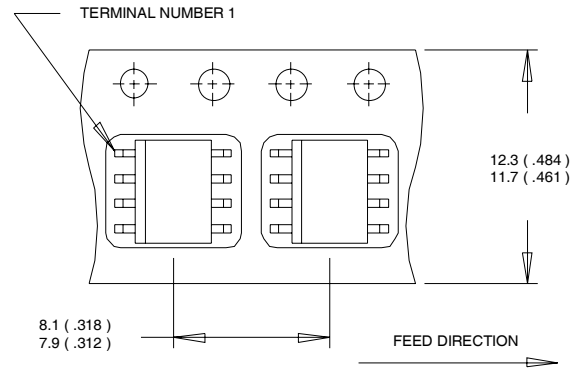
## SO-8 Part Marking Information

EXAMPLE: THIS IS AN IRF7101 (MOSFET)

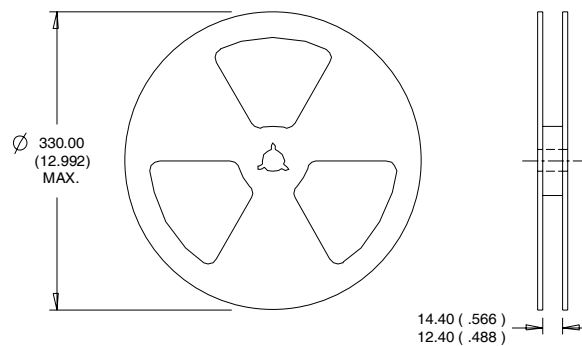


Note: For the most current drawing please refer to IR website at: <http://www.irf.com/package/>

## SO-8 Tape and Reel



- NOTES:
1. CONTROLLING DIMENSION : MILLIMETER.
  2. ALL DIMENSIONS ARE SHOWN IN MILLIMETERS(INCHES).
  3. OUTLINE CONFORMS TO EIA-481 & EIA-541.



- NOTES :
1. CONTROLLING DIMENSION : MILLIMETER.
  2. OUTLINE CONFORMS TO EIA-481 & EIA-541.

### Qualification information<sup>†</sup>

Qualification level	Consumer <sup>††</sup> (per JEDEC JESD47F <sup>†††</sup> guidelines )	
Moisture Sensitivity Level	SO-8	MSL1 (per JEDEC J-STD-020D <sup>†††</sup> )
RoHS compliant	Yes	

<sup>†</sup> Qualification standards can be found at International Rectifier's web site  
<http://www.irf.com/product-info/reliability>

<sup>††</sup> Higher qualification ratings may be available should the user have such requirements.  
Please contact your International Rectifier sales representative for further information:  
<http://www.irf.com/whoto-call/salesrep/>

<sup>†††</sup> Applicable version of JEDEC standard at the time of product release.

Data and specifications subject to change without notice.

International  
**IR** Rectifier

IR WORLD HEADQUARTERS: 233 Kansas St., El Segundo, California 90245, USA Tel: (310) 252-7105  
TAC Fax: (310) 252-7903

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