

IRL6372PBF Datasheet



DiGi Electronics Part Number	IRL6372PBF-DG
Manufacturer	Infineon Technologies
Manufacturer Product Number	IRL6372PBF
Description	MOSFET 2N-CH 30V 8.1A 850
Detailed Description	Mosfet Array 30V 8.1A 2W Surface Mount 8-SO

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



Tel: +00 852-30501935

RFQ Email: Info@DiGi-Electronics.com

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Purchase and inquiry

Manufacturer Product Number:

IRL6372PBF

Series:

HEXFET®

Technology:

MOSFET (Metal Oxide)

FET Feature:

Logic Level Gate

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

8.1A

Vgs(th) (Max) @ Id:

1.1V @ 10µA

Input Capacitance (Ciss) (Max) @ Vds:

1020pF @ 25V

Operating Temperature:

-55°C ~ 150°C (Tj)

Package / Case:

8-SOIC (0.154", 3.90mm Width)

Base Product Number:

IRL6372

Manufacturer:

Infineon Technologies

Product Status:

Discontinued at Digi-Key

Configuration:

2 N-Channel (Dual)

Drain to Source Voltage (Vdss):

30V

Rds On (Max) @ Id, Vgs:

17.9mOhm @ 8.1A, 4.5V

Gate Charge (Qg) (Max) @ Vgs:

11nC @ 4.5V

Power - Max:

2W

Mounting Type:

Surface Mount

Supplier Device Package:

8-SO

Environmental & Export classification

RoHS Status:

ROHS3 Compliant

REACH Status:

REACH Unaffected

HTSUS:

8541.29.0095

Moisture Sensitivity Level (MSL):

1 (Unlimited)

ECCN:

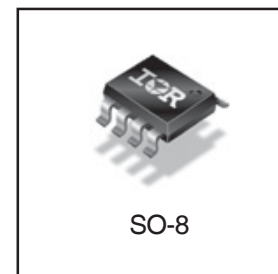
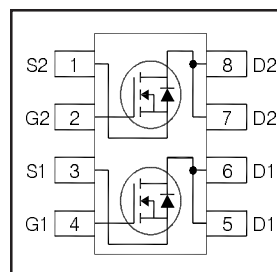
EAR99

International
IR Rectifier

IRL6372PbF

HEXFET® Power MOSFET

V_{DS}	30	V
V_{GS}	±12	V
$R_{DS(on) max}$ (@ $V_{GS} = 4.5V$)	17.9	mΩ
Q_g (typical)	11	nC
I_D (@ $T_A = 25^\circ C$)	8.1	A



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	
$I_D @ T_A = 25^\circ C$	Continuous Drain Current, $V_{GS} @ 4.5V$	8.1	A
$I_D @ T_A = 70^\circ C$	Continuous Drain Current, $V_{GS} @ 4.5V$	6.5	
I_{DM}	Pulsed Drain Current ①	65	
$P_D @ T_A = 25^\circ C$	Power Dissipation ③	2.0	W
$P_D @ T_A = 70^\circ C$	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		

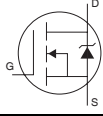
Notes ① through ④ are on page 2

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

	Parameter	Min.	Typ.	Max.	Units	Conditions
BV_{DSS}	Drain-to-Source Breakdown Voltage	30	—	—	V	$V_{GS} = 0V, I_D = 250\mu\text{A}$
$\Delta BV_{DSS}/\Delta T_J$	Breakdown Voltage Temp. Coefficient	—	23	—	mV/°C	Reference to $25^\circ\text{C}, I_D = 1\text{mA}$
$R_{DS(on)}$	Static Drain-to-Source On-Resistance	—	14.0	17.9	mΩ	$V_{GS} = 4.5V, I_D = 8.1A$ ②
		—	17.0	23.0		$V_{GS} = 2.5V, I_D = 6.5A$ ②
$V_{GS(th)}$	Gate Threshold Voltage	0.5	—	1.1	V	$V_{DS} = V_{GS}, I_D = 10\mu\text{A}$
$\Delta V_{GS(th)}$	Gate Threshold Voltage Coefficient	—	-4.0	—	mV/°C	
I_{DSS}	Drain-to-Source Leakage Current	—	—	1.0	μA	$V_{DS} = 24V, V_{GS} = 0V$
		—	—	150		$V_{DS} = 24V, V_{GS} = 0V, T_J = 125^\circ\text{C}$
I_{GSS}	Gate-to-Source Forward Leakage	—	—	100	nA	$V_{GS} = 12V$
	Gate-to-Source Reverse Leakage	—	—	-100		$V_{GS} = -12V$
g_{fs}	Forward Transconductance	30	—	—	S	$V_{DS} = 10V, I_D = 6.5A$
Q_g	Total Gate Charge	—	11	—	nC	$V_{GS} = 4.5V$ $V_{DS} = 15V$ $I_D = 6.5A$
Q_{gs1}	Pre-Vth Gate-to-Source Charge	—	0.01	—		
Q_{gs2}	Post-Vth Gate-to-Source Charge	—	0.50	—		
Q_{gd}	Gate-to-Drain Charge	—	4.8	—		
Q_{godr}	Gate Charge Overdrive	—	5.69	—		
Q_{sw}	Switch Charge ($Q_{gs2} + Q_{gd}$)	—	5.3	—		
R_G	Gate Resistance	—	2.2	—	Ω	
$t_{d(on)}$	Turn-On Delay Time	—	5.9	—	ns	$V_{DD} = 15V, V_{GS} = 4.5V$ ③ $I_D = 6.5A$ $R_G = 6.8\Omega$ See Figs. 18
t_r	Rise Time	—	13	—		
$t_{d(off)}$	Turn-Off Delay Time	—	34	—		
t_f	Fall Time	—	15	—		
C_{iss}	Input Capacitance	—	1020	—	pF	$V_{GS} = 0V$ $V_{DS} = 25V$ $f = 1.0\text{MHz}$
C_{oss}	Output Capacitance	—	98	—		
C_{rss}	Reverse Transfer Capacitance	—	68	—		

Diode Characteristics

	Parameter	Min.	Typ.	Max.	Units	Conditions
I_S	Continuous Source Current (Body Diode)	—	—	2.0	A	MOSFET symbol showing the integral reverse p-n junction diode. 
I_{SM}	Pulsed Source Current (Body Diode) ①	—	—	65		
V_{SD}	Diode Forward Voltage	—	—	1.2	V	$T_J = 25^\circ\text{C}, I_S = 6.5A, V_{GS} = 0V$ ②
t_{rr}	Reverse Recovery Time	—	13	20	ns	$T_J = 25^\circ\text{C}, I_F = 6.5A, V_{DD} = 24V$
Q_{rr}	Reverse Recovery Charge	—	5.3	8.0	nC	$di/dt = 100/\mu\text{s}$ ②

Thermal Resistance

	Parameter	Typ.	Max.	Units
$R_{\theta JL}$	Junction-to-Drain Lead ④	—	20	°C/W
$R_{\theta JA}$	Junction-to-Ambient ③	—	62.5	

Notes:

- ① Repetitive rating; pulse width limited by max. junction temperature.
- ② Pulse width $\leq 400\mu\text{s}$; duty cycle $\leq 2\%$.
- ③ When mounted on 1 inch square copper board.
- ④ R_{θ} is measured at T_J of approximately 90°C .

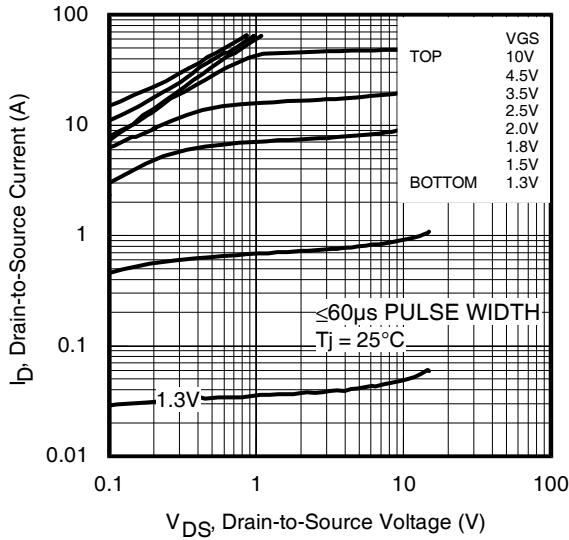


Fig 1. Typical Output Characteristics

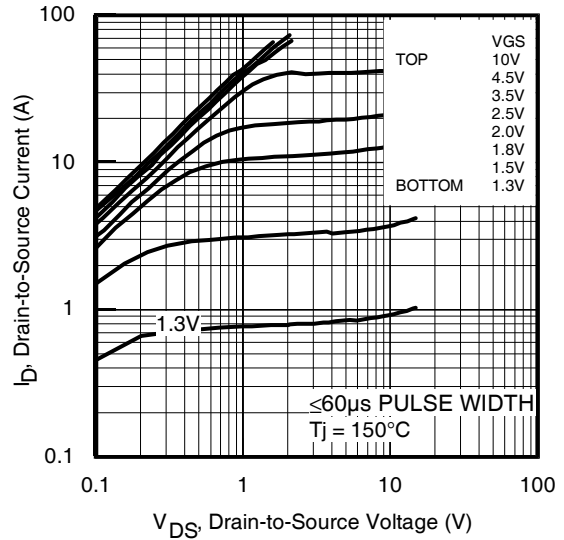


Fig 2. Typical Output Characteristics

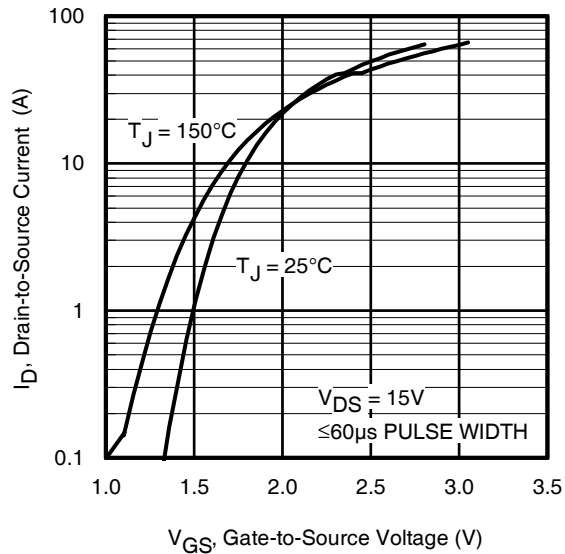


Fig 3. Typical Transfer Characteristics

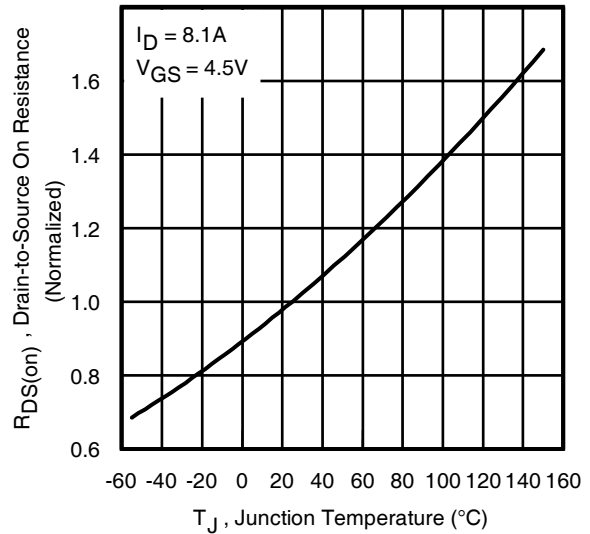


Fig 4. Normalized On-Resistance vs. Temperature

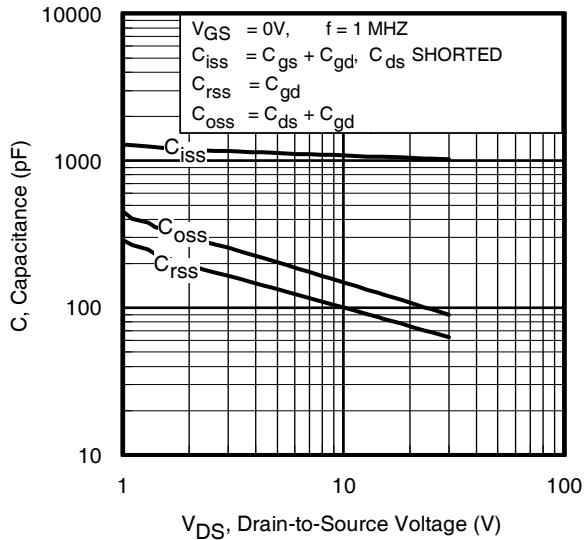


Fig 5. Typical Capacitance vs. Drain-to-Source Voltage
 www.irf.com

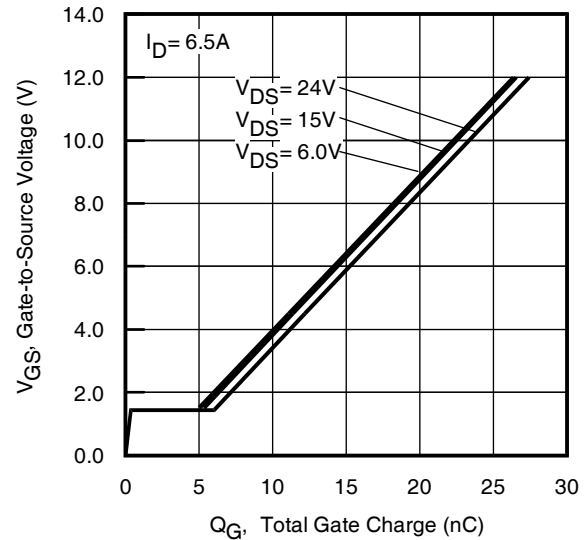


Fig 6. Typical Gate Charge vs. Gate-to-Source Voltage

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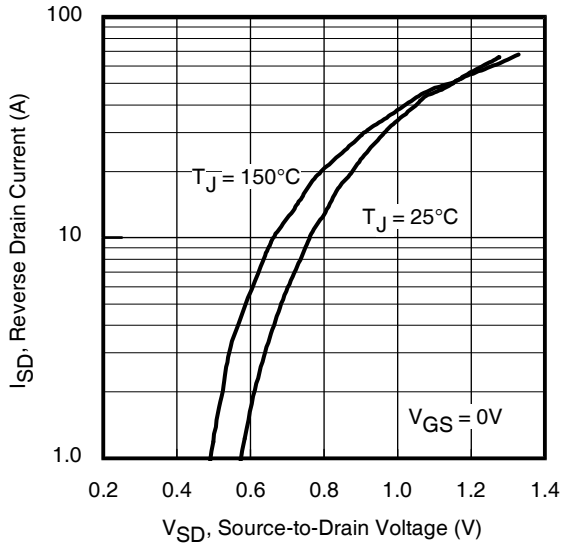


Fig 7. Typical Source-Drain Diode Forward Voltage

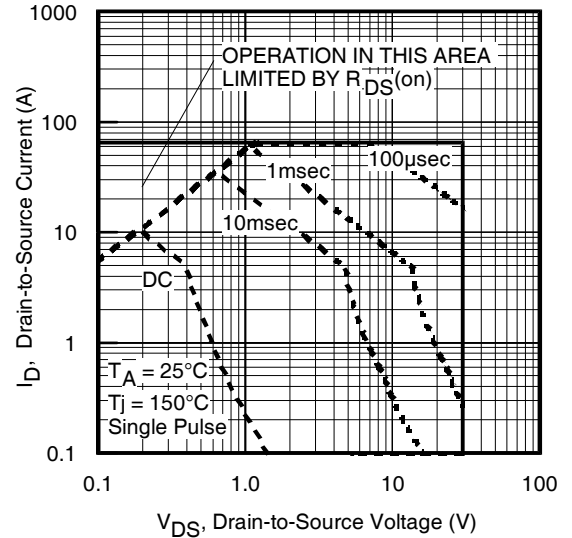


Fig 8. Maximum Safe Operating Area

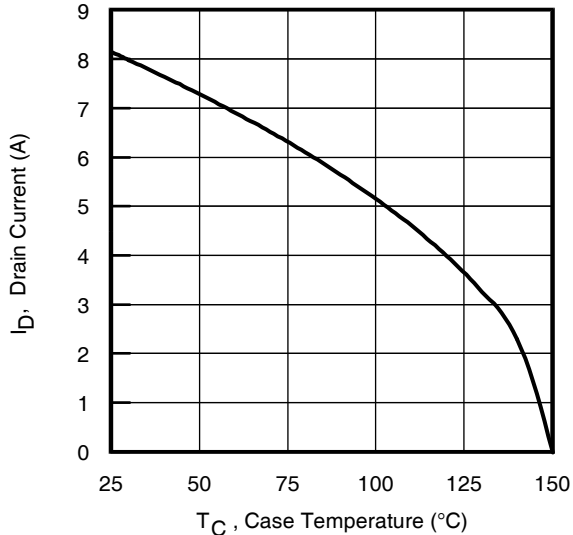


Fig 9. Maximum Drain Current vs. Case (Bottom) Temperature

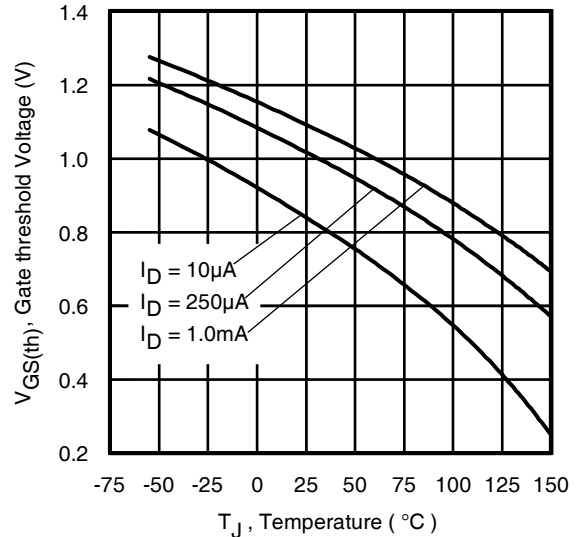


Fig 10. Threshold Voltage vs. Temperature

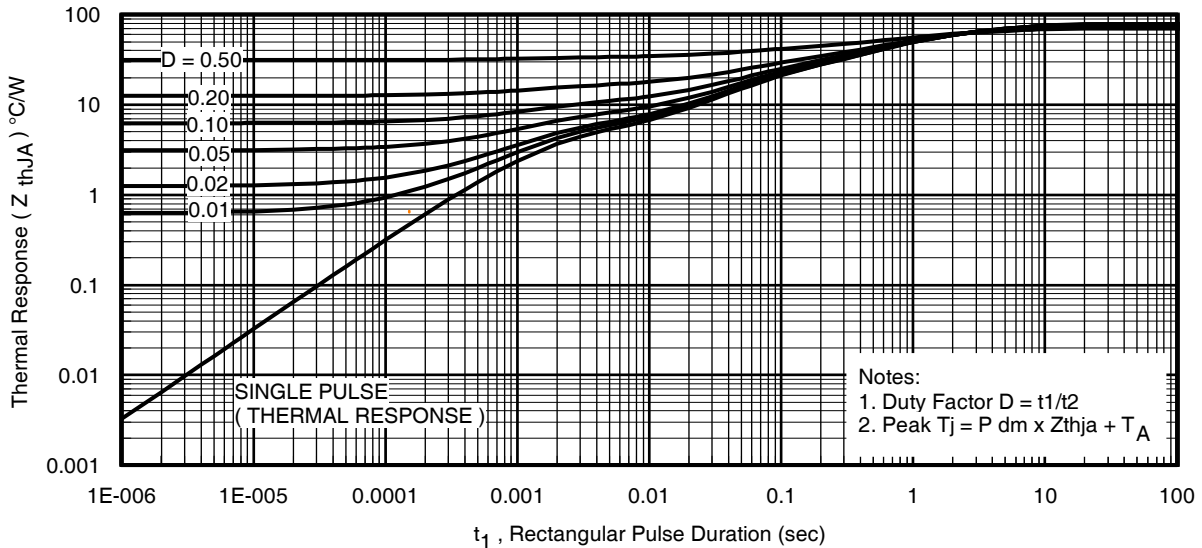


Fig 11. Maximum Effective Transient Thermal Impedance, Junction-to-Case (Bottom)

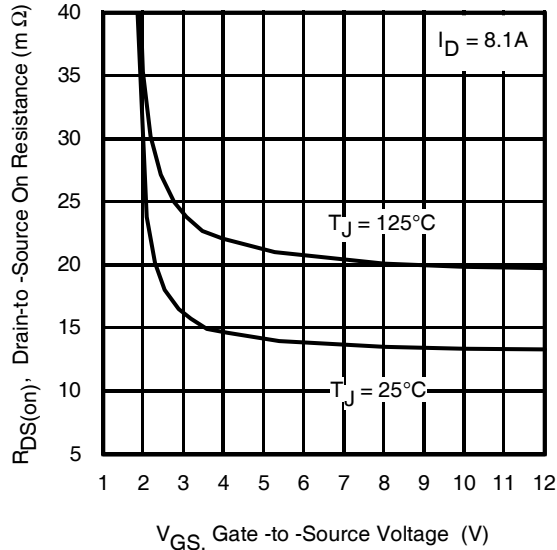


Fig 12. On-Resistance vs. Gate Voltage

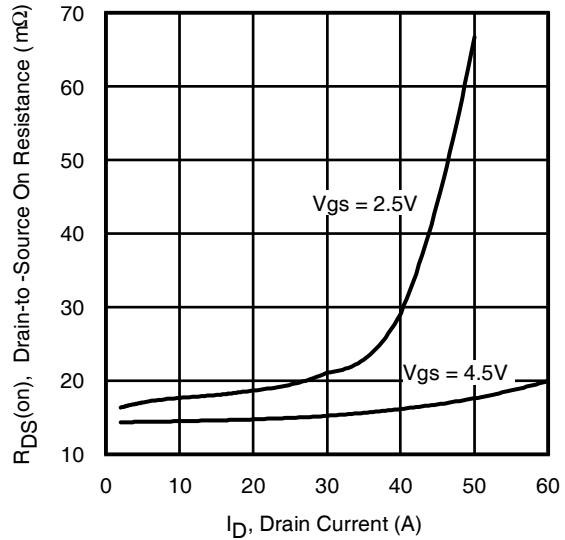


Fig 13. Typical On-Resistance vs. Drain Current

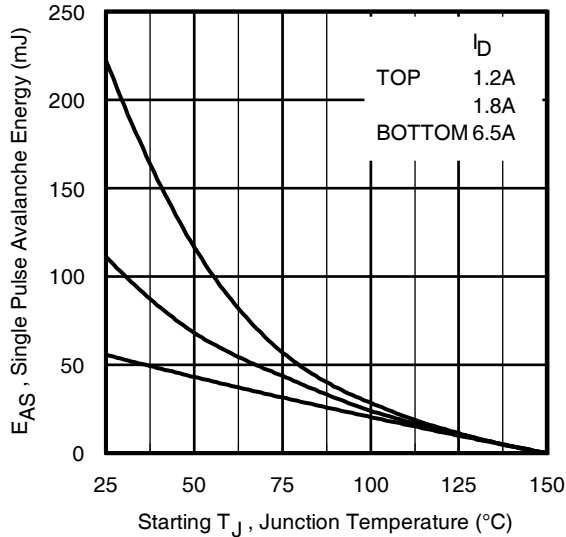


Fig 14. Maximum Avalanche Energy vs. Drain Current

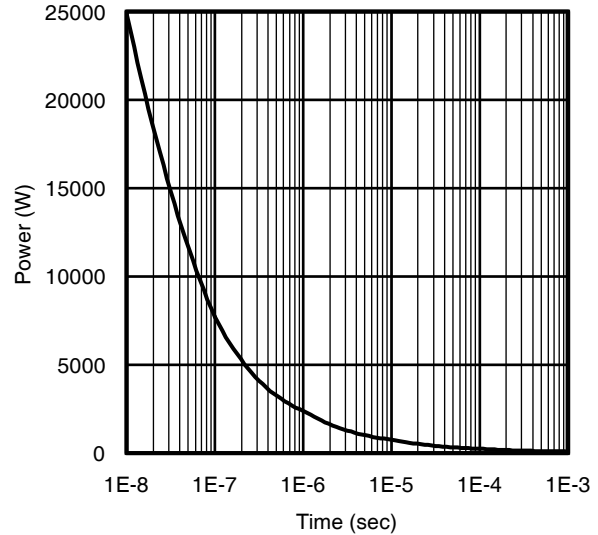


Fig 15. Typical Power vs. Time

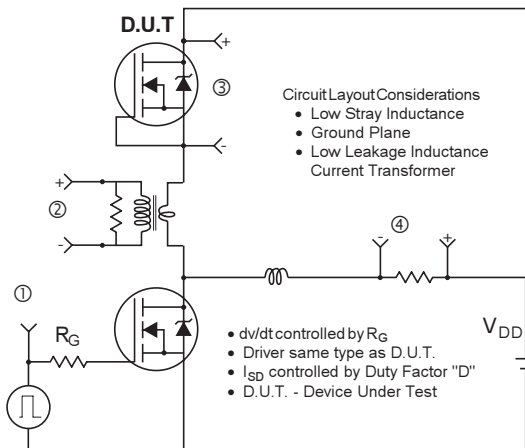
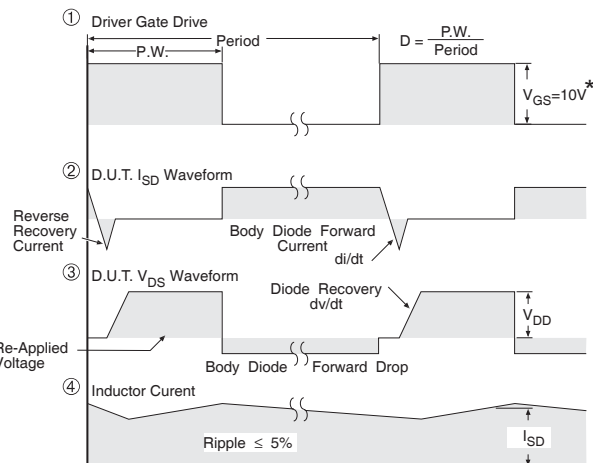


Fig 16. Peak Diode Recovery dv/dt Test Circuit for N-Channel HEXFET[®] Power MOSFETs



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

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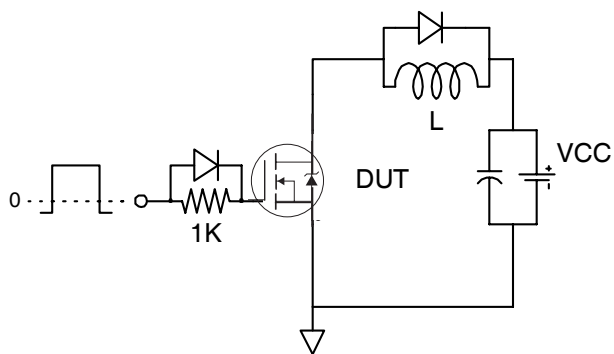


Fig 17a. Gate Charge Test Circuit

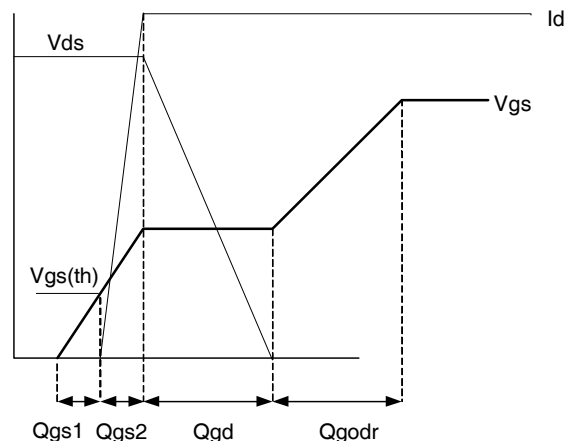


Fig 17b. Gate Charge Waveform

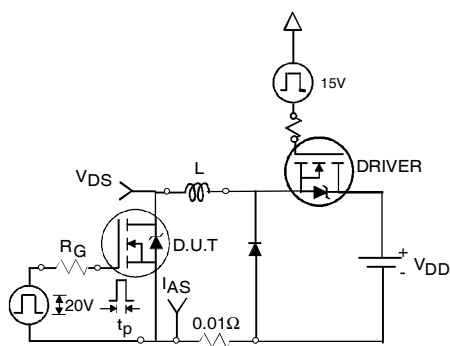


Fig 18a. Unclamped Inductive Test Circuit

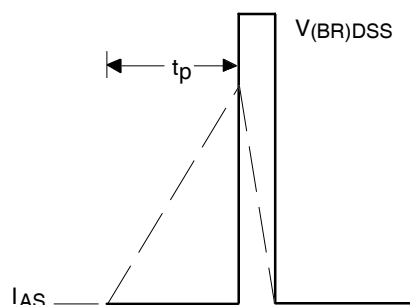


Fig 18b. Unclamped Inductive Waveforms

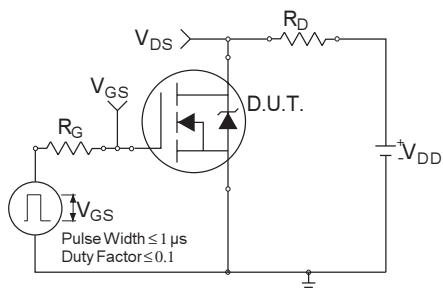


Fig 19a. Switching Time Test Circuit

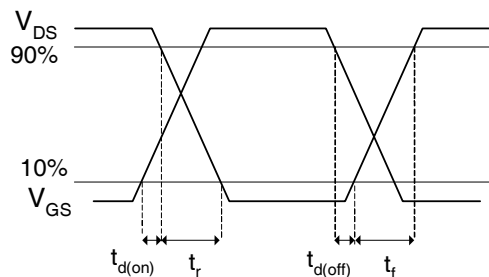
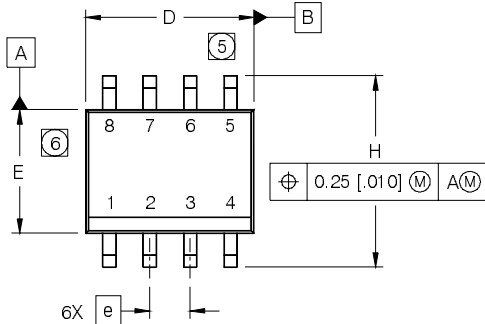


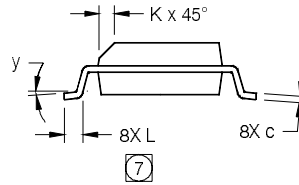
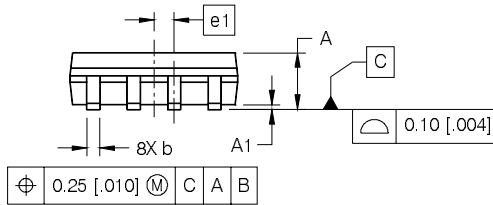
Fig 19b. Switching Time Waveforms

SO-8 Package Outline (Mosfet & Fetky)

Dimensions are shown in millimeters (inches)



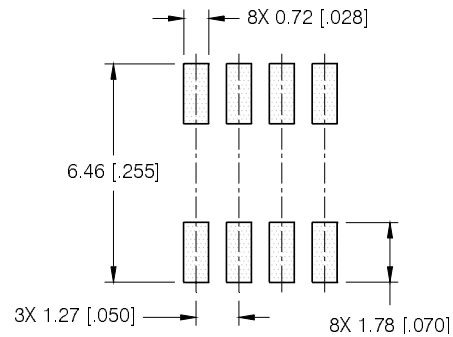
DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	.0532	.0688	1.35	1.75
A1	.0040	.0098	0.10	0.25
b	.013	.020	0.33	0.51
c	.0075	.0098	0.19	0.25
D	.189	.1968	4.80	5.00
E	.1497	.1574	3.80	4.00
e	.050 BASIC		1.27 BASIC	
e1	.025 BASIC		0.635 BASIC	
H	.2284	.2440	5.80	6.20
K	.0099	.0196	0.25	0.50
L	.016	.050	0.40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



NOTES:

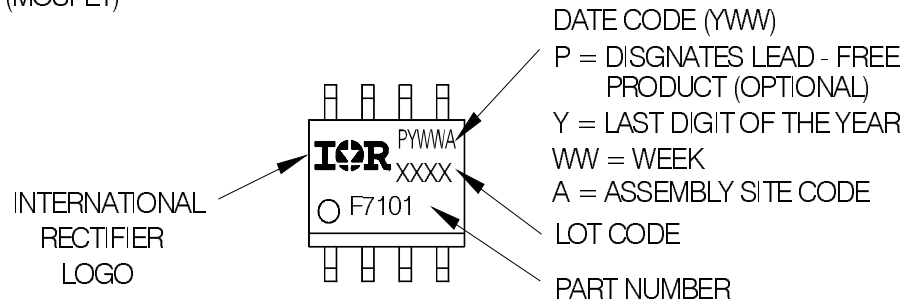
1. DIMENSIONING & TOLERANCING PER ASME Y14.5M-1994.
2. CONTROLLING DIMENSION: MILLIMETER
3. DIMENSIONS ARE SHOWN IN MILLIMETERS [INCHES].
4. OUTLINE CONFORMS TO JEDEC OUTLINE MS-012AA.
5. DIMENSION DOES NOT INCLUDE MOLD PROTRUSIONS. MOLD PROTRUSIONS NOT TO EXCEED 0.15 [0.006].
6. DIMENSION DOES NOT INCLUDE MOLD PROTRUSIONS. MOLD PROTRUSIONS NOT TO EXCEED 0.25 [0.010].
7. DIMENSION IS THE LENGTH OF LEAD FOR SOLDERING TO A SUBSTRATE.

FOOTPRINT



SO-8 Part Marking Information

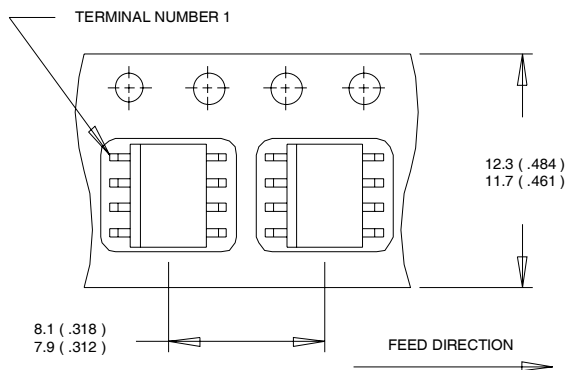
EXAMPLE: THIS IS AN IRF7101 (MOSFET)



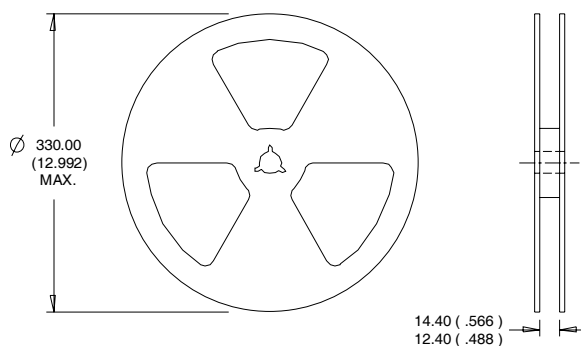
Note: For the most current drawing please refer to IR website at: <http://www.irf.com/package/>

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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[†]

Qualification level	Consumer ^{††} (per JEDEC JESD47F ^{†††} guidelines)	
Moisture Sensitivity Level	SO-8	MSL1 (per JEDEC J-STD-020D ^{†††})
RoHS compliant	Yes	

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

^{††} 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/>

^{†††} Applicable version of JEDEC standard at the time of product release.

Data and specifications subject to change without notice.

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