International
IOR Rectifier

IRFH7932PbF

HEXFET® Power MOSFET

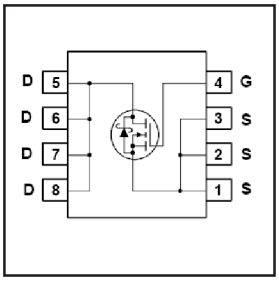
Applications

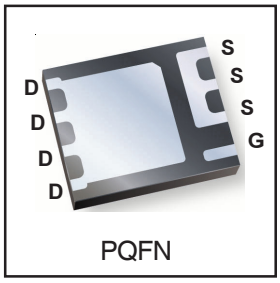
- Synchronous MOSFET for Notebook Processor Power
- Synchronous Rectifer MOSFET for Isolated DC-DC Converters in Networking Systems

V_{DSS}	$R_{DS(on)}$ max	Qg
30V	3.3mΩ@V_{GS} = 10V	34nC

Benefits

- Very low $R_{DS(ON)}$ at 4.5V V_{GS}
- Low Gate Charge
- Fully Characterized Avalanche Voltage and Current
- 100% Tested for R_G
- Lead-Free (Qualified up to 260°C Reflow)
- RoHS compliant (Halogen Free)
- Low Thermal Resistance
- Large Source Lead for more reliable Soldering





PQFN

Orderable part number	Package Type	Standard Pack		Note
		Form	Quantity	
IRFH7932TRPbF	PQFN 5mm x 6mm	Tape and Reel	4000	
~~IRFH7932TR2PbF~~	~~PQFN 5mm x 6mm~~	~~Tape and Reel~~	~~400~~	EOL notice # 259

Absolute Maximum Ratings

	Parameter	Max.	Units
V_{DS}	Drain-to-Source Voltage	30	V
V_{GS}	Gate-to-Source Voltage	± 20	
I_D @ T_A = 25°C	Continuous Drain Current, V_{GS} @ 10V	25	A
I_D @ T_A = 70°C	Continuous Drain Current, V_{GS} @ 10V	20	
I_D @ T_C = 25°C	Continuous Drain Current, V_{GS} @ 10V	104	
I_{DM}	Pulsed Drain Current ①	200	
P_D @T_A = 25°C	Power Dissipation ⑤	3.4	W
P_D @T_A = 70°C	Power Dissipation ⑤	2.2	
	Linear Derating Factor ⑤	0.03	W/°C
T_J T_{STG}	Operating Junction and Storage Temperature Range	-55 to + 150	°C

Thermal Resistance

	Parameter	Typ.	Max.	Units
$R_{\theta JC}$	Junction-to-Case ④	—	2.2	°C/W
$R_{\theta JA}$	Junction-to-Ambient ⑤	—	37	

Notes ① through ⑤ are on page 10

Static @ T_J = 25°C (unless otherwise specified)

	Parameter	Min.	Typ.	Max.	Units	Conditions
BV_{DSS}	Drain-to-Source Breakdown Voltage	30	—	—	V	V_{GS} = 0V, I_D = 250µA
$\Delta BV_{DSS}/\Delta T_J$	Breakdown Voltage Temp. Coefficient	—	0.021	—	V/°C	Reference to 25°C, I_D = 1mA
$R_{DS(on)}$	Static Drain-to-Source On-Resistance	—	2.5	3.3	mΩ	V_{GS} = 10V, I_D = 25A ③
		—	3.3	3.9		V_{GS} = 4.5V, I_D = 20A ③
$V_{GS(th)}$	Gate Threshold Voltage	1.35	1.8	2.35	V	V_{DS} = V_{GS}, I_D = 100µA
$\Delta V_{GS(th)}$	Gate Threshold Voltage Coefficient	—	-5.9	—	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°C
I_{GSS}	Gate-to-Source Forward Leakage	—	—	100	nA	V_{GS} = 20V
	Gate-to-Source Reverse Leakage	—	—	-100		V_{GS} = -20V
gfs	Forward Transconductance	59	—	—	S	V_{DS} = 15V, I_D = 20A
Q_g	Total Gate Charge	—	34	51	nC	V_{DS} = 15V V_{GS} = 4.5V I_D = 20A See Fig.17 & 18
Q_{gs1}	Pre-Vth Gate-to-Source Charge	—	7.9	—		
Q_{gs2}	Post-Vth Gate-to-Source Charge	—	3.6	—		
Q_{gd}	Gate-to-Drain Charge	—	11	—		
Q_{godr}	Gate Charge Overdrive	—	12	—		
Q_{sw}	Switch Charge (Q_{gs2} + Q_{gd})	—	15	—		
Q_{oss}	Output Charge	—	19	—	nC	V_{DS} = 16V, V_{GS} = 0V
R_G	Gate Resistance	—	0.7	—	Ω	
$t_{d(on)}$	Turn-On Delay Time	—	20	—	ns	V_{DD} = 15V, V_{GS} = 4.5V I_D = 20A R_G=1.8Ω See Fig.15
t_r	Rise Time	—	48	—		
$t_{d(off)}$	Turn-Off Delay Time	—	23	—		
t_f	Fall Time	—	20	—		
C_{iss}	Input Capacitance	—	4270	—	pF	V_{GS} = 0V V_{DS} = 15V f = 1.0MHz
C_{oss}	Output Capacitance	—	830	—		
C_{rss}	Reverse Transfer Capacitance	—	420	—		

Avalanche Characteristics

	Parameter	Typ.	Max.	Units
E_{AS}	Single Pulse Avalanche Energy ②	—	16	mJ
I_{AR}	Avalanche Current ①	—	20	A

Diode Characteristics

	Parameter	Min.	Typ.	Max.	Units	Conditions
I_S	Continuous Source Current (Body Diode)	—	—	4.2	A	MOSFET symbol showing the integral reverse p-n junction diode.
I_{SM}	Pulsed Source Current (Body Diode) ①	—	—	200		
V_{SD}	Diode Forward Voltage	—	—	1.0	V	T_J = 25°C, I_S = 20A, V_{GS} = 0V ③
t_{rr}	Reverse Recovery Time	—	21	32	ns	T_J = 25°C, I_F = 20A, V_{DD} = 15V
Q_{rr}	Reverse Recovery Charge	—	33	50	nC	di/dt = 300A/µs ③ See Fig.16
t_{on}	Forward Turn-On Time	Intrinsic turn-on time is negligible (turn-on is dominated by LS+LD)				

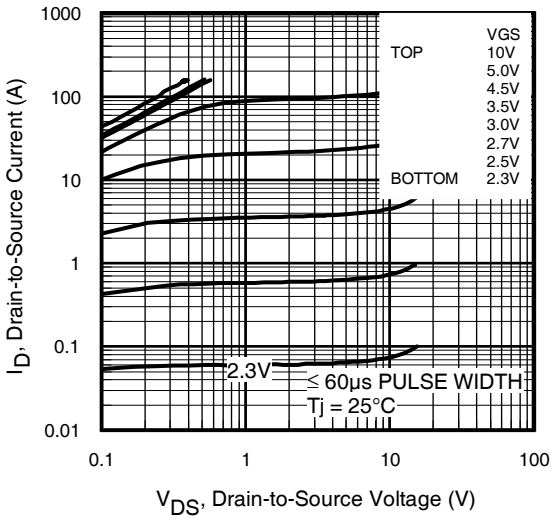


Fig 1. Typical Output Characteristics

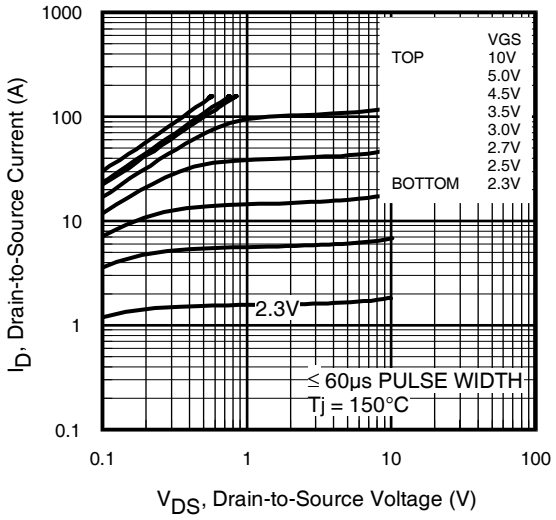


Fig 2. Typical Output Characteristics

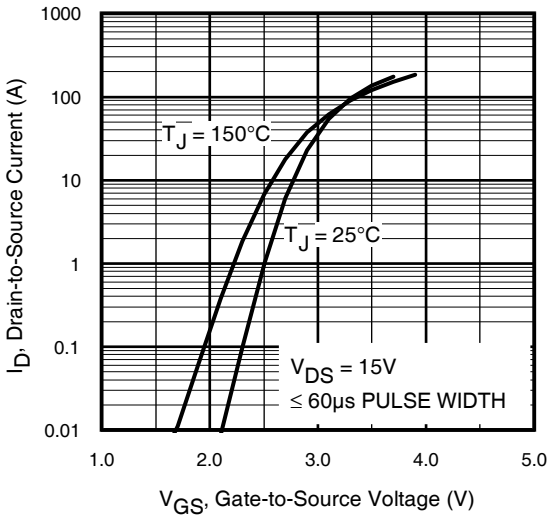


Fig 3. Typical Transfer Characteristics

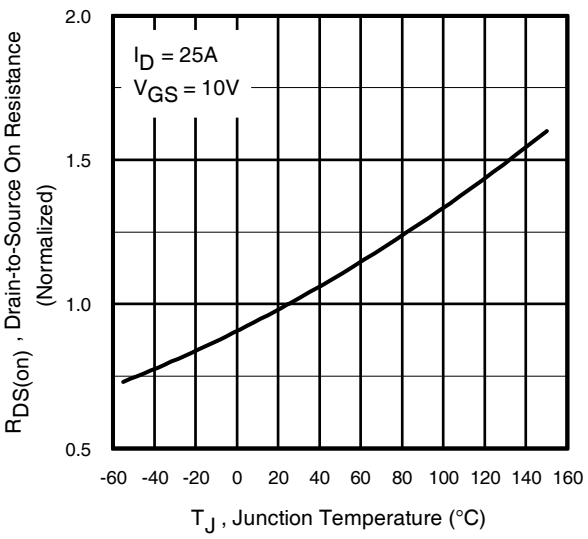


Fig 4. Normalized On-Resistance Vs. Temperature

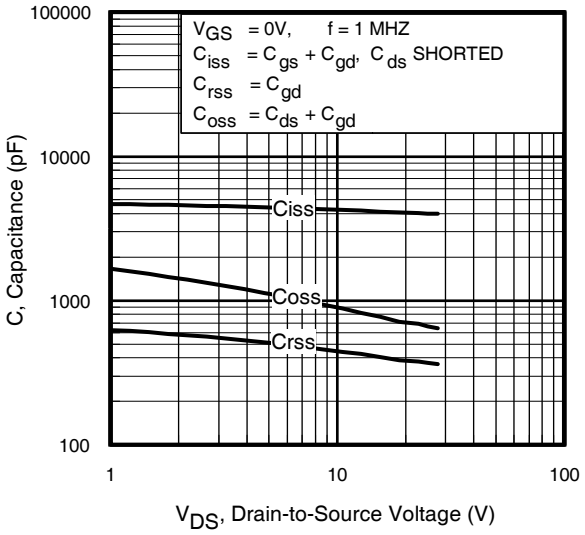


Fig 5. Typical Capacitance Vs. Drain-to-Source Voltage

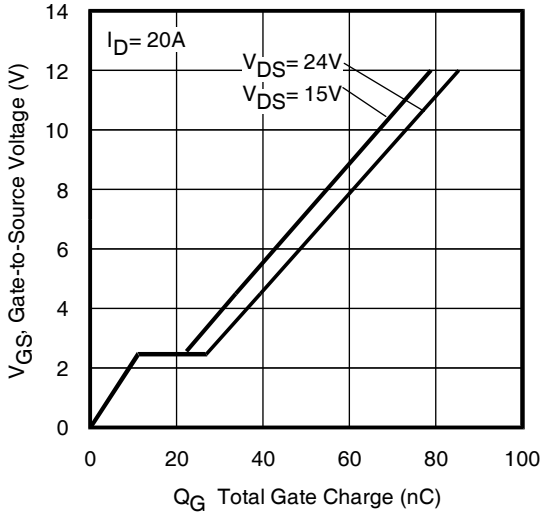


Fig 6. Typical Gate Charge Vs. Gate-to-Source Voltage

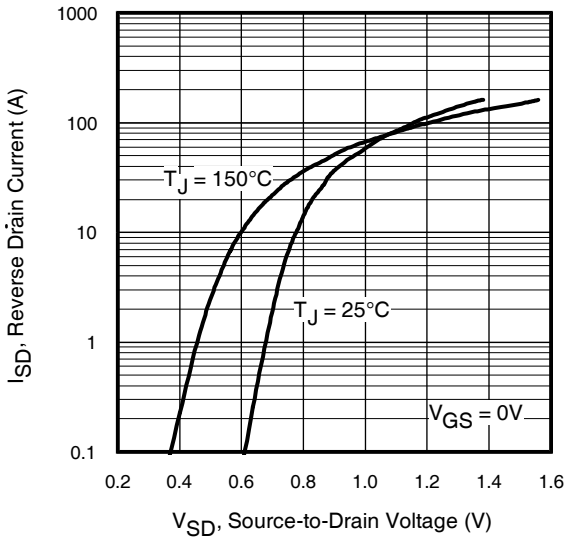


Fig 7. Typical Source-Drain Diode Forward Voltage

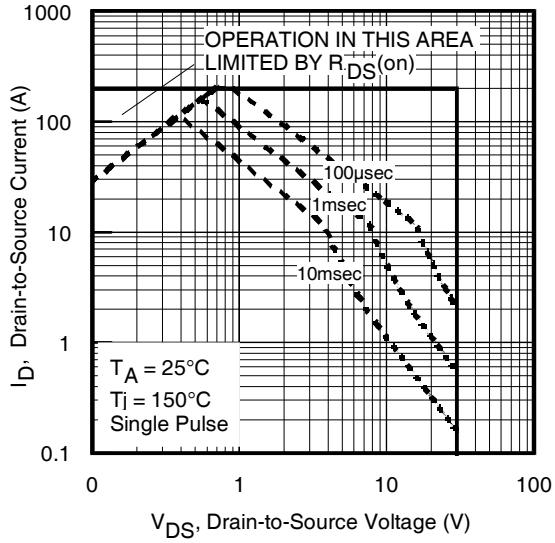


Fig 8. Maximum Safe Operating Area

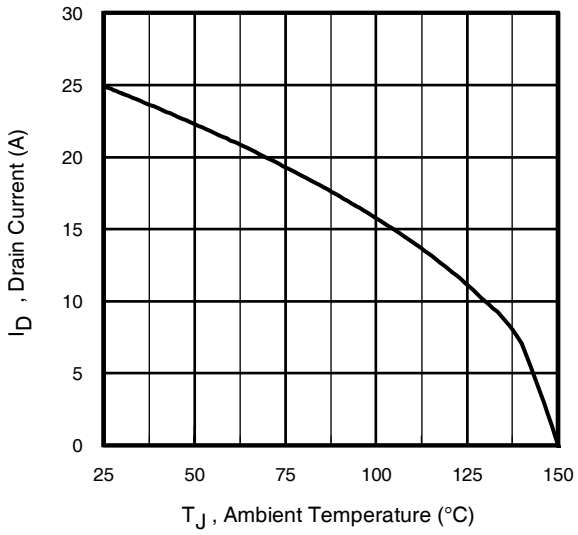


Fig 9. Maximum Drain Current Vs. Ambient Temperature

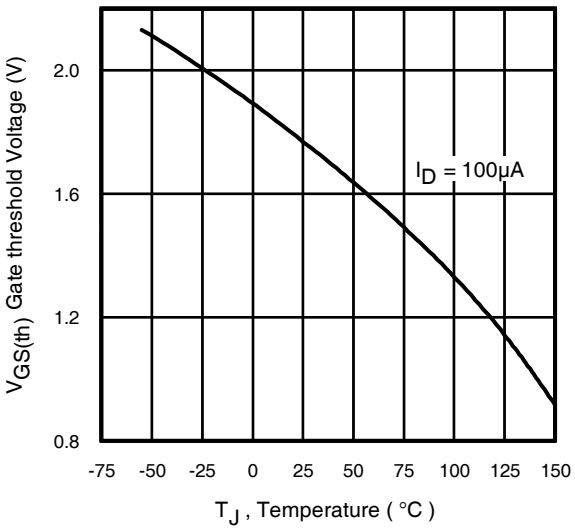


Fig 10. Threshold Voltage Vs. Temperature

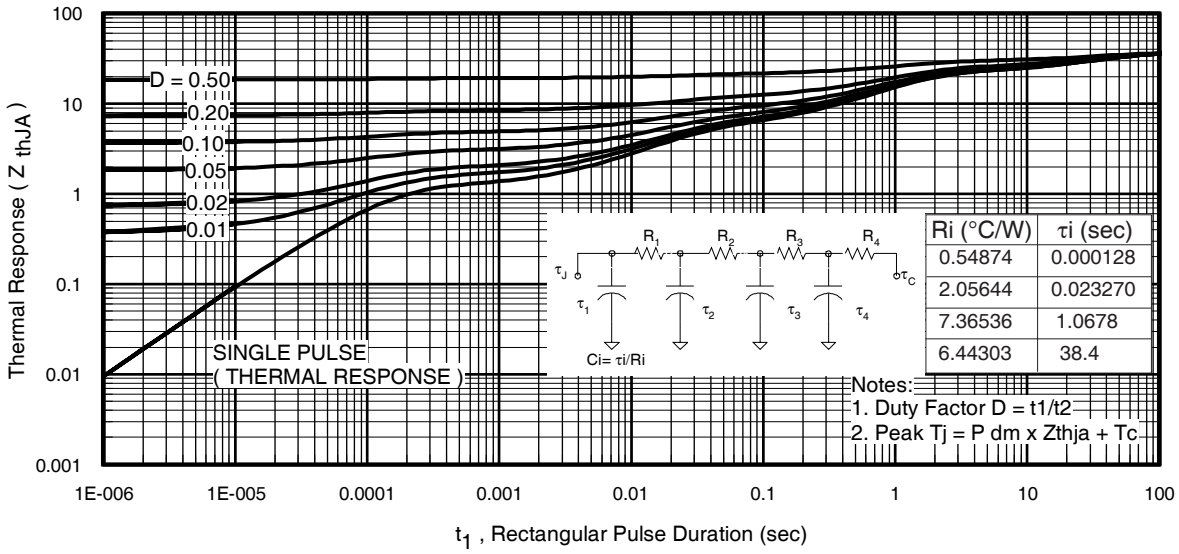


Fig 11. Maximum Effective Transient Thermal Impedance, Junction-to-Ambient

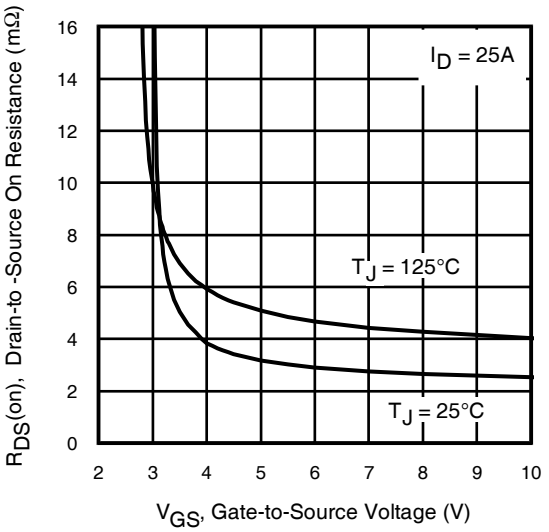


Fig 12. On-Resistance vs. Gate Voltage

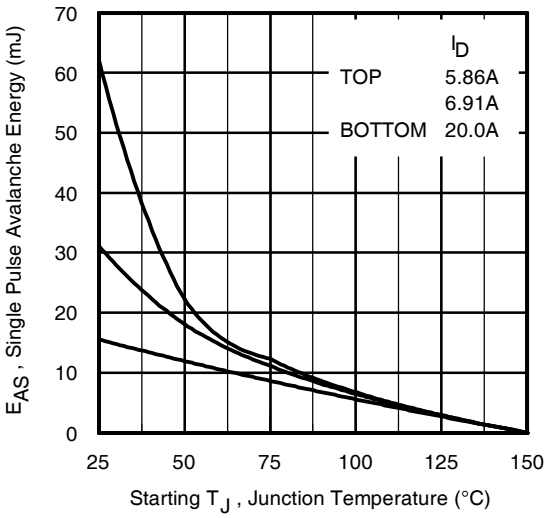


Fig 13. Maximum Avalanche Energy vs. Drain Current

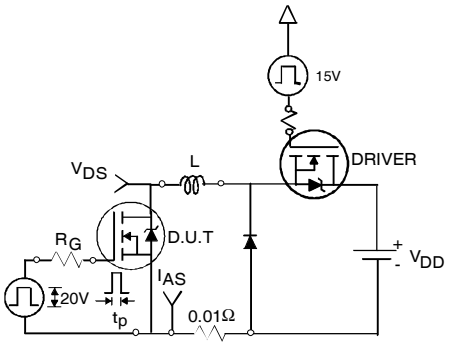


Fig 14a. Unclamped Inductive Test Circuit

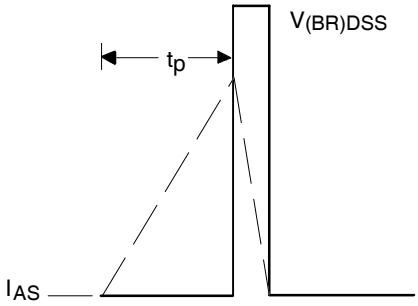


Fig 14b. Unclamped Inductive Waveforms

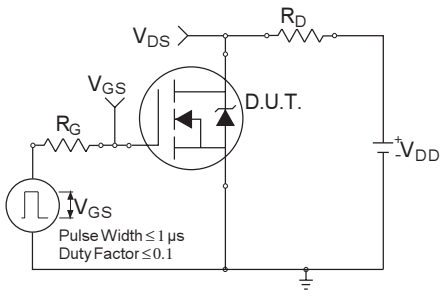


Fig 15a. Switching Time Test Circuit

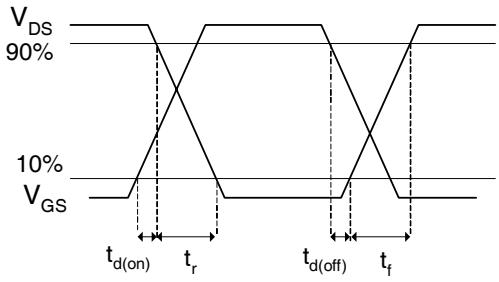


Fig 15b. Switching Time Waveforms

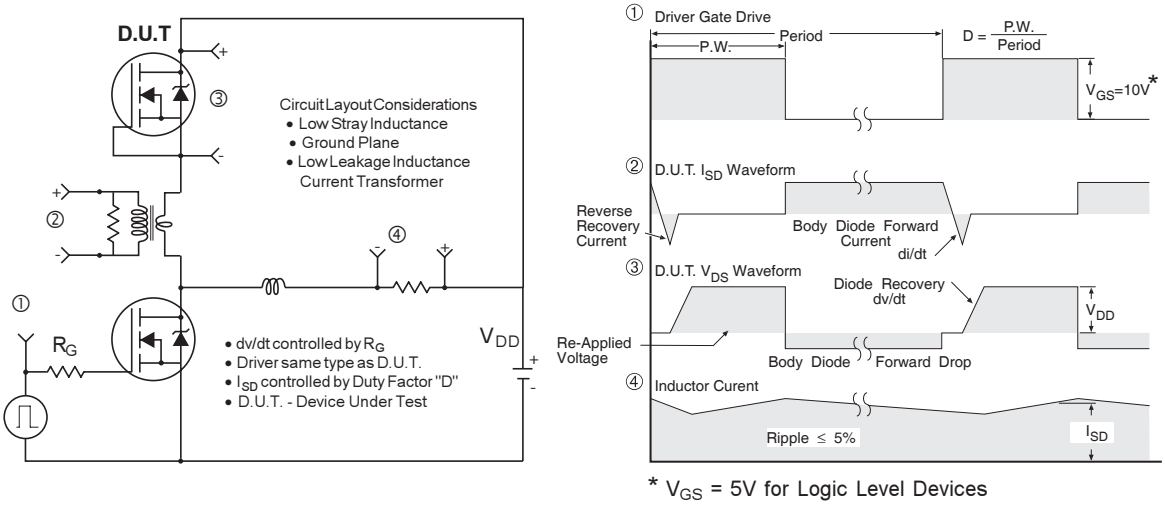


Fig 16. Peak Diode Recovery dv/dt Test Circuit for N-Channel HEXFET® Power MOSFETs

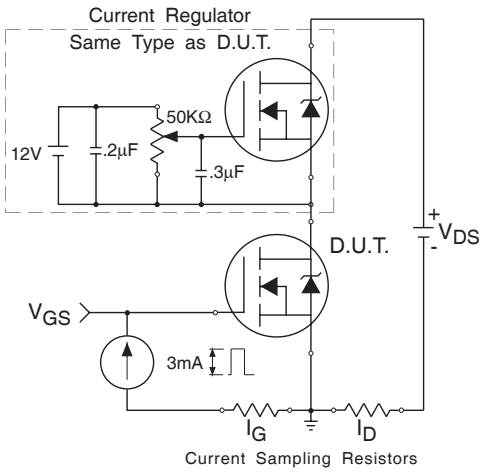


Fig 17. Gate Charge Test Circuit

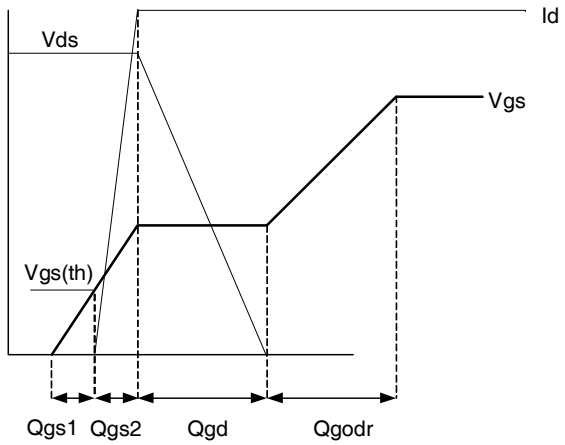
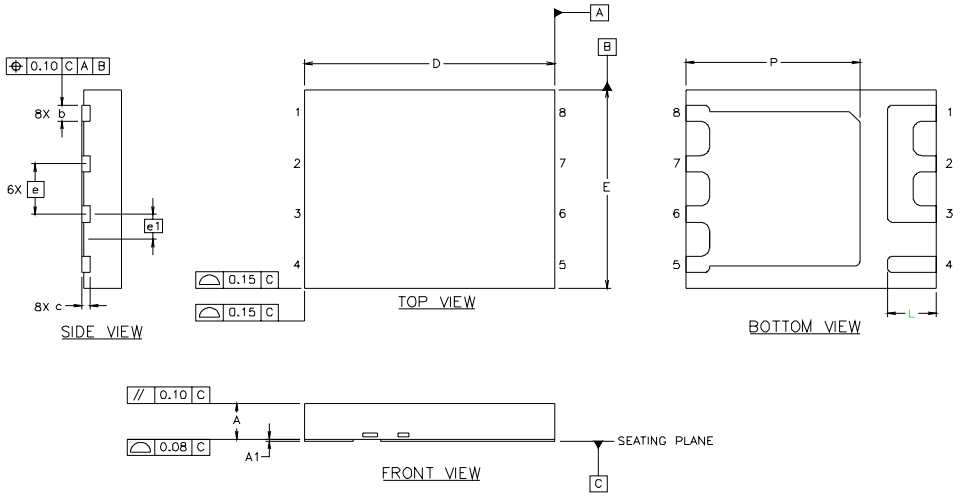
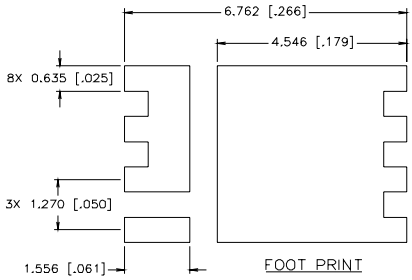


Fig 18. Gate Charge Waveform

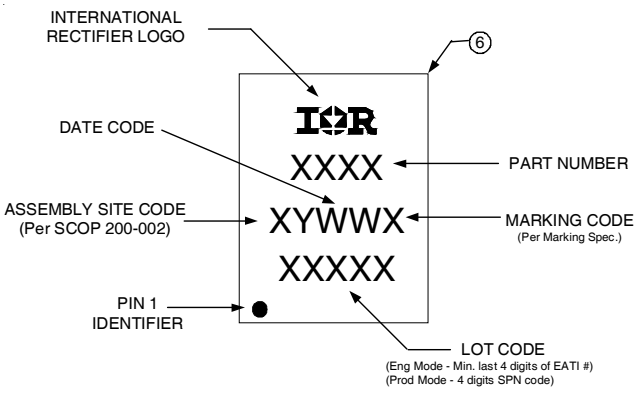
PQFN Package Details



DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	.0315	.0394	0.800	1.000
A1	.0000	.0020	0.000	0.050
b	.0140	.0180	0.356	0.456
c	.0080 REF.		0.203 REF.	
D	.2323	.2402	5.900	6.100
E	.1929	.2008	4.900	5.100
e	.0500 BASIC		1.270 BASIC	
e1	.0250 BASIC		0.635 BASIC	
L	.0443	.0482	1.125	1.225
P	.1620	.1659	4.115	4.215



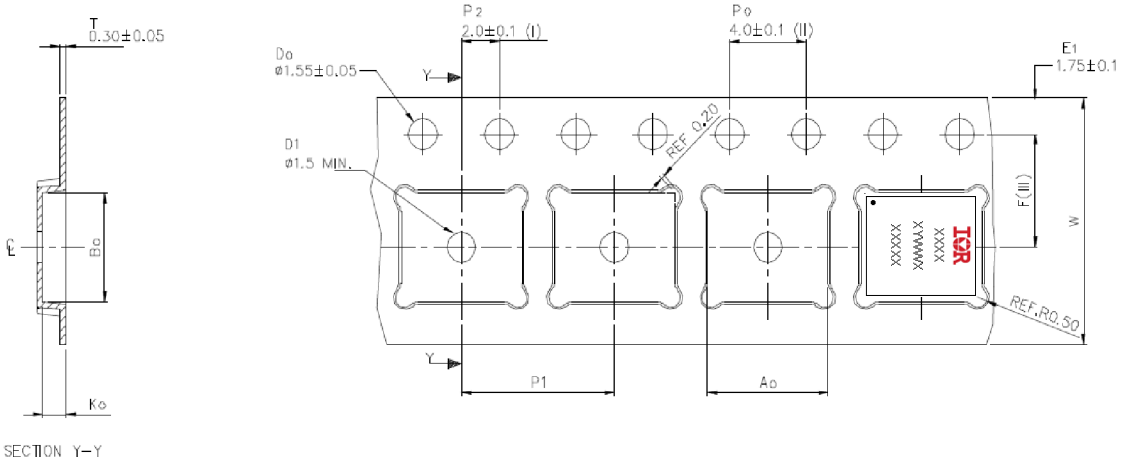
PQFN Part Marking



TOP MARKING (LASER)

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

PQFN Tape and Reel



Ao	6.30 +/− 0.1
Bo	5.30 +/− 0.1
Ko	1.20 +/− 0.1
F	5.50 +/− 0.1
P1	8.00 +/− 0.1
W	12.00 +/− 0.3

(I) Measured from centreline of sprocket hole to centreline of pocket.
(II) Cumulative tolerance of 10 sprocket holes is ± 0.20 .
(III) Measured from centreline of sprocket hole to centreline of pocket.
(IV) Other material available.
(V) Typical SR of form tape Max 10^9 OHM/SQ

ALL DIMENSIONS IN MILLIMETRES UNLESS OTHERWISE STATED.

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.

Notes:

① Repetitive rating; pulse width limited by max. junction temperature.

② Starting T_J = 25°C, L = 0.078mH, R_G = 25Ω, I_{AS} = 20A.

③ Pulse width ≤ 400µs; duty cycle ≤ 2%.

④ Rthjc is guaranteed by design

⑤ When mounted on 1 inch square 2 oz copper pad on 1.5x1.5 in. board of FR-4 material.

Revision History

Date	Comments
12/16/2013	• Updated ordering information to reflect the End-Of-life (EOL) of the mini-reel option (EOL notice #259) • Updated data sheet with new IR corporate template
8/1/2014	• Updated data sheet with PQFN Tape and Reel Diagram from Datasheet IRFH7934PbF

International IOR Rectifier

IR WORLD HEADQUARTERS: 101 N. Sepulveda Blvd., El Segundo, California 90245, USA
To contact International Rectifier, please visit http://www.irf.com/whoto-call/

IMPORTANT NOTICE

The information given in this document shall in no event be regarded as a guarantee of conditions or characteristics ("Beschaffenheitsgarantie") .

With respect to any examples, hints or any typical values stated herein and/or any information regarding the application of the product, Infineon Technologies hereby disclaims any and all warranties and liabilities of any kind, including without limitation warranties of non-infringement of intellectual property rights of any third party.

In addition, any information given in this document is subject to customer's compliance with its obligations stated in this document and any applicable legal requirements, norms and standards concerning customer's products and any use of the product of Infineon Technologies in customer's applications.

The data contained in this document is exclusively intended for technically trained staff. It is the responsibility of customer's technical departments to evaluate the suitability of the product for the intended application and the completeness of the product information given in this document with respect to such application.

For further information on the product, technology, delivery terms and conditions and prices please contact your nearest Infineon Technologies office (**www.infineon.com**).

WARNINGS

Due to technical requirements products may contain dangerous substances. For information on the types in question please contact your nearest Infineon Technologies office.

Except as otherwise explicitly approved by Infineon Technologies in a written document signed by authorized representatives of Infineon Technologies, Infineon Technologies' products may not be used in any applications where a failure of the product or any consequences of the use thereof can reasonably be expected to result in personal injury.

X-ON Electronics

Largest Supplier of Electrical and Electronic Components

Click to view similar products for MOSFET ***category:***

Click to view products by Infineon ***manufacturer:***

Other Similar products are found below :

614233C 648584F IRFD120 JANTX2N5237 FCA20N60_F109 FDZ595PZ 2SK2545(Q,T) 405094E 423220D TPCC8103,L1Q(CM MIC4420CM-TR VN1206L 614234A 715780A NTNS3166NZT5G SSM6J414TU,LF(T 751625C BUK954R8-60E GROUP A 5962-8877003PA NTE6400 SQJ402EP-T1-GE3 2SK2614(TE16L1,Q) 2N7002KW-FAI DMN1017UCP3-7 EFC2J004NUZTDG ECH8691-TL-W FCAB21350L1 P85W28HP2F-7071 DMN1053UCP4-7 NTE221 NTE222 NTE2384 NTE2903 NTE2941 NTE2945 NTE2946 NTE2960 NTE2967 NTE2969 NTE2976 NTE6400A NTE2910 NTE2916 NTE2956 NTE2911 DMN2080UCB4-7 TK10A80W,S4X(S SSM6P69NU,LF DMP22D4UFO-7B DMN1006UCA6-7