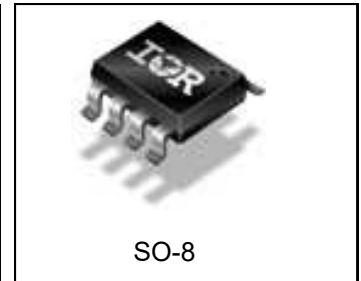
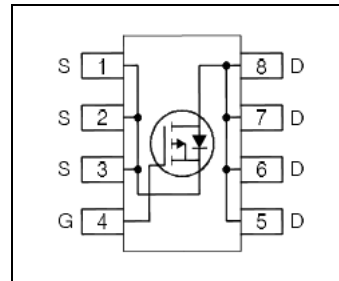


V_{DS}	-30	V
$V_{GS\ max}$	±25	mΩ
$R_{DS(on)\ max}$ (@ $V_{GS} = -10V$)	11.9	
I_D (@ $T_A = 25^\circ C$)	-12	A


Applications

- Adaptor Input Switch for Notebook PC

Features

25V $V_{GS\ max}$
Industry-Standard SO8 Package
RoHS Compliant Containing no Lead, no Bromide and no Halogen

Resulting Benefits

Direct Drive at High V_{GS}
Multi-Vendor Compatibility
Environmentally Friendlier

Base part number	Package Type	Standard Pack		Note
		Form	Quantity	
IRF9388EPbF	SO-8	Tube/Bulk	95	
		Tape and Reel	4000	

Absolute Maximum Ratings

	Parameter	Max.	Units
V_{DS}	Drain-to-Source Voltage	-30	V
V_{GS}	Gate-to-Source Voltage	± 25	
$I_D @ T_A = 25^\circ C$	Continuous Drain Current, $V_{GS} @ 10V$	-12	A
$I_D @ T_A = 70^\circ C$	Continuous Drain Current, $V_{GS} @ 10V$	-9.6	
I_{DM}	Pulsed Drain Current ①	-96	
$P_D @ T_A = 25^\circ C$	Power Dissipation ④	2.5	W
$P_D @ T_A = 70^\circ C$	Power Dissipation ④	1.6	
	Linear Derating Factor	0.02	W/°C
T_J T_{STG}	Operating Junction and Storage Temperature Range	-55 to + 150	°C

Notes ① through ⑥ are on page 2

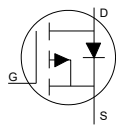
Static @ T_J = 25°C (unless otherwise specified)

	Parameter	Min.	Typ.	Max.	Units	Conditions
BV _{DSS}	Drain-to-Source Breakdown Voltage	-30	—	—	V	V _{GS} = 0V, I _D = -250μA
ΔBV _{DSS} /ΔT _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	—	8.5	—	mΩ	V _{GS} = -20V, I _D = -12A ^③
		—	10	11.9		V _{GS} = -10V, I _D = -12A ^③
V _{GS(th)}	Gate Threshold Voltage	-1.3	-1.8	-2.4	V	V _{DS} = V _{GS} , I _D = -25μA
ΔV _{GS(th)}	Gate Threshold Voltage Coefficient	—	-5.8	—	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	—	—	10	μA	V _{GS} = 25V
	Gate-to-Source Reverse Leakage	—	—	-10		V _{GS} = -25V
g _{fs}	Forward Transconductance	20	—	—	S	V _{DS} = -10V, I _D = -9.6A
Q _g	Total Gate Charge ^⑥	—	18	—		V _{DD} = -15V, V _{GS} = -4.5V, I _D = -9.6A
Q _g	Total Gate Charge ^⑥	—	35	52		V _{GS} = -10V,
Q _{gs}	Gate to Source Charge ^⑥	—	5.3	—		V _{DD} = -15V
Q _{gd}	Gate to Drain Charge ^⑥	—	8.5	—		I _D = -9.6A
R _G	Gate Resistance ^⑥	—	15	—	Ω	
t _{d(on)}	Turn-On Delay Time	—	19	—	ns	V _{DD} = -15V, V _{GS} = -4.5V ^③
t _r	Rise Time	—	57	—		I _D = -1.0A
t _{d(off)}	Turn-Off Delay Time	—	80	—		R _G = 6.8Ω
t _f	Fall Time	—	66	—		See Figs.20a & 20b
C _{iss}	Input Capacitance	—	1680	—	pF	V _{GS} = 0V
C _{oss}	Output Capacitance	—	350	—		V _{DS} = -25V
C _{riss}	Reverse Transfer Capacitance	—	220	—		f = 1.0MHz

Avalanche Characteristics

	Parameter	Typ.	Max.	Units
E _{AS}	Single Pulse Avalanche Energy ^②	—	120	mJ
I _{AR}	Avalanche Current ^①	—	-9.6	A

Diode Characteristics

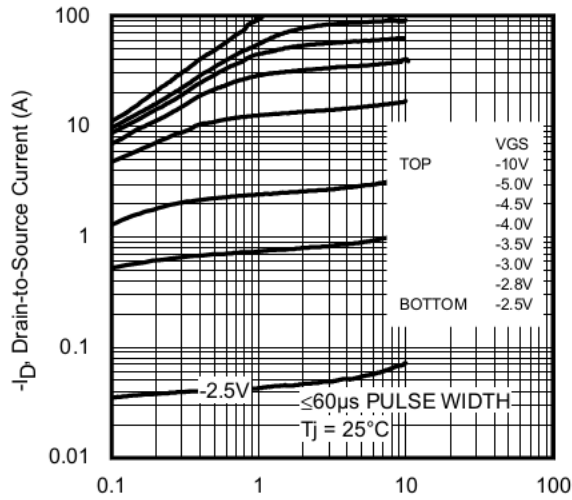
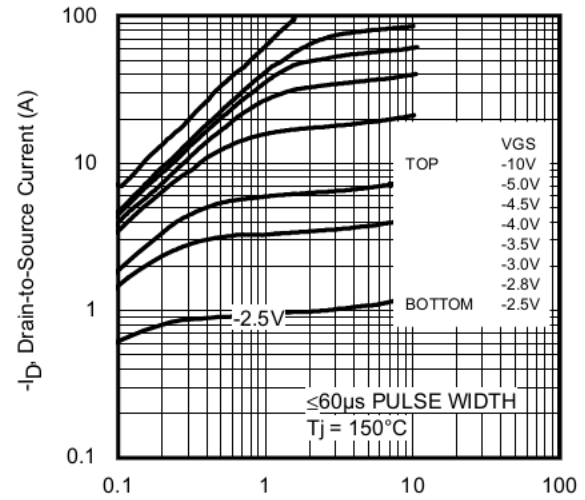
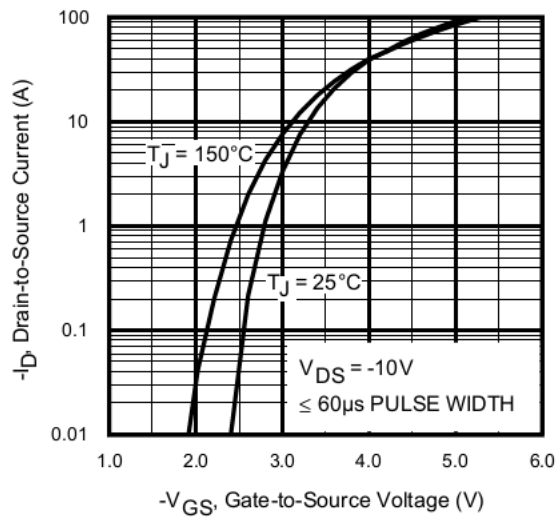
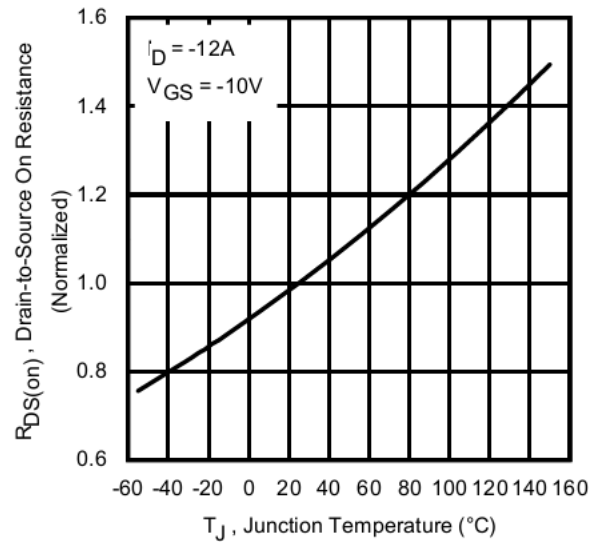
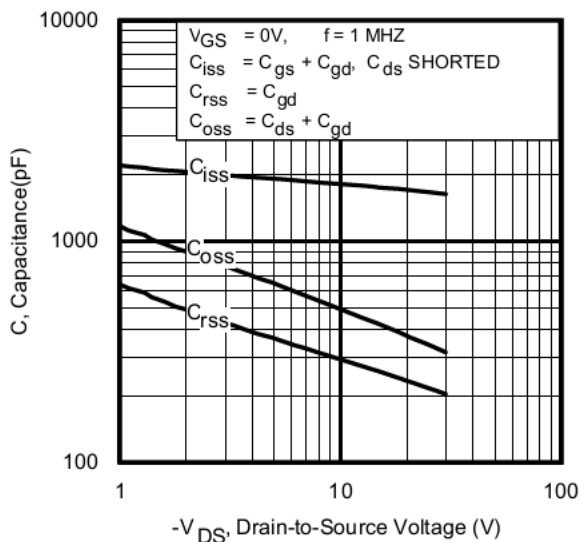
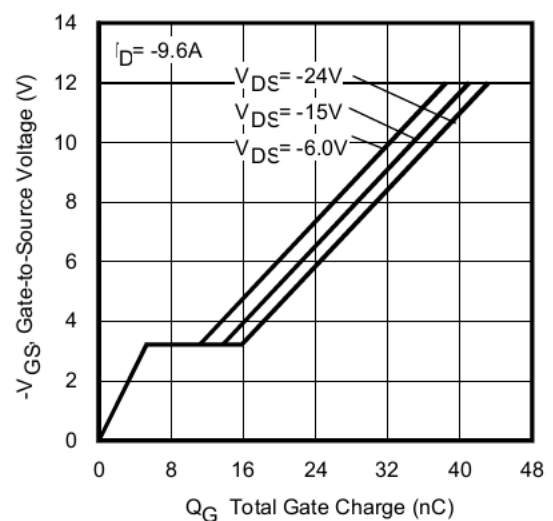
	Parameter	Min.	Typ.	Max.	Units	Conditions
I _S	Continuous Source Current (Body Diode)	—	—	-2.5	A	MOSFET symbol showing the integral reverse p-n junction diode. 
I _{SM}	Pulsed Source Current (Body Diode) ^①	—	—	-96		
V _{SD}	Diode Forward Voltage	—	—	-1.2	V	T _J = 25°C, I _S = -2.5A, V _{GS} = 0V ^③
t _{rr}	Reverse Recovery Time	—	51	76	ns	T _J = 25°C, I _F = -2.5A, V _{DD} = -24V
Q _{rr}	Reverse Recovery Charge	—	35	53	nC	di/dt = 100A/μs ^③

Thermal Resistance

	Parameter	Typ.	Max.	Units
R _{θJL}	Junction-to-Drain Lead ^⑤	—	20	°C/W
R _{θJA}	Junction-to-Ambient ^④	—	50	

Notes:

- ① Repetitive rating; pulse width limited by max. junction temperature.
- ② Starting T_J = 25°C, L = 2.6mH, R_G = 50Ω, I_{AS} = -9.6A.
- ③ Pulse width ≤ 400μs; duty cycle ≤ 2%.
- ④ When mounted on 1 inch square copper board.
- ⑤ R_θ is measured at T_J of approximately 90°C.
- ⑥ For DESIGN AID ONLY, not subject to production testing.


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

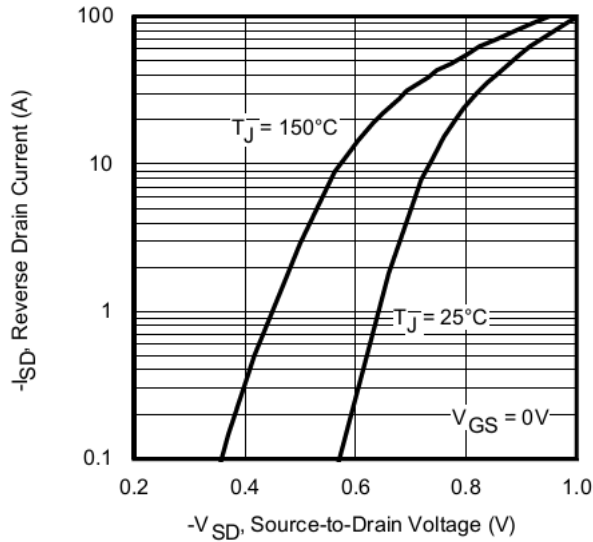


Fig 7. Typical Source-Drain Diode Forward Voltage

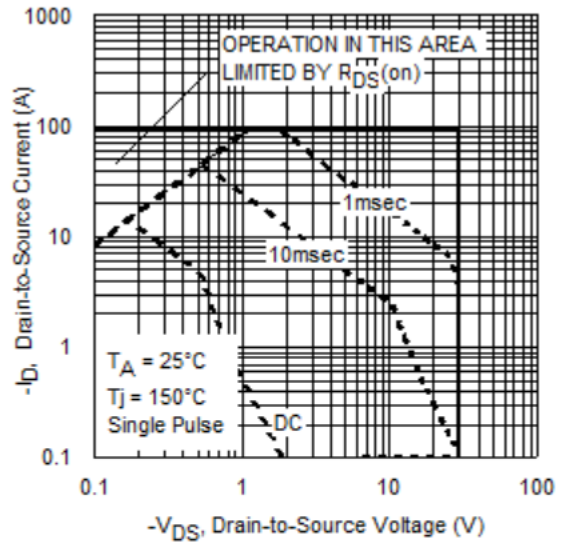


Fig 8. Maximum Safe Operating Area

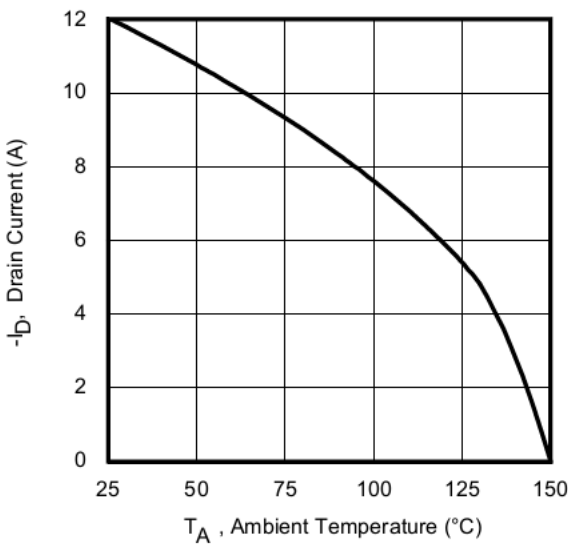


Fig 9. Maximum Drain Current vs. Ambient Temperature

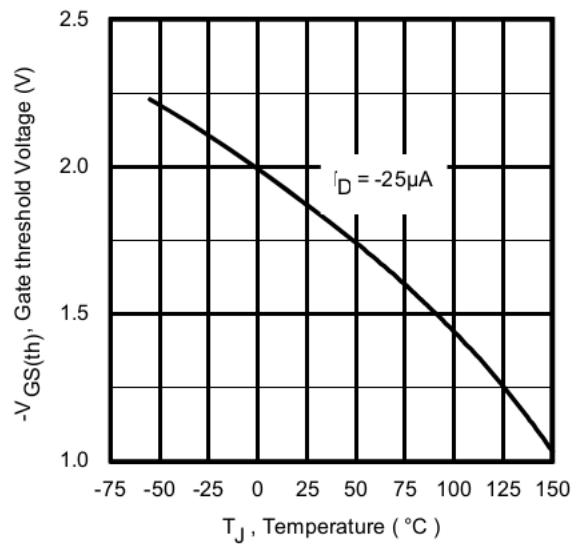


Fig 10. Threshold Voltage Vs. Temperature

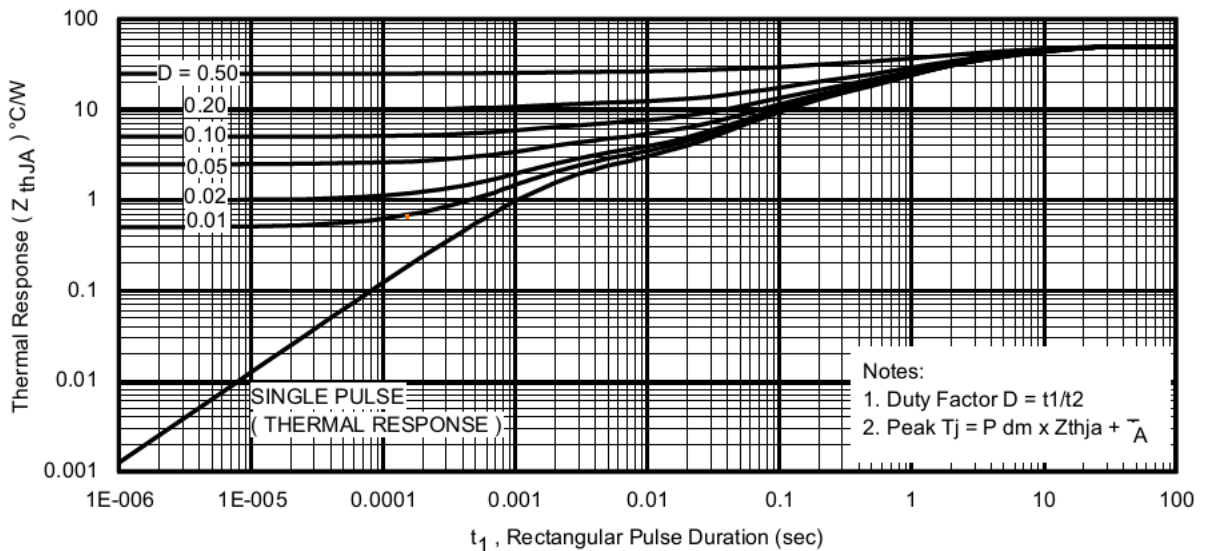


Fig 11. Maximum Effective Transient Thermal Impedance, Junction-to-ambient

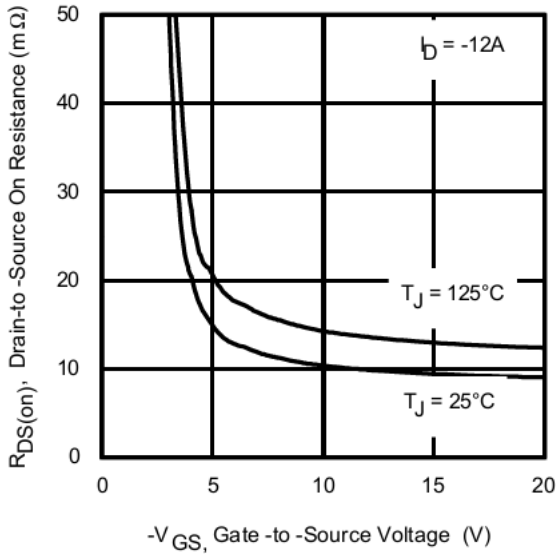


Fig 12. Maximum Avalanche Energy vs. Drain Current

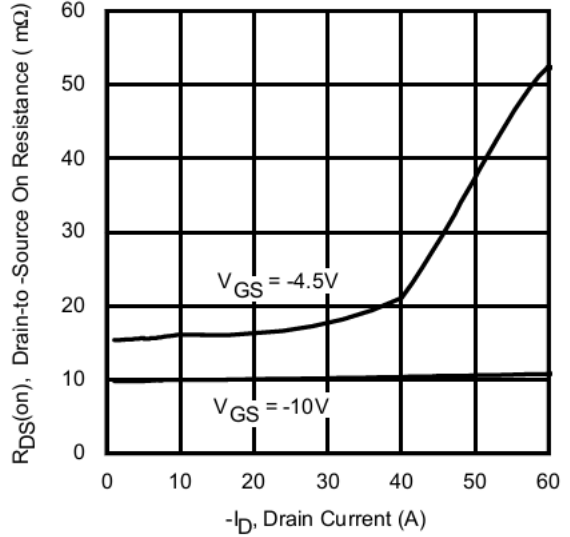


Fig 13. Typical Power vs. Time

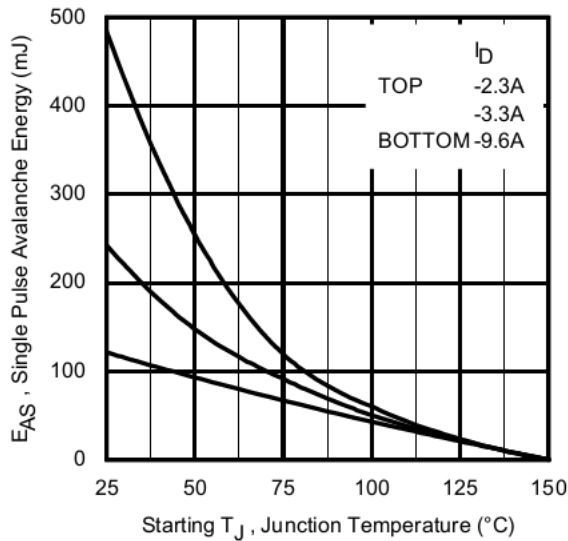


Fig 14. On-Resistance vs. Gate Voltage

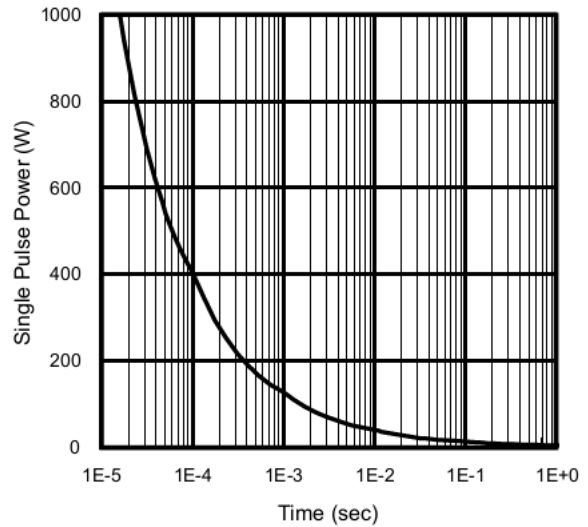


Fig 15. Typical On-Resistance vs. Drain Current

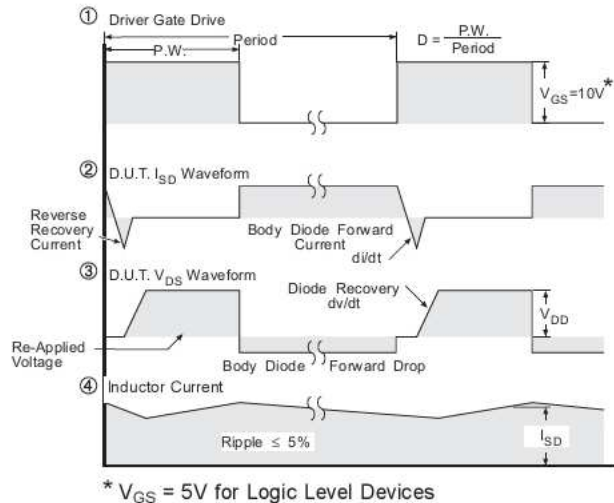
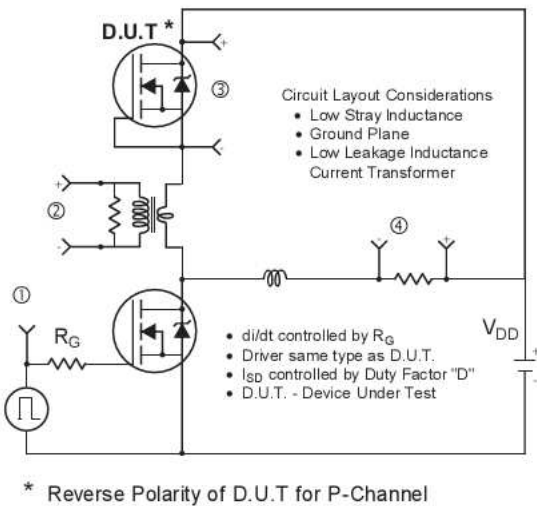


Fig 17. Diode Reverse Recovery Test Circuit for P-Channel HEXFET[®] Power MOSFETs

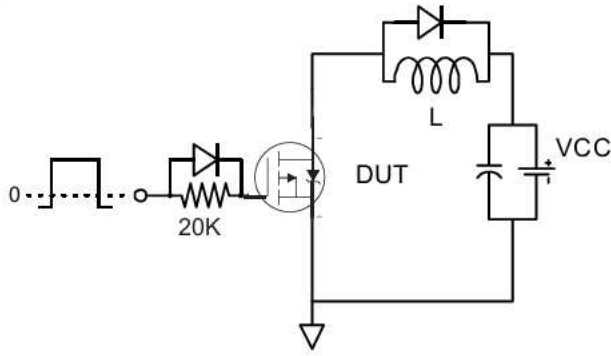


Fig 18a. Gate Charge Test Circuit

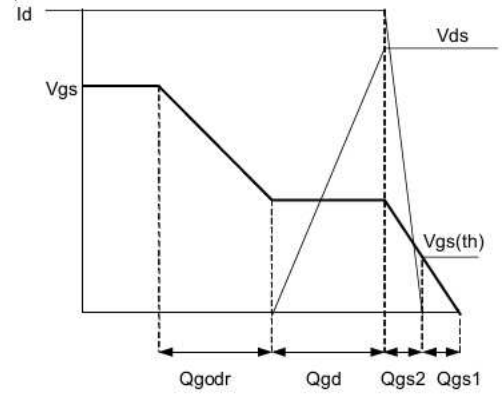


Fig 18b. Gate Charge Waveform

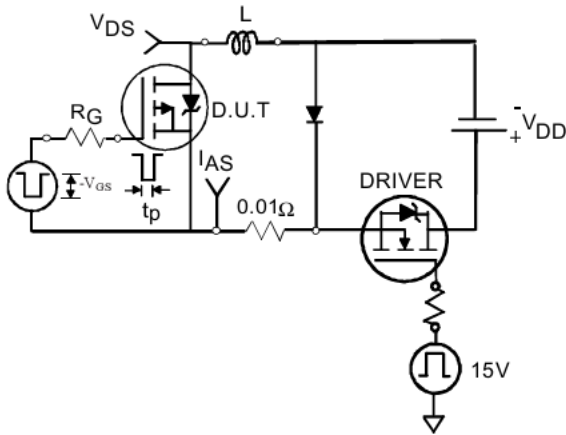


Fig 19a. Unclamped Inductive Test Circuit

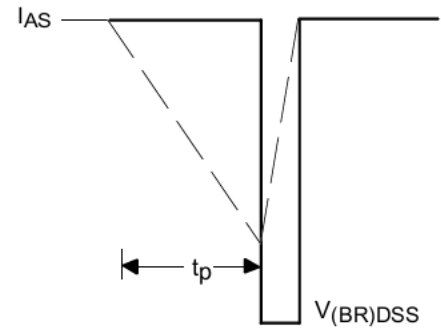


Fig 19b. Unclamped Inductive Waveforms

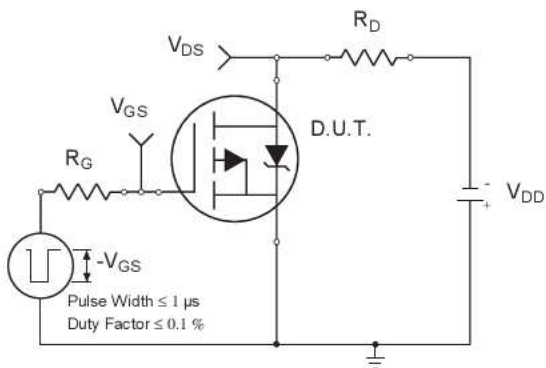


Fig 20a. Switching Time Test Circuit

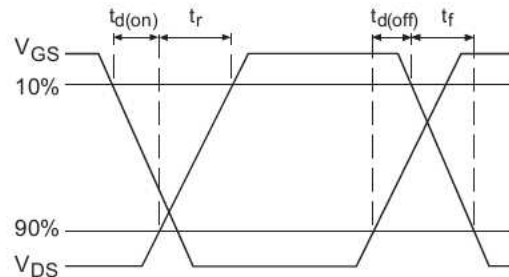
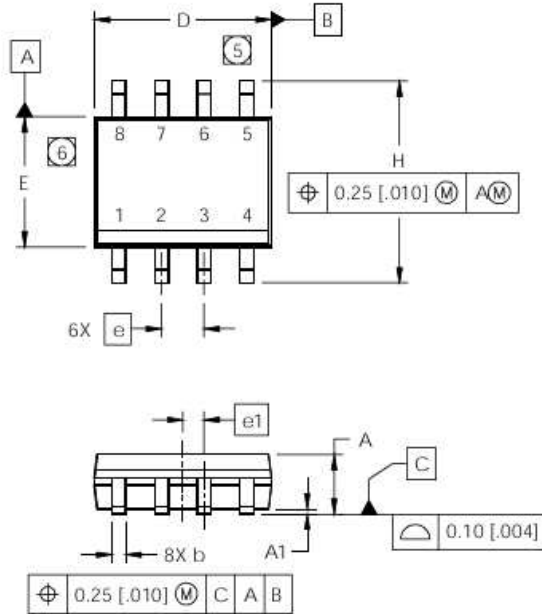


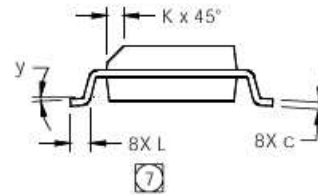
Fig 20b. Switching Time Waveforms

SO-8 Package Outline (Mosfet & Fetky)

Dimensions are shown in millimeters (inches)



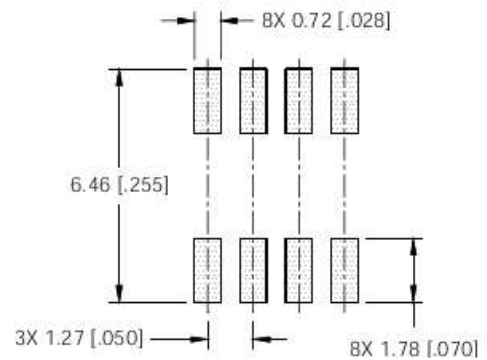
DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	.0532	.0688	1.35	1.75
A1	.0040	.0098	0.10	0.25
b	.013	.020	0.33	0.51
c	.0075	.0098	0.19	0.25
D	.189	.1968	4.80	5.00
E	.1497	.1574	3.80	4.00
e	.050 BASIC		1.27 BASIC	
e1	.025 BASIC		0.635 BASIC	
H	.2284	.2440	5.80	6.20
K	.0099	.0196	0.25	0.50
L	.016	.050	0.40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



NOTES:

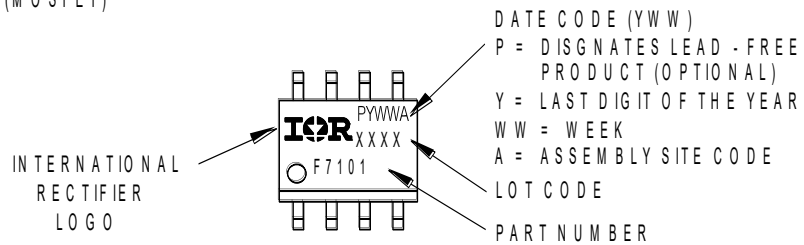
1. DIMENSIONING & TOLERANCING PER ASME Y14.5M-1994.
2. CONTROLLING DIMENSION: MILLIMETER
3. DIMENSIONS ARE SHOWN IN MILLIMETERS [INCHES].
4. OUTLINE CONFORMS TO JEDEC OUTLINE MS-012AA.
- ⑤ DIMENSION DOES NOT INCLUDE MOLD PROTRUSIONS. MOLD PROTRUSIONS NOT TO EXCEED 0.15 [.006].
- ⑥ DIMENSION DOES NOT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

FOOTPRINT



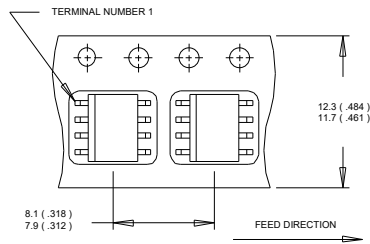
SO-8 Part Marking

EXAMPLE: THIS IS AN IRF7101 (MOSFET)

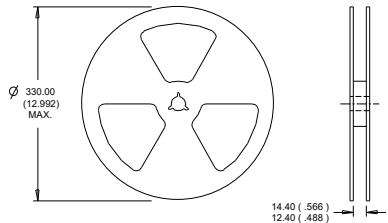


Note: For the most current drawing please refer to IR website at <http://www.irf.com/package/>

SO-8 Tape and Reel (Dimensions are shown in millimeters (inches))



- 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.

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

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

Revision History

Date	Rev.	Comments
10/01/2021	2.1	<ul style="list-style-type: none"> Updated I_{DM} in SOA curve Updated datasheet based on IFX template

Trademarks of Infineon Technologies AG

μ HVIC™, μ IPM™, μ PFC™, AU-ConvertIR™, AURIX™, C166™, CanPAK™, CIPOS™, CIPURSE™, CoolDP™, CoolGaN™, COOLiR™, CoolMOS™, CoolSET™, CoolSiC™, DAVE™, DI-POL™, DirectFET™, DrBlade™, EasyPIM™, EconoBRIDGE™, EconoDUAL™, EconoPACK™, EconoPIM™, EiceDRIVER™, eupec™, FCOS™, GaNpowIR™, HEXFET™, HITFET™, HybridPACK™, iMOTION™, IRAM™, ISOFACE™, IsoPACK™, LEDriviR™, LITIX™, MIPAQ™, ModSTACK™, my-d™, NovalithIC™, OPTIGA™, OptiMOS™, ORIGA™, PowIRaudio™, PowIRstage™, PrimePACK™, PrimeSTACK™, PROFET™, PRO-SiL™, RASIC™, REAL3™, SmartLEWIS™, SOLID FLASH™, SPOC™, StrongIRFET™, SupIRBuck™, TEMPFET™, TRENCHSTOP™, TriCore™, UHVIC™, XHP™, XMC™

Trademarks updated November 2015

Other Trademarks

All referenced product or service names and trademarks are the property of their respective owners.

Edition 2016-04-19

Published by
Infineon Technologies AG
81726 Munich, Germany

© 2016 Infineon Technologies AG.
All Rights Reserved.

Do you have a question about this document?
Email: erratum@infineon.com

Document reference
ifx1

IMPORTANT NOTICE

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

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).

Please note that this product is not qualified according to the AEC Q100 or AEC Q101 documents of the Automotive Electronics Council.

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.