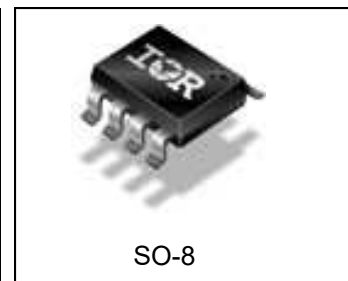
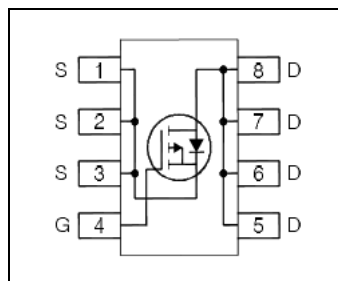


V_{DS}	-30	V
$V_{GS\ max}$	±25	mΩ
$R_{DS(on)\ max}$ (@ $V_{GS} = -10V$)	11.9	
I_D (@ $T_A = 25^\circ C$)	-12	A



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

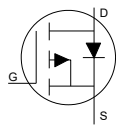
Static @ $T_J = 25^\circ\text{C}$ (unless otherwise specified)

	Parameter	Min.	Typ.	Max.	Units	Conditions
BV_{DSS}	Drain-to-Source Breakdown Voltage	-30	—	—	V	$V_{GS} = 0V, I_D = -250\mu A$
$\Delta BV_{DSS}/\Delta T_J$	Breakdown Voltage Temp. Coefficient	—	0.021	—	V/ $^\circ\text{C}$	Reference to 25°C , $I_D = -1\text{mA}$
$R_{DS(on)}$	Static Drain-to-Source On-Resistance	—	8.5	—	$m\Omega$	$V_{GS} = -20V, I_D = -12A$ ③
		—	10	11.9		$V_{GS} = -10V, I_D = -12A$ ③
$V_{GS(th)}$	Gate Threshold Voltage	-1.3	-1.8	-2.4	V	$V_{DS} = V_{GS}, I_D = -25\mu A$
$\Delta V_{GS(th)}$	Gate Threshold Voltage Coefficient	—	-5.8	—	mV/ $^\circ\text{C}$	
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	—	—	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	—		$R_G = 6.8\Omega$
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_{rss}	Reverse Transfer Capacitance	—	220	—		$f = 1.0\text{MHz}$

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

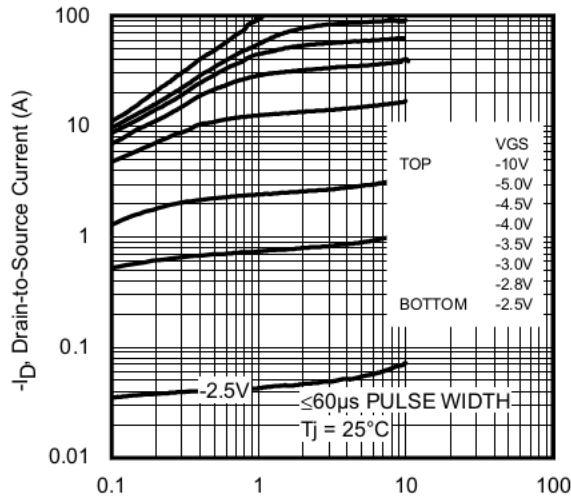
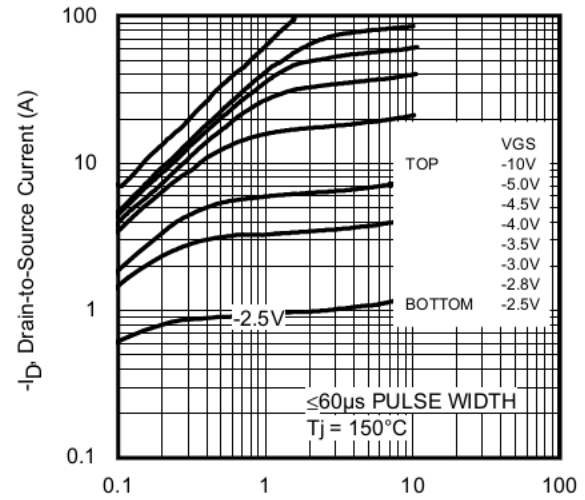
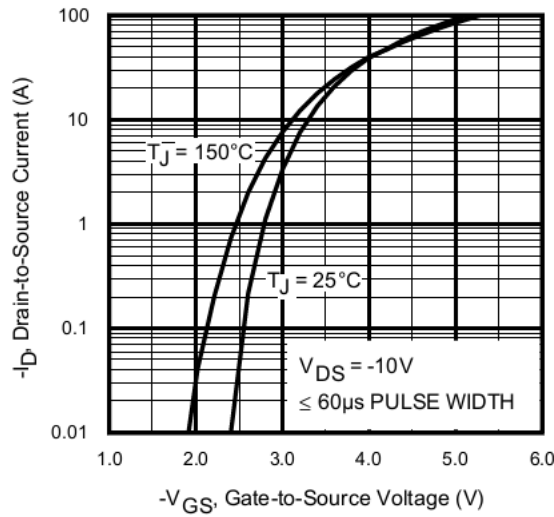
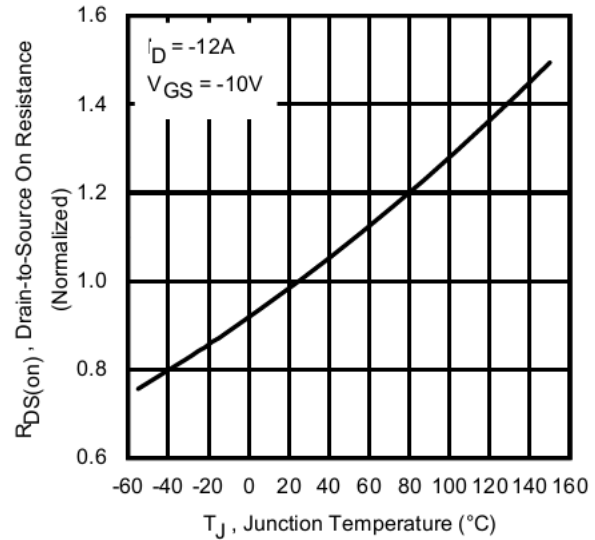
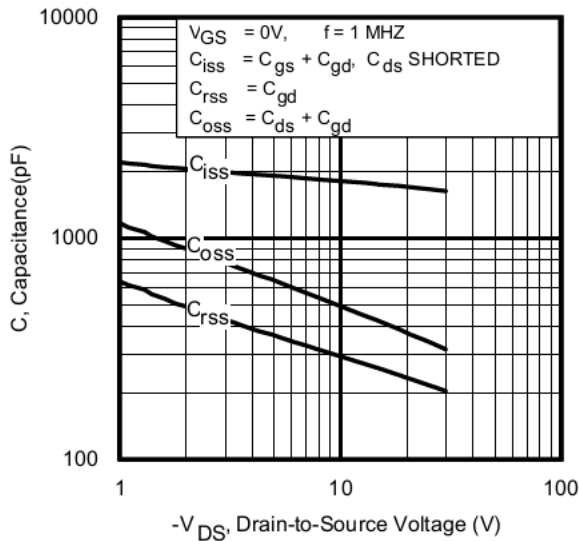
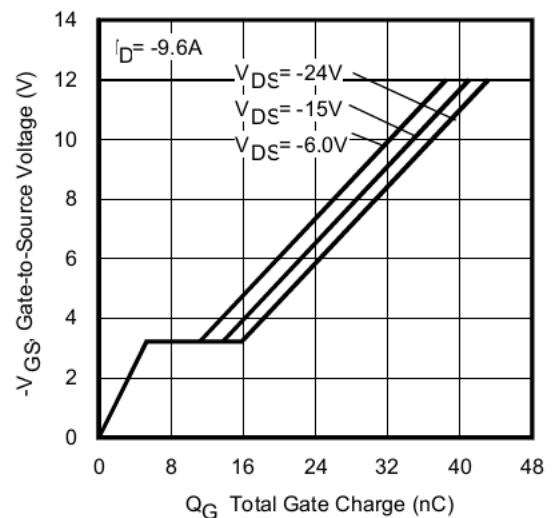
	Parameter	Min.	Typ.	Max.	Units	Conditions
I_S	Continuous Source Current (Body Diode)	—	—	-2.5	A	MOSFET symbol showing the integral reverse p-n junction diode. 
I_{SM}	Pulsed Source Current (Body Diode) ①	—	—	-96		
V_{SD}	Diode Forward Voltage	—	—	-1.2	V	$T_J = 25^\circ\text{C}, I_S = -2.5A, V_{GS} = 0V$ ③
t_{rr}	Reverse Recovery Time	—	51	76	ns	$T_J = 25^\circ\text{C}, I_F = -2.5A, V_{DD} = -24V$
Q_{rr}	Reverse Recovery Charge	—	35	53	nC	$di/dt = 100A/\mu s$ ③

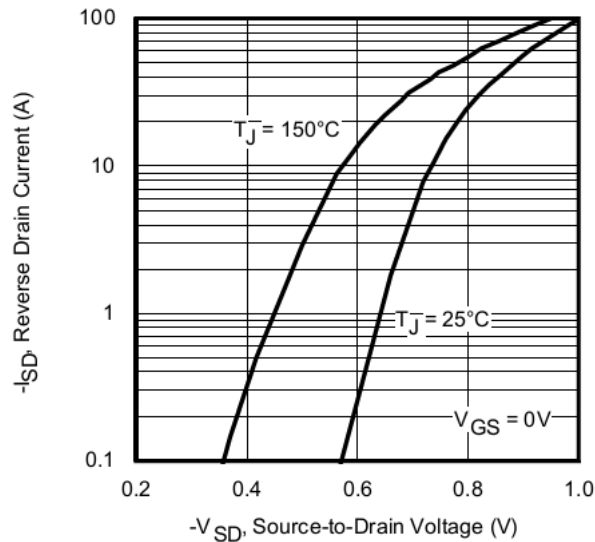
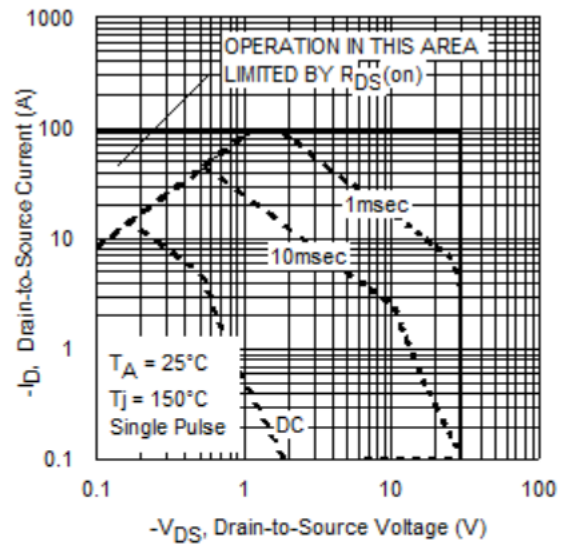
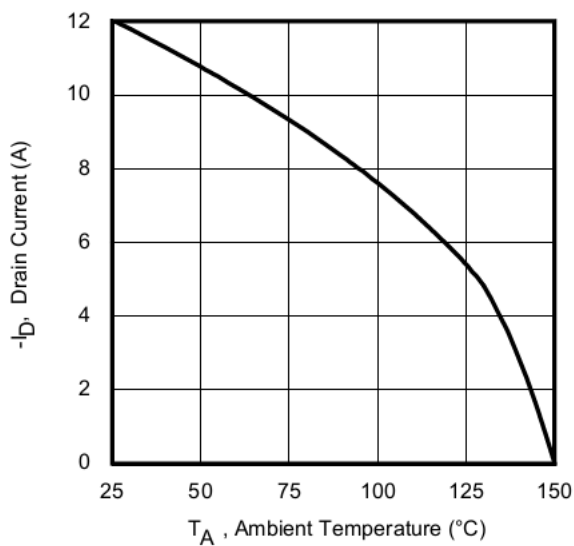
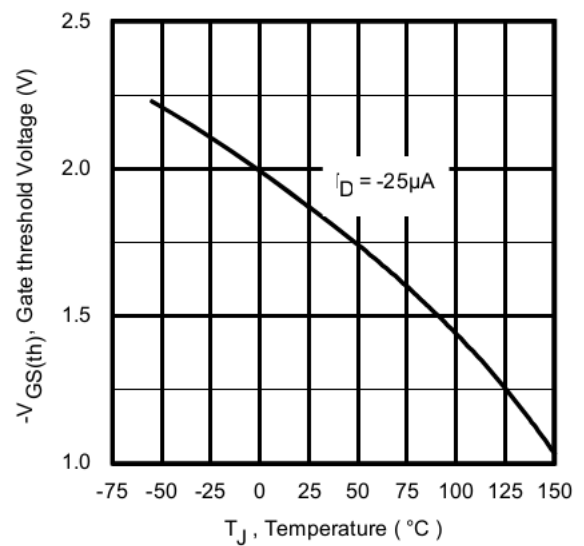
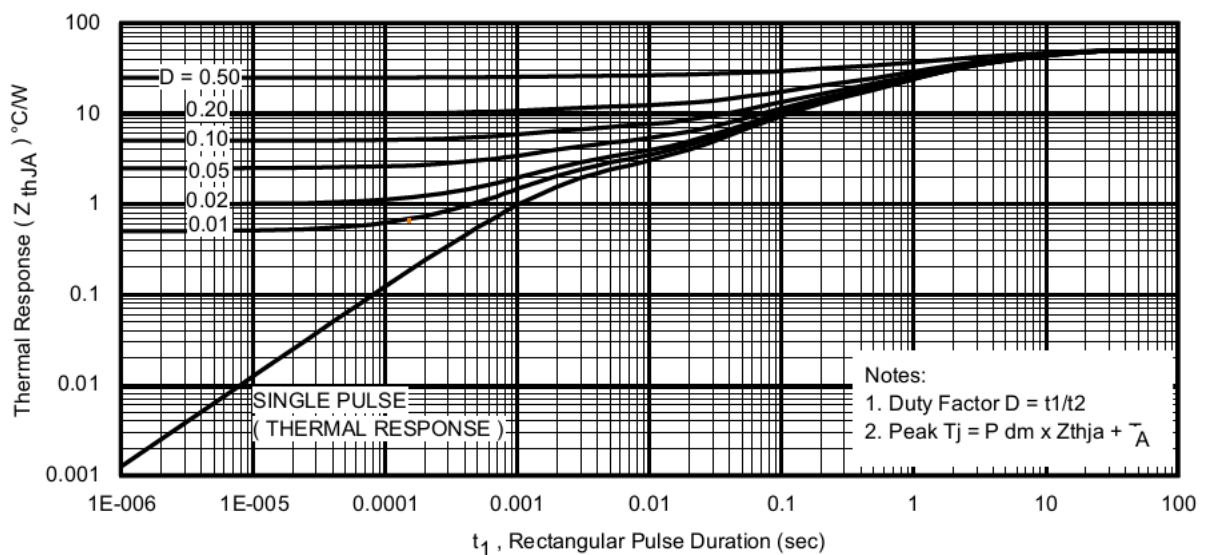
Thermal Resistance

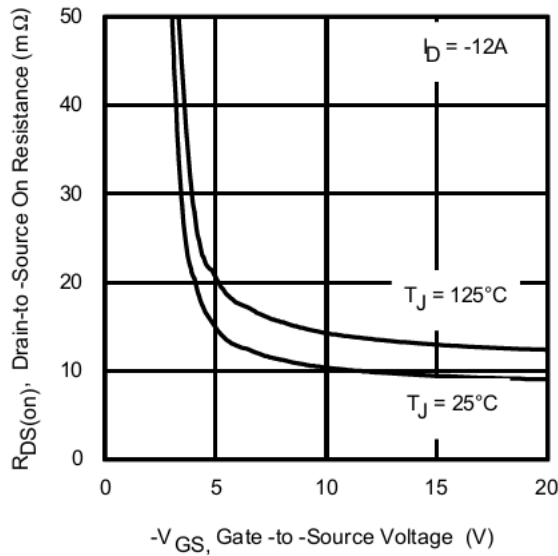
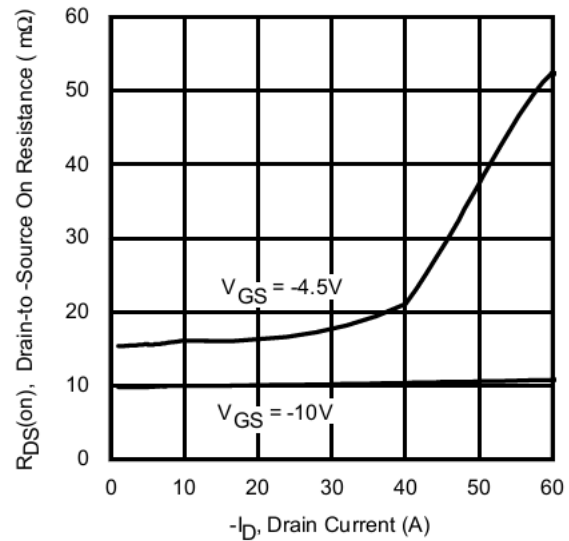
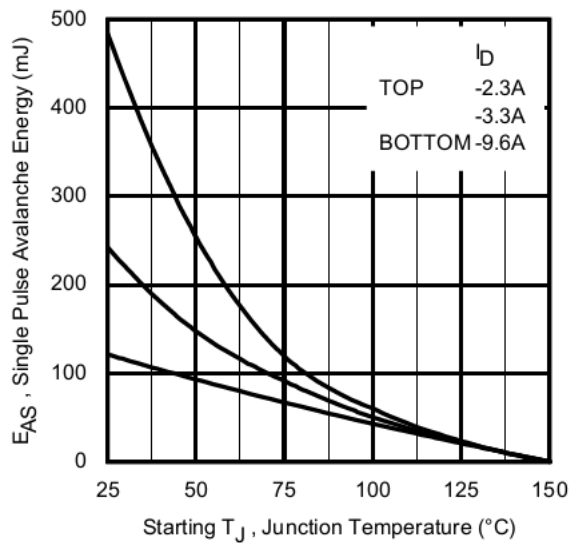
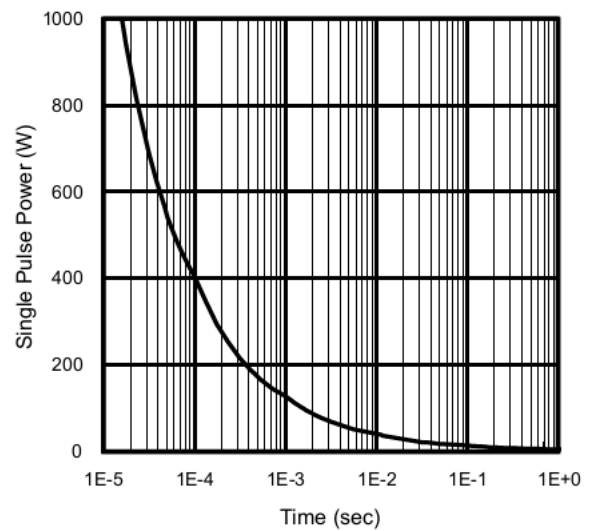
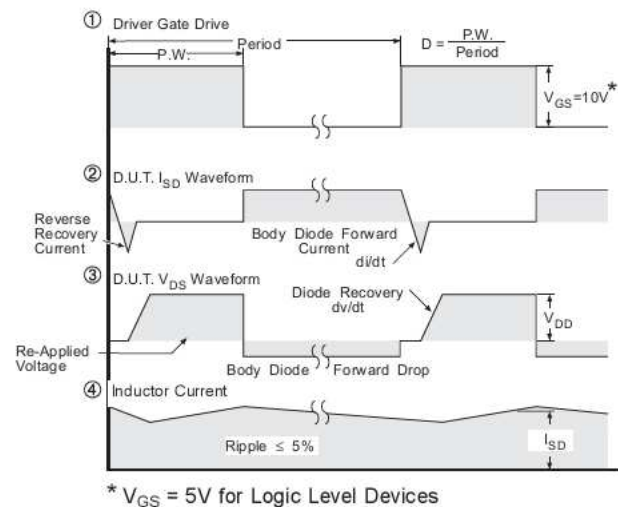
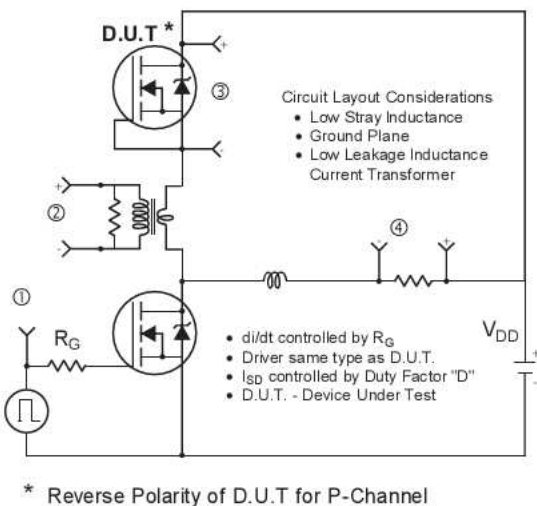
	Parameter	Typ.	Max.	Units
$R_{\theta JL}$	Junction-to-Drain Lead ⑤	—	20	$^\circ\text{C/W}$
$R_{\theta JA}$	Junction-to-Ambient ④	—	50	

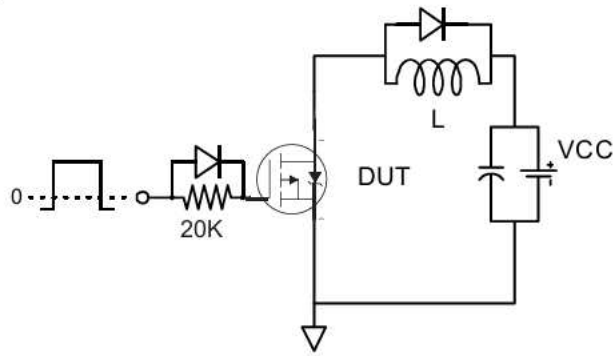
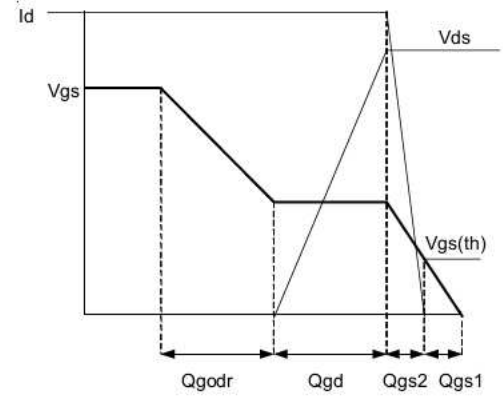
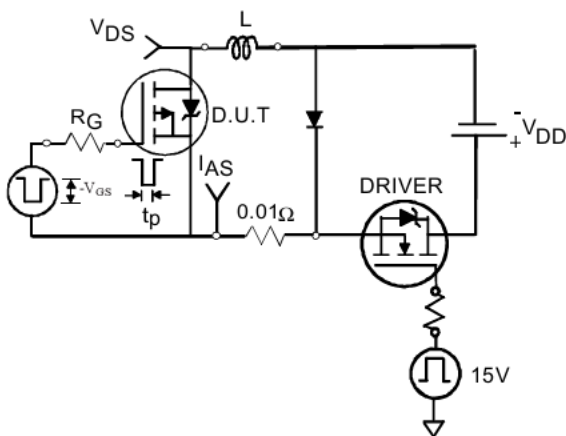
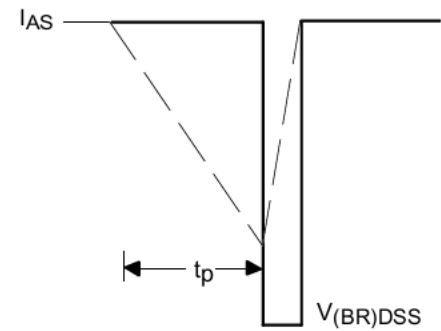
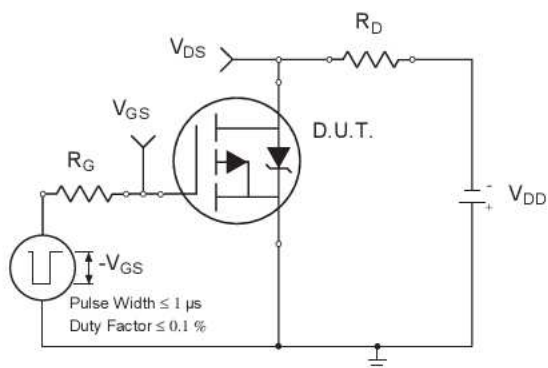
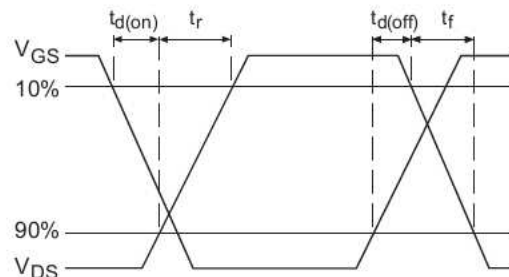
Notes:

- ① Repetitive rating; pulse width limited by max. junction temperature.
- ② Starting $T_J = 25^\circ\text{C}$, $L = 2.6\text{mH}$, $R_G = 50\Omega$, $I_{AS} = -9.6A$.
- ③ Pulse width $\leq 400\mu s$; duty cycle $\leq 2\%$.
- ④ When mounted on 1 inch square copper board.
- ⑤ $R_{\theta q}$ 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

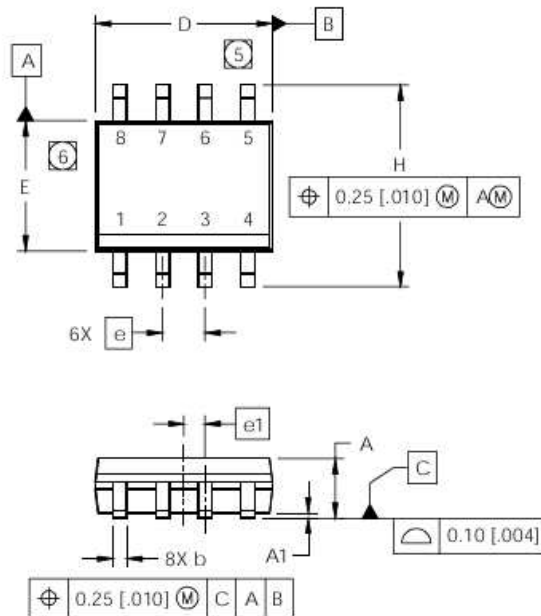

Fig 7. Typical Source-Drain Diode Forward Voltage

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

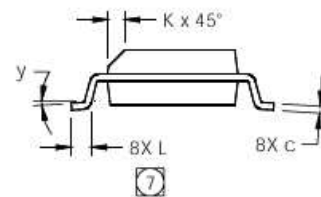

Fig 18a. Gate Charge Test Circuit

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)



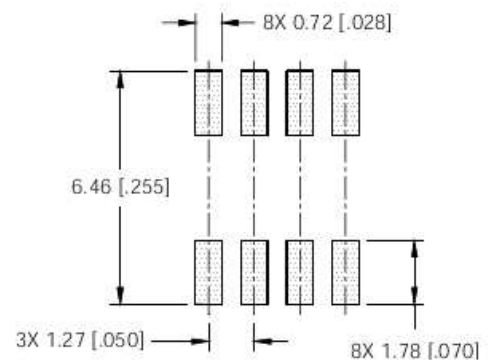
DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	.0532	.0688	1.35	1.75
A1	.0040	.0098	0.10	0.25
b	.013	.020	0.33	0.51
c	.0075	.0098	0.19	0.25
D	.189	.1968	4.80	5.00
E	.1497	.1574	3.80	4.00
e	.050 BASIC		1.27 BASIC	
e1	.025 BASIC		0.635 BASIC	
H	.2284	.2440	5.80	6.20
K	.0099	.0196	0.25	0.50
L	.016	.050	0.40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



NOTES:

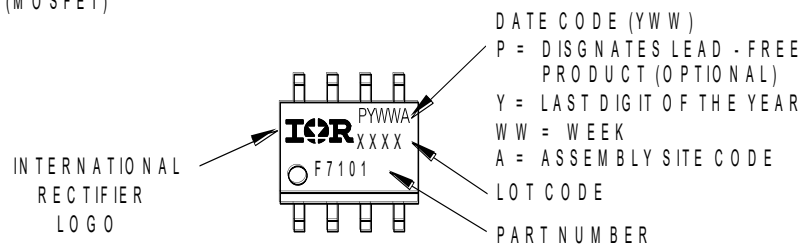
1. DIMENSIONING & TOLERANCING PER ASME Y14.5M-1994.
2. CONTROLLING DIMENSION: MILLIMETER
3. DIMENSIONS ARE SHOWN IN MILLIMETERS [INCHES].
4. OUTLINE CONFORMS TO JEDEC OUTLINE MS-012AA.
5. DIMENSION DOES NOT INCLUDE MOLD PROTRUSIONS. MOLD PROTRUSIONS NOT TO EXCEED 0.15 [0.006].
6. DIMENSION DOES NOT INCLUDE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

FOOTPRINT

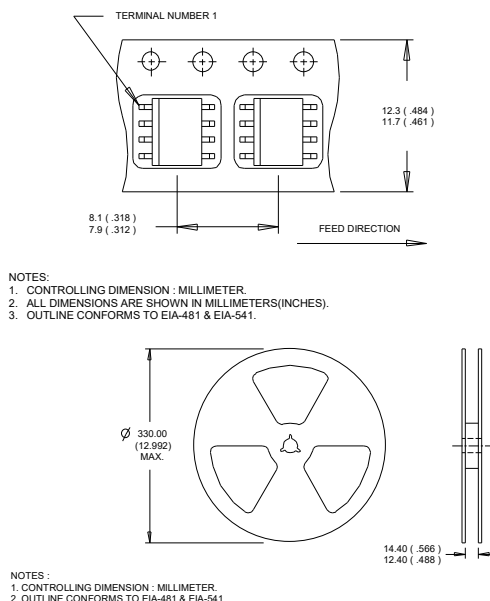


SO-8 Part Marking

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))


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	- Updated I_{DM} in SOA curve - Updated datasheet based on IFX template

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