SMPS MOSFET

PD - 95293

International
IOR Rectifier

IRF6216PbF

HEXFET® Power MOSFET

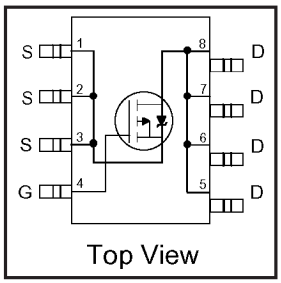
Applications

- Reset Switch for Active Clamp Reset DC-DC converters
- Lead-Free

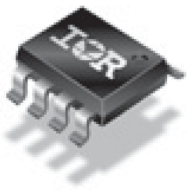
V_{DSS}	$R_{DS(on)}$ max	I_D
-150V	0.240Ω@V_{GS} =-10V	-2.2A

Benefits

- Low Gate to Drain Charge to Reduce Switching Losses
- Fully Characterized Capacitance Including Effective C_{OSS} to Simplify Design (See App. Note AN1001)
- Fully Characterized Avalanche Voltage and Current



Top View


SO-8

Absolute Maximum Ratings

	Parameter	Max.	Units
I_D @ T_A = 25°C	Continuous Drain Current, V_{GS} @ 10V	-2.2	A
I_D @ T_A = 70°C	Continuous Drain Current, V_{GS} @ 10V	-1.9	
I_{DM}	Pulsed Drain Current ①	-19	
P_D @T_A = 25°C	Power Dissipation④	2.5	W
	Linear Derating Factor	0.02	W/°C
V_{GS}	Gate-to-Source Voltage	± 20	V
dv/dt	Peak Diode Recovery dv/dt	7.8	V/ns
T_J T_{STG}	Operating Junction and Storage Temperature Range	-55 to + 150	°C
	Soldering Temperature, for 10 seconds	300 (1.6mm from case)	

Thermal Resistance

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

Notes ① through ④ are on page 8

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

	Parameter	Min.	Typ.	Max.	Units	Conditions
$V_{(BR)DSS}$	Drain-to-Source Breakdown Voltage	-150	—	—	V	V_{GS} = 0V, I_D = -250µA
$\Delta V_{(BR)DSS}/\Delta T_J$	Breakdown Voltage Temp. Coefficient	—	-0.17	—	V/°C	Reference to 25°C, I_D = -1mA ③
$R_{DS(on)}$	Static Drain-to-Source On-Resistance	—	—	0.240	Ω	V_{GS} = -10V, I_D = -1.3A ③
$V_{GS(th)}$	Gate Threshold Voltage	-3.0	—	-5.0	V	V_{DS} = V_{GS}, I_D = -250µA
I_{DSS}	Drain-to-Source Leakage Current	—	—	-25	µA	V_{DS} = -150V, V_{GS} = 0V
		—	—	-250		V_{DS} = -120V, 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

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

	Parameter	Min.	Typ.	Max.	Units	Conditions
g_{fs}	Forward Transconductance	2.7	—	—	S	V_{DS} = -50V, I_D = -1.3A
Q_g	Total Gate Charge	—	33	49	nC	I_D = -1.3A
Q_{gs}	Gate-to-Source Charge	—	7.2	11		V_{DS} = -120V
Q_{gd}	Gate-to-Drain ("Miller") Charge	—	15	23		V_{GS} = -10V,
$t_{d(on)}$	Turn-On Delay Time	—	18	—	ns	V_{DD} = -75V
t_r	Rise Time	—	15	—		I_D = -1.3A
$t_{d(off)}$	Turn-Off Delay Time	—	33	—		R_G = 6.5Ω
t_f	Fall Time	—	26	—		V_{GS} = -10V ③
C_{iss}	Input Capacitance	—	1280	—	pF	V_{GS} = 0V
C_{oss}	Output Capacitance	—	220	—		V_{DS} = -25V
C_{rss}	Reverse Transfer Capacitance	—	53	—		f = 1.0MHz
C_{oss}	Output Capacitance	—	1290	—		V_{GS} = 0V, V_{DS} = -1.0V, f = 1.0MHz
C_{oss}	Output Capacitance	—	99	—		V_{GS} = 0V, V_{DS} = -120V, f = 1.0MHz
C_{oss} eff.	Effective Output Capacitance	—	220	—		V_{GS} = 0V, V_{DS} = 0V to -120V

Avalanche Characteristics

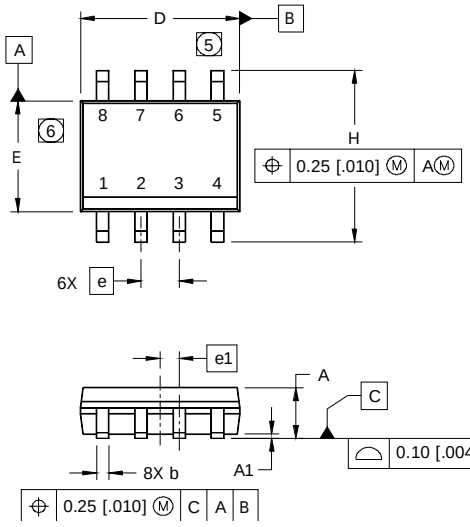
	Parameter	Typ.	Max.	Units
E_{AS}	Single Pulse Avalanche Energy②	—	200	mJ
I_{AR}	Avalanche Current①	—	-4.0	A

Diode Characteristics

	Parameter	Min.	Typ.	Max.	Units	Conditions
I_S	Continuous Source Current (Body Diode)	—	—	-2.2	A	MOSFET symbol showing the integral reverse p-n junction diode.
I_{SM}	Pulsed Source Current (Body Diode) ①	—	—	-19		
V_{SD}	Diode Forward Voltage	—	—	-1.6	V	T_J = 25°C, I_S = -1.3A, V_{GS} = 0V ③
t_{rr}	Reverse Recovery Time	—	80	120	nS	T_J = 25°C, I_F = -1.3A
Q_{rr}	Reverse RecoveryCharge	—	310	460	nC	di/dt = -100A/µs ③

SO-8 Package Outline

Dimensions are shown in millimeters (inches)

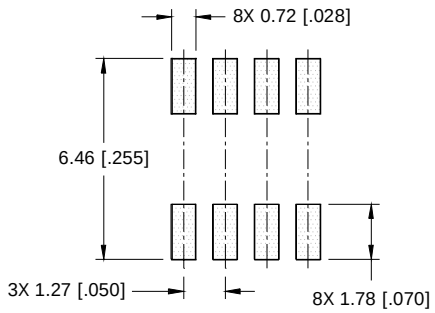


DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	.0532	.0688	1.35	1.75
A1	.0040	.0098	0.10	0.25
b	.013	.020	0.33	0.51
c	.0075	.0098	0.19	0.25
D	.189	.1968	4.80	5.00
E	.1497	.1574	3.80	4.00
e	.050 BASIC		1.27 BASIC	
e 1	.025 BASIC		0.635 BASIC	
H	.2284	.2440	5.80	6.20
K	.0099	.0196	0.25	0.50
L	.016	.050	0.40	1.27
y	0°	8°	0°	8°

NOTES:

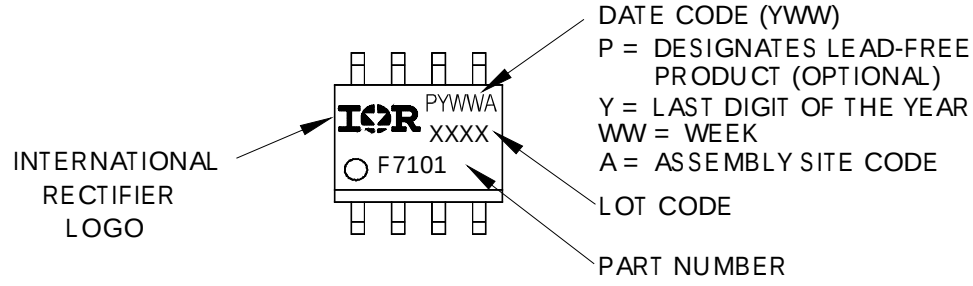
1. DIMENSIONING & TOLERANCING PER ASME Y14.5M-1994.
2. CONTROLLING DIMENSION: MILLIMETER
3. DIMENSIONS ARE SHOWN IN MILLIMETERS [INCHES].
4. OUTLINE CONFORMS TO JEDEC OUTLINE MS-012AA.
5. DIMENSION DOES NOT INCLUDE MOLD PROTRUSIONS. MOLD PROTRUSIONS NOT TO EXCEED 0.15 [.006].
6. DIMENSION DOES NOT INCLUDE 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)



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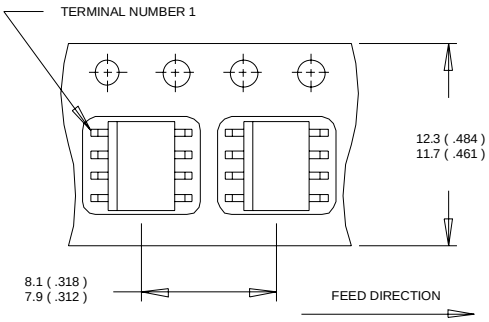
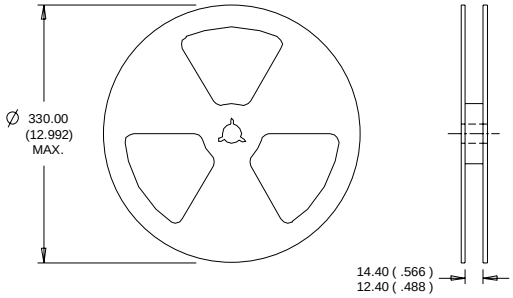
SO-8 Tape and Reel

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.

Notes:

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

② Starting T_J = 25°C, L = 25mH R_G = 25Ω, I_{AS} = -4.0A.

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

④ When mounted on 1 inch square copper board.

Data and specifications subject to change without notice.
This product has been designed and qualified for the Consumer market.

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