

IRF7832ZPbF

HEXFET® Power MOSFET

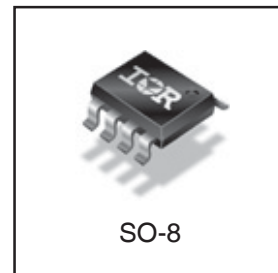
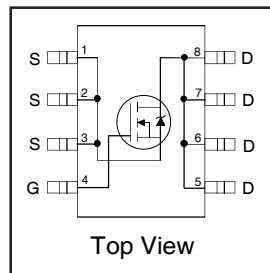
Applications

- Synchronous MOSFET for Notebook Processor Power
- Synchronous Rectifier MOSFET for Isolated DC-DC Converters

V_{DSS}	R_{DS(on)} max	Qg
30V	3.8mΩ@V_{GS} = 10V	30nC

Benefits

- Very Low R_{DS(on)} at 4.5V V_{GS}
- Ultra-Low Gate Impedance
- Fully Characterized Avalanche Voltage and Current
- 20V V_{GS} Max. Gate Rating
- Lead-Free
- 100% tested for Rg



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	21	A
I _D @ T _A = 70°C	Continuous Drain Current, V _{GS} @ 10V	17	
I _{DM}	Pulsed Drain Current ①	160	
P _D @ T _A = 25°C	Power Dissipation	2.5	W
P _D @ T _A = 70°C	Power Dissipation	1.6	
	Linear Derating Factor	0.02	W/°C
T _J	Operating Junction and	-55 to + 150	°C
T _{STG}	Storage Temperature Range		

Thermal Resistance

	Parameter	Typ.	Max.	Units
R _{θJL}	Junction-to-Drain Lead ⑤	—	20	°C/W
R _{θJA}	Junction-to-Ambient ②⑤	—	50	

Notes ① through ⑤ are on page 10

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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	$V_{GS} = 0V, I_D = 250\mu A$
$\Delta BV_{DSS}/\Delta T_J$	Breakdown Voltage Temp. Coefficient	---	0.023	---	V/ $^\circ\text{C}$	Reference to $25^\circ\text{C}, I_D = 1mA$
$R_{DS(on)}$	Static Drain-to-Source On-Resistance	---	3.1	3.8	m Ω	$V_{GS} = 10V, I_D = 20A$ Ⓣ
		---	3.7	4.5		$V_{GS} = 4.5V, I_D = 16A$ Ⓣ
$V_{GS(th)}$	Gate Threshold Voltage	1.35	---	2.35	V	$V_{DS} = V_{GS}, I_D = 250\mu A$
$\Delta V_{GS(th)}$	Gate Threshold Voltage Coefficient	---	-5.5	---	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	---	---	100	nA	$V_{GS} = 20V$
	Gate-to-Source Reverse Leakage	---	---	-100		$V_{GS} = -20V$
g_{fs}	Forward Transconductance	80	---	---	S	$V_{DS} = 15V, I_D = 16A$
Q_g	Total Gate Charge	---	30	45	nC	$V_{DS} = 15V$ $V_{GS} = 4.5V$ $I_D = 16A$ See Fig. 16
Q_{gs1}	Pre-Vth Gate-to-Source Charge	---	7.9	---		
Q_{gs2}	Post-Vth Gate-to-Source Charge	---	2.6	---		
Q_{gd}	Gate-to-Drain Charge	---	11	---		
Q_{godr}	Gate Charge Overdrive	---	8.5	---		
Q_{sw}	Switch Charge ($Q_{gs2} + Q_{gd}$)	---	13.6	---		
Q_{oss}	Output Charge	---	19	---	nC	$V_{DS} = 16V, V_{GS} = 0V$
R_g	Gate Resistance	---	1.2	1.9	Ω	
$t_{d(on)}$	Turn-On Delay Time	---	14	---	ns	$V_{DD} = 15V, V_{GS} = 4.5V$ $I_D = 16A$ Clamped Inductive Load
t_r	Rise Time	---	15	---		
$t_{d(off)}$	Turn-Off Delay Time	---	18	---		
t_f	Fall Time	---	5.6	---		
C_{iss}	Input Capacitance	---	3860	---	pF	$V_{GS} = 0V$ $V_{DS} = 15V$ $f = 1.0MHz$
C_{oss}	Output Capacitance	---	840	---		
C_{riss}	Reverse Transfer Capacitance	---	370	---		

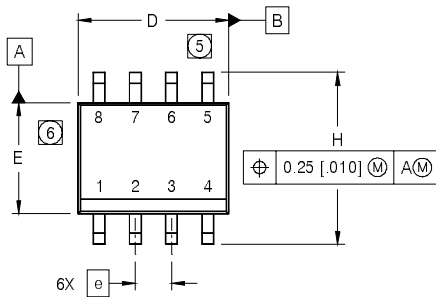
Avalanche Characteristics

	Parameter	Typ.	Max.	Units
E_{AS}	Single Pulse Avalanche Energy Ⓣ	---	350	mJ
I_{AR}	Avalanche Current Ⓣ	---	16	A

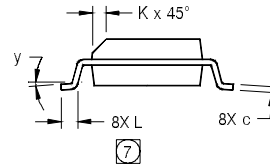
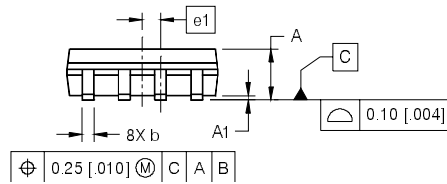
Diode Characteristics

	Parameter	Min.	Typ.	Max.	Units	Conditions
I_S	Continuous Source Current (Body Diode)	---	---	3.1	A	MOSFET symbol showing the integral reverse p-n junction diode.
I_{SM}	Pulsed Source Current (Body Diode) Ⓣ	---	---	160		
V_{SD}	Diode Forward Voltage	---	---	1.0	V	$T_J = 25^\circ\text{C}, I_S = 16A, V_{GS} = 0V$ Ⓣ
t_{rr}	Reverse Recovery Time	---	16	24	ns	$T_J = 25^\circ\text{C}, I_F = 16A, V_{DD} = 15V$
Q_{rr}	Reverse Recovery Charge	---	29	44	nC	$di/dt = 500A/\mu s$ Ⓣ
t_{on}	Forward Turn-On Time	Intrinsic turn-on time is negligible (turn-on is dominated by LS+LD)				

SO-8 Package Outline (Dimensions are shown in millimeters (inches))



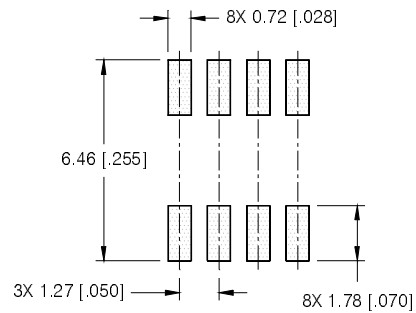
DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	.0532	.0688	1.35	1.75
A1	.0040	.0098	0.10	0.25
b	.013	.020	0.33	0.51
c	.0075	.0098	0.19	0.25
D	.189	.1968	4.80	5.00
E	.1497	.1574	3.80	4.00
e	.050 BASIC		1.27 BASIC	
e1	.025 BASIC		0.635 BASIC	
H	.2284	.2440	5.80	6.20
K	.0099	.0196	0.25	0.50
L	.016	.050	0.40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



NOTES:

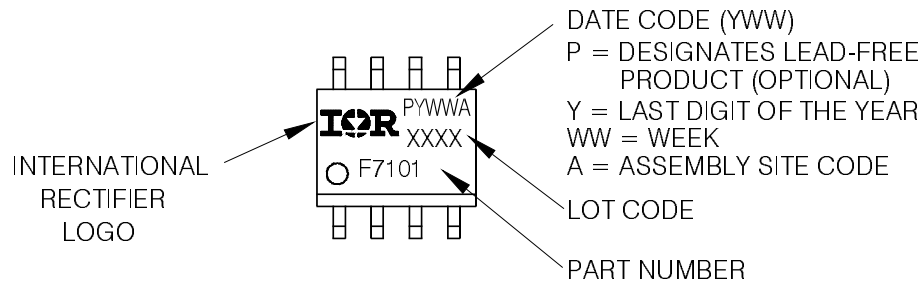
- DIMENSIONING & TOLERANCING PER ASME Y14.5M-1994.
- CONTROLLING DIMENSION: MILLIMETER
- DIMENSIONS ARE SHOWN IN MILLIMETERS [INCHES].
- OUTLINE CONFORMS TO JEDEC OUTLINE MS-012AA.
- ⑤** DIMENSION DOES NOT INCLUDE MOLD PROTRUSIONS. MOLD PROTRUSIONS NOT TO EXCEED 0.15 [0.006].
- ⑥** DIMENSION DOES NOT 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)

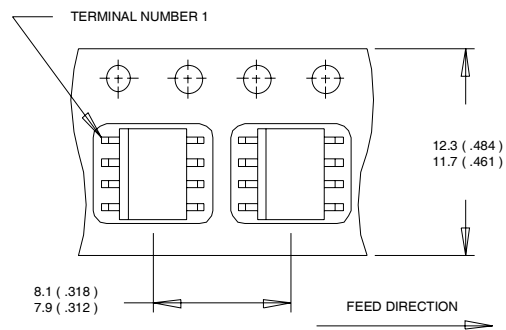


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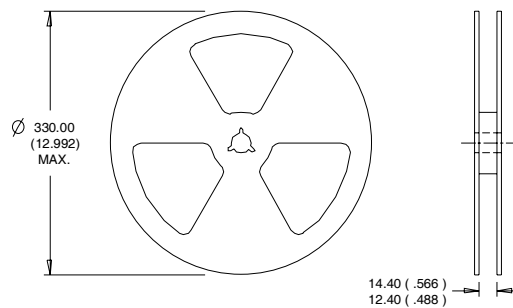
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SO-8 Tape and Reel

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 $T_J = 25^\circ\text{C}$, $L = 2.7\text{mH}$, $R_G = 25\Omega$, $I_{AS} = 16\text{A}$.
- ③ Pulse width $\leq 400\mu\text{s}$; duty cycle $\leq 2\%$.
- ④ When mounted on 1 inch square copper board.
- ⑤ R_θ is measured at T_J of approximately 90°C .

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

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