

IRF7832PbF

HEXFET® Power MOSFET

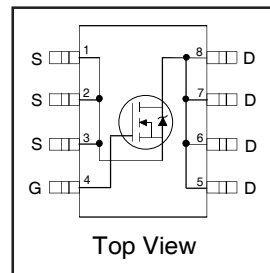
Applications

- Synchronous MOSFET for Notebook Processor Power
- Synchronous Rectifier MOSFET for Isolated DC-DC Converters in Networking Systems
- Lead-Free

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
- 100% tested for Rg

V_{DSS}	$R_{DS(on)}$ max	Qg
30V	4.0mΩ @ $V_{GS} = 10V$	34nC



Absolute Maximum Ratings

	Parameter	Max.	Units
V_{DS}	Drain-to-Source Voltage	30	V
V_{GS}	Gate-to-Source Voltage	± 20	
$I_D @ T_A = 25^\circ C$	Continuous Drain Current, $V_{GS} @ 10V$	20	A
$I_D @ T_A = 70^\circ C$	Continuous Drain Current, $V_{GS} @ 10V$	16	
I_{DM}	Pulsed Drain Current ①	160	
$P_D @ T_A = 25^\circ C$	Power Dissipation	2.5	W
$P_D @ T_A = 70^\circ C$	Power Dissipation	1.6	
	Linear Derating Factor	0.02	W/°C
T_J T_{STG}	Operating Junction and Storage Temperature Range	-55 to + 155	°C

Thermal Resistance

	Parameter	Typ.	Max.	Units
$R_{\theta JL}$	Junction-to-Drain Lead	—	20	°C/W
$R_{\theta JA}$	Junction-to-Ambient ②	—	50	

Notes ① through ④ 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
ΔBV _{DSS} /ΔT _J	Breakdown Voltage Temp. Coefficient	—	0.023	—	V/°C	Reference to 25°C, I _D = 1mA
R _{DS(on)}	Static Drain-to-Source On-Resistance	—	3.1	4.0	mΩ	V _{GS} = 10V, I _D = 20A ③
		—	3.7	4.8		V _{GS} = 4.5V, I _D = 16A ③
V _{GS(th)}	Gate Threshold Voltage	1.39	—	2.32	V	V _{DS} = V _{GS} , I _D = 250μA
ΔV _{GS(th)}	Gate Threshold Voltage Coefficient	—	5.7	—	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
g _{fs}	Forward Transconductance	77	—	—	S	V _{DS} = 15V, I _D = 16A
Q _g	Total Gate Charge	—	34	51	nC	V _{DS} = 15V V _{GS} = 4.5V I _D = 16A See Fig. 16
Q _{gs1}	Pre-V _{th} Gate-to-Source Charge	—	8.6	—		
Q _{gs2}	Post-V _{th} Gate-to-Source Charge	—	2.9	—		
Q _{gd}	Gate-to-Drain Charge	—	12	—		
Q _{godr}	Gate Charge Overdrive	—	10.5	—		
Q _{sw}	Switch Charge (Q _{gs2} + Q _{gd})	—	14.9	—		
Q _{oss}	Output Charge	—	23	—	nC	V _{DS} = 16V, V _{GS} = 0V
R _g	Gate Resistance	—	1.2	2.4	Ω	
t _{d(on)}	Turn-On Delay Time	—	12	—	ns	V _{DD} = 15V, V _{GS} = 4.5V I _D = 16A Clamped Inductive Load
t _r	Rise Time	—	6.7	—		
t _{d(off)}	Turn-Off Delay Time	—	21	—		
t _f	Fall Time	—	13	—		
C _{iss}	Input Capacitance	—	4310	—	pF	V _{GS} = 0V V _{DS} = 15V f = 1.0MHz
C _{oss}	Output Capacitance	—	990	—		
C _{rss}	Reverse Transfer Capacitance	—	450	—		

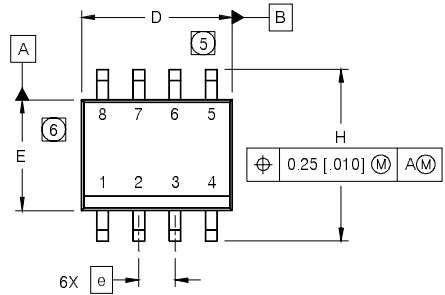
Avalanche Characteristics

	Parameter	Typ.	Max.	Units
E _{AS}	Single Pulse Avalanche Energy ②	—	260	mJ
I _{AR}	Avalanche Current ①	—	16	A

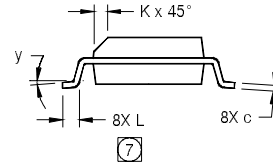
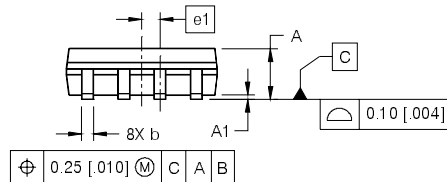
Diode Characteristics

	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) ①	—	—	160		
V _{SD}	Diode Forward Voltage	—	—	1.0	V	T _J = 25°C, I _S = 16A, V _{GS} = 0V ③
t _{rr}	Reverse Recovery Time	—	41	62	ns	T _J = 25°C, I _F = 16A, V _{DD} = 10V
Q _{rr}	Reverse Recovery Charge	—	39	59	nC	di/dt = 100A/μs ③
t _{on}	Forward Turn-On Time	Intrinsic turn-on time is negligible (turn-on is dominated by LS+LD)				

SO-8 Package Details

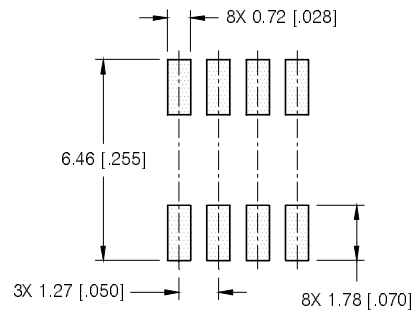


DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	.0532	.0688	1.35	1.75
A1	.0040	.0098	0.10	0.25
b	.013	.020	0.33	0.51
c	.0075	.0098	0.19	0.25
D	.189	.1968	4.80	5.00
E	.1497	.1574	3.80	4.00
e	.050 BASIC		1.27 BASIC	
e1	.025 BASIC		0.635 BASIC	
H	.2284	.2440	5.80	6.20
K	.0099	.0196	0.25	0.50
L	.016	.050	0.40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



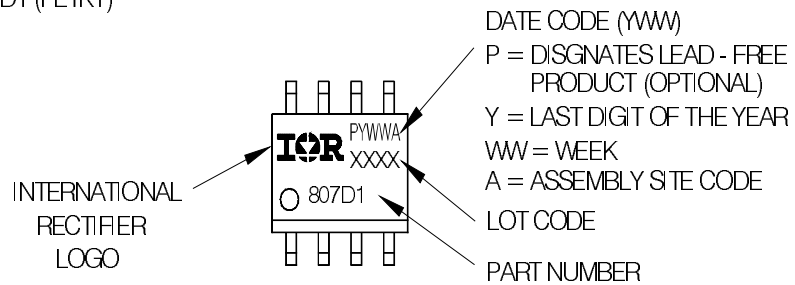
- NOTES:
- DIMENSIONING & TOLERANCING PER ASME Y14.5M-1994.
 - CONTROLLING DIMENSION: MILLIMETER
 - DIMENSIONS ARE SHOWN IN MILLIMETERS [INCHES].
 - OUTLINE CONFORMS TO JEDEC OUTLINE MS-012AA.
 - (5) DIMENSION DOES NOT INCLUDE MOLD PROTRUSIONS. MOLD PROTRUSIONS NOT TO EXCEED 0.15 [0.006].
 - (6) DIMENSION DOES NOT INCLUDE MOLD PROTRUSIONS. MOLD PROTRUSIONS NOT TO EXCEED 0.25 [0.10].
 - (7) DIMENSION IS THE LENGTH OF LEAD FOR SOLDERING TO A SUBSTRATE.

FOOTPRINT



SO-8 Part Marking

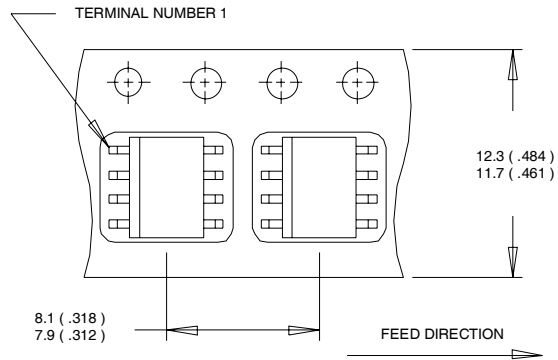
EXAMPLE: THIS IS AN IRF7807D1 (FETKY)



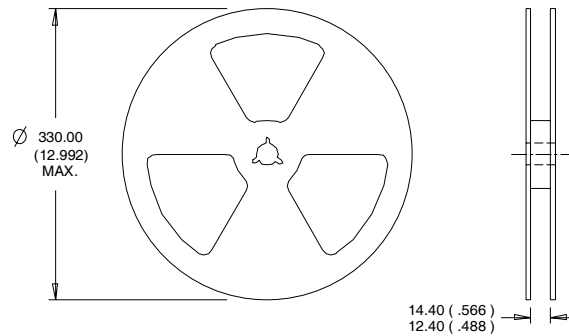
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SO-8 Tape and Reel

International
IR Rectifier



- 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 $T_J = 25^\circ\text{C}$, $L = 2.0\text{mH}$, $R_G = 25\Omega$, $I_{AS} = 16\text{A}$.
- ③ Pulse width $\leq 400\mu\text{s}$; duty cycle $\leq 2\%$.
- ④ When mounted on 1 inch square copper board.

Data and specifications subject to change without notice.
This product has been designed and qualified for the Consumer market.
Qualification Standards can be found on IR's Web site.

International
IR Rectifier