International
IOR Rectifier

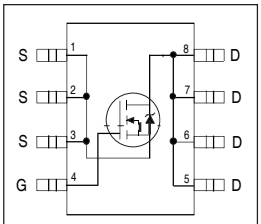
PD-95210

IRF7807VPbF

HEXFET® Power MOSFET

- N Channel Application Specific MOSFET
- Ideal for Mobile DC-DC Converters
- Low Conduction Losses
- Low Switching Losses
- 100% R_G Tested
- Lead-Free

SO-8



Top View

Description

This new device employs advanced HEXFET Power MOSFET technology to achieve an unprecedented balance of on-resistance and gate charge. The reduction of conduction and switching losses makes it ideal for high efficiency DC-DC Converters that power the latest generation of mobile microprocessors.

A pair of IRF7807V devices provides the best cost/ performance solution for system voltages, such as 3.3V and 5V.

DEVICE CHARACTERISTICS⑤

	IRF7807V
$R_{DS(on)}$	17 mΩ
Q_G	9.5 nC
Q_{SW}	3.4 nC
Q_{OSS}	12 nC

Absolute Maximum Ratings

Parameter		Symbol	IRF7807V	Units
Drain-Source Voltage		V_{DS}	30	V
Gate-Source Voltage		V_{GS}	±20	
Continuous Drain or Source ($V_{GS} \geq 4.5V$)	T_A = 25°C	I_D	8.3	A
	T_A = 70°C		6.6	
Pulsed Drain Current ①		I_{DM}	66	
Power Dissipation ③	T_A = 25°C	P_D	2.5	W
	T_A = 70°C		1.6	
Junction & Storage Temperature Range		T_J , T_{STG}	-55 to 150	°C
Continuous Source Current (Body Diode)		I_S	2.5	A
Pulsed Source Current ①		I_{SM}	66	

Thermal Resistance

Parameter	Symbol	Typ	Max	Units
Maximum Junction-to-Ambient ③⑥	$R_{\theta JA}$	—	50	°C/W
Maximum Junction-to-Lead ⑥	$R_{\theta JL}$	—	20	

Electrical Characteristics

Parameter	Symbol	Min	Typ	Max	Units	Conditions
Drain-Source Breakdown Voltage	BV_{DSS}	30	—	—	V	V_{GS} = 0V, I_D = 250µA
Static Drain-Source On-Resistance	$R_{DS(on)}$	—	17	25	mΩ	V_{GS} = 4.5V, I_D = 7.0A ②
Gate Threshold Voltage	$V_{GS(th)}$	1.0	—	3.0	V	V_{DS} = V_{GS}, I_D = 250µA
Drain-Source Leakage Current	I_{DSS}	—	—	100	µA	V_{DS} = 30V, V_{GS} = 0
		—	—	20		V_{DS} = 24V, V_{GS} = 0
		—	—	100		V_{DS} = 24V, V_{GS} = 0, T_J = 100°C
Gate-Source Leakage Current*	I_{GSS}	—	—	±100	nA	V_{GS} = ± 20V
Total Gate Charge*	Q_G	—	9.5	14	nC	V_{GS} = 5V, I_D = 7.0A
Pre-Vth Gate-Source Charge	Q_{GS1}	—	2.3	—		V_{DS} = 16V
Post-Vth Gate-Source Charge	Q_{GS2}	—	1.0	—		
Gate-to-Drain Charge	Q_{GD}	—	2.4	—		
Switch Charge (Q_{gs2} + Q_{gd})	Q_{SW}	—	3.4	5.2		
Output Charge*	Q_{OSS}	—	12	16.8		V_{DS} = 16V, V_{GS} = 0
Gate Resistance	R_G	0.9	—	2.8	Ω	
Turn-On Delay Time	$t_{d(on)}$	—	6.3	—	ns	V_{DD} = 16V
Rise Time	t_r	—	1.2	—		I_D = 7A
Turn-Off Delay Time	$t_{d(off)}$	—	11	—		V_{GS} = 5V, R_G = 2Ω
Fall Time	t_f	—	2.2	—		Resistive Load

Source-Drain Ratings and Characteristics

Parameter	Symbol	Min	Typ	Max	Units	Conditions
Diode Forward Voltage*	V_{SD}	—	—	1.2	V	I_S = 7.0A ② ,V_{GS} = 0V
Reverse Recovery Charge ④	Q_{rr}	—	64	—	nC	di/dt = 700A/µs V_{DS} = 16V, V_{GS} = 0V, I_S = 7.0A
Reverse Recovery Charge (with Parallel Schottsky) ④	$Q_{rr(s)}$	—	41	—		di/dt = 700A/µs , (with 10BQ040) V_{DS} = 16V, V_{GS} = 0V, I_S = 7.0A

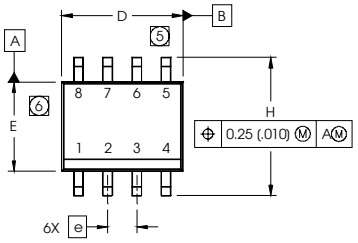
Notes:

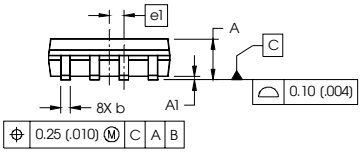
① Repetitive rating; pulse width limited by max. junction temperature.
② Pulse width ≤ 400 µs; duty cycle ≤ 2%.
③ When mounted on 1 inch square copper board
④ Typ = measured - Q_{oss}
⑤ Typical values of R_{DS}(on) measured at V_{GS} = 4.5V, Q_G, Q_{SW} and Q_{OSS} measured at V_{GS} = 5.0V, I_F = 7.0A.
⑥ R_θ is measured at T_J approximately 90°C

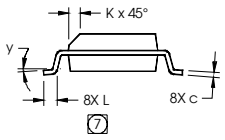
* Device are 100% tested to these parameters.

SO-8 Package Outline

Dimensions are shown in milimeters (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:

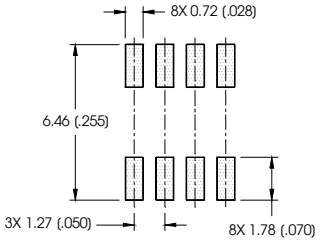
1. DIMENSIONING & TOLERANCING PER ASME Y14.5M-1994.
2. CONTROLLING DIMENSION: MILLIMETER
3. DIMENSIONS ARE SHOWN IN MILLIMETERS (INCHES).
4. OUTLINE CONFORMS TO JEDEC OUTLINE MS-012AA.

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).

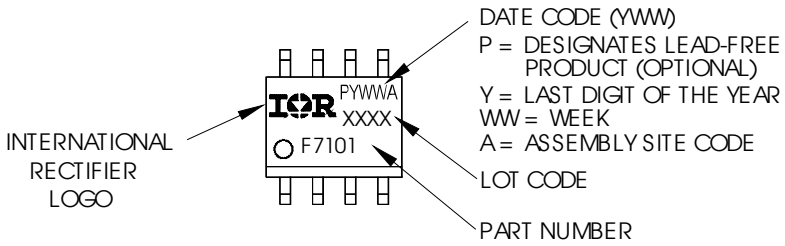
7 DIMENSION IS THE LENGTH OF LEAD FOR SOLDERING TO A SUBSTRATE.

FOOTPRINT



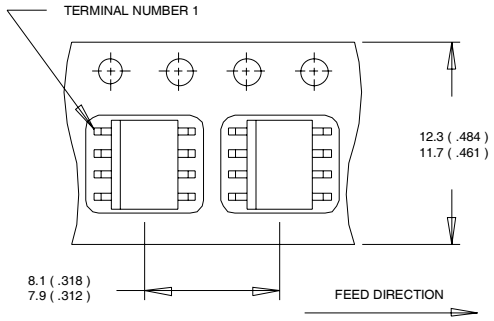
SO-8 Part Marking Information (Lead-Free)

EXAMPLE: THIS IS AN IRF7101 (MOSFET)

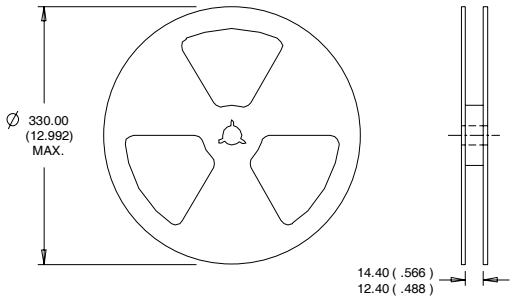


SO-8 Tape and Reel

Dimensions are shown in milimeters (inches)



NOTES:
1. CONTROLLING DIMENSION : MILLIMETER.
2. ALL DIMENSIONS ARE SHOWN IN MILLIMETERS(INCHES).
3. OUTLINE CONFORMS TO EIA-481 & EIA-541.



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2. OUTLINE CONFORMS TO EIA-481 & EIA-541.

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

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