International
IOR Rectifier

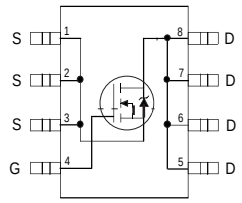
PD – 95290

IRF7807PbF
IRF7807APbF

HEXFET® Chip-Set for DC-DC Converters

- N Channel Application Specific MOSFETs
- Ideal for Mobile DC-DC Converters
- Low Conduction Losses
- Low Switching Losses
- Lead-Free

SO-8



Top View

Description

These new devices employ advanced HEXFET Power MOSFET technology to achieve an unprecedented balance of on-resistance and gate charge. The reduced conduction and switching losses make them ideal for high efficiency DC-DC Converters that power the latest generation of mobile microprocessors.

A pair of IRF7807 devices provides the best cost/ performance solution for system voltages, such as 3.3V and 5V.

Device Features

	IRF7807	IRF7807A
Vds	30V	30V
Rds(on)	25mΩ	25mΩ
Qg	17nC	17nC
Qsw	5.2nC	
Qoss	16.8nC	16.8nC

Absolute Maximum Ratings

Parameter		Symbol	IRF7807	IRF7807A	Units
Drain-Source Voltage		V_{DS}	30		V
Gate-Source Voltage		V_{GS}	±12		
Continuous Drain or Source	25°C	I_D	8.3	8.3	A
Current ($V_{GS} \geq 4.5V$)	70°C		6.6	6.6	
Pulsed Drain Current①		I_{DM}	66	66	
Power Dissipation	25°C	P_D	2.5		W
	70°C		1.6		
Junction & Storage Temperature Range		T_J, T_{STG}	–55 to 150		°C
Continuous Source Current (Body Diode)①		I_S	2.5	2.5	A
Pulsed source Current		I_{SM}	66	66	

Thermal Resistance

Parameter		Max.	Units
Maximum Junction-to-Ambient③	$R_{\theta JA}$	50	°C/W

Electrical Characteristics

Parameter		IRF7807			IRF7807A			Units	Conditions
		Min	Typ	Max	Min	Typ	Max		
Drain-to-Source Breakdown Voltage*	$V_{(BR)DSS}$	30	–	–	30	–	–	V	V_{GS} = 0V, I_D = 250µA
Static Drain-Source on Resistance*	R_{DS}(on)		17	25		17	25	mΩ	V_{GS} = 4.5V, I_D = 7A②
Gate Threshold Voltage*	V_{GS}(th)	1.0			1.0			V	V_{DS} = V_{GS}, I_D = 250µA
Drain-Source Leakage Current*	I_{DSS}			30			30	µA	V_{DS} = 24V, V_{GS} = 0
				150			150		V_{DS} = 24V, V_{GS} = 0, Tj = 100°C
Gate-Source Leakage Current*	I_{GSS}			±100			±100	nA	V_{GS} = ±12V
Total Gate Charge*	Q_g		12	17		12	17	nC	V_{GS} = 5V, I_D = 7A
Pre-Vth Gate-Source Charge	Q_{gs1}		2.1			2.1			V_{DS} = 16V, I_D = 7A
Post-Vth Gate-Source Charge	Q_{gs2}		0.76			0.76			
Gate to Drain Charge	Q_{gd}		2.9			2.9			
Switch Charge* (Q_{gs2} + Q_{gd})	Q_{SW}		3.66	5.2		3.66			
Output Charge*	Q_{oss}		14	16.8		14	16.8		V_{DS} = 16V, V_{GS} = 0
Gate Resistance	R_g		1.2			1.2		Ω	
Turn-on Delay Time	t_d(on)		12			12		ns	V_{DD} = 16V
Rise Time	t_r		17			17			I_D = 7A
Turn-off Delay Time	t_d (off)		25			25			R_g = 2Ω
Fall Time	t_f		6			6			V_{GS} = 4.5V Resistive Load

Source-Drain Rating & Characteristics

Parameter		Min	Typ	Max	Min	Typ	Max	Units	Conditions
Diode Forward Voltage*	V_{SD}			1.2			1.2	V	I_S = 7A②, V_{GS} = 0V
Reverse Recovery Charge④	Q_{rr}		80			80		nC	di/dt = 700A/µs V_{DS} = 16V, V_{GS} = 0V, I_S = 7A
Reverse Recovery Charge (with Parallel Schotkky)④	$Q_{rr(s)}$		50			50			di/dt = 700A/µs (with 10BQ040) V_{DS} = 16V, V_{GS} = 0V, I_S = 7A

Notes:

① Repetitive rating; pulse width limited by max. junction temperature.
② Pulse width ≤ 300 µs; duty cycle ≤ 2%.
③ When mounted on 1 inch square copper board, t < 10 sec.
④ Typ = measured - Q_{oss}
* Devices are 100% tested to these parameters.

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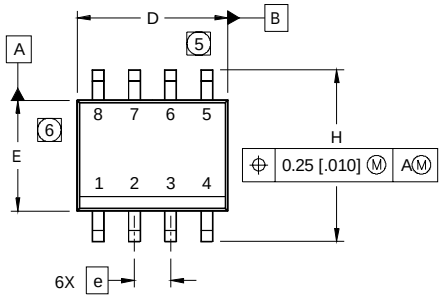
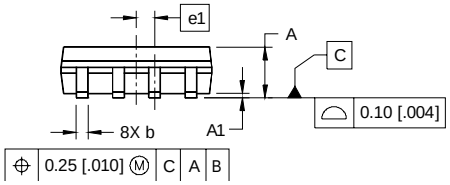
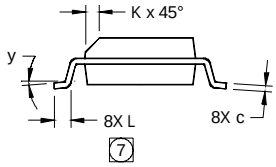
SO-8 Package Outline

Dimensions are shown in millimeters (inches)







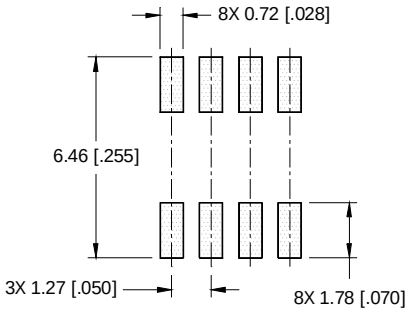
DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	.0532	.0688	1.35	1.75
A1	.0040	.0098	0.10	0.25
b	.013	.020	0.33	0.51
c	.0075	.0098	0.19	0.25
D	.189	.1968	4.80	5.00
E	.1497	.1574	3.80	4.00
e	.050 BASIC		1.27 BASIC	
e 1	.025 BASIC		0.635 BASIC	
H	.2284	.2440	5.80	6.20
K	.0099	.0196	0.25	0.50
L	.016	.050	0.40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

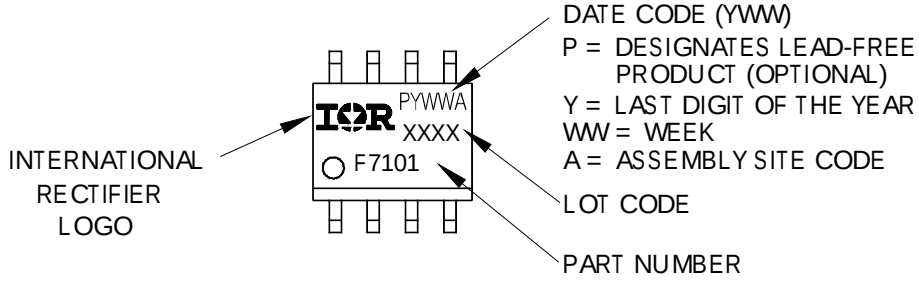
5. DIMENSION DOES NOT INCLUDE MOLD PROTRUSIONS. MOLD PROTRUSIONS NOT TO EXCEED 0.15 [.006].
6. DIMENSION DOES NOT INCLUDE MOLD PROTRUSIONS. MOLD PROTRUSIONS NOT TO EXCEED 0.25 [.010].
7. DIMENSION IS THE LENGTH OF LEAD FOR SOLDERING TO A SUBSTRATE.

FOOTPRINT



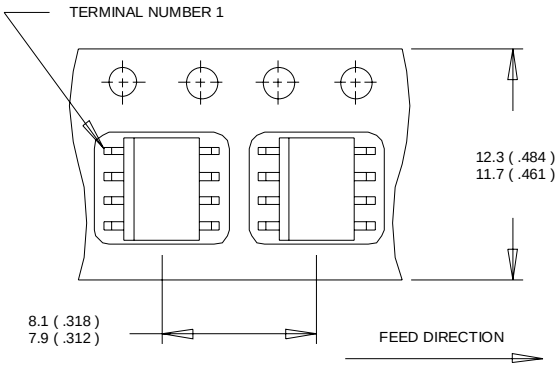
SO-8 Part Marking

EXAMPLE: THIS IS AN IRF7101 (MOSFET)

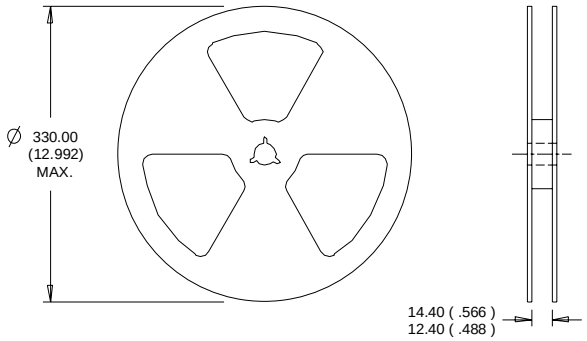


SO-8 Tape and Reel

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.

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