

IRF5810PbF

HEXFET® Power MOSFET

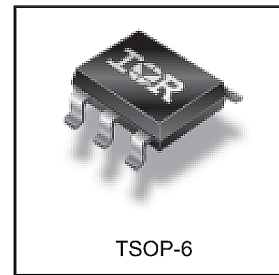
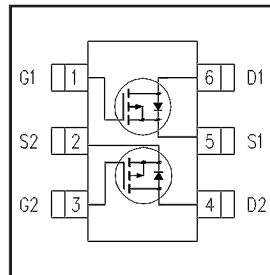
- Ultra Low On-Resistance
- Dual P-Channel MOSFET
- Surface Mount
- Available in Tape & Reel
- Low Gate Charge
- Lead-Free

Description

These P-channel HEXFET® Power MOSFETs from International Rectifier utilize advanced processing techniques to achieve the extremely low on-resistance per silicon area. This benefit provides the designer with an extremely efficient device for use in battery and load management applications.

This Dual TSOP-6 package is ideal for applications where printed circuit board space is at a premium and where maximum functionality is required. With two die per package, the IRF5810 can provide the functionality of two SOT-23 packages in a smaller footprint. Its unique thermal design and $R_{DS(on)}$ reduction enables an increase in current-handling capability.

V_{DSS}	$R_{DS(on)}$ max (m Ω)	I_D
-20V	90@ $V_{GS} = -4.5V$	-2.9A
	135@ $V_{GS} = -2.5V$	-2.3A



Absolute Maximum Ratings

	Parameter	Max.	Units
V_{DS}	Drain- Source Voltage	-20	V
$I_D @ T_A = 25^\circ C$	Continuous Drain Current, $V_{GS} @ -4.5V$	-2.9	A
$I_D @ T_A = 70^\circ C$	Continuous Drain Current, $V_{GS} @ -4.5V$	-2.3	
I_{DM}	Pulsed Drain Current ①	-11	
$P_D @ T_A = 25^\circ C$	Power Dissipation ③	0.96	W
$P_D @ T_A = 70^\circ C$	Power Dissipation ③	0.62	
	Linear Derating Factor	0.008	mW/°C
V_{GS}	Gate-to-Source Voltage	± 12	V
T_J, T_{STG}	Junction and Storage Temperature Range	-55 to + 150	°C

Thermal Resistance

	Parameter	Max.	Units
$R_{\theta JA}$	Maximum Junction-to-Ambient ③	130	°C/W

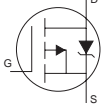
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International
IR Rectifier

Electrical Characteristics @ T_J = 25°C (unless otherwise specified)

	Parameter	Min.	Typ.	Max.	Units	Conditions
V _{(BR)DSS}	Drain-to-Source Breakdown Voltage	-20	—	—	V	V _{GS} = 0V, I _D = -250μA
ΔV _{(BR)DSS} /ΔT _J	Breakdown Voltage Temp. Coefficient	—	0.011	—	V/°C	Reference to 25°C, I _D = -1mA
R _{DS(on)}	Static Drain-to-Source On-Resistance	—	60	90	mΩ	V _{GS} = -4.5V, I _D = -2.9 ②
		—	87	135		V _{GS} = -2.5V, I _D = -2.3A ②
V _{GS(th)}	Gate Threshold Voltage	-0.45	—	-1.2	V	V _{DS} = V _{GS} , I _D = -250μA
g _{fs}	Forward Transconductance	5.4	—	—	S	V _{DS} = -10V, I _D = -2.9A
I _{DSS}	Drain-to-Source Leakage Current	—	—	-1.0	μA	V _{DS} = -16V, V _{GS} = 0V
		—	—	-25		V _{DS} = -16V, V _{GS} = 0V, T _J = 70°C
I _{GSS}	Gate-to-Source Forward Leakage	—	—	-100	nA	V _{GS} = -12V
	Gate-to-Source Reverse Leakage	—	—	100		V _{GS} = 12V
Q _g	Total Gate Charge	—	6.4	9.6	nC	I _D = -2.9A
Q _{gs}	Gate-to-Source Charge	—	1.2	1.8		V _{DS} = -10V
Q _{gd}	Gate-to-Drain ("Miller") Charge	—	1.7	2.6		V _{GS} = -4.5V
t _{d(on)}	Turn-On Delay Time	—	8.2	—	ns	V _{DD} = -10V ②
t _r	Rise Time	—	14	—		I _D = -1.0A
t _{d(off)}	Turn-Off Delay Time	—	62	—		R _G = 6.0Ω
t _f	Fall Time	—	53	—		V _{GS} = -4.5V
C _{iss}	Input Capacitance	—	650	—	pF	V _{GS} = 0V
C _{oss}	Output Capacitance	—	110	—		V _{DS} = -16V
C _{rss}	Reverse Transfer Capacitance	—	86	—		f = 1kHz

Source-Drain Ratings and Characteristics

	Parameter	Min.	Typ.	Max.	Units	Conditions
I _S	Continuous Source Current (Body Diode)	—	—	-1.0	A	MOSFET symbol showing the integral reverse p-n junction diode. 
I _{SM}	Pulsed Source Current (Body Diode) ①	—	—	-11		
V _{SD}	Diode Forward Voltage	—	—	-1.2	V	T _J = 25°C, I _S = -1.0A, V _{GS} = 0V ②
t _{rr}	Reverse Recovery Time	—	110	170	ns	T _J = 25°C, I _F = -1.0A
Q _{rr}	Reverse Recovery Charge	—	130	200	nC	di/dt = -100A/μs ②

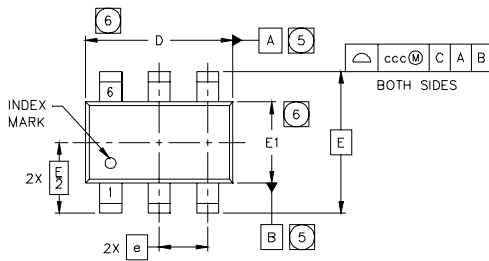
Notes:

- ① Repetitive rating; pulse width limited by max. junction temperature.
- ② Pulse width ≤ 400μs; duty cycle ≤ 2%.
- ③ Surface mounted on 1 in square Cu board

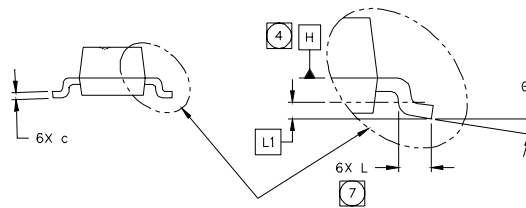
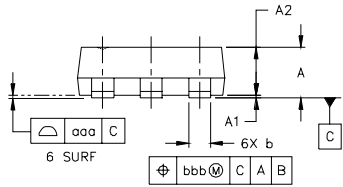
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TSOP-6 Package Outline

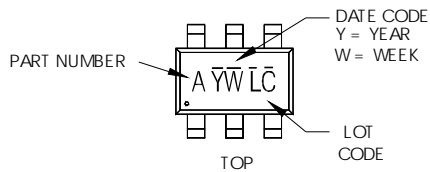


SYMBOL	MO-193AA DIMENSIONS					
	MILLIMETERS			INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	---	---	1.10	---	---	.0433
A1	0.01	---	0.10	.0004	---	.0039
A2	0.80	0.90	1.00	.0315	.0354	.0393
b	0.25	---	0.50	.0099	---	.0196
c	0.10	---	0.26	.004	---	.010
D	2.90	3.00	3.10	.115	.118	.122
E	2.75 BSC			.108 BSC		
E1	1.30	1.50	1.70	.052	.059	.066
e	1.00 BSC			.039 BSC		
L	0.20	0.40	0.60	.0079	.0157	.0236
L1	0.30 BSC			.0118 BSC		
θ	0°	---	8°	0°	---	8°
ooo	0.10			.004		
bbb	0.15			.006		
ccc	0.25			.010		



TSOP-6 Part Marking Information

W = (1-26) IF PRECEDED BY LAST DIGIT OF CALENDAR YEAR



PART NUMBER CODE REFERENCE:

- A = SI3443DV
- B = IRF5800
- C = IRF5850
- D = IRF5851
- E = IRF5852
- F = IRF5801
- I = IRF5805
- J = IRF5806
- K = IRF5810
- L = IRF5804
- M = IRF5803
- N = IRF5802

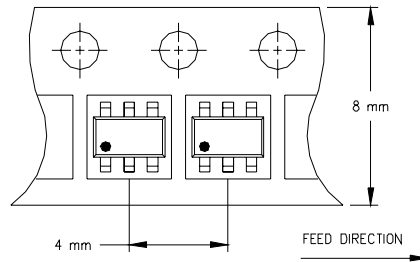
Note: A line above the work week (as shown here) indicates Lead-Free.

YEAR	Y	WORK WEEK	W
2001	1	01	A
2002	2	02	B
2003	3	03	C
2004	4	04	D
2005	5		
2006	6		
2007	7		
2008	8		
2009	9		
2010	0	24	X
		25	Y
		26	Z

W = (27-52) IF PRECEDED BY A LETTER

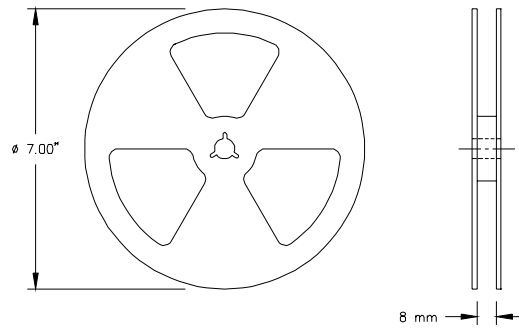
YEAR	Y	WORK WEEK	W
2001	A	27	A
2002	B	28	B
2003	C	29	C
2004	D	30	D
2005	E		
2006	F		
2007	G		
2008	H		
2009	J		
2010	K	50	X
		51	Y
		52	Z

TSOP-6 Tape & Reel Information



NOTES:

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



NOTES:

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