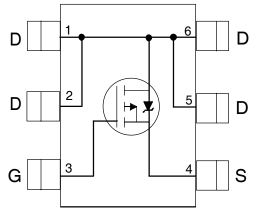
International
IOR Rectifier

PD- 94897

IRLMS6802PbF

HEXFET® Power MOSFET

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



Top View

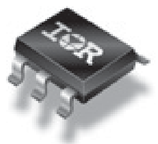
$V_{DSS} = -20V$

$R_{DS(on)} = 0.050\Omega$

Description

These P-Channel MOSFETs from International Rectifier utilize advanced processing techniques to achieve 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.

The Micro6™ package with its customized leadframe produces a HEXFET® power MOSFET with $R_{DS(on)}$ 60% less than a similar size SOT-23. This package is ideal for applications where printed circuit board space is at a premium. The unique thermal design and $R_{DS(on)}$ reduction enables a current-handling increase of nearly 300% compared to the SOT-23.



Micro6™

Absolute Maximum Ratings

	Parameter	Max.	Units
V_{DS}	Drain- Source Voltage	-20	V
I_D @ $T_A = 25°C$	Continuous Drain Current, V_{GS} @ -4.5V	-5.6	A
I_D @ $T_A = 70°C$	Continuous Drain Current, V_{GS} @ -4.5V	-4.5	
I_{DM}	Pulsed Drain Current ①	-45	
P_D @$T_A = 25°C$	Power Dissipation	2.0	W
P_D @$T_A = 70°C$	Power Dissipation	1.3	
	Linear Derating Factor	0.016	W/°C
E_{AS}	Single Pulse Avalanche Energy④	31	mJ
V_{GS}	Gate-to-Source Voltage	± 12	V
T_J, T_{STG}	Junction and Storage Temperature Range	-55 to + 150	°C

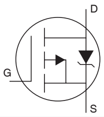
Thermal Resistance

	Parameter	Max.	Units
$R_{\theta JA}$	Maximum Junction-to-Ambient③	62.5	°C/W

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
$\Delta V_{(BR)DSS}/\Delta T_J$	Breakdown Voltage Temp. Coefficient	——	-0.005	——	V/°C	Reference to 25°C, I_D = -1mA
$R_{DS(on)}$	Static Drain-to-Source On-Resistance	——	——	0.050	Ω	V_{GS} = -4.5V, I_D = -5.1A ②
		——	——	0.100		V_{GS} = -2.5V, I_D = -3.4A ②
$V_{GS(th)}$	Gate Threshold Voltage	-0.60	——	-1.2	V	V_{DS} = V_{GS}, I_D = -250µA
g_{fs}	Forward Transconductance	1.5	——	——	S	V_{DS} = -10V, I_D = -0.80A
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 = 125°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	——	11	16	nC	I_D = -4.5A
Q_{gs}	Gate-to-Source Charge	——	2.2	3.3		V_{DS} = -10V
Q_{gd}	Gate-to-Drain ("Miller") Charge	——	2.9	4.3		V_{GS} = -5.0V ②
$t_{d(on)}$	Turn-On Delay Time	——	12	——	ns	V_{DD} = -10V
t_r	Rise Time	——	33	——		I_D = -1.0A
$t_{d(off)}$	Turn-Off Delay Time	——	70	——		R_G = 6.0Ω
t_f	Fall Time	——	72	——		R_D = 10Ω ②
C_{iss}	Input Capacitance	——	1079	——	pF	V_{GS} = 0V
C_{oss}	Output Capacitance	——	220	——		V_{DS} = -10V
C_{rss}	Reverse Transfer Capacitance	——	152	——		f = 1.0MHz

Source-Drain Ratings and Characteristics

	Parameter	Min.	Typ.	Max.	Units	Conditions
I_S	Continuous Source Current (Body Diode)	——	——	-2.0	A	MOSFET symbol showing the integral reverse p-n junction diode. 
I_{SM}	Pulsed Source Current (Body Diode) ①	——	——	-45		
V_{SD}	Diode Forward Voltage	——	——	-1.2	V	T_J = 25°C, I_S = -1.6A, V_{GS} = 0V ③
t_{rr}	Reverse Recovery Time	——	74	110	ns	T_J = 25°C, I_F = -3.0A
Q_{rr}	Reverse Recovery Charge	——	45	67	nC	di/dt = -100A/µs ②

Notes:

① Repetitive rating; pulse width limited by max. junction temperature. (See fig. 11)

② Pulse width ≤ 400µs; duty cycle ≤ 2%.

③ Surface mounted on FR-4 board, t ≤ 5sec.

④ Starting T_J = 25°C, L = 6.8mH
R_G = 25Ω, I_{AS} = -3.0A. (See Figure 12)

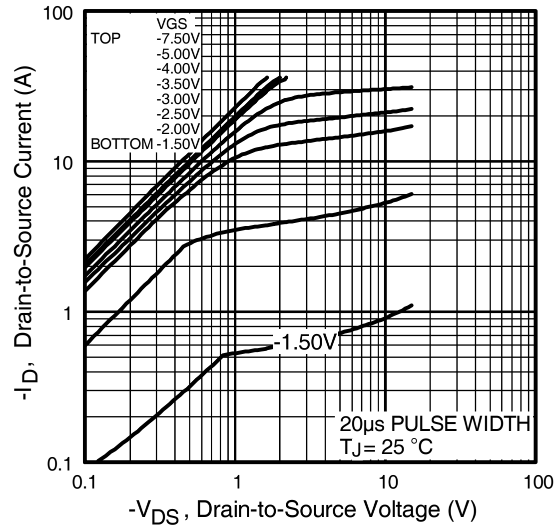


Fig 1. Typical Output Characteristics

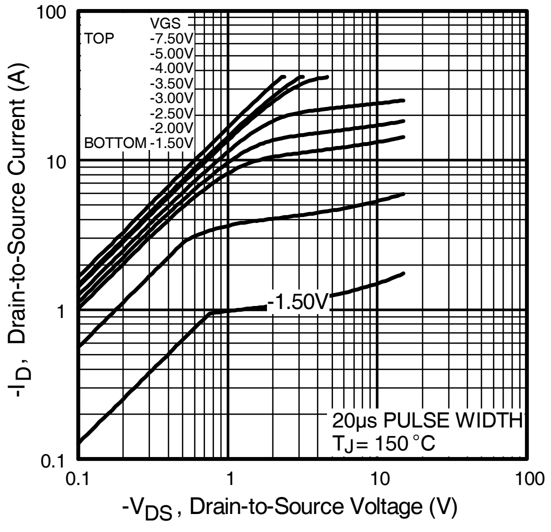


Fig 2. Typical Output Characteristics

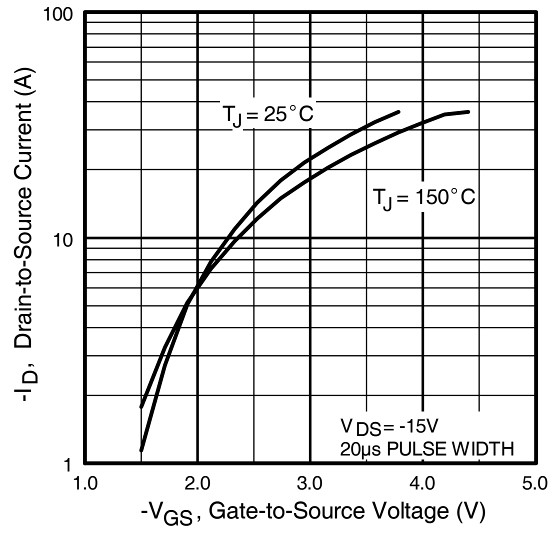


Fig 3. Typical Transfer Characteristics

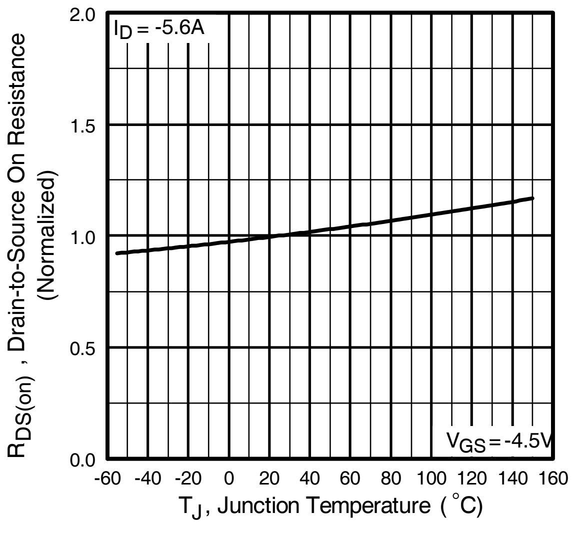


Fig 4. Normalized On-Resistance Vs. Temperature

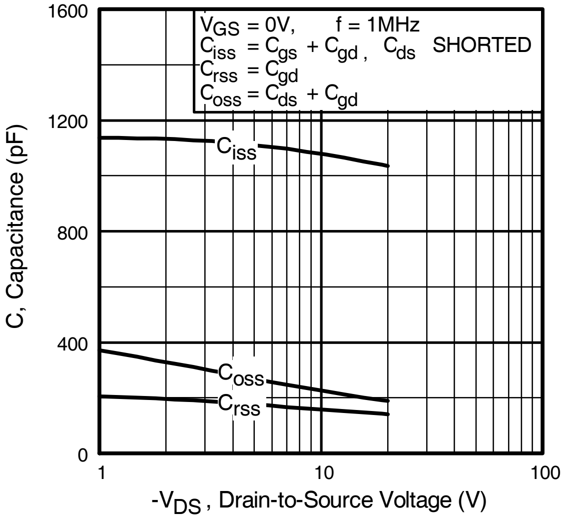


Fig 5. Typical Capacitance Vs. Drain-to-Source Voltage

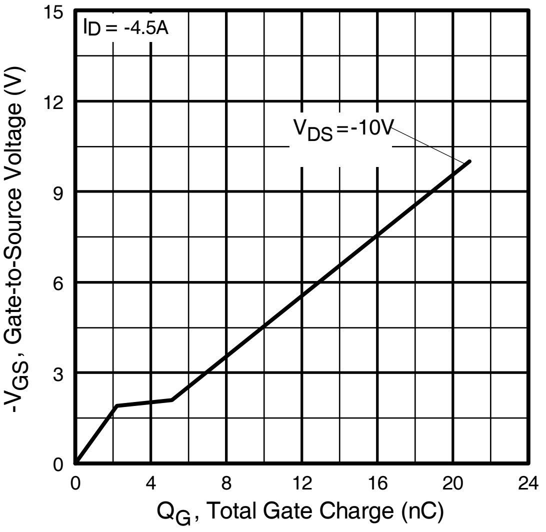


Fig 6. Typical Gate Charge Vs. Gate-to-Source Voltage

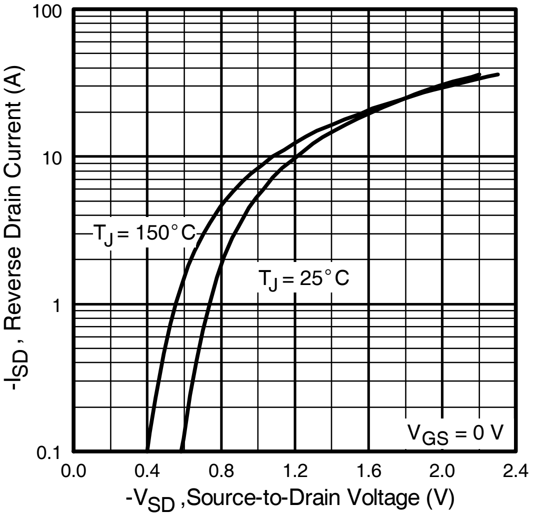


Fig 7. Typical Source-Drain Diode Forward Voltage

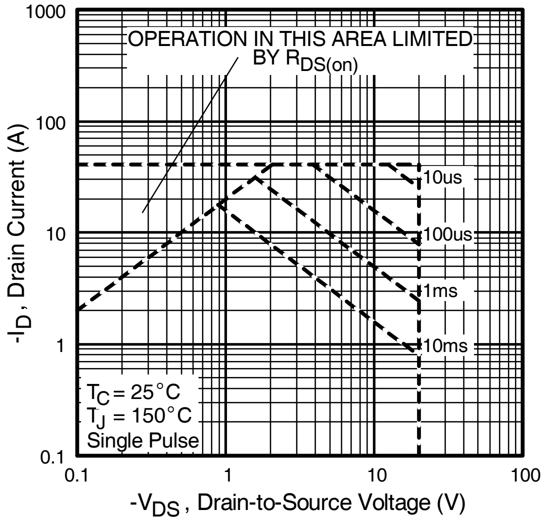


Fig 8. Maximum Safe Operating Area

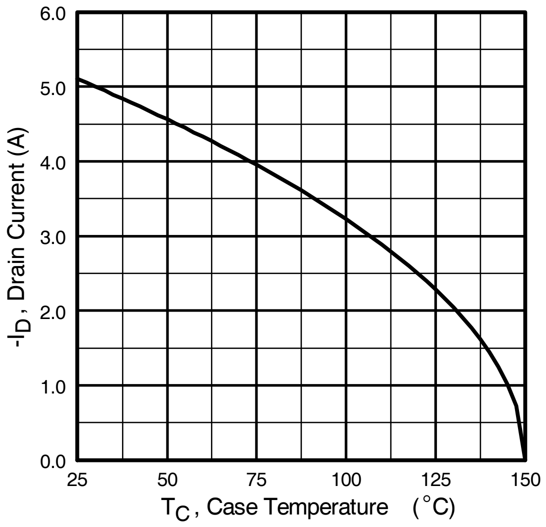


Fig 9. Maximum Drain Current Vs. Case Temperature

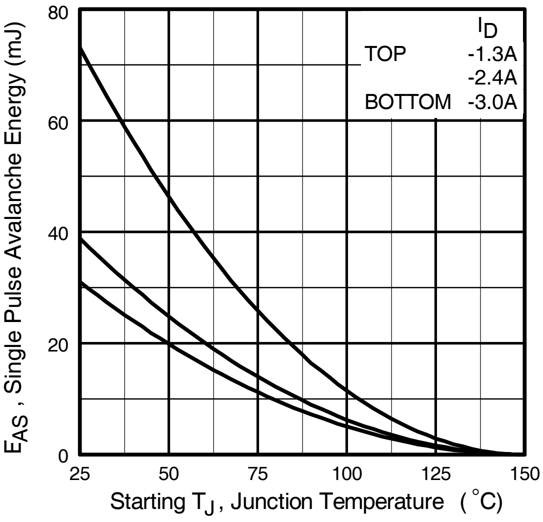


Fig 10. Maximum Avalanche Energy Vs. Drain Current

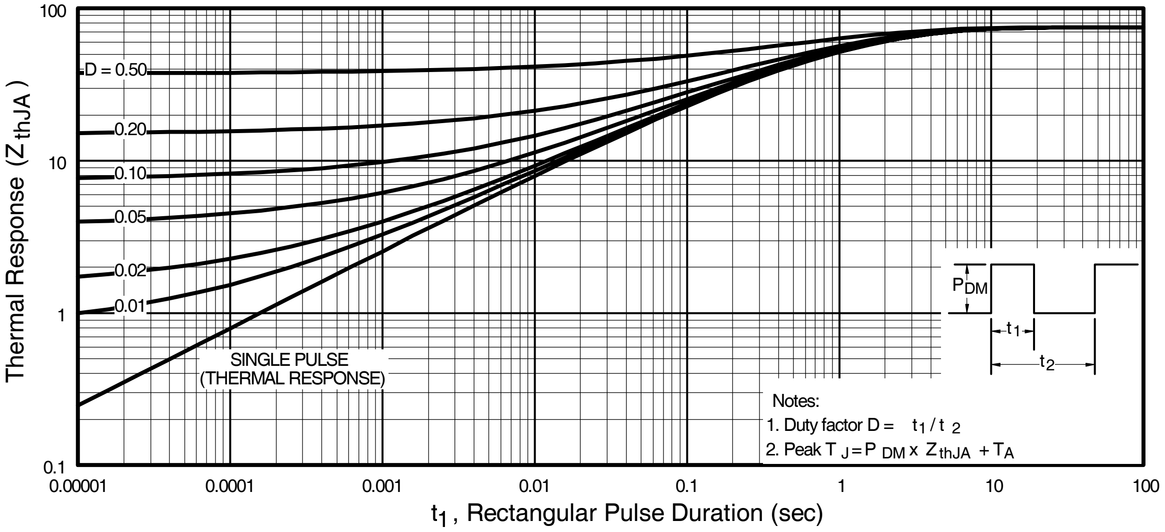
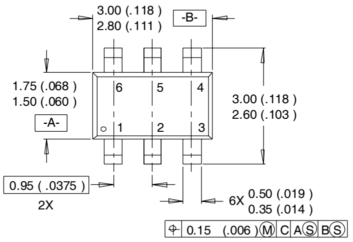


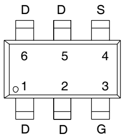
Fig 11. Maximum Effective Transient Thermal Impedance, Junction-to-Ambient

Micro6 (SOT23 6L) Package Outline

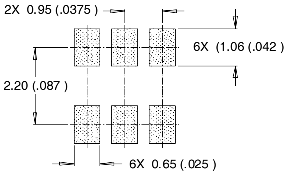
Dimensions are shown in milimeters (inches)

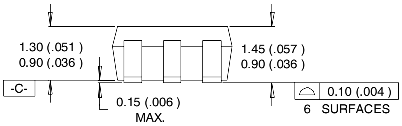


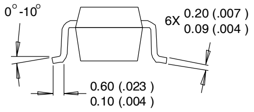
LEAD ASSIGNMENTS



RECOMMENDED FOOTPRINT

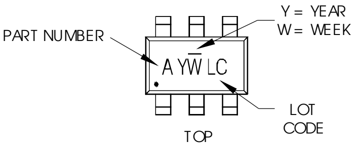






NOTES :
1. DIMENSIONING & TOLERANCING PER ANSI Y14.5M-1982.
2. CONTROLLING DIMENSION : MILLIMETER.
3. DIMENSIONS ARE SHOWN IN MILLIMETERS (INCHES).

Micro6 (SOT23 6L) Part Marking Information



PART NUMBER CODE REFERENCE:

A = IRLMS1902
B = IRLMS1503
C = IRLMS6702
D = IRLMS5703
E = IRLMS6802
F = IRLMS4502
G = IRLMS2002
H = IRLMS6803

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

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

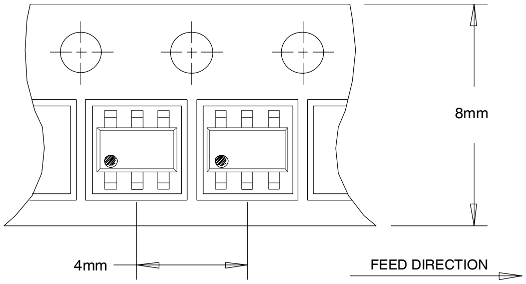
YEAR	Y	WORK WEEK	W
2001	1	01	A
2002	2	02	B
2003	3	03	C
2004	4	04	D
2005	5		
2006	6	↓	↓
2007	7		
2008	8		
2009	9		
2010	0	24	X
		25	Y
		26	Z

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

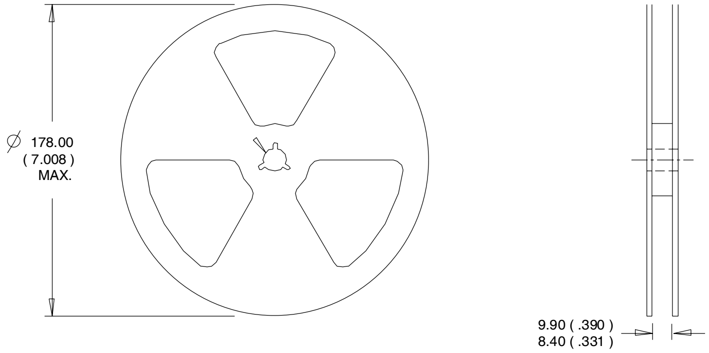
YEAR	Y	WORK WEEK	W
2001	A	27	A
2002	B	28	B
2003	C	29	C
2004	D	30	D
2005	E		
2006	F	↓	↓
2007	G		
2008	H		
2009	J		
2010	K	50	X
		51	Y
		52	Z

Micro6 Tape & Reel Information

Dimensions are shown in milimeters (inches)



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



NOTES:
1. CONTROLLING DIMENSION : MILLIMETER.
2. OUTLINE CONFORMS TO EIA-481 & EIA-541.

This product has been designed and qualified for the consumer market.
Qualification Standards can be found on IR's Web site.

Data and specifications subject to change without notice.

International
Rectifier

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