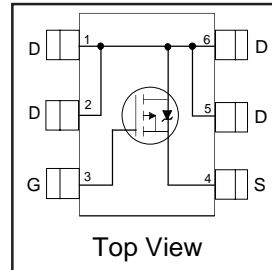


# IRLMS6802

HEXFET® Power MOSFET

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

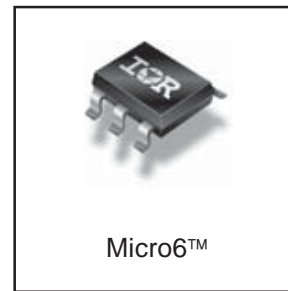


$V_{DSS} = -20V$
$R_{DS(on)} = 0.050\Omega$

## 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.



## Absolute Maximum Ratings

	Parameter	Max.	Units
$V_{DS}$	Drain- Source Voltage	-20	V
$I_D @ T_A = 25^\circ C$	Continuous Drain Current, $V_{GS} @ -4.5V$	-5.6	A
$I_D @ T_A = 70^\circ C$	Continuous Drain Current, $V_{GS} @ -4.5V$	-4.5	
$I_{DM}$	Pulsed Drain Current ①	-45	
$P_D @ T_A = 25^\circ C$	Power Dissipation	2.0	W
$P_D @ T_A = 70^\circ C$	Power Dissipation	1.3	
	Linear Derating Factor	0.016	W/°C
$E_{AS}$	Single Pulse Avalanche Energy②	31	mJ
$V_{GS}$	Gate-to-Source Voltage	$\pm 12$	V
$T_J, T_{STG}$	Junction and Storage Temperature Range	-55 to + 150	°C

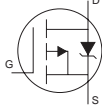
## Thermal Resistance

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

## Electrical Characteristics @ T<sub>J</sub> = 25°C (unless otherwise specified)

	Parameter	Min.	Typ.	Max.	Units	Conditions
V <sub>(BR)DSS</sub>	Drain-to-Source Breakdown Voltage	-20	—	—	V	V <sub>GS</sub> = 0V, I <sub>D</sub> = -250μA
ΔV <sub>(BR)DSS</sub> /ΔT <sub>J</sub>	Breakdown Voltage Temp. Coefficient	—	-0.005	—	V/°C	Reference to 25°C, I <sub>D</sub> = -1mA
R <sub>DS(on)</sub>	Static Drain-to-Source On-Resistance	—	—	0.050	Ω	V <sub>GS</sub> = -4.5V, I <sub>D</sub> = -5.1A ②
		—	—	0.100		V <sub>GS</sub> = -2.5V, I <sub>D</sub> = -3.4A ②
V <sub>GS(th)</sub>	Gate Threshold Voltage	-0.60	—	-1.2	V	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = -250μA
g <sub>fs</sub>	Forward Transconductance	1.5	—	—	S	V <sub>DS</sub> = -10V, I <sub>D</sub> = -0.80A
I <sub>DSS</sub>	Drain-to-Source Leakage Current	—	—	-1.0	μA	V <sub>DS</sub> = -16V, V <sub>GS</sub> = 0V
		—	—	-25		V <sub>DS</sub> = -16V, V <sub>GS</sub> = 0V, T <sub>J</sub> = 125°C
I <sub>GSS</sub>	Gate-to-Source Forward Leakage	—	—	-100	nA	V <sub>GS</sub> = -12V
	Gate-to-Source Reverse Leakage	—	—	100		V <sub>GS</sub> = 12V
Q <sub>g</sub>	Total Gate Charge	—	11	16	nC	I <sub>D</sub> = -4.5A
Q <sub>gs</sub>	Gate-to-Source Charge	—	2.2	3.3		V <sub>DS</sub> = -10V
Q <sub>gd</sub>	Gate-to-Drain ("Miller") Charge	—	2.9	4.3		V <sub>GS</sub> = -5.0V ②
t <sub>d(on)</sub>	Turn-On Delay Time	—	12	—	ns	V <sub>DD</sub> = -10V
t <sub>r</sub>	Rise Time	—	33	—		I <sub>D</sub> = -1.0A
t <sub>d(off)</sub>	Turn-Off Delay Time	—	70	—		R <sub>G</sub> = 6.0Ω
t <sub>f</sub>	Fall Time	—	72	—		R <sub>D</sub> = 10Ω ②
C <sub>iss</sub>	Input Capacitance	—	1079	—	pF	V <sub>GS</sub> = 0V
C <sub>oss</sub>	Output Capacitance	—	220	—		V <sub>DS</sub> = -10V
C <sub>rss</sub>	Reverse Transfer Capacitance	—	152	—		f = 1.0MHz

## Source-Drain Ratings and Characteristics

	Parameter	Min.	Typ.	Max.	Units	Conditions
I <sub>S</sub>	Continuous Source Current (Body Diode)	—	—	-2.0	A	MOSFET symbol showing the integral reverse p-n junction diode. 
I <sub>SM</sub>	Pulsed Source Current (Body Diode) ①	—	—	-45		
V <sub>SD</sub>	Diode Forward Voltage	—	—	-1.2	V	T <sub>J</sub> = 25°C, I <sub>S</sub> = -1.6A, V <sub>GS</sub> = 0V ③
t <sub>rr</sub>	Reverse Recovery Time	—	74	110	ns	T <sub>J</sub> = 25°C, I <sub>F</sub> = -3.0A
Q <sub>rr</sub>	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<sub>J</sub> = 25°C, L = 6.8mH  
R<sub>G</sub> = 25Ω, I<sub>AS</sub> = -3.0A. (See Figure 12)

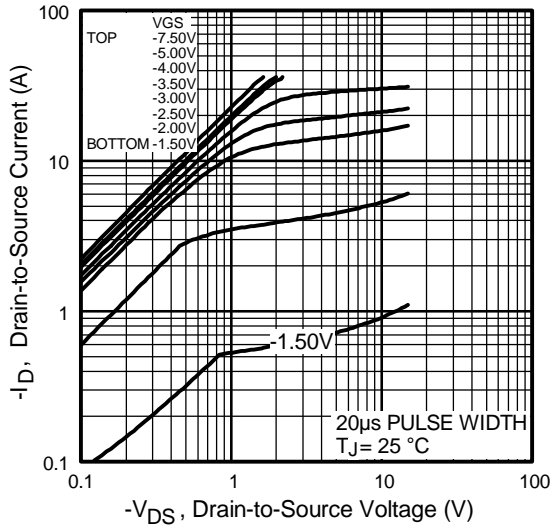


Fig 1. Typical Output Characteristics

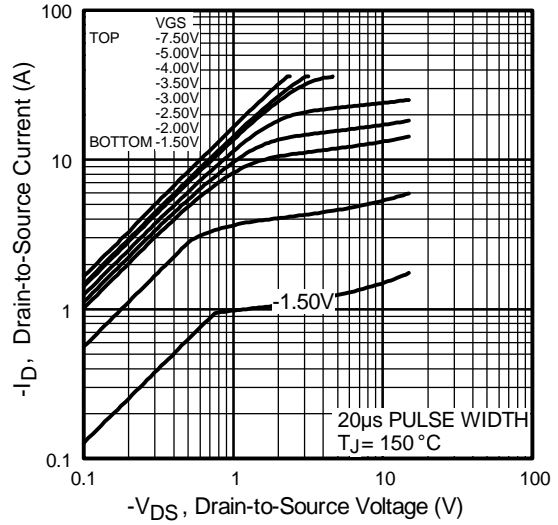


Fig 2. Typical Output Characteristics

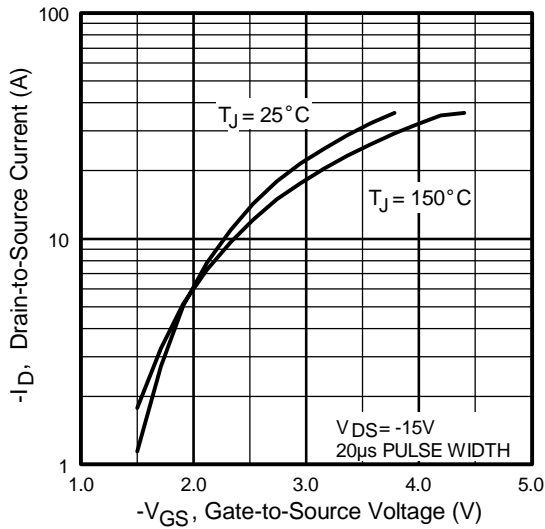


Fig 3. Typical Transfer Characteristics

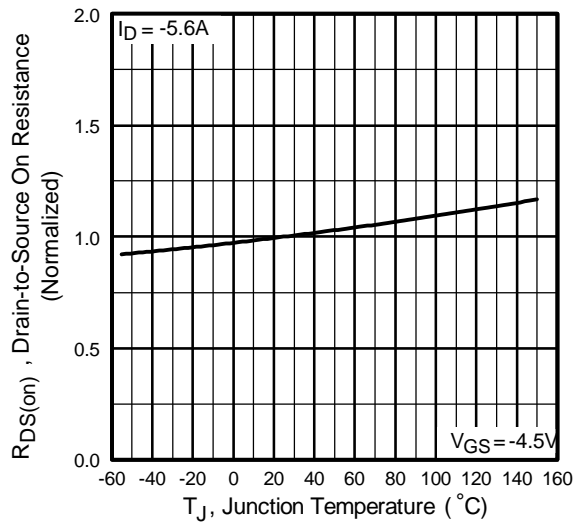
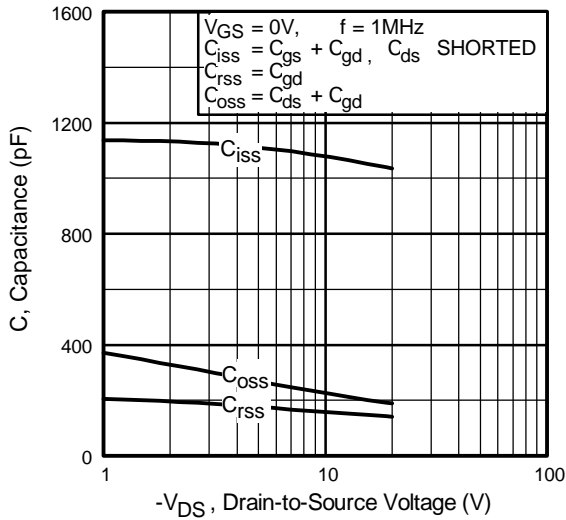
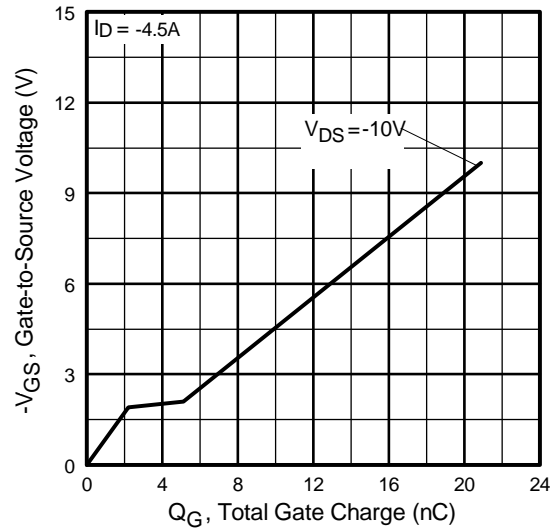


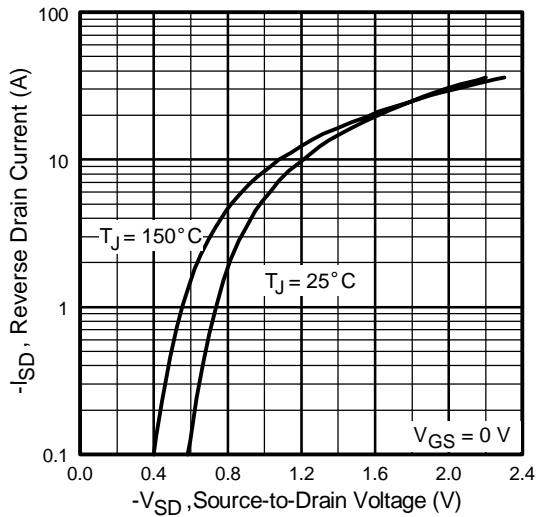
Fig 4. Normalized On-Resistance Vs. Temperature



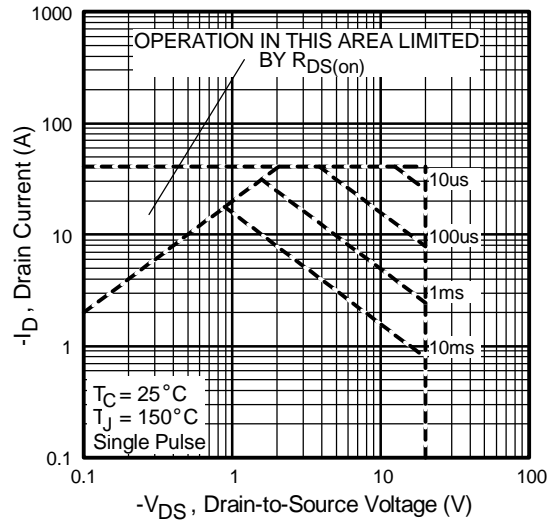
**Fig 5.** Typical Capacitance Vs. Drain-to-Source Voltage



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



**Fig 7.** Typical Source-Drain Diode Forward Voltage



**Fig 8.** Maximum Safe Operating Area

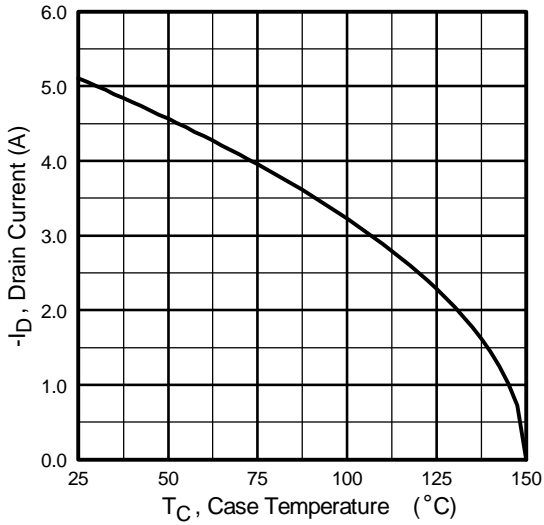


Fig 9. Maximum Drain Current Vs. Case Temperature

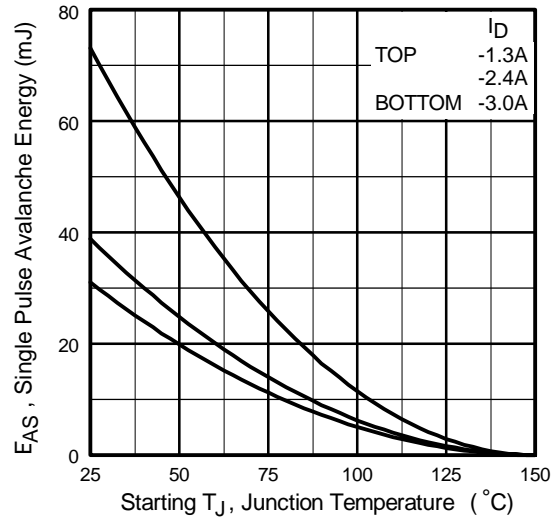


Fig 10. Maximum Avalanche Energy Vs. Drain Current

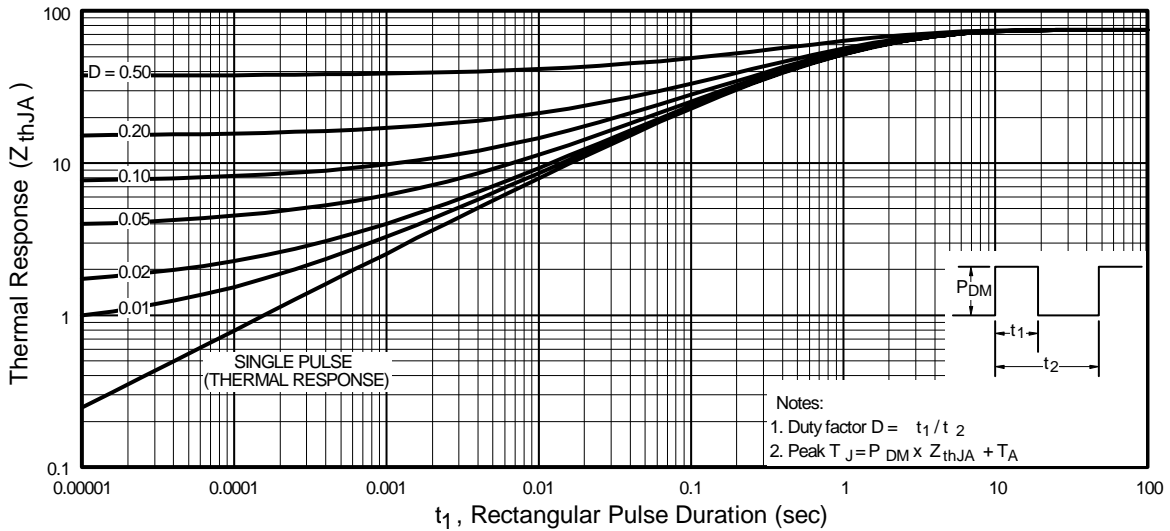
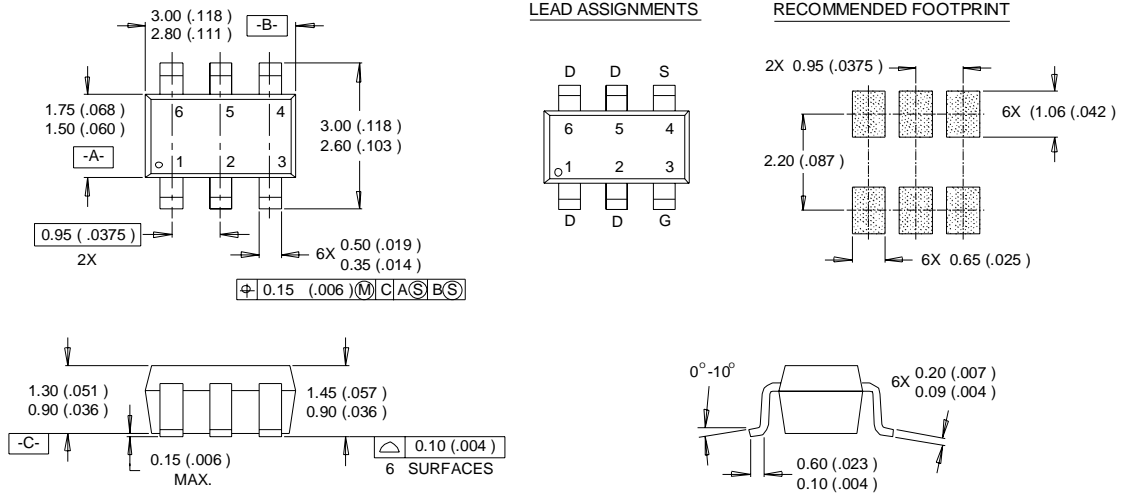


Fig 11. Maximum Effective Transient Thermal Impedance, Junction-to-Ambient

# IRLMS6802

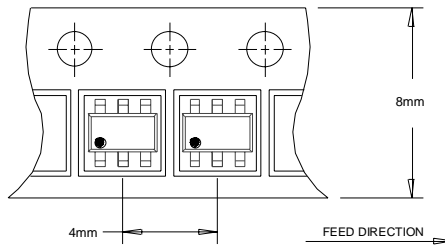
International  
**IRF** Rectifier

## Micro6™ Package Outline

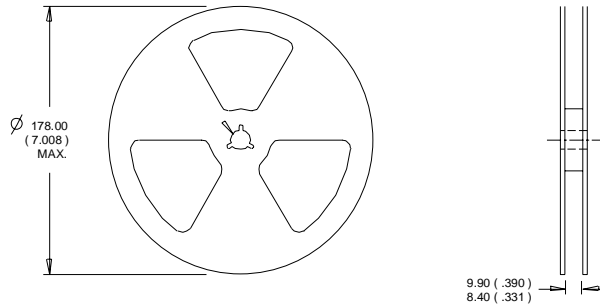


- NOTES :
1. DIMENSIONING & TOLERANCING PER ANSI Y14.5M-1982.
  2. CONTROLLING DIMENSION : MILLIMETER.
  3. DIMENSIONS ARE SHOWN IN MILLIMETERS (INCHES).

## Micro6™ Tape & Reel Information



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



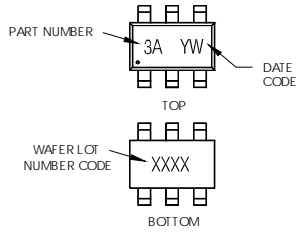
- NOTES:
1. CONTROLLING DIMENSION : MILLIMETER.
  2. OUTLINE CONFORMS TO EIA-481 & EIA-541.

## Micro6™ Part Marking Information

Notes: This part marking information applies to devices produced before 02/26/2001

EXAMPLE: THIS IS AN IRLMS6702

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



PART NUMBER CODE REFERENCE:

2A = IRLMS1902  
 2B = IRLMS1503  
 2C = IRLMS6702  
 2D = IRLMS5703  
 2E = IRLMS6802  
 2F = IRLMS4502  
 2G = IRLMS2002  
 2H = IRLMS6803

DATE CODE EXAMPLES:

YWW = 9603 = 6C  
 YWW = 9632 = FF

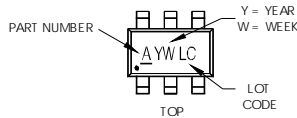
YEAR	Y	WORK WEEK	W
2001	1	01	A
2002	2	02	B
2003	3	03	C
2004	4	04	D
2005	5		
1996	6		
1997	7		
1998	8		
1999	9		
2000	0	24	X
		25	Y
		26	Z

WW = (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		
1996	F		
1997	G		
1998	H		
1999	J		
2000	K	50	X
		51	Y
		52	Z

Notes: This part marking information applies to devices produced after 02/26/2001

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



PART NUMBER CODE REFERENCE:

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

YEAR	Y	WORK WEEK	W
2001	1	01	A
2002	2	02	B
2003	3	03	C
2004	4	04	D
2005	5		
1996	6		
1997	7		
1998	8		
1999	9		
2000	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		
1996	F		
1997	G		
1998	H		
1999	J		
2000	K	50	X
		51	Y
		52	Z

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