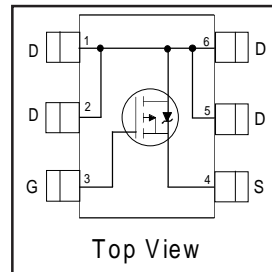


IRLMS6802

HEXFET® Power MOSFET

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

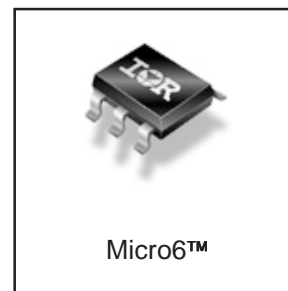


$V_{DSS} = -20V$
$R_{DS(on)} = 0.050\Omega$

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 Energy④	31	mJ
V_{GS}	Gate-to-Source Voltage	± 12	V
T_J, T_{STG}	Junction and Storage Temperature Range	-55 to + 150	°C

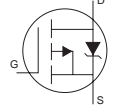
Thermal Resistance

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

Electrical Characteristics @ $T_J = 25^\circ\text{C}$ (unless otherwise specified)

	Parameter	Min.	Typ.	Max.	Units	Conditions
$V_{(BR)DSS}$	Drain-to-Source Breakdown Voltage	-20	—	—	V	$V_{GS} = 0V$, $I_D = -250\mu A$
$\Delta V_{(BR)DSS}/\Delta T_J$	Breakdown Voltage Temp. Coefficient	—	-0.005	—	V/ $^\circ\text{C}$	Reference to 25°C , $I_D = -1\text{mA}$
$R_{DS(on)}$	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	$V_{DS} = V_{GS}$, $I_D = -250\mu A$
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		$V_{DS} = -16V$, $V_{GS} = 0V$, $T_J = 125^\circ\text{C}$
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	—		$R_G = 6.0\Omega$
t_f	Fall Time	—	72	—		$R_D = 10\Omega$ ②
C_{iss}	Input Capacitance	—	1079	—	pF	$V_{GS} = 0V$
C_{oss}	Output Capacitance	—	220	—		$V_{DS} = -10V$
C_{rss}	Reverse Transfer Capacitance	—	152	—		$f = 1.0\text{MHz}$

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	$T_J = 25^\circ\text{C}$, $I_S = -1.6A$, $V_{GS} = 0V$ ③
t_{rr}	Reverse Recovery Time	—	74	110	ns	$T_J = 25^\circ\text{C}$, $I_F = -3.0A$
Q_{rr}	Reverse Recovery Charge	—	45	67	nC	$di/dt = -100A/\mu s$ ②

Notes:

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

② Pulse width $\leq 300\mu s$; duty cycle $\leq 2\%$.

③ Surface mounted on FR-4 board, $t \leq 5\text{sec}$.

④ Starting $T_J = 25^\circ\text{C}$, $L = 6.8\text{mH}$
 $R_G = 25\Omega$, $I_{AS} = -3.0A$. (See Figure 12)

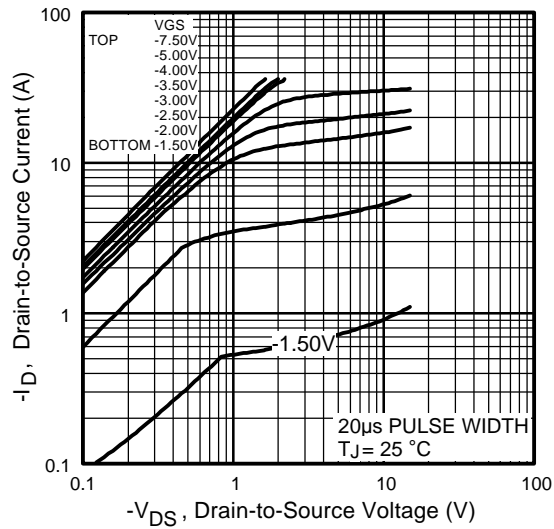


Fig 1. Typical Output Characteristics

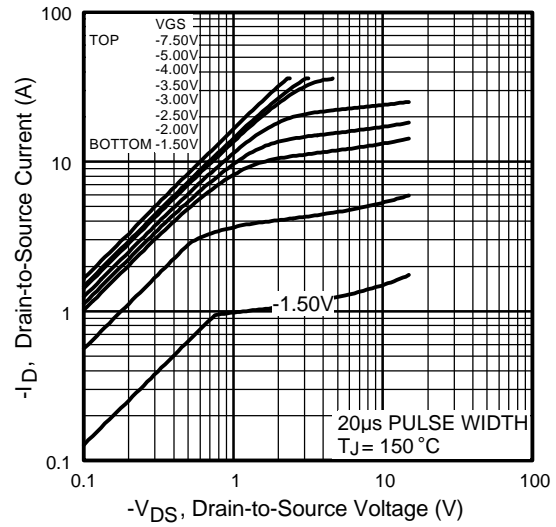


Fig 2. Typical Output Characteristics

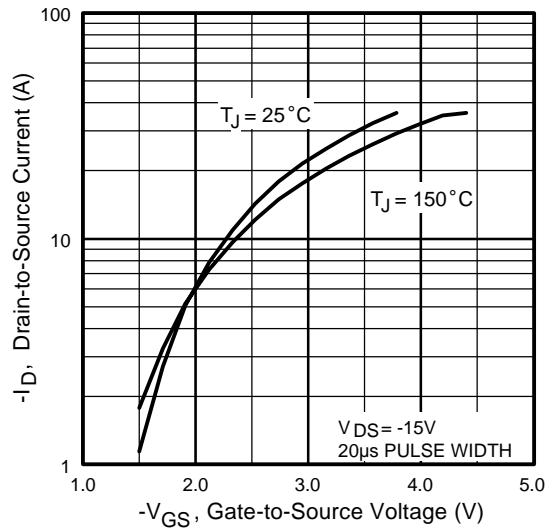


Fig 3. Typical Transfer Characteristics

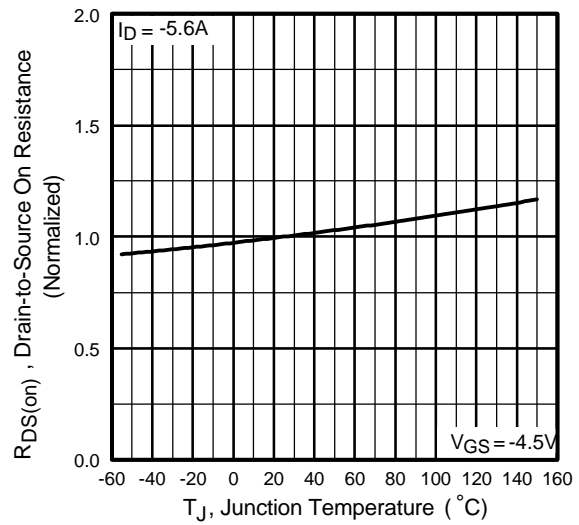


Fig 4. Normalized On-Resistance Vs. Temperature

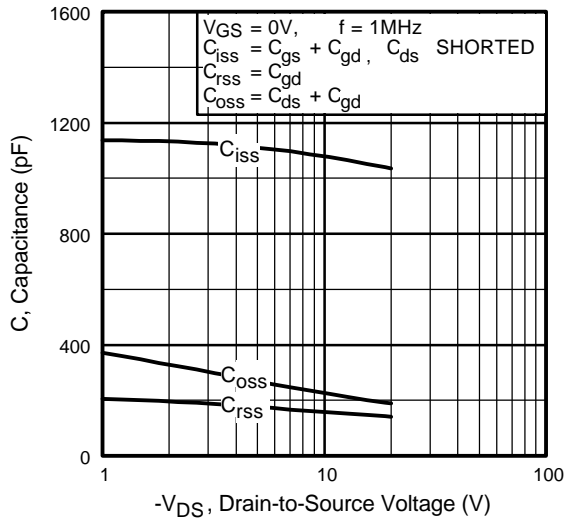


Fig 5. Typical Capacitance Vs. Drain-to-Source Voltage

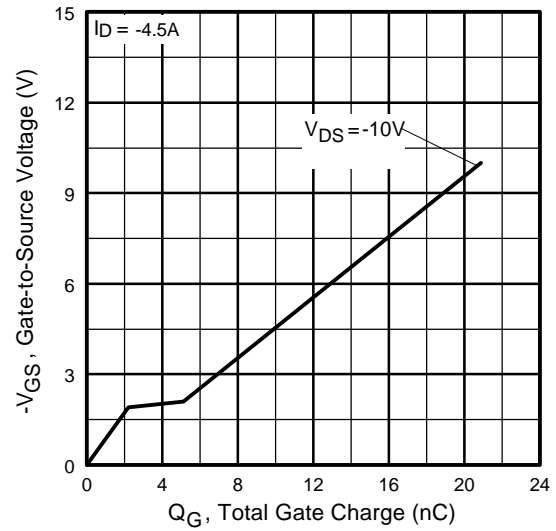


Fig 6. Typical Gate Charge Vs. Gate-to-Source Voltage

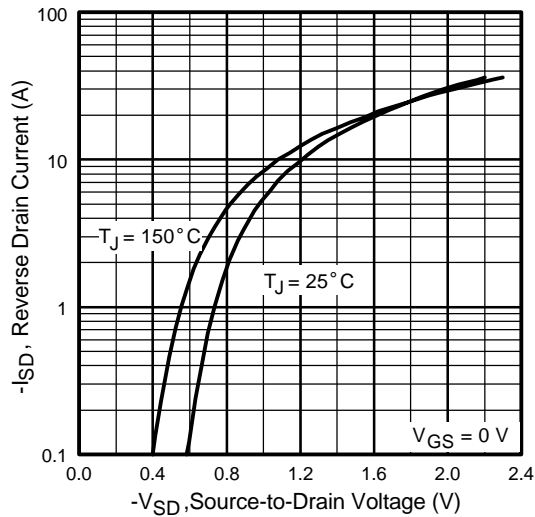


Fig 7. Typical Source-Drain Diode Forward Voltage

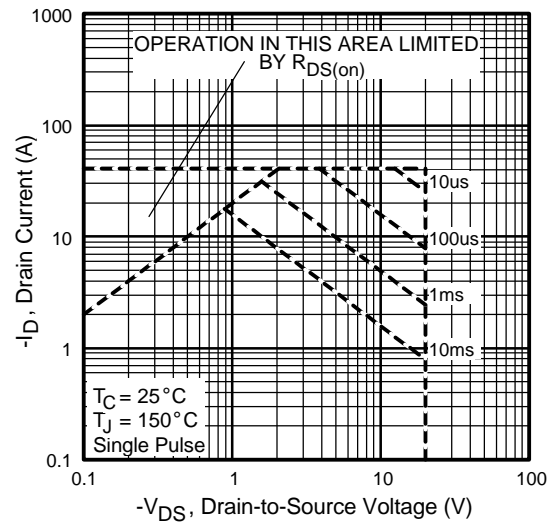


Fig 8. Maximum Safe Operating Area

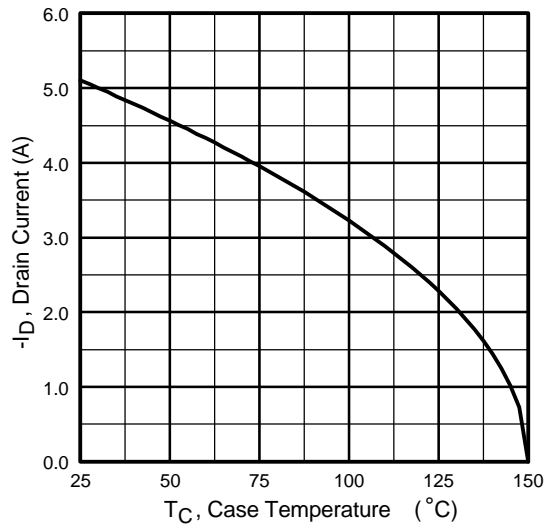


Fig 9. Maximum Drain Current Vs. Case Temperature

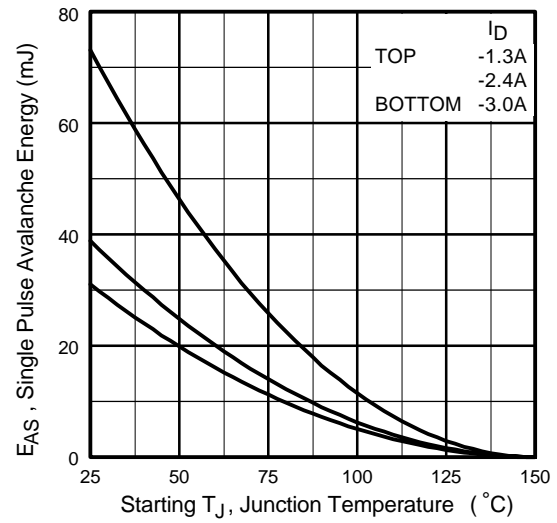


Fig 10. Maximum Avalanche Energy Vs. Drain Current

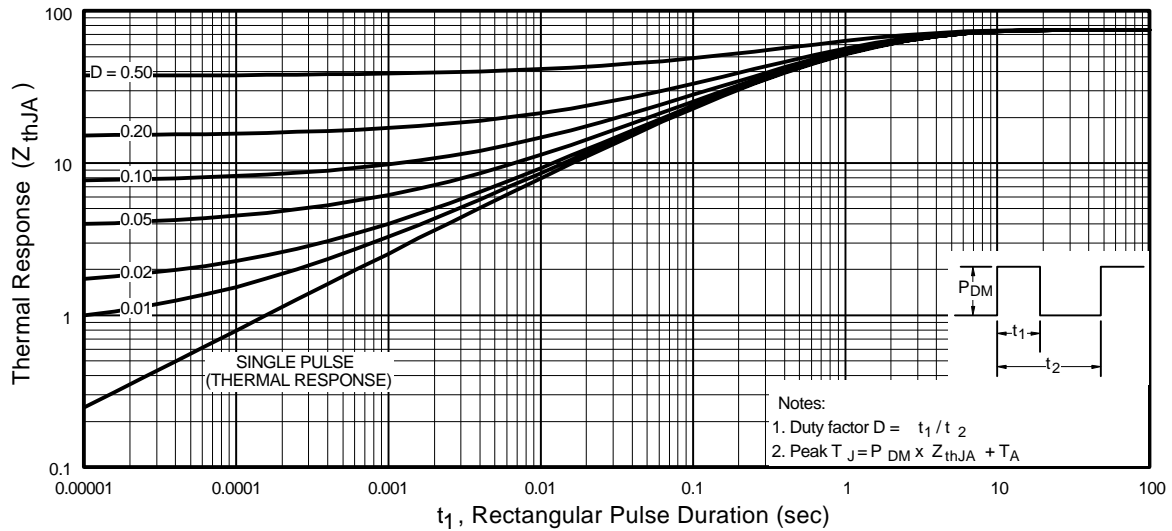


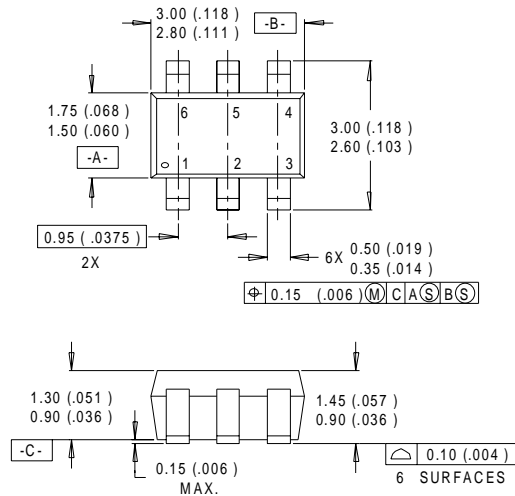
Fig 11. Maximum Effective Transient Thermal Impedance, Junction-to-Ambient

IRLMS6802

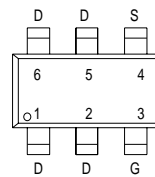
International
IR Rectifier

Package Outline

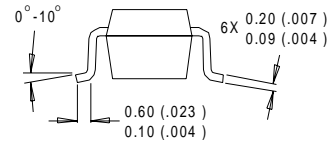
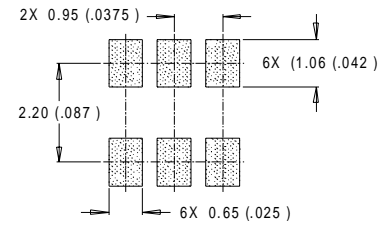
Micro6™



LEAD ASSIGNMENTS



RECOMMENDED FOOTPRINT

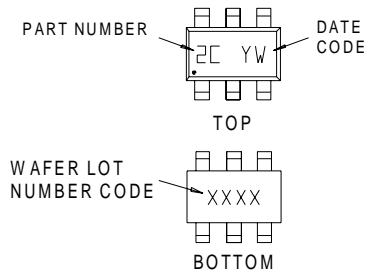


- NOTES :
1. DIMENSIONING & TOLERANCING PER ANSI Y14.5M-1982.
 2. CONTROLLING DIMENSION : MILLIMETER.
 3. DIMENSIONS ARE SHOWN IN MILLIMETERS (INCHES).

Part Marking Information

Micro6™

EXAMPLE : THIS IS AN IRLMS6702



PART NUMBER EXAMPLES:

- 2A = IRLMS1902
- 2B = IRLMS1503
- 2C = IRLMS6702
- 2D = IRLMS5703

DATE CODE EXAMPLES:

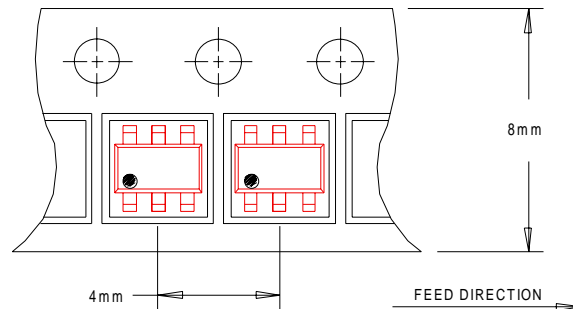
- YW W = 9603 = 6C
- YW W = 9632 = FF

YEAR	Y	WORK WEEK	W	YEAR	Y	WORK WEEK	W
2001	1	01	A	2001	A	27	A
2002	2	02	B	2002	B	28	B
2003	3	03	C	2003	C	29	C
2004	4	04	D	2004	D	30	D
2005	5			2005	E		
1996	6			1996	F		
1997	7			1997	G		
1998	8			1998	H		
1999	9			1999	J		
2000	0	24	X	2000	K	50	X
		25	Y			51	Y
		26	Z			52	Z

WORK WEEK = (1-26) IF PRECEDED BY LAST DIGIT OF CALENDER YEAR
WORK WEEK = (27-52) IF PRECEDED BY A LETTER

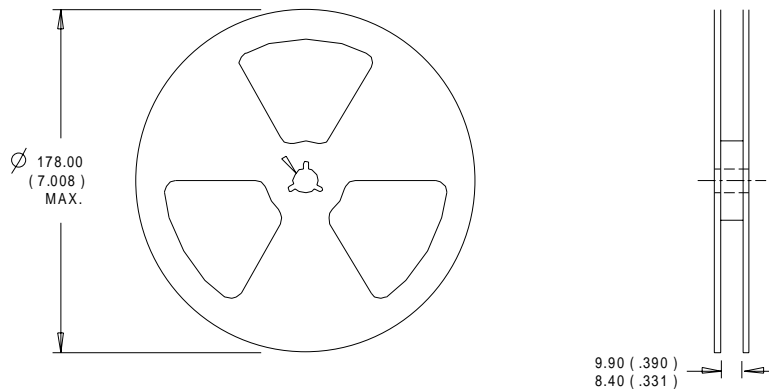
Tape & Reel Information

Micro6™



NOTES :

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



NOTES:

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

International
IR Rectifier

WORLD HEADQUARTERS: 233 Kansas St., El Segundo, California 90245, Tel: (310) 252 7105

IR GREAT BRITAIN: Hurst Green, Oxted, Surrey RH8 9BB, UK Tel: ++ 44 1883 732020

IR CANADA: 15 Lincoln Court, Brampton, Ontario L6T3Z2, Tel: (905) 453 2200

IR GERMANY: Saalburgstrasse 157, 61350 Bad Homburg Tel: ++ 49 6172 96590

IR ITALY: Via Liguria 49, 10071 Borgaro, Torino Tel: ++ 39 11 451 0111

IR JAPAN: K&H Bldg., 2F, 30-4 Nishi-Ikebukuro 3-Chome, Toshima-Ku, Tokyo Japan 171 Tel: 81 3 3983 0086

IR SOUTHEAST ASIA: 1 Kim Seng Promenade, Great World City West Tower, 13-11, Singapore 237994 Tel: ++ 65 838 4630

IR TAIWAN: 16 Fl. Suite D. 207, Sec. 2, Tun Haw South Road, Taipei, 10673, Taiwan Tel: 886-2-2377-9936

Data and specifications subject to change without notice. 2/2000