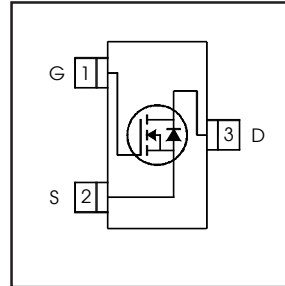


IRLML2803PbF

HEXFET® Power MOSFET

- Generation V Technology
- Ultra Low On-Resistance
- N-Channel MOSFET
- SOT-23 Footprint
- Low Profile (<1.1mm)
- Available in Tape and Reel
- Fast Switching
- Lead-Free
- RoHS Compliant, Halogen-Free



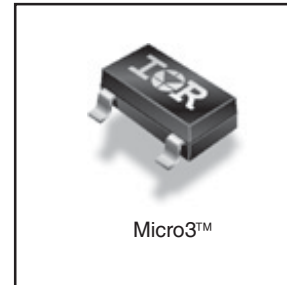
$$V_{DSS} = 30V$$

$$R_{DS(on)} = 0.25\Omega$$

Description

Fifth Generation HEXFETs from International Rectifier utilize advanced processing techniques to achieve extremely low on-resistance per silicon area. This benefit, combined with the fast switching speed and ruggedized device design that HEXFET Power MOSFETs are well known for, provides the designer with an extremely efficient and reliable device for use in a wide variety of applications.

A customized leadframe has been incorporated into the standard SOT-23 package to produce a HEXFET Power MOSFET with the industry's smallest footprint. This package, dubbed the Micro3, is ideal for applications where printed circuit board space is at a premium. The low profile (<1.1mm) of the Micro3 allows it to fit easily into extremely thin application environments such as portable electronics and PCMCIA cards.



Base Part Number	Package Type	Standard Pack		Orderable Part Number
		Form	Quantity	
IRLML2803TRPbF	Micro3™ (SOT-23)	Tape and Reel	3000	IRLML2803TRPbF

Absolute Maximum Ratings

	Parameter	Max.	Units
$I_D @ T_A = 25^\circ C$	Continuous Drain Current, $V_{GS} @ 10V$	1.2	A
$I_D @ T_A = 70^\circ C$	Continuous Drain Current, $V_{GS} @ 10V$	0.93	
I_{DM}	Pulsed Drain Current ①	7.3	
$P_D @ T_A = 25^\circ C$	Power Dissipation	540	mW
	Linear Derating Factor	4.3	mW/°C
V_{GS}	Gate-to-Source Voltage	±20	V
E_{AS}	Single Pulse Avalanche Energy ⑤	3.9	mJ
dv/dt	Peak diode Recovery dv/dt ②	5.0	V/ns
T_J, T_{STG}	Junction and Storage Temperature Range	-55 to +150	°C

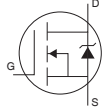
Thermal Resistance

	Parameter	Typ.	Max.	Units
$R_{\theta JA}$	Maximum Junction-to-Ambient ④	—	230	°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	30	—	—	V	$V_{GS} = 0V, I_D = 250\mu A$
$\Delta V_{(BR)DSS}/\Delta T_J$	Breakdown Voltage Temp. Coefficient	—	0.029	—	V/ $^\circ\text{C}$	Reference to $25^\circ\text{C}, I_D = 1mA$
$R_{DS(on)}$	Static Drain-to-Source On-Resistance	—	—	0.25	Ω	$V_{GS} = 10V, I_D = 0.91A$ ③
		—	—	0.40		$V_{GS} = 4.5V, I_D = 0.46A$ ③
$V_{GS(th)}$	Gate Threshold Voltage	1.0	—	—	V	$V_{DS} = V_{GS}, I_D = 250\mu A$
g_{fs}	Forward Transconductance	0.87	—	—	S	$V_{DS} = 10V, I_D = 0.46A$
I_{DSS}	Drain-to-Source Leakage Current	—	—	1.0	μA	$V_{DS} = 24V, V_{GS} = 0V$
		—	—	25		$V_{DS} = 24V, V_{GS} = 0V, T_J = 125^\circ\text{C}$
I_{GSS}	Gate-to-Source Forward Leakage	—	—	-100	nA	$V_{GS} = -20V$
	Gate-to-Source Reverse Leakage	—	—	100		$V_{GS} = 20V$
Q_g	Total Gate Charge	—	3.3	5.0	nC	$I_D = 0.91A$
Q_{gs}	Gate-to-Source Charge	—	0.48	0.72		$V_{DS} = 24V$
Q_{gd}	Gate-to-Drain ("Miller") Charge	—	1.1	1.7		$V_{GS} = 10V$, See Fig. 6 and 9 ③
$t_{d(on)}$	Turn-On Delay Time	—	3.9	—		$V_{DD} = 15V$
t_r	Rise Time	—	4.0	—	ns	$I_D = 0.91A$
$t_{d(off)}$	Turn-Off Delay Time	—	9.0	—		$R_G = 6.2\Omega$
t_f	Fall Time	—	1.7	—		$R_D = 16\Omega$, See Fig. 10 ③
C_{iss}	Input Capacitance	—	85	—	pF	$V_{GS} = 0V$
C_{oss}	Output Capacitance	—	34	—		$V_{DS} = 25V$
C_{rss}	Reverse Transfer Capacitance	—	15	—		$f = 1.0MHz$, See Fig. 5

Source-Drain Ratings and Characteristics

	Parameter	Min.	Typ.	Max.	Units	Conditions
I_S	Continuous Source Current (Body Diode)	—	—	0.54	A	MOSFET symbol showing the integral reverse p-n junction diode. 
I_{SM}	Pulsed Source Current (Body Diode) ①	—	—	7.3		
V_{SD}	Diode Forward Voltage	—	—	1.2	V	$T_J = 25^\circ\text{C}, I_S = 0.91A, V_{GS} = 0V$ ③
t_{rr}	Reverse Recovery Time	—	26	40	ns	$T_J = 25^\circ\text{C}, I_F = 0.91A$
Q_{rr}	Reverse Recovery Charge	—	22	32	nC	$di/dt = 100A/\mu s$ ③

Notes:

- ① Repetitive rating; pulse width limited by max. junction temperature. (See fig. 11)
- ② $I_{SD} \leq 0.91A, di/dt \leq 120A/\mu s, V_{DD} \leq V_{(BR)DSS}, T_J \leq 150^\circ\text{C}$
- ③ Pulse width $\leq 300\mu s$; duty cycle $\leq 2\%$.
- ④ Surface mounted on FR-4 board, $t \leq 5sec$.
- ⑤ Limited by T_{Jmax} , starting $T_J = 25^\circ\text{C}, L = 9.4mH, R_G = 25\Omega, I_{AS} = 0.9A$.

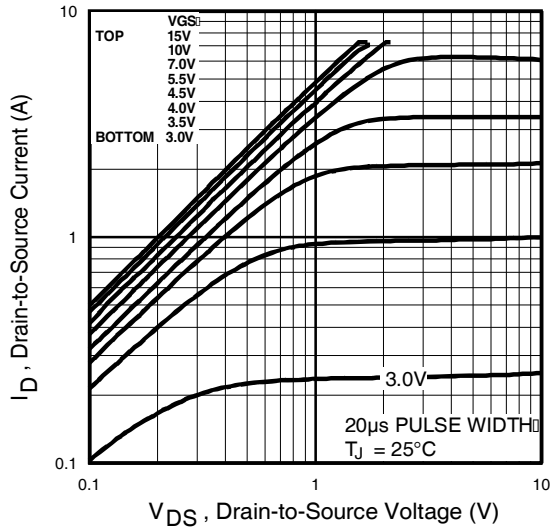


Fig 1. Typical Output Characteristics

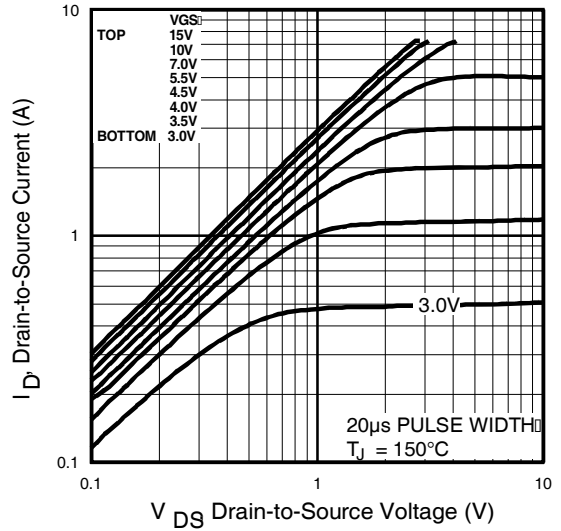


Fig 2. Typical Output Characteristics

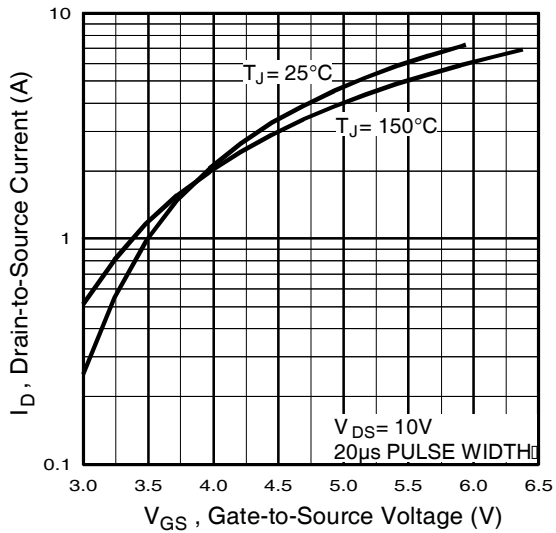


Fig 3. Typical Transfer Characteristics

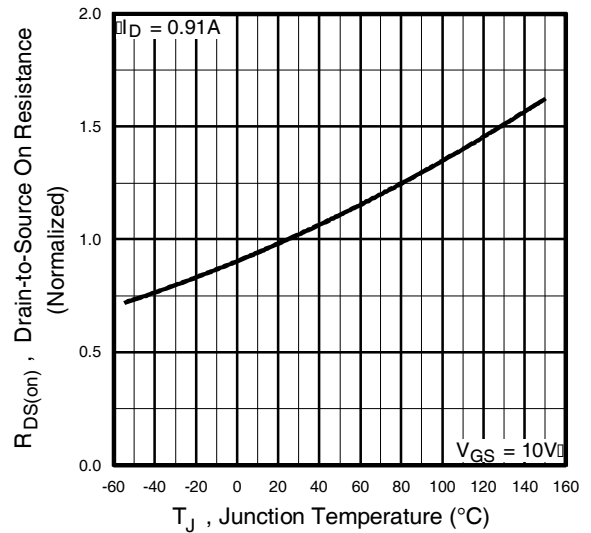


Fig 4. Normalized On-Resistance Vs. Temperature

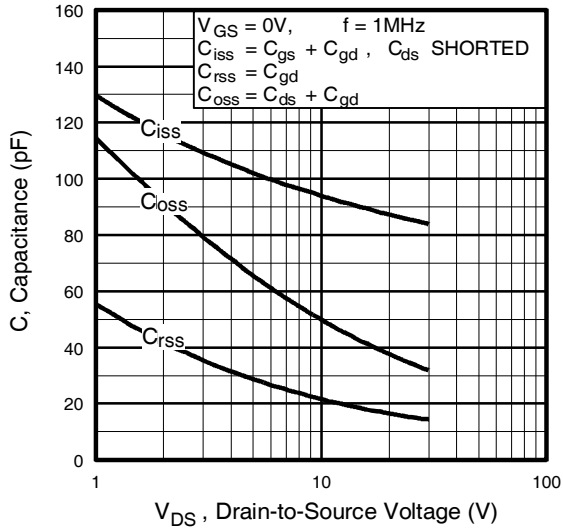


Fig 5. Typical Capacitance Vs. Drain-to-Source Voltage

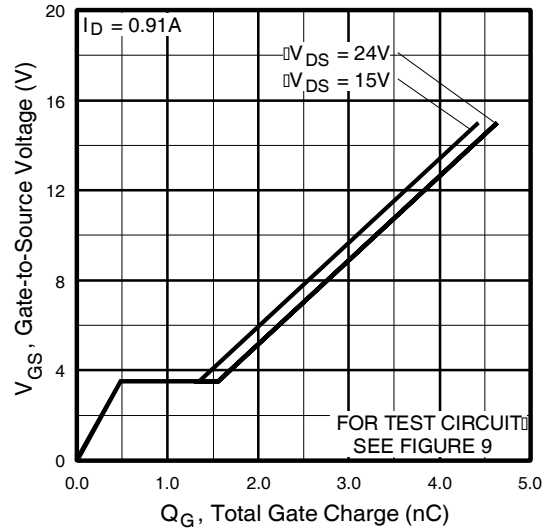


Fig 6. Typical Gate Charge Vs. Gate-to-Source Voltage

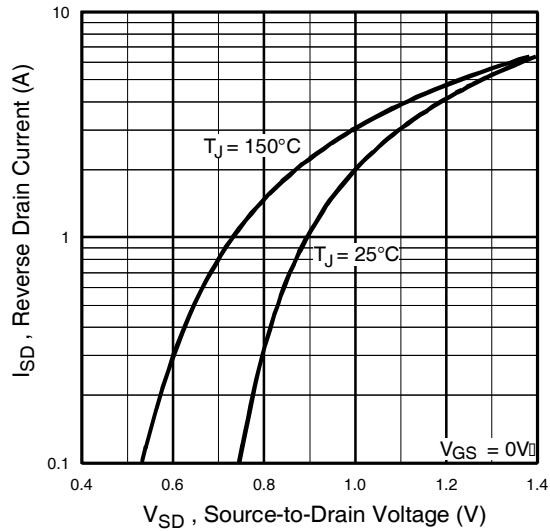


Fig 7. Typical Source-Drain Diode Forward Voltage

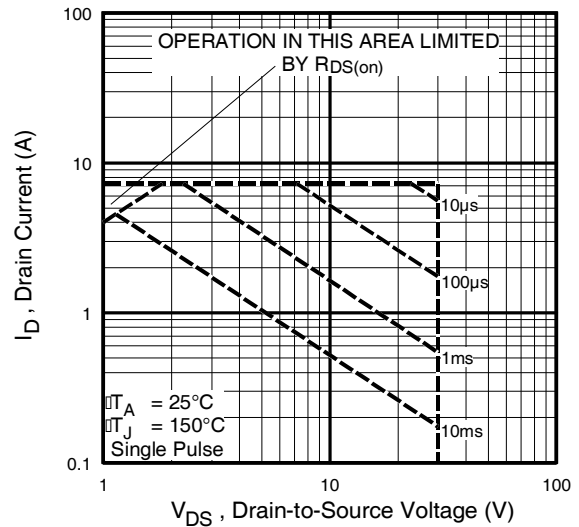


Fig 8. Maximum Safe Operating Area