

IRLML5203PbF

HEXFET® Power MOSFET

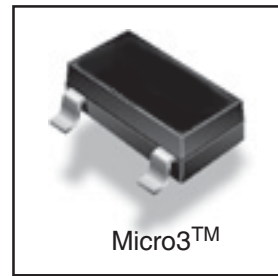
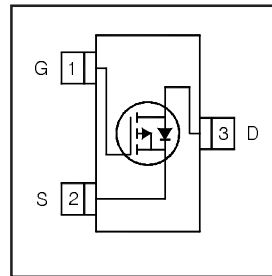
- Ultra Low On-Resistance
- P-Channel MOSFET
- Surface Mount
- Available in Tape & Reel
- Low Gate Charge
- Lead-Free
- Halogen-Free

V_{DS}	$R_{DS(on)}$ max (m Ω)	I_D
-30V	98 @ $V_{GS} = -10V$	-3.0A
	165 @ $V_{GS} = -4.5V$	-2.6A

Description

These P-channel 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.

A thermally enhanced large pad 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. The thermal resistance and power dissipation are the best available.



Absolute Maximum Ratings

	Parameter	Max.	Units
V_{DS}	Drain- Source Voltage	-30	V
I_D @ $T_A = 25^\circ C$	Continuous Drain Current, V_{GS} @ -10V	-3.0	A
I_D @ $T_A = 70^\circ C$	Continuous Drain Current, V_{GS} @ -10V	-2.4	
I_{DM}	Pulsed Drain Current ①	-24	
P_D @ $T_A = 25^\circ C$	Power Dissipation	1.25	W
P_D @ $T_A = 70^\circ C$	Power Dissipation	0.80	
	Linear Derating Factor	10	mW/°C
V_{GS}	Gate-to-Source Voltage	± 20	V
T_J, T_{STG}	Junction and Storage Temperature Range	-55 to + 150	°C

Thermal Resistance

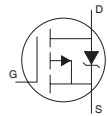
	Parameter	Max.	Units
$R_{\theta JA}$	Maximum Junction-to-Ambient ③	100	°C/W

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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	—	0.019	—	V/ $^\circ\text{C}$	Reference to 25°C , $I_D = -1\text{mA}$
$R_{DS(on)}$	Static Drain-to-Source On-Resistance	—	—	98	$\text{m}\Omega$	$V_{GS} = -10V, I_D = -3.0A$ ②
		—	—	165		$V_{GS} = -4.5V, I_D = -2.6A$ ②
$V_{GS(th)}$	Gate Threshold Voltage	-1.0	—	-2.5	V	$V_{DS} = V_{GS}, I_D = -250\mu A$
g_{fs}	Forward Transconductance	3.1	—	—	S	$V_{DS} = -10V, I_D = -3.0A$
I_{DSS}	Drain-to-Source Leakage Current	—	—	-1.0	μA	$V_{DS} = -24V, V_{GS} = 0V$
		—	—	-5.0		$V_{DS} = -24V, V_{GS} = 0V, T_J = 70^\circ\text{C}$
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	—	9.5	14	nC	$I_D = -3.0A$
Q_{gs}	Gate-to-Source Charge	—	2.3	3.5		$V_{DS} = -24V$
Q_{gd}	Gate-to-Drain ("Miller") Charge	—	1.6	2.4		$V_{GS} = -10V$ ②
$t_{d(on)}$	Turn-On Delay Time	—	12	—	ns	$V_{DD} = -15V$ ②
t_r	Rise Time	—	18	—		$I_D = -1.0A$
$t_{d(off)}$	Turn-Off Delay Time	—	88	—		$R_G = 6.0\Omega$
t_f	Fall Time	—	52	—		$V_{GS} = -10V$
C_{iss}	Input Capacitance	—	510	—	pF	$V_{GS} = 0V$
C_{oss}	Output Capacitance	—	71	—		$V_{DS} = -25V$
C_{rss}	Reverse Transfer Capacitance	—	43	—		$f = 1.0\text{MHz}$

Source-Drain Ratings and Characteristics

	Parameter	Min.	Typ.	Max.	Units	Conditions
I_S	Continuous Source Current (Body Diode)	—	—	-1.3	A	MOSFET symbol showing the integral reverse p-n junction diode. 
I_{SM}	Pulsed Source Current (Body Diode) ①	—	—	-24		
V_{SD}	Diode Forward Voltage	—	—	-1.2	V	$T_J = 25^\circ\text{C}, I_S = -1.3A, V_{GS} = 0V$ ②
t_{rr}	Reverse Recovery Time	—	17	26	ns	$T_J = 25^\circ\text{C}, I_F = -1.3A$
Q_{rr}	Reverse Recovery Charge	—	12	18	nC	$di/dt = -100A/\mu s$ ②

Notes:

① Repetitive rating; pulse width limited by max. junction temperature.

② Pulse width $\leq 400\mu s$; duty cycle $\leq 2\%$.

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