

IRF7328PBF

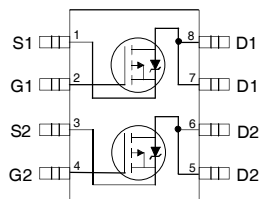
Power MOSFET

- Trench Technology
- Ultra Low On-Resistance
- Dual P-Channel MOSFET
- Available in Tape & Reel
- Lead-Free

V_{DS}	$R_{DS(on)}$ max	I_D
-30V	21m Ω @ $V_{GS} = -10V$	-8.0A
	32m Ω @ $V_{GS} = -4.5V$	-6.8A

Description

New trench HEXFET® Power MOSFETs from International Rectifier utilize advanced processing techniques to achieve extremely low on-resistance per silicon area. This benefit, combined with the ruggedized device design that HEXFET power MOSFETs are well known for, provides the designer with an extremely efficient and reliable device for use in battery and load management applications.



Top View

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	-8.0	A
I_D @ $T_A = 70^\circ C$	Continuous Drain Current, V_{GS} @ -10V	-6.4	
I_{DM}	Pulsed Drain Current①	-32	
P_D @ $T_A = 25^\circ C$	Maximum Power Dissipation③	2.0	W
P_D @ $T_A = 70^\circ C$	Maximum Power Dissipation③	1.3	W
	Linear Derating Factor	16	mW/ $^\circ C$
V_{GS}	Gate-to-Source Voltage	± 20	V
T_J, T_{STG}	Junction and Storage Temperature Range	-55 to + 150	$^\circ C$

Thermal Resistance

	Parameter	Max.	Units
$R_{\theta JA}$	Maximum Junction-to-Ambient ③	62.5	$^\circ C/W$

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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	—	-0.018	—	V/ $^\circ\text{C}$	Reference to 25°C , $I_D = -1\text{mA}$
$R_{DS(on)}$	Static Drain-to-Source On-Resistance	—	17	21	$m\Omega$	$V_{GS} = -10V$, $I_D = -8.0A$ ②
		—	26.8	32		$V_{GS} = -4.5V$, $I_D = -6.8A$ 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	12	—	—	S	$V_{DS} = -10V$, $I_D = -8.0A$
I_{DSS}	Drain-to-Source Leakage Current	—	—	-15	μA	$V_{DS} = -24V$, $V_{GS} = 0V$
		—	—	-25		$V_{DS} = -24V$, $V_{GS} = 0V$, $T_J = 70^\circ\text{C}$
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	—	52	78	nC	$I_D = -8.0A$
Q_{gs}	Gate-to-Source Charge	—	9.8	—		$V_{DS} = -15V$
Q_{gd}	Gate-to-Drain ("Miller") Charge	—	8.3	—		$V_{GS} = -10V$
$t_{d(on)}$	Turn-On Delay Time	—	13	20	ns	$V_{DD} = -15V$, $V_{GS} = -10.0V$
t_r	Rise Time	—	15	23		$I_D = -1.0A$
$t_{d(off)}$	Turn-Off Delay Time	—	198	297		$R_G = 6.0\Omega$
t_f	Fall Time	—	98	147		$R_D = 15\Omega$ ②
C_{iss}	Input Capacitance	—	2675	—	pF	$V_{GS} = 0V$
C_{oss}	Output Capacitance	—	409	—		$V_{DS} = -25V$
C_{rss}	Reverse Transfer Capacitance	—	262	—		$f = 1.0\text{MHz}$

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	—	—	-32		
V_{SD}	Diode Forward Voltage	—	—	-1.2	V	$T_J = 25^\circ\text{C}$, $I_S = -2.0A$, $V_{GS} = 0V$ ②
t_{rr}	Reverse Recovery Time	—	37	56	ns	$T_J = 25^\circ\text{C}$, $I_F = -2.0A$
Q_{rr}	Reverse Recovery Charge	—	36	54	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, $t \leq 10\text{sec}$.

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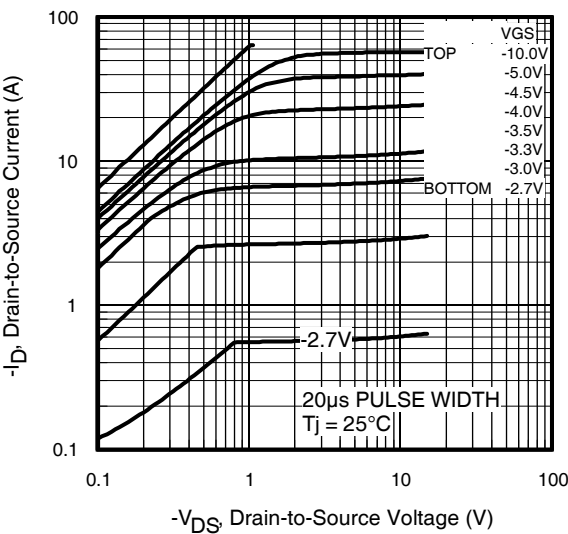


Fig 1. Typical Output Characteristics

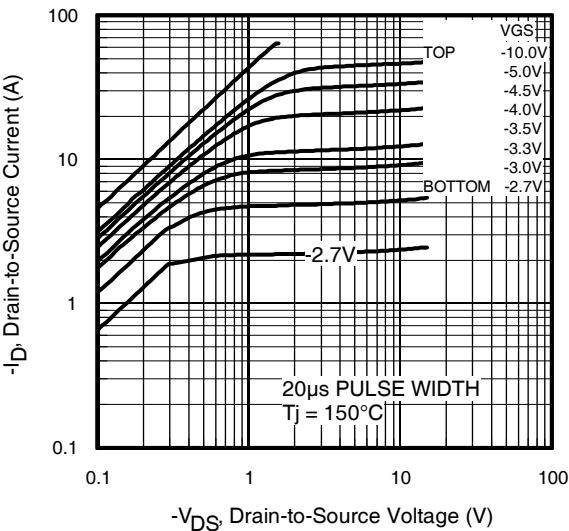


Fig 2. Typical Output Characteristics

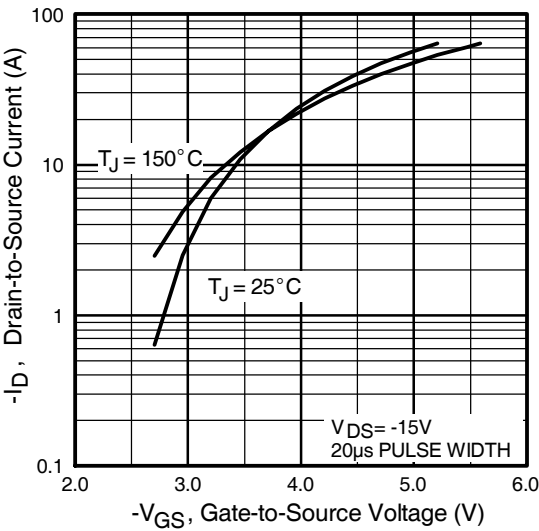


Fig 3. Typical Transfer Characteristics

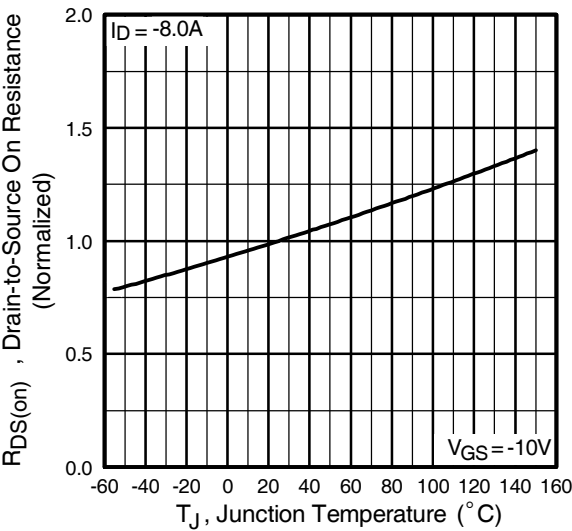


Fig 4. Normalized On-Resistance Vs. Temperature

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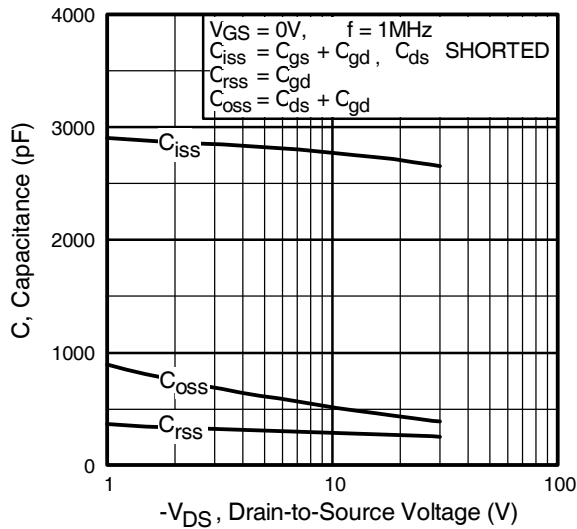


Fig 5. Typical Capacitance Vs. Drain-to-Source Voltage

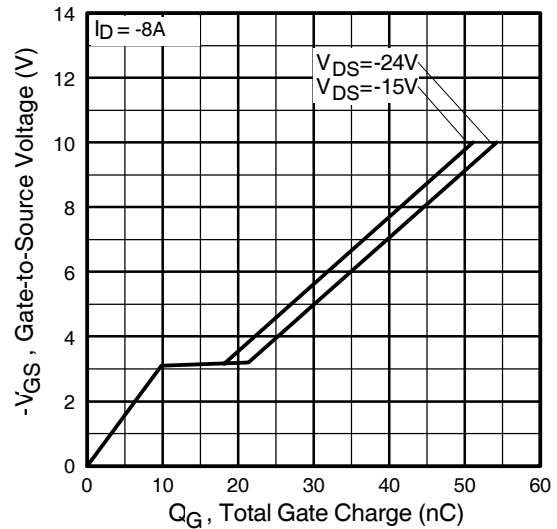


Fig 6. Typical Gate Charge Vs. Gate-to-Source Voltage

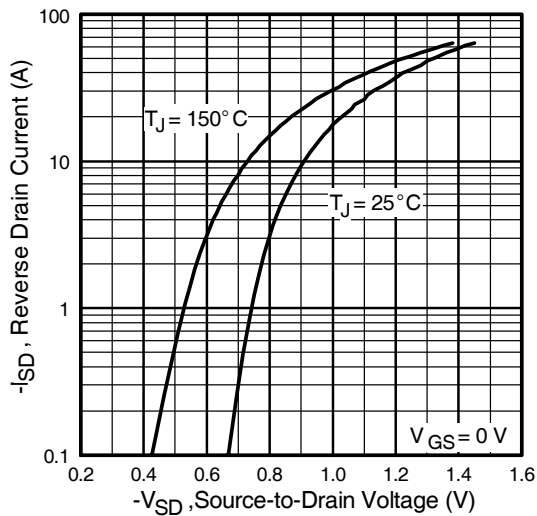


Fig 7. Typical Source-Drain Diode Forward Voltage

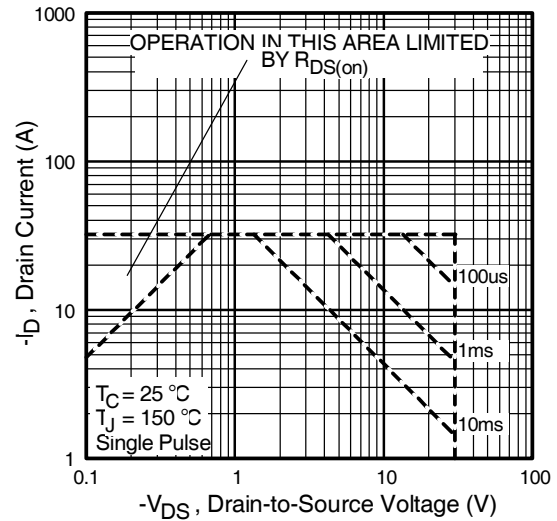


Fig 8. Maximum Safe Operating Area