

P-Channel -30V (D-S) MOSFET

FEATURES

$R_{DS(ON)} \leq 9m\Omega @ V_{GS} = -10V$

$R_{DS(ON)} \leq 13m\Omega @ V_{GS} = -4.5V$

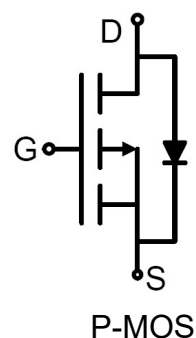
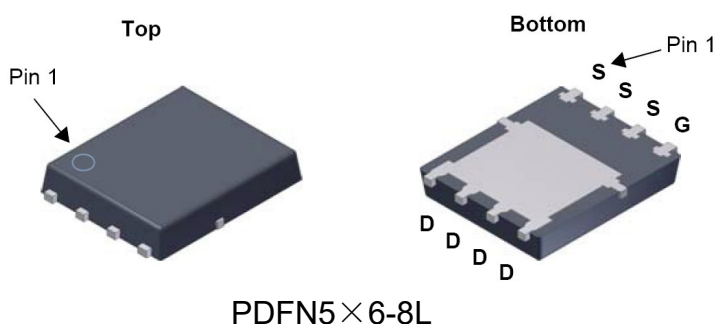
high density cell design for extremely low $R_{DS(ON)}$

Exceptional on-resistance and maximum DC current capability

GENERAL DESCRIPTION

The FS4471B combines advanced trench MOSFET technology with a low resistance package to provide extremely low $R_{DS(ON)}$. This device is ideal for load switch and battery protection applications.

PIN CONFIGURATION



Absolute Maximum Ratings ($T_A = 25^\circ C$ Unless Otherwise Noted)

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V_{DS}	-30	V
Gate-Source Voltage	V_{GS}	± 20	V
Drain Current-Continuous	I_D	-35	A
Pulsed Drain Current	I_{DM}	-50	A
Maximum Power Dissipation	P_D	35	W
Derating factor		0.28	W/ $^\circ C$
Single pulse avalanche energy (Note 5)	E_{AS}	300	mJ
Operating Junction and Storage Temperature Range	T_J, T_{STG}	-55 To 150	$^\circ C$

* The device mounted on 1in² FR4 board with 2 oz copper

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● Electrical Characteristics (T_J=25°C unless otherwise noted)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Off Characteristics						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V I _D =-250μA	-31	-33	-	V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =-30V, V _{GS} =0V	-	-	1	μA
Gate-Body Leakage Current	I _{GSS}	V _{GS} =±20V, V _{DS} =0V	-	-	±100	nA
On Characteristics ^(Note 3)						
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =-250μA	-1	-1.6	-2.2	V
Drain-Source On-State Resistance	R _{DS(ON)}	V _{GS} =-10V, I _D =-10A V _{GS} =-4.5V, I _D =-10A	-	9 13	13 17	mΩ
Forward Transconductance	g _{FS}	V _{DS} =-10V, I _D =-15A	-	20	-	S
Dynamic Characteristics ^(Note4)						
Input Capacitance	C _{ISS}	V _{DS} =-15V, V _{GS} =0V, F=1.0MHz	-	3250	-	PF
Output Capacitance	C _{OSS}		-	605	-	PF
Reverse Transfer Capacitance	C _{RSS}		-	565	-	PF
Switching Characteristics ^(Note 4)						
Turn-on Delay Time	t _{d(on)}	V _{DD} =-15V, I _D =-10A V _{GS} =-10V, R _{GEN} =6Ω	-	13	-	nS
Turn-on Rise Time	t _r		-	12	-	nS
Turn-Off Delay Time	t _{d(off)}		-	50	-	nS
Turn-Off Fall Time	t _f		-	14	-	nS
Total Gate Charge	Q _g	V _{DS} =-15V, I _D =-10A, V _{GS} =-10V	-	84	-	nC
Gate-Source Charge	Q _{gs}		-	11.7	-	nC
Gate-Drain Charge	Q _{gd}		-	25	-	nC
Drain-Source Diode Characteristics						
Diode Forward Voltage ^(Note 3)	V _{SD}	V _{GS} =0V, I _S =-10A	-	-0.85	-1.2	V
Diode Forward Current ^(Note 2)	I _S		-	-	-50	A
Reverse Recovery Time	t _{rr}	T _J = 25°C, I _F = -10A di/dt = 100A/μs ^(Note3)	-	-	45	nS
Reverse Recovery Charge	Q _{rr}		-	-	43	nC
Forward Turn-On Time	t _{on}	Intrinsic turn-on time is negligible (turn-on is dominated by LS+LD)				

Note:

a: Pulse test: pulse width ≤ 300μs, duty cycle ≤ 2%

b: FORSEMI reserves the right to improve product design, functions and reliability without notice.

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● TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

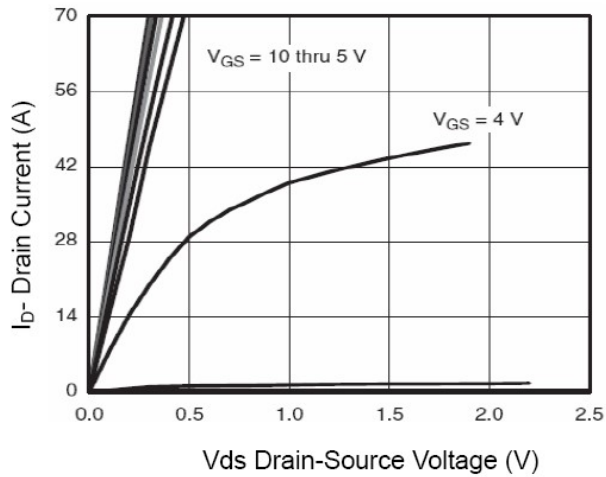


Figure 1 Output Characteristics

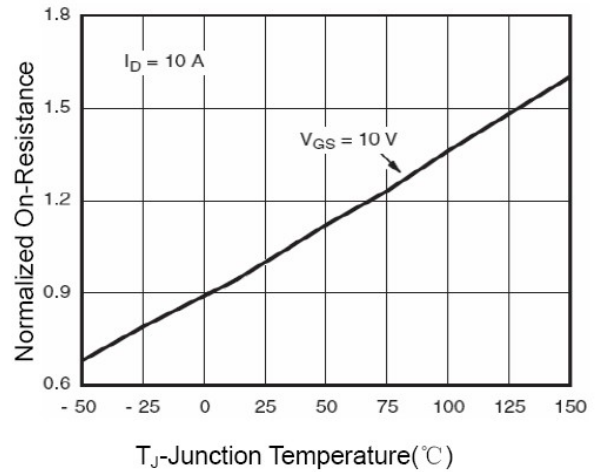


Figure 4 $R_{DS(on)}$ -Junction Temperature

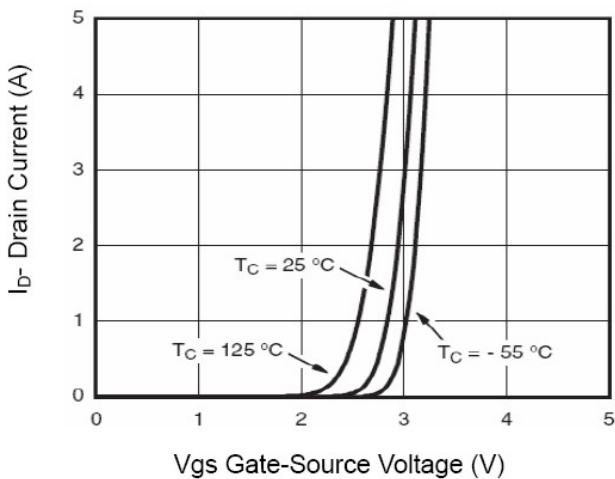


Figure 2 Transfer Characteristics

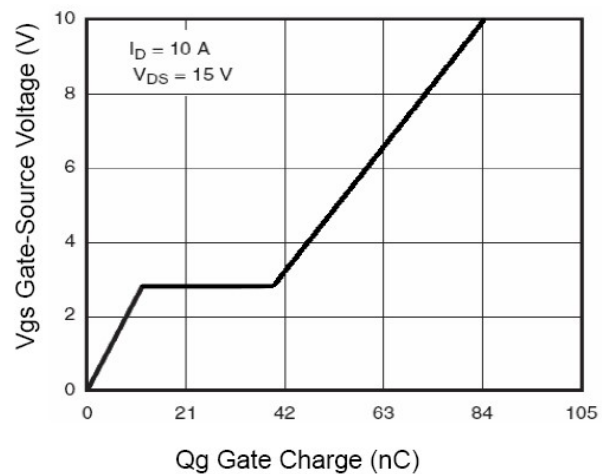


Figure 5 Gate Charge

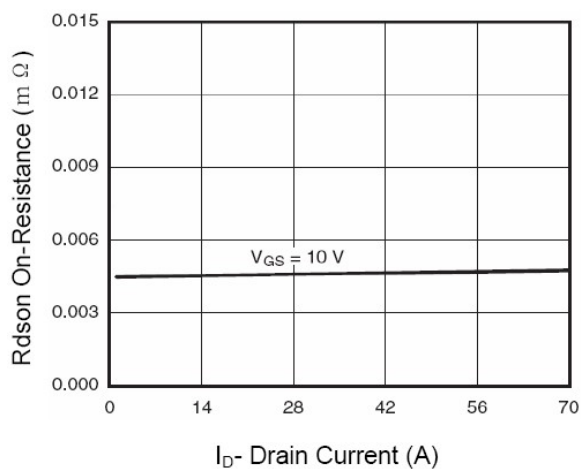


Figure 3 $R_{DS(on)}$ - Drain Current

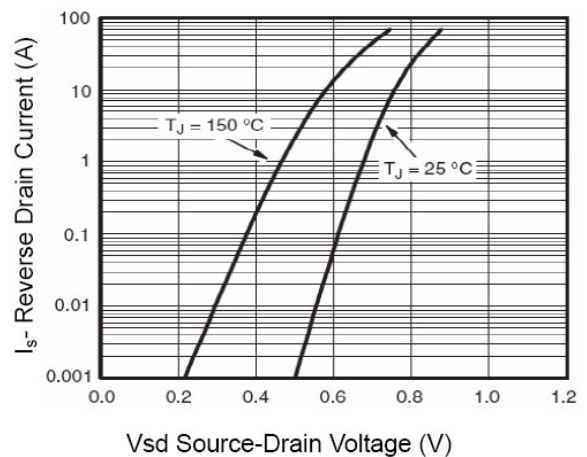
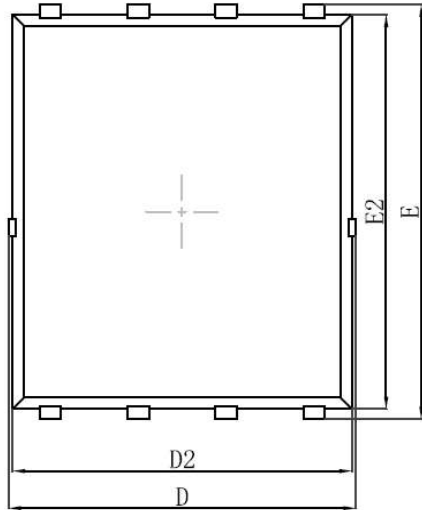


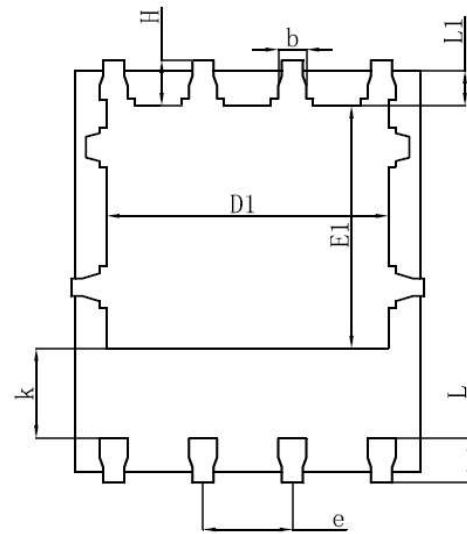
Figure 6 Source- Drain Diode Forward

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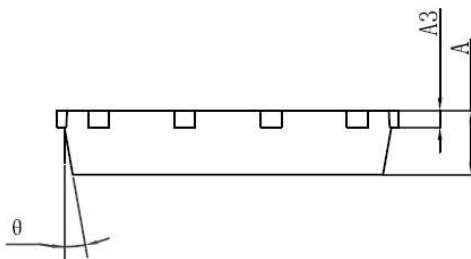
● PACKAGE PDFN5×6-8L



Top View
[顶视图]



Bottom View
[背视图]



Side View
[侧视图]

Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.900	1.000	0.035	0.039
A3	0.254REF.		0.010REF.	
D	4.944	5.096	0.195	0.201
E	5.974	6.126	0.235	0.241
D1	3.910	4.110	0.154	0.162
E1	3.375	3.575	0.133	0.141
D2	4.824	4.976	0.190	0.196
E2	5.674	5.826	0.223	0.229
k	1.190	1.390	0.047	0.055
b	0.350	0.450	0.014	0.018
e	1.270TYP.		0.050TYP.	
L	0.559	0.711	0.022	0.028
L1	0.424	0.576	0.017	0.023
H	0.574	0.726	0.023	0.029
θ	8°	12°	8°	12°