

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

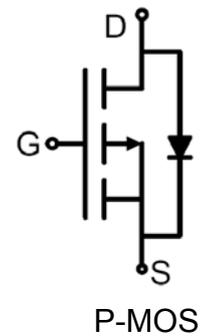
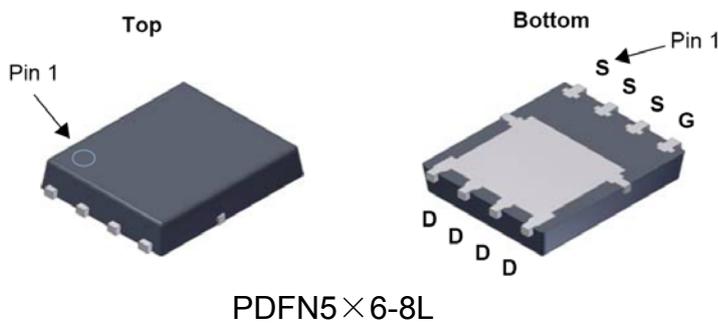
● FEATURES

- $R_{DS(ON)} \leq 4.4m\Omega @ V_{GS} = -10V$
- $R_{DS(ON)} \leq 7m\Omega @ V_{GS} = -4.5V$
- high density cell design for extremely low $R_{DS(ON)}$
- Exceptional on-resistance and maximum DC current capability

● GENERAL DESCRIPTION

The FS4471 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	-50	A
Pulsed Drain Current	I_{DM}	-70	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

● **Electrical Characteristics** ($T_J=25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Off Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_D=-250\mu A$	-30	-33	-	V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=-30V, V_{GS}=0V$	-	-	1	μA
Gate-Body Leakage Current	I_{GSS}	$V_{GS}=\pm 20V, V_{DS}=0V$	-	-	± 100	nA
On Characteristics (Note 3)						
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=-250\mu A$	-1	-1.5	-2.2	V
Drain-Source On-State Resistance	$R_{DS(on)}$	$V_{GS}=-10V, I_D=-10A$	-	4.4	7	m Ω
Forward Transconductance	g_{FS}	$V_{DS}=-10V, I_D=-15A$	-	20	-	S
Dynamic Characteristics (Note 4)						
Input Capacitance	C_{iss}	$V_{DS}=-15V, V_{GS}=0V, F=1.0\text{MHz}$	-	3590	-	PF
Output Capacitance	C_{oss}		-	695	-	PF
Reverse Transfer Capacitance	C_{rss}		-	665	-	PF
Switching Characteristics (Note 4)						
Turn-on Delay Time	$t_{d(on)}$	$V_{DD}=-15V, I_D=-10A$ $V_{GS}=-10V, R_{GEN}=6\Omega$	-	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}	$T_J = 25^\circ\text{C}, I_F = -10A$ $di/dt = 100A/\mu s$ (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 $\leq 300\mu s$, duty cycle $\leq 2\%$

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

● TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

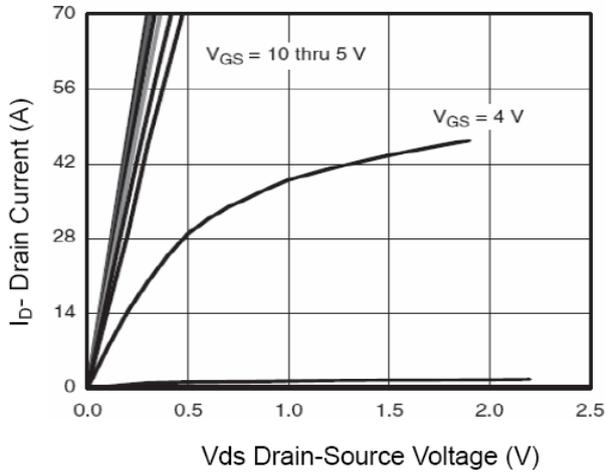


Figure 1 Output Characteristics

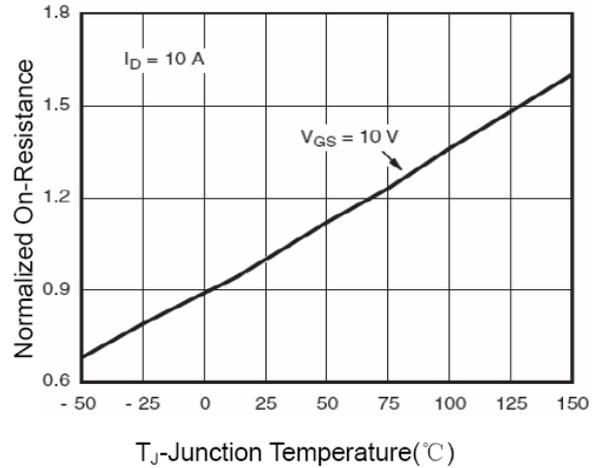


Figure 4 R_{dson} -Junction Temperature

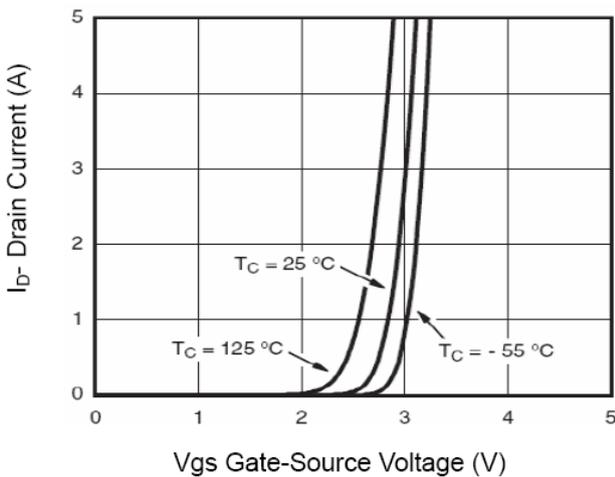


Figure 2 Transfer Characteristics

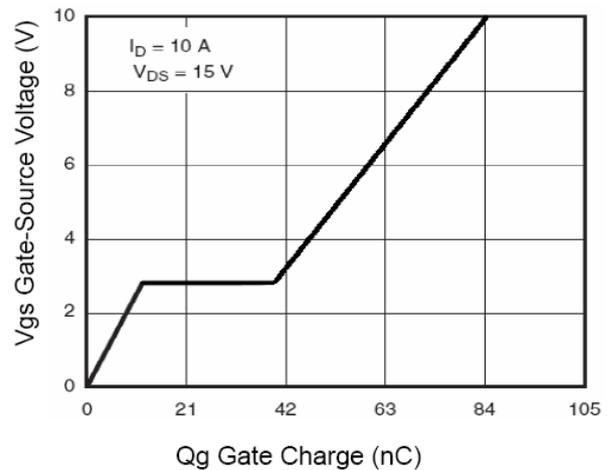


Figure 5 Gate Charge

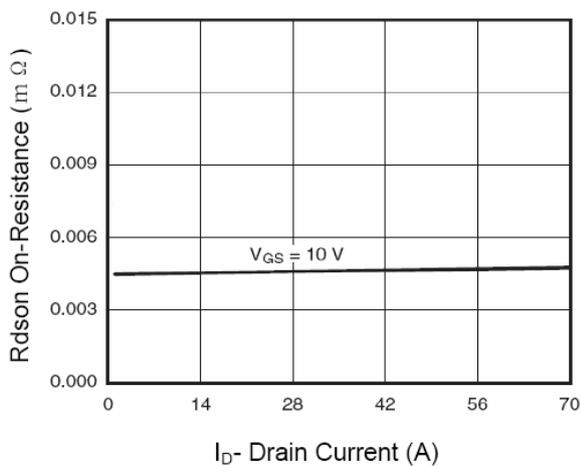


Figure 3 R_{dson} - Drain Current

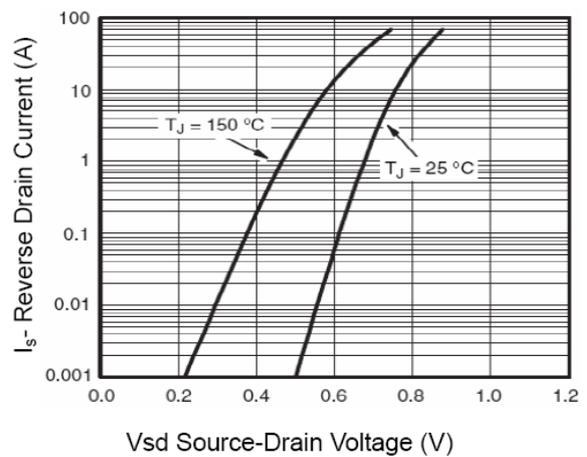
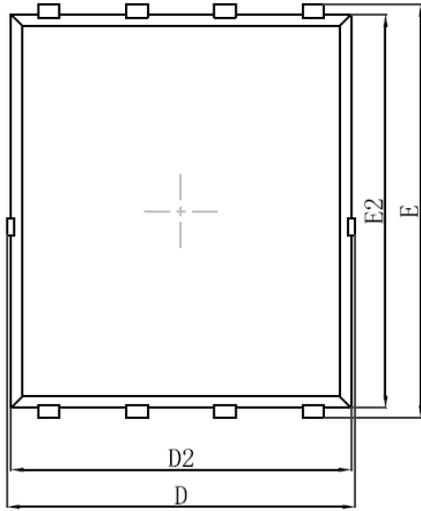


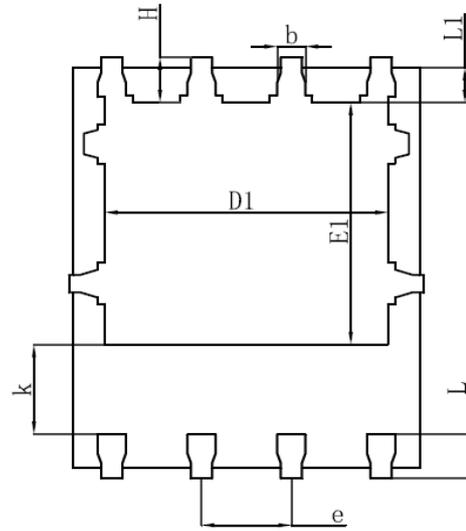
Figure 6 Source- Drain Diode Forward

FS4471

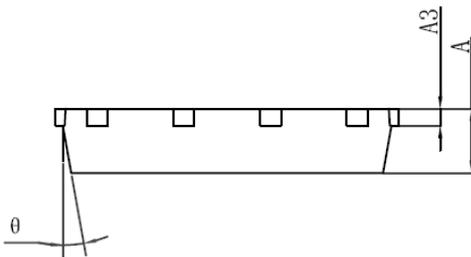
● PACKAGE PDFN5×6-8L



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°