



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

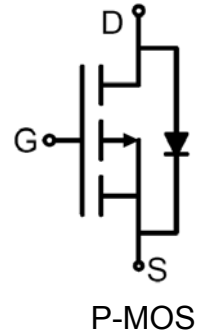
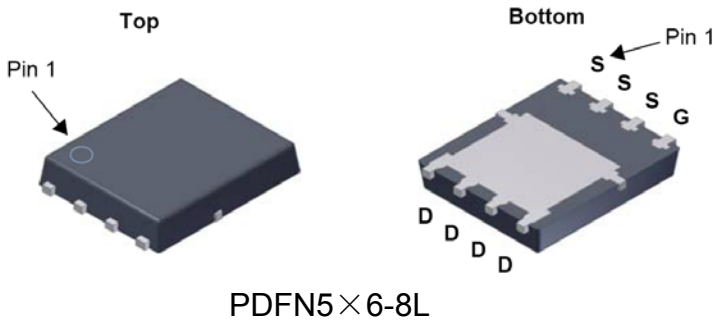
● **FEATURES**

- $R_{DS(ON)} \leq 5.6m\Omega @ V_{GS} = -10V$
- $R_{DS(ON)} \leq 9m\Omega @ V_{GS} = -4.5V$
- high density cell design for extremely low  $R_{DS(ON)}$
- Exceptional on-resistance and maximum DC current capability

● **GENERAL DESCRIPTION**

The FS4481 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	$V_{GS}$	$\pm 20$	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)	EAS	300	mJ
Operating Junction and Storage Temperature Range	$T_J, T_{STG}$	-55 To 150	$^\circ C$

\* The device mounted on 1in<sup>2</sup> FR4 board with 2 oz copper



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

Parameter	Symbol	Condition	Min	Typ	Max	Unit
<b>Off Characteristics</b>						
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	$\mu A$
Gate-Body Leakage Current	$I_{GSS}$	$V_{GS}=\pm 20V, V_{DS}=0V$	-	-	$\pm 100$	nA
<b>On Characteristics</b> (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	5.6	m $\Omega$
		$V_{GS}=-4.5V, I_D=-10A$	-	6	9	
Forward Transconductance	$g_{FS}$	$V_{DS}=-10V, I_D=-15A$	-	20	-	S
<b>Dynamic Characteristics</b> (Note4)						
Input Capacitance	$C_{iss}$	$V_{DS}=-15V, V_{GS}=0V, F=1.0MHz$	-	3590	-	PF
Output Capacitance	$C_{oss}$		-	695	-	PF
Reverse Transfer Capacitance	$C_{rss}$		-	665	-	PF
<b>Switching Characteristics</b> (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
<b>Drain-Source Diode Characteristics</b>						
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

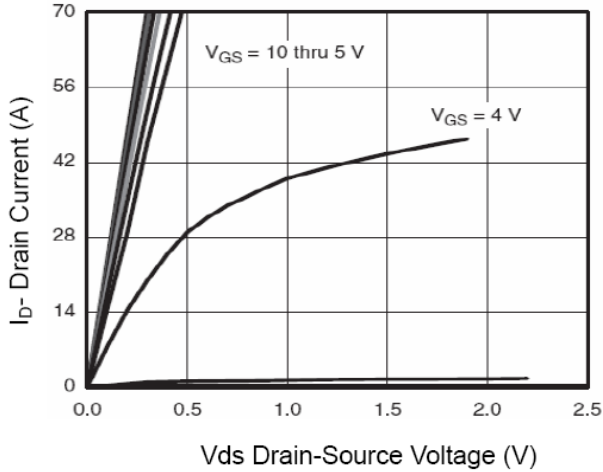


Figure 1 Output Characteristics

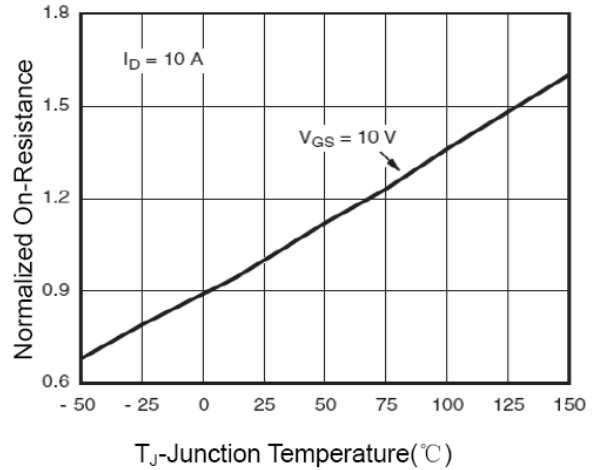


Figure 4 Rdson-Junction Temperature

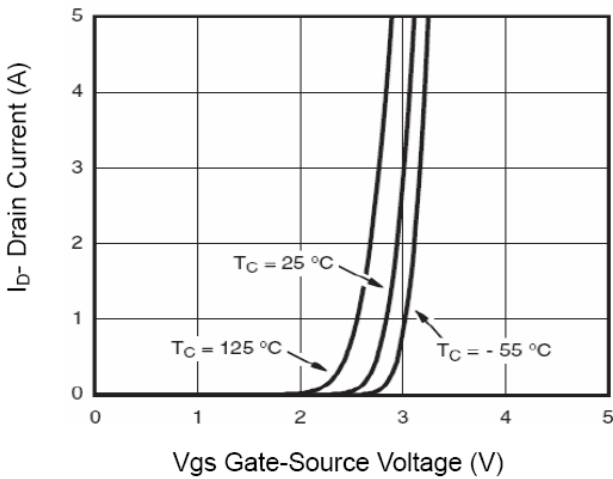


Figure 2 Transfer Characteristics

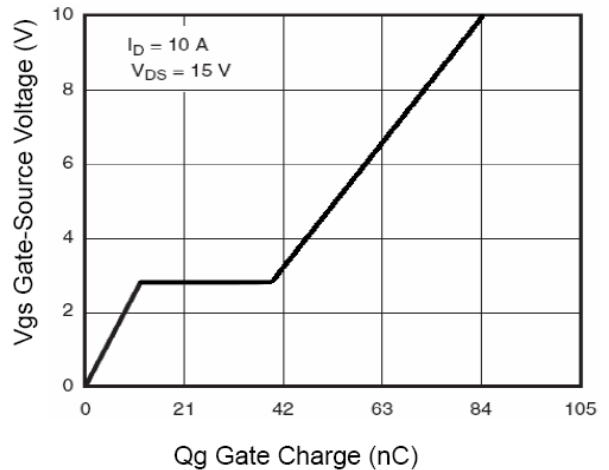


Figure 5 Gate Charge

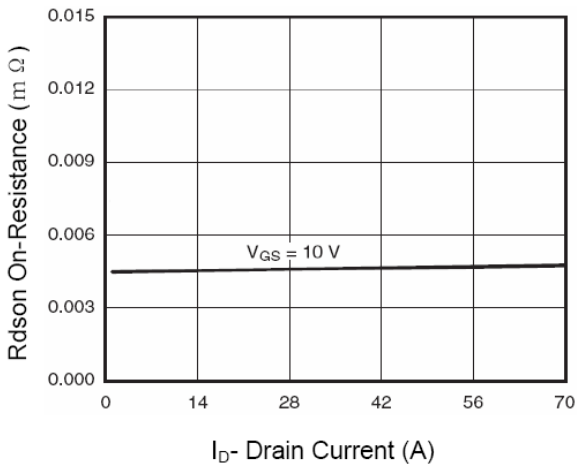


Figure 3 Rdson- Drain Current

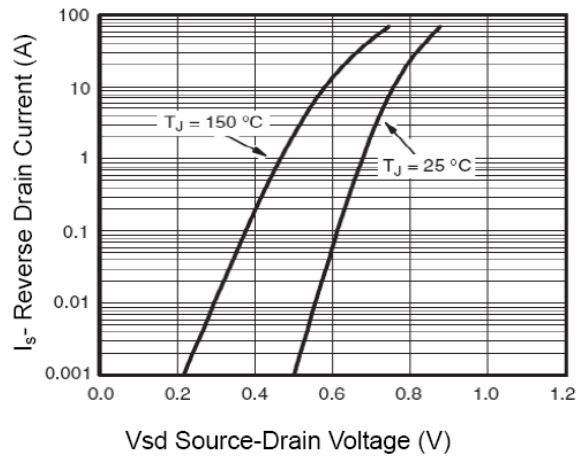
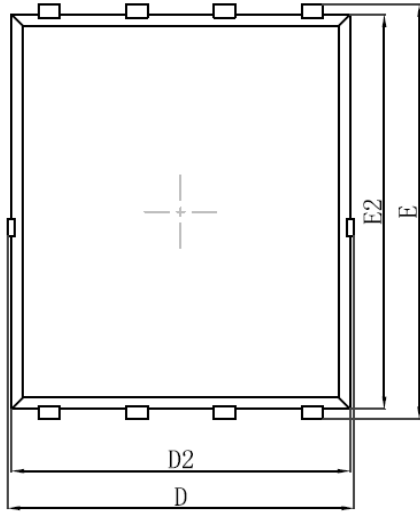


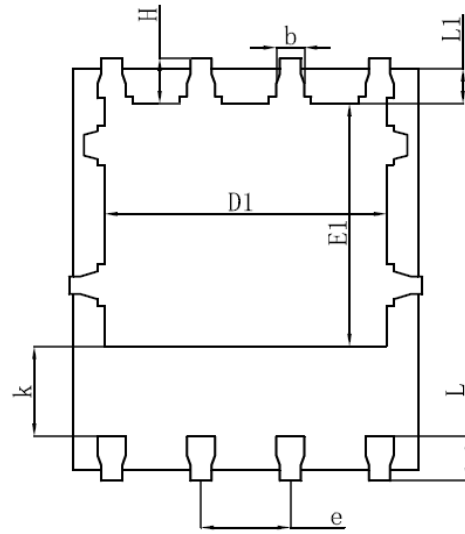
Figure 6 Source- Drain Diode Forward



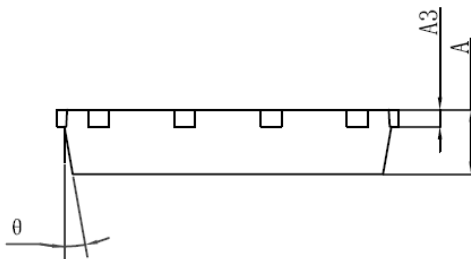
● PACKAGE PDFN5×6-8L



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°