N-Channel 60-V (D-S) MOSFET

● FEATURES

$R_{DS(ON)}$≦4.1mΩ@VGS=10V

$R_{DS(ON)}$≦5.5mΩ@V_{GS}=4.5V

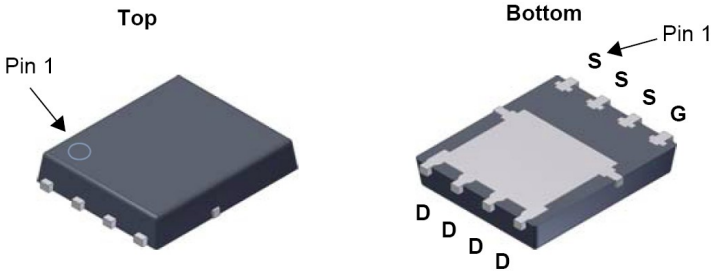
high density cell design for extremely low $R_{DS(ON)}$

Exceptional on-resistance and maximum DC current capability

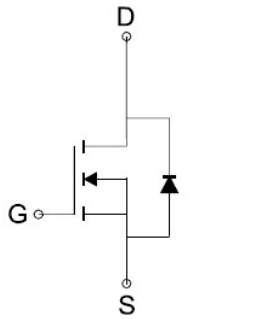
● GENERAL DESCRIPTION

The FS4474 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



PDFN5×6-8L



N-Channel MOSFET

● Absolute Maximum Ratings (T_A=25℃ Unless Otherwise Noted)

Parameter		Symbol	Limit	Unit
Drain-Source Voltage		VDSS	60	V
Gate-Source Voltage		VGSS	±20	V
Continuous Drain Current(TJ =150℃)*	TA=25℃	ID	80	A
	TA=70℃		58	
Pulsed Drain Current		IDM	320	A
Maximum Power Dissipation*	TA=25℃	PD	2.5	W
	TA=70℃		1.6	
Operating Junction Temperature		TJ	-55 to 150	℃
Thermal Resistance-Junction to Ambient*		RθJA	50	℃/W
Thermal Resistance-Junction to Lead*		RθJL	24	

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

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

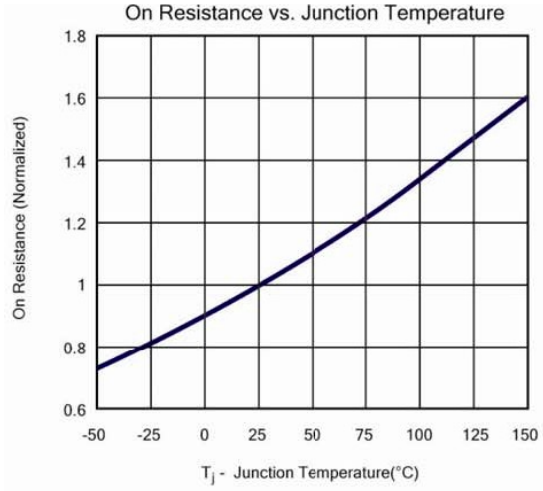
Symbol	Parameter	Limit	Min	Typ	Max	Unit
STATIC						
BVDSS	Drain-Source Breakdown Voltage	VGS=0V, ID=250μA	60			V
VGS(th)	Gate Threshold Voltage	VDS=VGS, ID=250μA	1.0	1.7	2.4	V
IGSS	Gate Leakage Current	VDS=0V, VGS=±20V			±100	nA
IDSS	Zero Gate Voltage Drain Current	VDS=60V, VGS=0V			1	μA
RDS(ON)	Drain-Source On-State Resistance a	VGS=10V, ID= 10A		3.5	4.1	mΩ
		VGS=4.5V, ID= 7.5A		4.0	5.5	
VSD	Diode Forward Voltage	IS=2.7A, VGS=0V		0.72	1.1	V
DYNAMIC						
Qg	Total Gate Charge(10V)	VDS=15V, VGS=10V, ID=17A		75		nC
Qg	Total Gate Charge(4.5V)	VDS=15V, VGS=4.5V, ID=17A		40		
Qgs	Gate-Source Charge			23		
Qgd	Gate-Drain Charge			15		
Ciss	Input capacitance	VDS=15V, VGS=0V, f=1.0MHz		4000		pF
Coss	Output Capacitance			680		
Crss	Reverse Transfer Capacitance			230		
Rg	Gate-Resistance	VDS=0V, VGS=0V, f=1MHz		1.2		Ω
td(on)	Turn-On Delay Time	VDD=15V, RL =15Ω ID=1A, VGEN=10V RG=6Ω		33		ns
tr	Turn-On Rise Time			15		
td(off)	Turn-Off Delay Time			66		
tf	Turn-Off Fall Time			18		

Note:

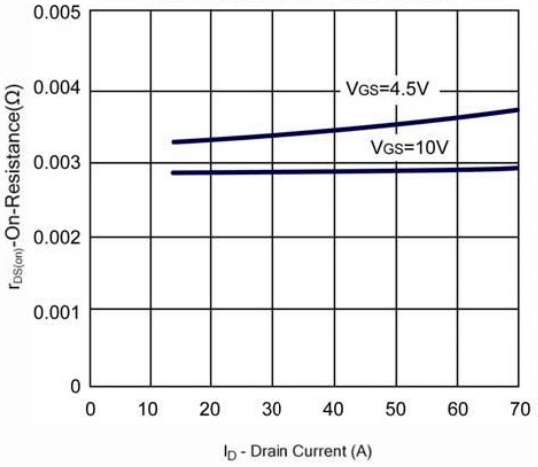
a: Pulse test: pulse width < =300us, duty cycle < =2%

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

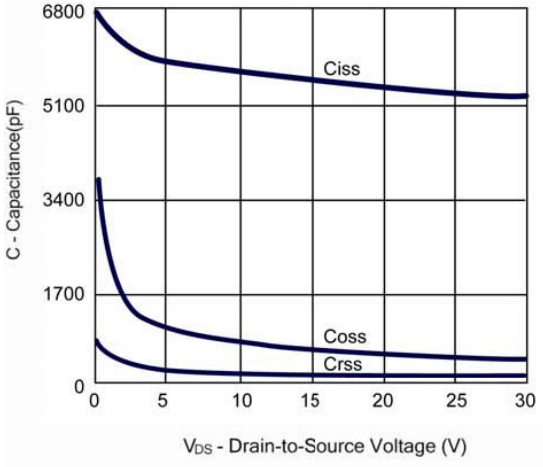
On Resistance vs. Junction Temperature



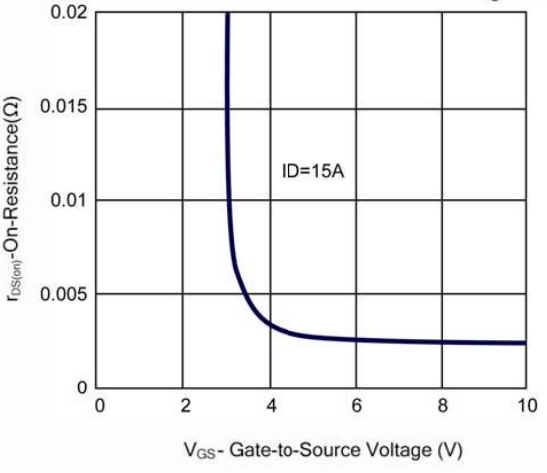
On-Resistance vs. Drain Current



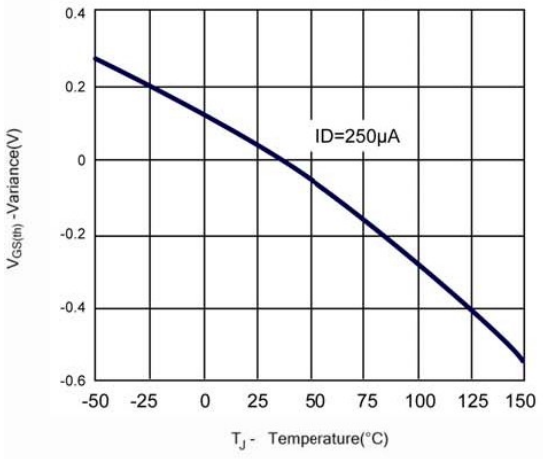
Capacitance



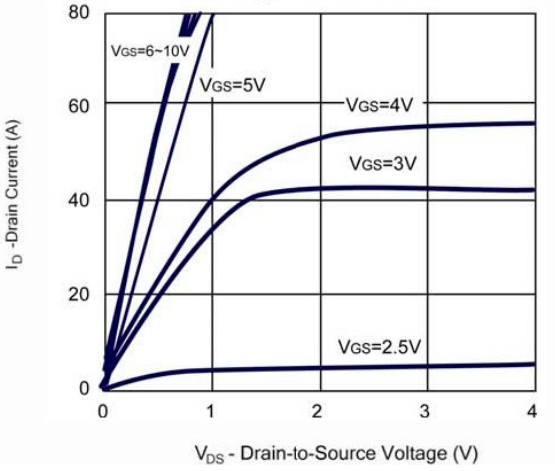
On-Resistance vs. Gate-to-Source Voltage



Threshold Voltage

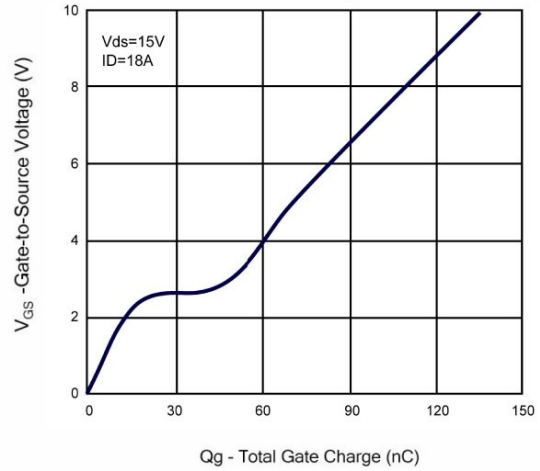


On-Region Characteristics

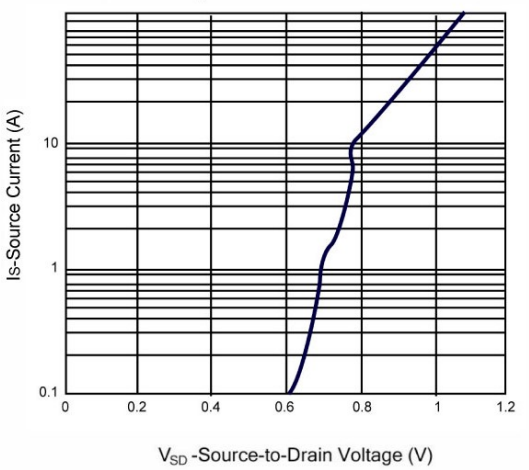


TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

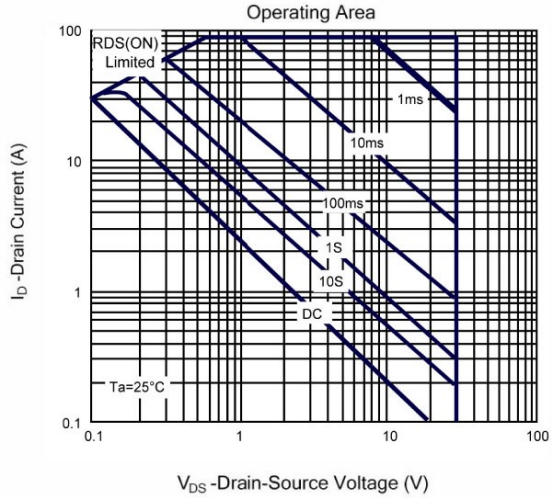
Gate Charge



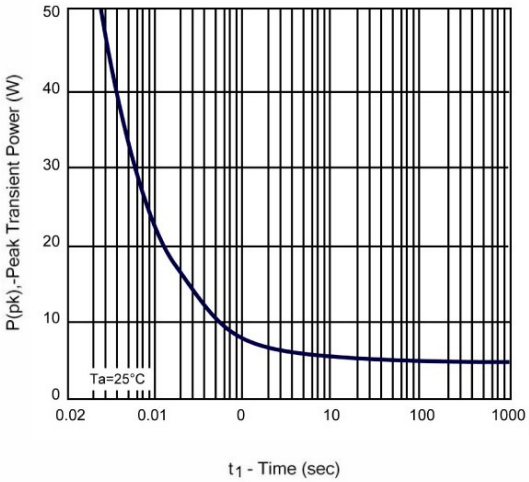
Body-diode characteristics



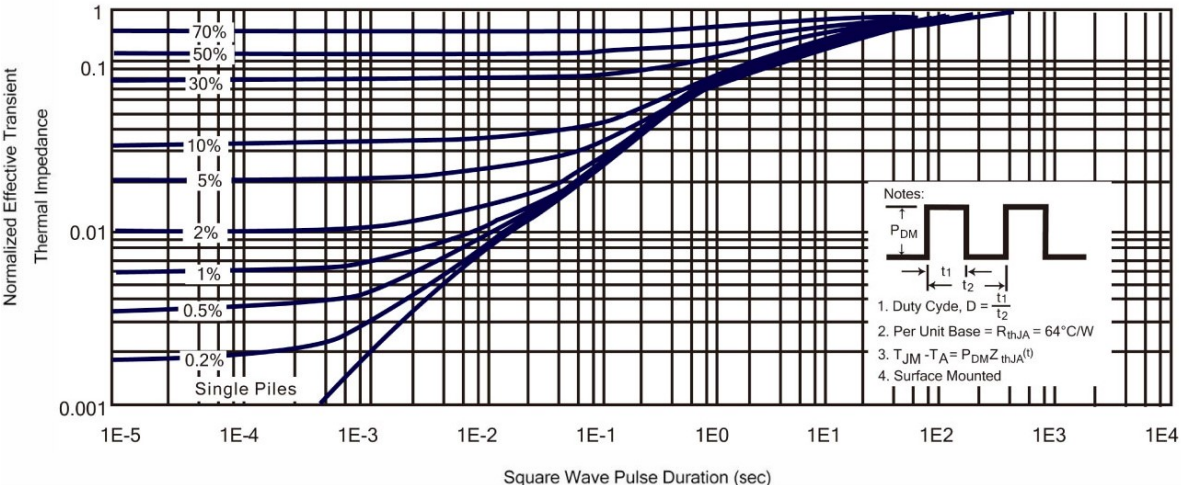
Maximum Forward Biased Safe Operating Area



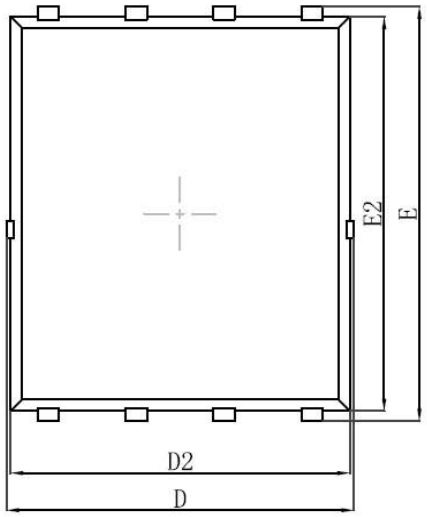
Single Pulse Maximum Power Dissipation



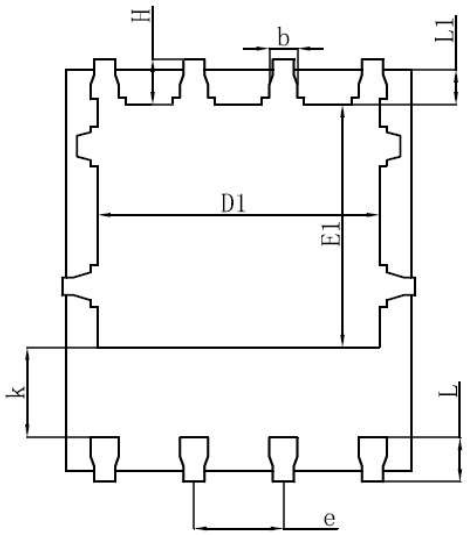
Normalized Thermal Transient Impedance, Junction-to-Ambient



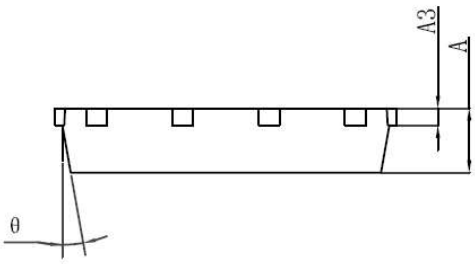
- **PACKAGE PDFN5×6-8L**



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°