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

● FEATURES

$R_{DS(ON)} \leqq 0.87m\Omega @ V_{GS}=10V$

$R_{DS(ON)} \leqq 1.89m\Omega @ V_{GS}=4.5V$

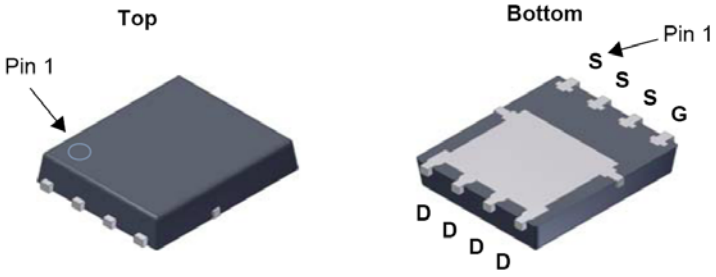
high density cell design for extremely low $R_{DS(ON)}$

Exceptional on-resistance and maximum DC current capability

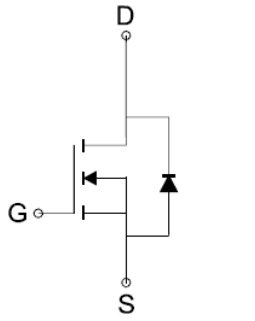
● GENERAL DESCRIPTION

The FS4472 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	30	V
Gate-Source Voltage		VGSS	±20	V
Continuous Drain Current NOTE	TA=25℃	I_D	205	A
	TA=100℃		155	
Pulsed Drain Current NOTE		I_{DM}	450	
Continuous Drain Current(TJ =150℃)* NOTE	TA=25℃	I_{DSM}	75	A
	TA=70℃		60	
Maximum Power Dissipation*	TA=25℃	PD	2.78	W
	TA=70℃		1.78	
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 1in$_2$ FR4 board with 2 oz copper

NOTE: same as the second page

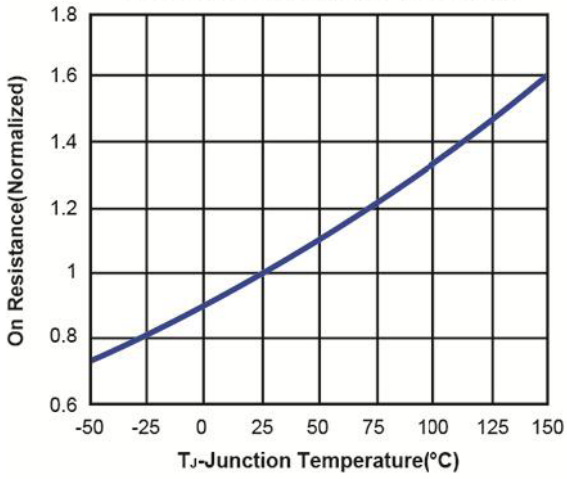
Electrical Characteristics (T_J=25°C unless otherwise noted)

Symbol	Parameter	Limit	Min	Typ	Max	Unit
STATIC						
BVDSS	Drain-Source Breakdown Voltage	VGS=0V, ID=250μA	30			V
VGS(th)	Gate Threshold Voltage	VDS=VGS, ID=250μA	1.3		2.2	V
IGSS	Gate Leakage Current	VDS=0V, VGS=±20V			±100	nA
IDSS	Zero Gate Voltage Drain Current	VDS=30V, VGS=0V			1	μA
RDS(ON)	Drain-Source On-State Resistance a	VGS=10V, ID= 30A		0.72	0.87	mΩ
		VGS=4.5V, ID= 30A		1.45	1.89	
VSD	Diode Forward Voltage	IS=10A, VGS=0V		0.73	1.1	V
DYNAMIC						
Qg	Total Gate Charge(10V)	VDS=15V, VGS=10V, ID=30A		209		nC
Qg	Total Gate Charge(4.5V)	VDS=15V, VGS=4.5V, ID=30A		106		
Qgs	Gate-Source Charge			40		
Qgd	Gate-Drain Charge			51		
Ciss	Input capacitance	VDS=15V, VGS=0V, f=1.0MHz		1670		pF
Coss	Output Capacitance			880		
Crss	Reverse Transfer Capacitance			760		
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=4.5V RG=3Ω		80		ns
tr	Turn-On Rise Time			75		
td(off)	Turn-Off Delay Time			141		
tf	Turn-Off Fall Time			68		

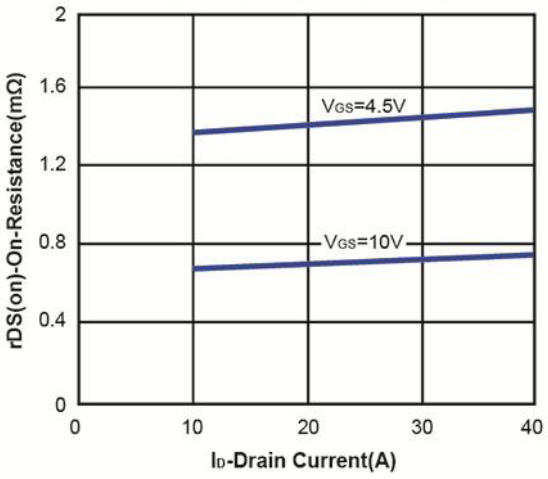
Note:
a: Pulse test: pulse width＜=300us, duty cycle＜=2%
b: FORSEMI reserves the right to improve product design, functions and reliability without notice.
c. Single pulse width limited by junction temperature TJ(MAX)=150° C.
d. The RqJA is the sum of the thermal impedance from junction to case RqJC and case to ambient.
e. The static characteristics in Figures 1 to 6 are obtained using <300ms pulses, duty cycle 0.5% max.
f. These curves are based on the junction-to-case thermal impedance which is measured with the device mounted to a large heatsink, assuming a maximum junction temperature of TJ(MAX)=150° C. The SOA curve provides a single pulse rating.
g. The maximum current rating is package limited.
h. These tests are performed with the device mounted on 1 in2 FR-4 board with 2oz. Copper, in a still air environment with TA=25° C.

Typical Characteristics

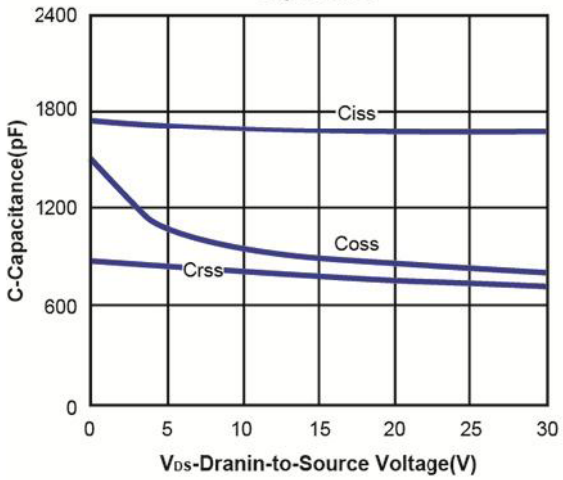
On Resistance vs. Junction Temperature



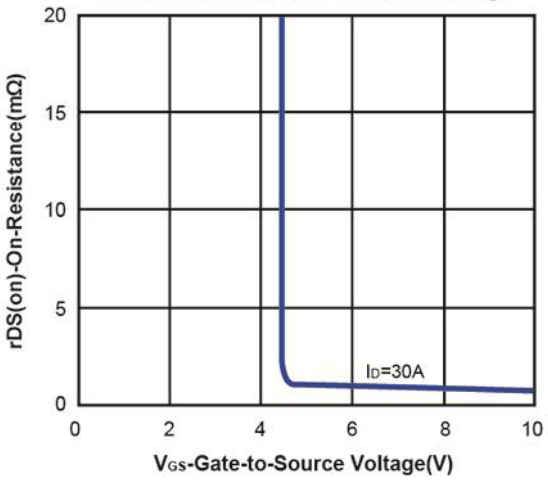
On Resistance vs. Drain Current



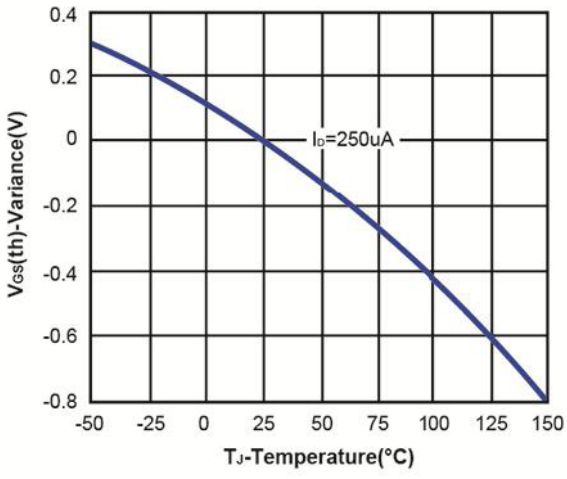
Capacitance



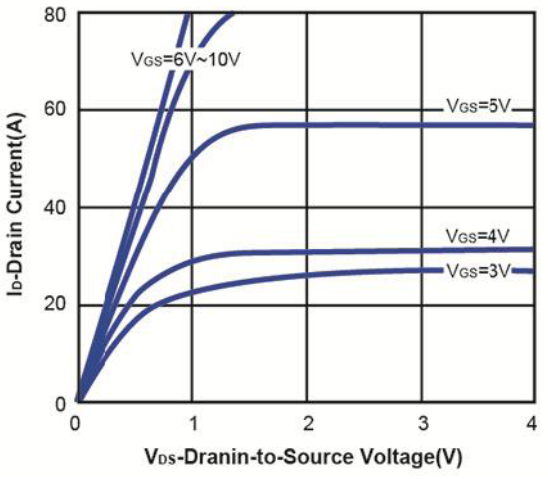
On Resistance vs. Gate-to-Source Voltage



Threshold Voltage

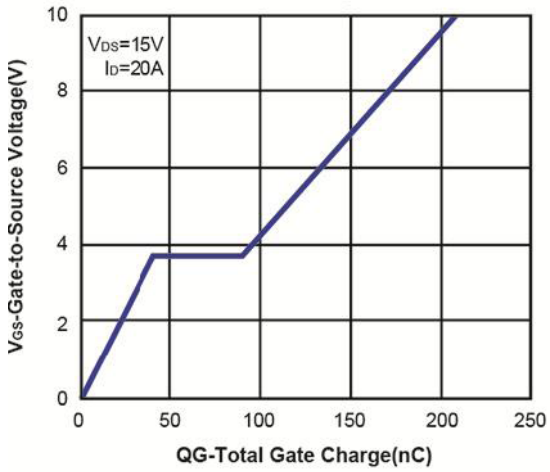


On-Region Characteristics

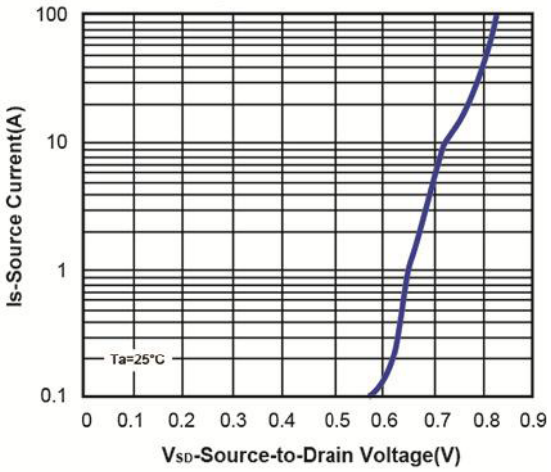


TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

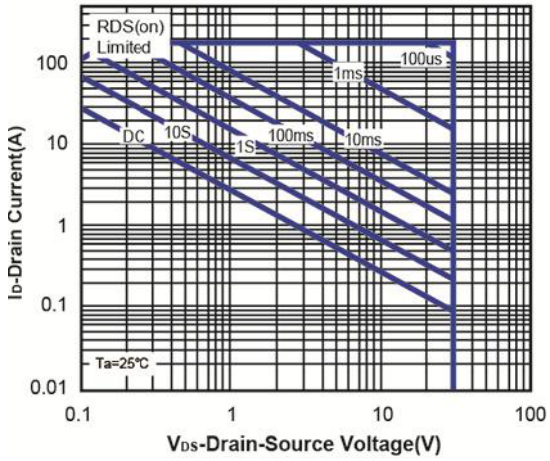
Gate Charge



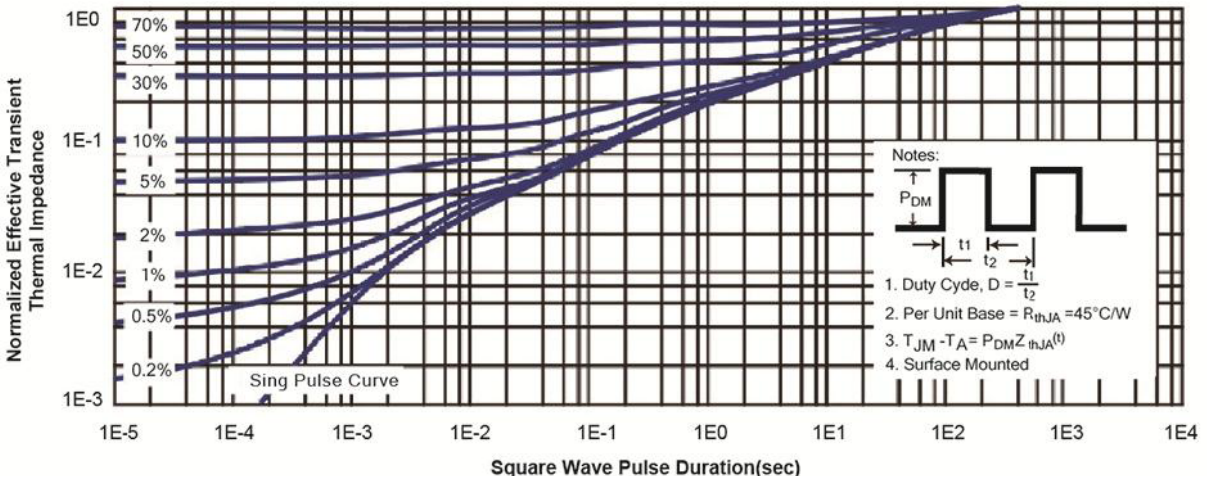
Body-diode characteristics



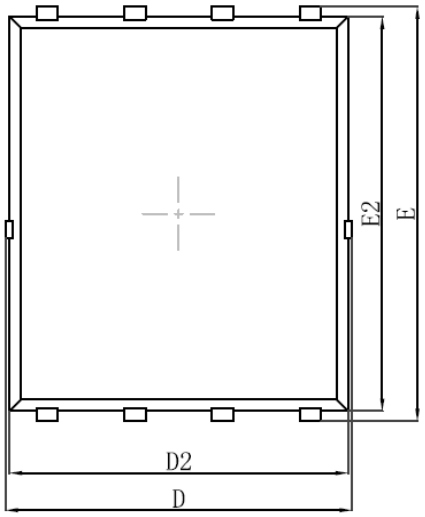
Maximum Forward Biased Safe Operating Area



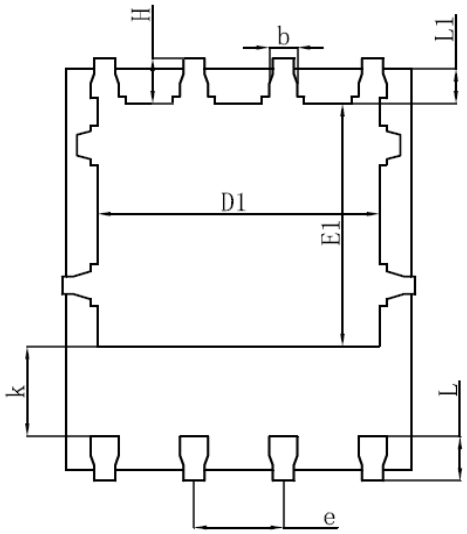
Normalized Thermal Transient Impedance, Junction-to-Ambient



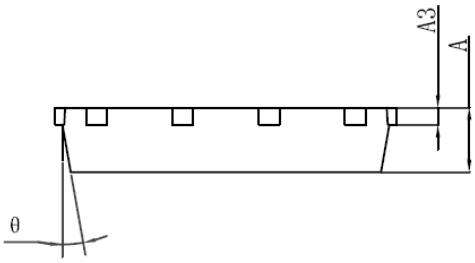
- **PACKAGE PDFN5×6-8L**



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°