

Datasheet

FS4422

Single N-Channel Enhancement Mode Power MOSFET

FORTUNE,
Properties
For Reference Only

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1. Features

1.1 Low on-resistance

1.1.1 $R_{DS(ON)} = 15\text{ m}\Omega$ MAX. ($V_{GS} = 10\text{V}$, $I_D = 11\text{A}$)

1.1.2 $R_{DS(ON)} = 24\text{ m}\Omega$ MAX. ($V_{GS} = 4.5\text{V}$, $I_D = 10\text{A}$)

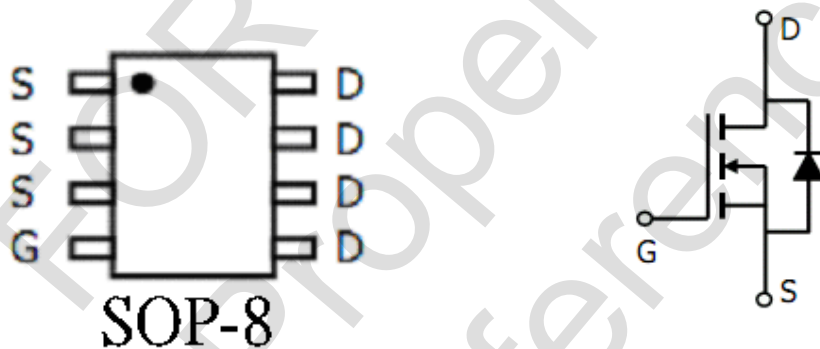
2. Applications

- Power management
- Load switch
- Battery protection

3. Ordering Information

Product Number	Description	Package Type	Quantity/Reel
FS4422	SOP-8 package version	SOP-8	3,000

4. Pin Assignment



5. Limiting Values

Symbol	Parameter	Rating	Units
VDS	Drain-Source Voltage	30	V
VGS	Gate-Source Voltage	±20	V
ID @TA = 25°C	Continuous Drain Current ³	11	A
ID @TA = 70°C	Continuous Drain Current ³	9.3	A
IDM	Pulsed Drain Current ¹	50	A
PD @TA = 25°C	Total Power Dissipation	3	W
TSTG	Storage Temperature Range	-55 to 150	°C
TJ	Operating Junction Temperature Range	-55 to 150	°C
Is	Diode Forward Current	4.3	A

6. Thermal Data

Symbol	Parameter	Value	Unit
Rthj-a	Thermal Resistance Junction-ambient	Max. 75	°C/W

7. Electrical Characteristics

Electrical Characteristics @T_J = 25°C (unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
Static Characteristics						
B _{VDS}	Drain-Source Breakdown Voltage	V _{GS} = 0V, I _D = 250uA	30	-	-	V
R _{DS(ON)} ¹	Static Drain-Source On-Resistance ²	V _{GS} = 10V, I _D = 11A	-	12.6	15	mΩ
		V _{GS} = 4.5V, I _D = 10A	-	19.6	24	mΩ
V _{GS(th)}	Gate Threshold Voltage	V _{DS} = V _{GS} , I _D = 250uA	1.3	1.8	2.5	V
I _{DSS}	Drain-Source Leakage Current (T _J = 25°C)	V _{DS} =30V V _{GS} = 0V	-	-	1	uA
	Drain-Source Leakage Current (T _J = 85°C)	V _{DS} =30V V _{GS} = 0V	-	-	5	uA
I _{GSS}	Gate-Source Leakage	V _{GS} = ±20V V _{DS} =0V	-	-	100	nA
Diode Characteristics						
V _{SD} ¹	Diode Forward Voltage	I _{SD} =1A, V _{GS} =0V		0.75	1.0	V
t _{rr}	Reverse Recovery Time	I _{SD} =11A, dI _{SD} /dt=100A/μs		17.5	21	ns
Q _{rr}	Reverse Recovery Charge			9.3	12	nC
Dynamic Characteristics²						
R _G	Gate Resistance	V _{GS} =V _{DS} =0V, F=1MHz	0.5	0.7	0.85	Ω
C _{iss}	Input Capacitance	V _{GS} =0V, V _{DS} =15V Frequency=1MHz	800	104	125	pF
C _{oss}	Output Capacitance		140	180	220	
C _{rss}	Reverse Transfer Capacitance		80	110	140	
t _{d(on)}	Turn-on Delay Time	V _{GS} =10V, V _{DS} =15V, R _G =3Ω, R _L =1.35Ω, I _{DS} =1A		4.5	6.5	ns
t _r	Turn-on Rise Time			3.9	5.5	
t _{d(off)}	Turn-off Delay Time			17.4	25	
t _f	Turn-off Rise Time			3.2	5	
Gate Charge Characteristics²						
Q _g (10V)	Total Gate Charge	V _{GS} =10V, V _{DS} =15V, I _{DS} =11A	15	19.8	24	nC
Q _g (4.5V)	Total Gate Charge		7	9.8	12	
Q _{gs}	Gate-Source Charge			2.5		
Q _{gd}	Gate-Drain Charge			3.5		

Notes :

1. Pulse width ≤ 300us, duty cycle ≤ 2%.
2. Guaranteed by design, not subject to production testing

8. Typical Characteristics

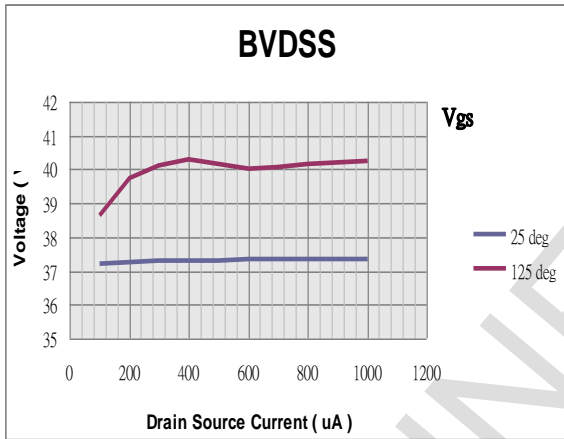


Fig 1. Drain-Source Breakdown Voltage

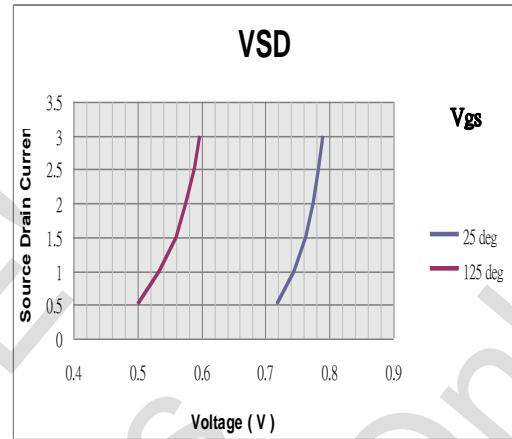


Fig 2. Doide Forward Voltage

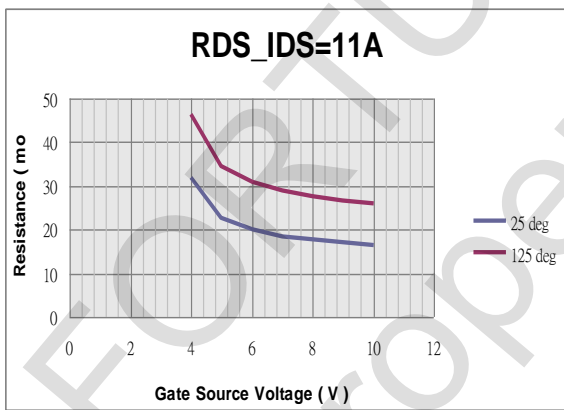


Fig 3. Static Drain-Source On-Resistance

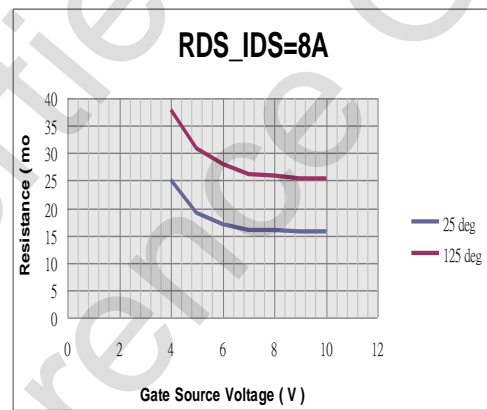
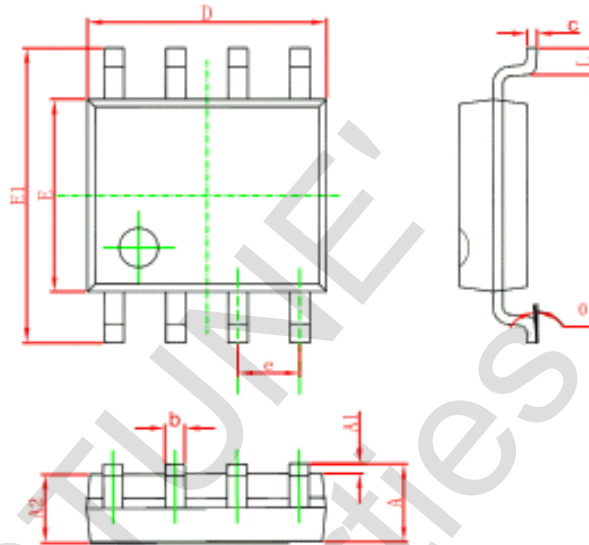


Fig 4. Static Drain-Source On-Resistance

9. Package Information

SOP8 PACKAGE OUTLINE DIMENSIONS



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.350	1.750	0.053	0.069
A1	0.100	0.250	0.004	0.010
A2	1.350	1.550	0.053	0.061
b	0.330	0.510	0.013	0.020
c	0.170	0.250	0.006	0.010
D	4.700	5.100	0.185	0.200
E	3.800	4.000	0.150	0.157
E1	5.800	6.200	0.228	0.244
e	1.270 (BSC)		0.050 (BSC)	
L	0.400	1.270	0.016	0.050
θ	0°	8°	0°	8°

10. Revision History

Version	Date	Page	Description
1.0	2010/12/22	-	Version 1.0 released
1.1	2011/02/18	4	Revise IGSS Unit nA
1.2	2011/05/26	3	Revise Applications