



New Product

Si7404DN
Vishay Siliconix

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

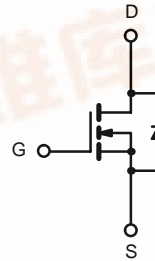
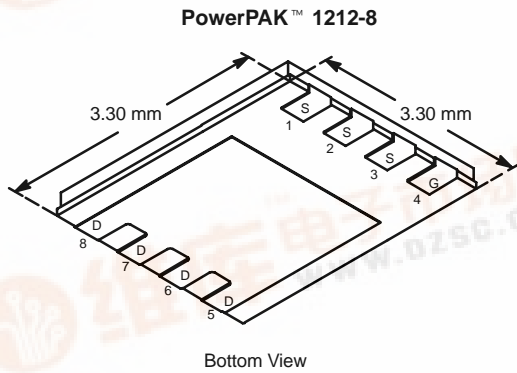
PRODUCT SUMMARY		
V _{DS} (V)	r _{DS(on)} (Ω)	I _D (A)
30	0.013 @ V _{GS} = 10 V	13.3
	0.015 @ V _{GS} = 4.5 V	12.4
	0.022 @ V _{GS} = 2.5 V	10.2

FEATURES

- TrenchFET® Power MOSFET
- New Low Thermal Resistance PowerPAK™ Package with Low 1.07-mm Profile

APPLICATIONS

- Lilon Battery Protection



N-Channel MOSFET

ABSOLUTE MAXIMUM RATINGS (T _A = 25°C UNLESS OTHERWISE NOTED)					
Parameter	Symbol	10 secs	Steady State	Unit	
Drain-Source Voltage	V _{DS}	30		V	
Gate-Source Voltage	V _{GS}	± 12			
Continuous Drain Current (T _J = 150°C) ^a	I _D	T _A = 25°C	13.3	8.5	A
		T _A = 70°C	10.6	6.8	
Pulsed Drain Current	I _{DM}	40			
Single Avalanche Current	I _{AS}	15			
Single Avalanche Energy (Duty Cycle 1%)	E _{AS}	0.1 mH	11		mJ
Continuous Source Current (Diode Conduction) ^a	I _S	3.2	1.3	A	
Maximum Power Dissipation ^a	P _D	T _A = 25°C	3.8	1.5	W
		T _A = 70°C	2.0	0.8	
Operating Junction and Storage Temperature Range	T _J , T _{stg}	-55 to 150		°C	

THERMAL RESISTANCE RATINGS					
Parameter	Symbol	Typical	Maximum	Unit	
Maximum Junction-to-Ambient ^a	R _{thJA}	t ≤ 10 sec	26	33	°C/W
		Steady State	65	81	
Maximum Junction-to-Case (Drain)	R _{thJC}	1.9	2.4		

Notes:
a. Surface Mounted on 1" x 1" FR4 Board.

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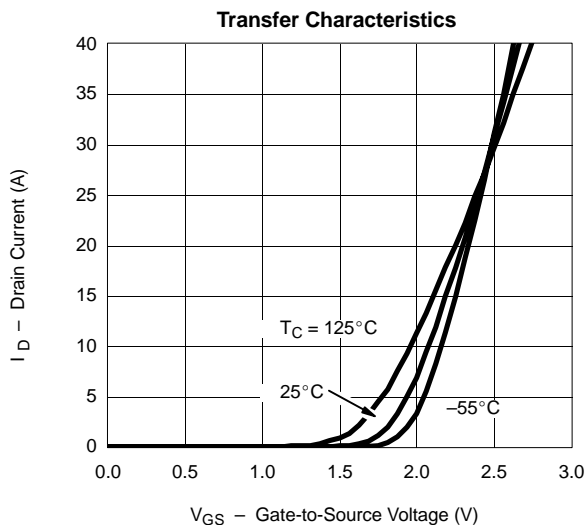
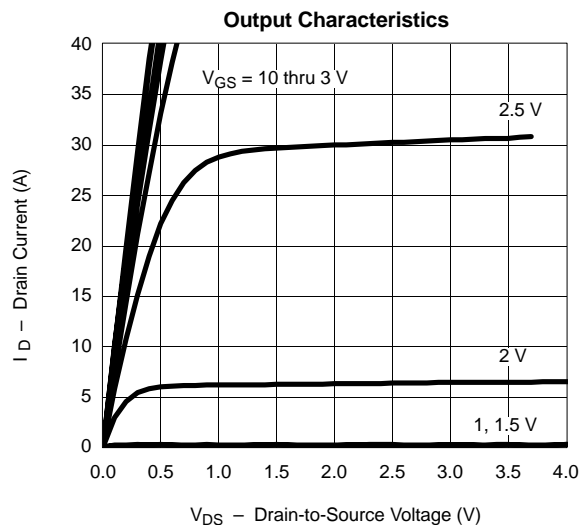
MOSFET SPECIFICATIONS (T_J = 25 °C UNLESS OTHERWISE NOTED)

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Static						
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250 μA	0.6			V
Gate-Body Leakage	I _{GSS}	V _{DS} = 0 V, V _{GS} = ± 12 V			± 100	nA
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 24 V, V _{GS} = 0 V			1	μA
		V _{DS} = 24 V, V _{GS} = 0 V, T _J = 55 °C			5	
On-State Drain Current ^a	I _{D(on)}	V _{DS} ≥ 5 V, V _{GS} = 10 V	40			A
Drain-Source On-State Resistance ^a	r _{DS(on)}	V _{GS} = 10 V, I _D = 13.3 A		0.010	0.013	Ω
		V _{GS} = 4.5 V, I _D = 12.4 A		0.0125	0.015	
		V _{GS} = 2.5 V, I _D = 5 A		0.019	0.022	
Forward Transconductance ^a	g _{fs}	V _{DS} = 15 V, I _D = 13.3 A		50		S
Diode Forward Voltage ^a	V _{SD}	I _S = 3.2 A, V _{GS} = 0 V		0.75	1.2	V
Dynamic^b						
Total Gate Charge	Q _g	V _{DS} = 15 V, V _{GS} = 4.5 V, I _D = 13.3 A		20	30	nC
Gate-Source Charge	Q _{gs}			5.8		
Gate-Drain Charge	Q _{gd}			7.1		
Turn-On Delay Time	t _{d(on)}	V _{DD} = 15 V, R _L = 15 Ω I _D ≅ 1 A, V _{GEN} = 4.5 V, R _G = 6 Ω		27	40	ns
Rise Time	t _r			39	60	
Turn-Off Delay Time	t _{d(off)}			64	100	
Fall Time	t _f			33	50	
Source-Drain Reverse Recovery Time	t _{rr}		I _F = 3.2 A, di/dt = 100 A/μs		45	

Notes

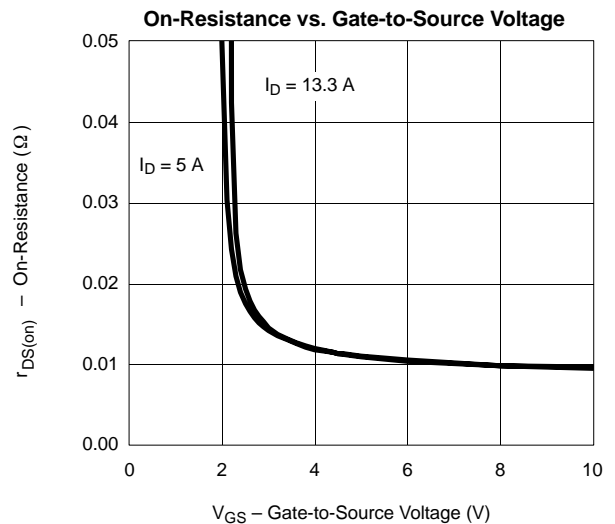
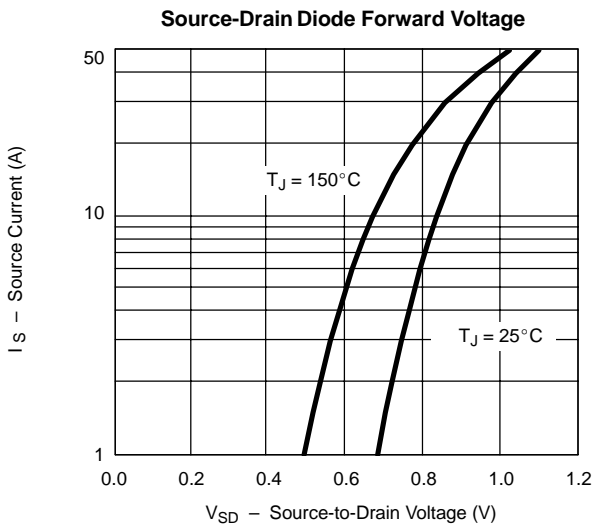
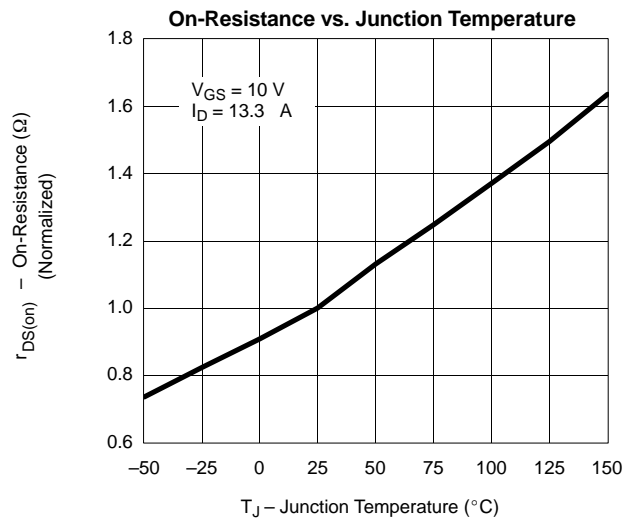
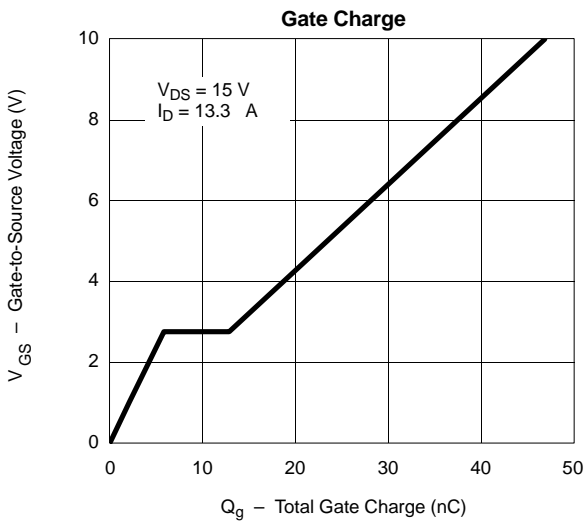
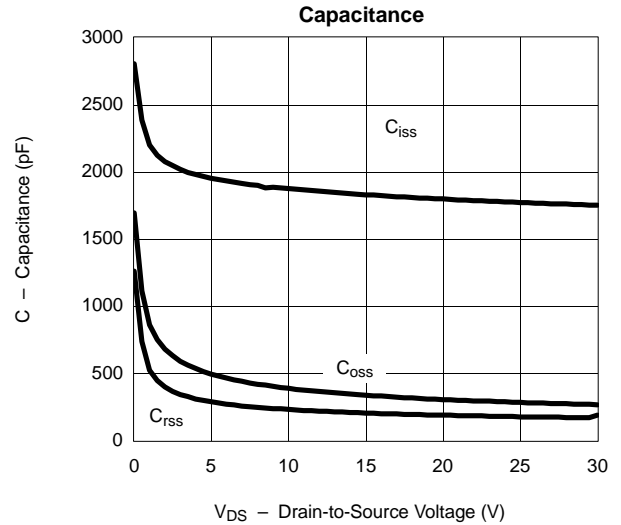
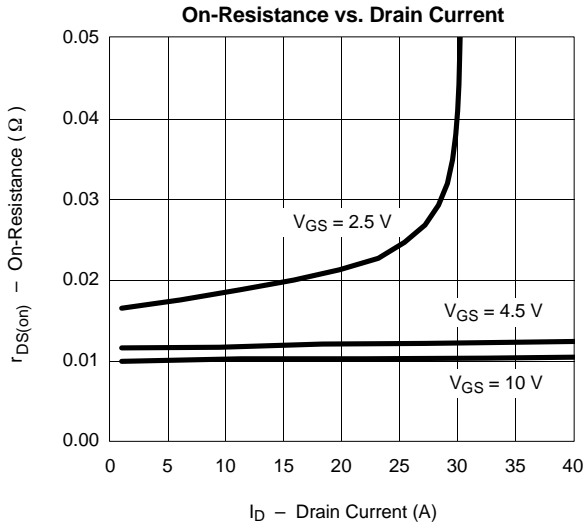
- a. Pulse test; pulse width ≤ 300 μs, duty cycle ≤ 2%.
- b. Guaranteed by design, not subject to production testing.

TYPICAL CHARACTERISTICS (25 °C UNLESS NOTED)





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