



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

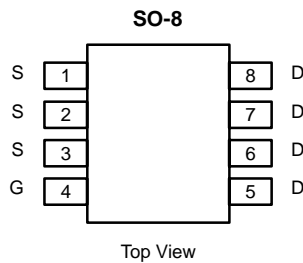
PRODUCT SUMMARY		
V _{DS} (V)	r _{DS(on)} (Ω)	I _D (A)
30	0.003 @ V _{GS} = 10 V	25
	0.004 @ V _{GS} = 4.5 V	22

FEATURES

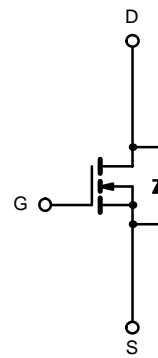
- TrenchFET® Gen II
- Ultra Low On-Resistance Using High Density TrenchFET Power MOSFET Technology

APPLICATIONS

- Synchronous Buck Low-Side
 - Notebook
 - Server
 - Workstation
- Synchronous Rectifier-POL



Ordering Information: Si4320DY
Si4320DY-T1 (with Tape and Reel)



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}	±20			
Continuous Drain Current (T _J = 150 °C) ^a	I _D	T _A = 25 °C	25	17	A
		T _A = 70 °C	20	13	
Pulsed Drain Current (10 μs Pulse Width)	I _{DM}	70			
Continuous Source Current (Diode Conduction) ^a	I _S	2.9	1.3		
Avalanch Current	i _{AS}	50			
Maximum Power Dissipation ^a	P _D	T _A = 25 °C	3.5	1.6	W
		T _A = 70 °C	2.2	1	
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	29	35	°C/W
		Steady State	67	80	
Maximum Junction-to-Foot (Drain)	R _{thJF}	13	16		

Notes

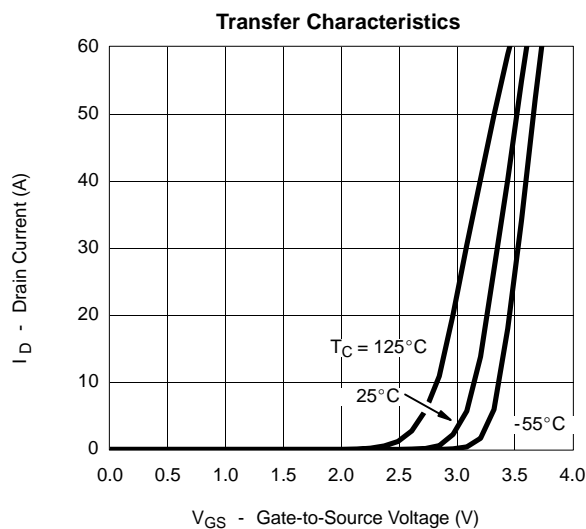
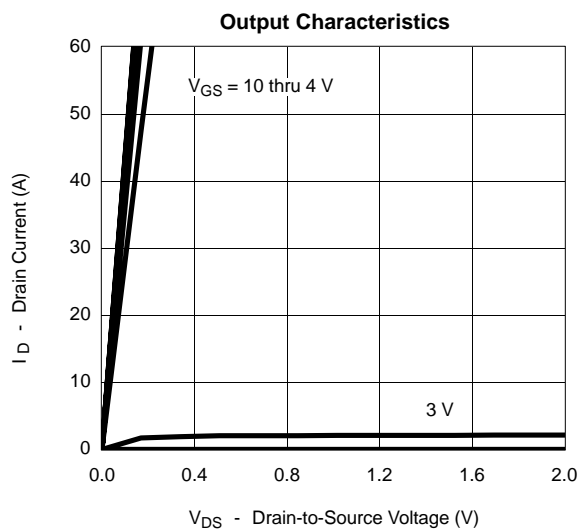
a. Surface Mounted on 1" x 1" FR4 Board.

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	1.0		3.0	V
Gate-Body Leakage	I _{GSS}	V _{DS} = 0 V, V _{GS} = ±20 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	30			A
Drain-Source On-State Resistance ^a	r _{DS(on)}	V _{GS} = 10 V, I _D = 25 A		0.0024	0.003	Ω
		V _{GS} = 4.5 V, I _D = 22 A		0.0032	0.004	
Forward Transconductance ^a	g _{fs}	V _{DS} = 15 V, I _D = 25 A		110		S
Diode Forward Voltage ^a	V _{SD}	I _S = 2.9 A, V _{GS} = 0 V		0.72	1.1	V
Dynamic^b						
Input Capacitance	C _{iss}	V _{DS} = 15 V, V _{GS} = 4.5 V, I _D = 20 A		6500		pF
Output Capacitance	C _{oss}			930		
Reverse Transfer Capacitance	C _{rss}			610		
Total Gate Charge	Q _g	V _{DS} = 15 V, V _{GS} = 4.5 V, I _D = 20 A		45	70	nC
Gate-Source Charge	Q _{gs}			20		
Gate-Drain Charge	Q _{gd}			16		
Gate Resistance	R _G	f = 1.0 MHz		1.1		Ω
Turn-On Delay Time	t _{d(on)}	V _{DD} = 15 V, R _L = 15 Ω I _D ≅ 1 A, V _{GEN} = 10 V, R _G = 6 Ω		27	40	ns
Rise Time	t _r			21	35	
Turn-Off Delay Time	t _{d(off)}			107	160	
Fall Time	t _f			43	65	
Source-Drain Reverse Recovery Time	t _{rr}		I _F = 2.9 A, di/dt = 100 A/μs		45	

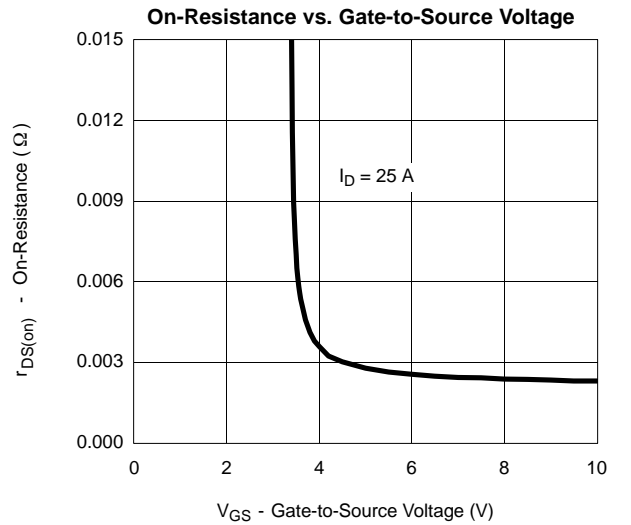
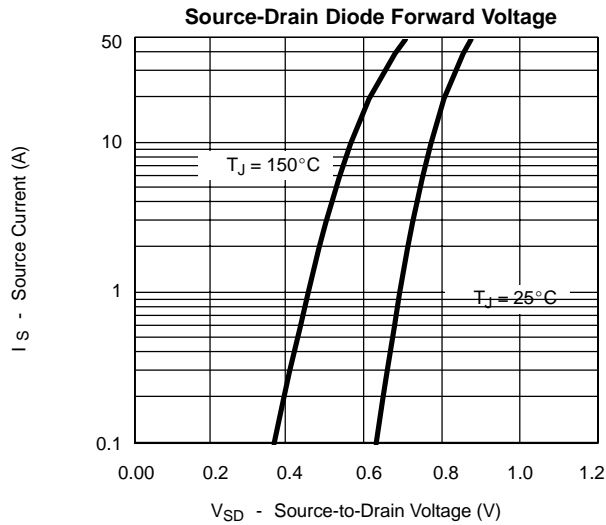
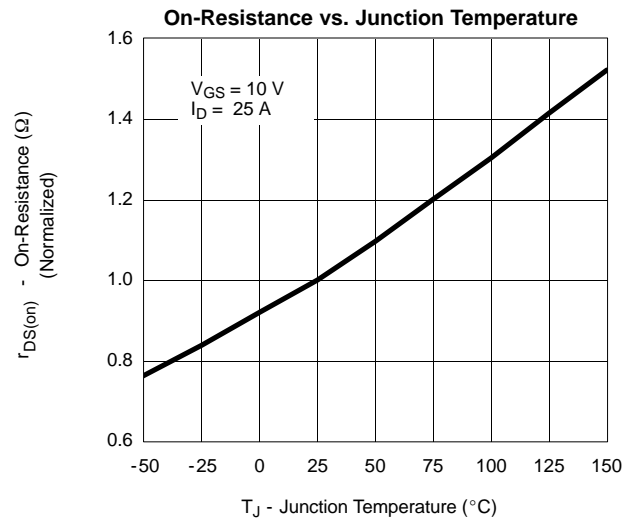
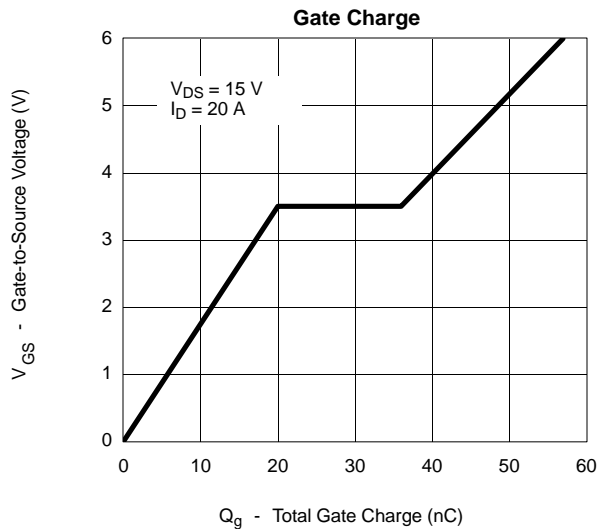
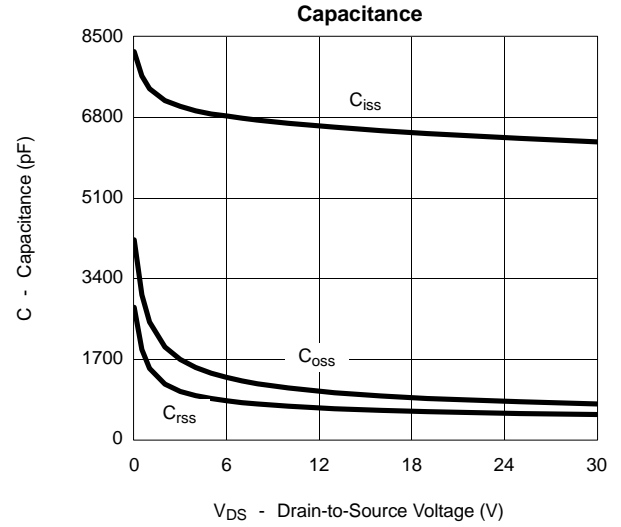
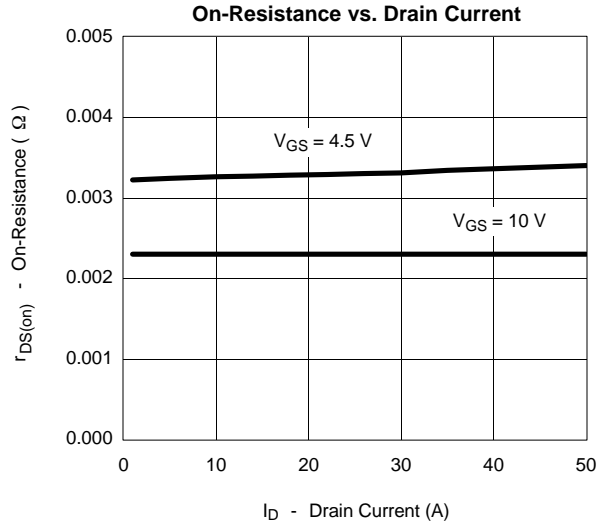
Notes

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

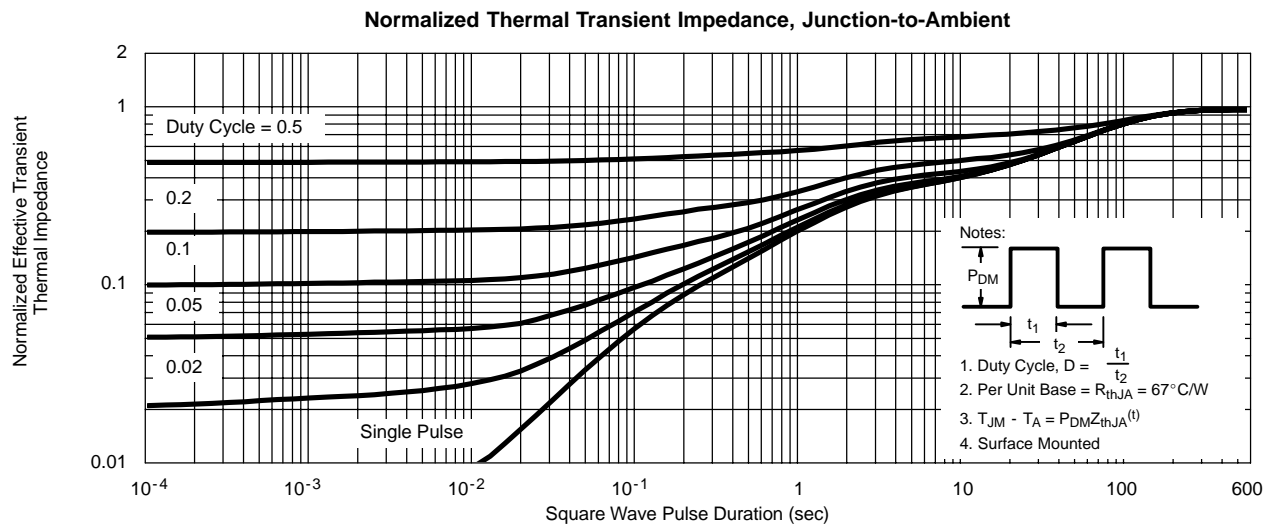
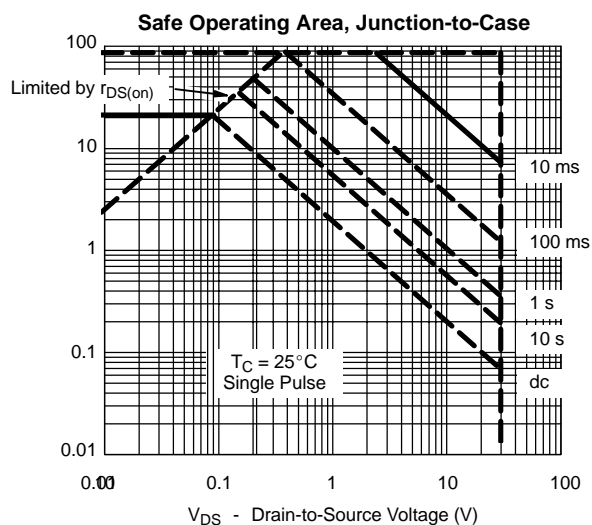
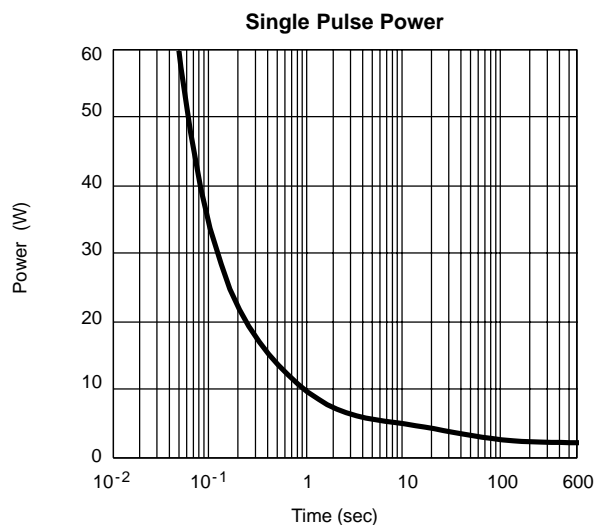
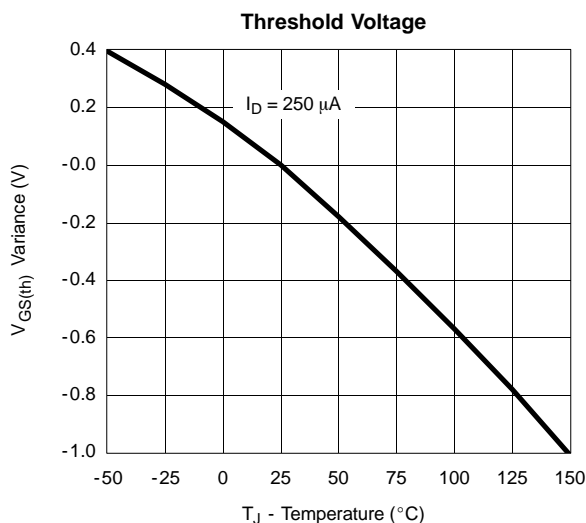
TYPICAL CHARACTERISTICS (25 °C UNLESS NOTED)



TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)



TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)





TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)

