

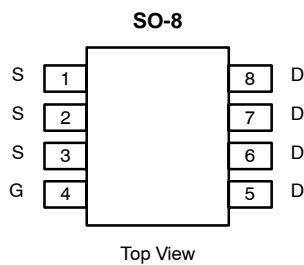


N-Channel 30-V (D-S) MOSFET

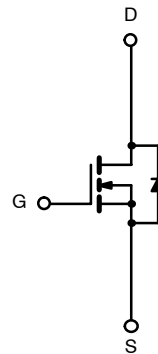
PRODUCT SUMMARY		
V_{DS} (V)	$r_{DS(on)}$ (Ω)	I_D (A)
30	0.009 @ $V_{GS} = 10$ V	13.5
	0.013 @ $V_{GS} = 4.5$ V	11

FEATURES

- TrenchFET® Power MOSFET
- 100% R_g Tested



Ordering Information: Si4420DY
Si4420DY-T1 (with Tape and Reel)



ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ UNLESS OTHERWISE NOTED)					
Parameter	Symbol	10 sec	Steady State	Unit	
Drain-Source Voltage	V_{DS}	30		V	
Gate-Source Voltage	V_{GS}	± 20			
Continuous Drain Current ($T_J = 150^\circ\text{C}$) ^a	I_D	$T_A = 25^\circ\text{C}$	13.5	9.5	A
		$T_A = 70^\circ\text{C}$	10.8	7.5	
Pulsed Drain Current	I_{DM}	50			
Continuous Source Current (Diode Conduction) ^a	I_S	2.7	1.36		
Maximum Power Dissipation ^a	P_D	$T_A = 25^\circ\text{C}$	3.0	1.5	W
		$T_A = 70^\circ\text{C}$	1.9	0.95	
Operating Junction and Storage Temperature Range	T_J, T_{stg}	-55 to 150		$^\circ\text{C}$	

THERMAL RESISTANCE RATINGS					
Parameter	Symbol	Typical	Maximum	Unit	
Maximum Junction-to-Ambient ^a	R_{thJA}	$t < 10$ sec	33	42	$^\circ\text{C/W}$
		Steady State	70	84	
Maximum Junction-to-Foot (Drain)	R_{thJF}	16	21		

Notes

a. Surface Mounted on FR4 Board, $t \leq 10$ sec.

For SPICE model information via the Worldwide Web: <http://www.vishay.com/www/product/spice.htm>



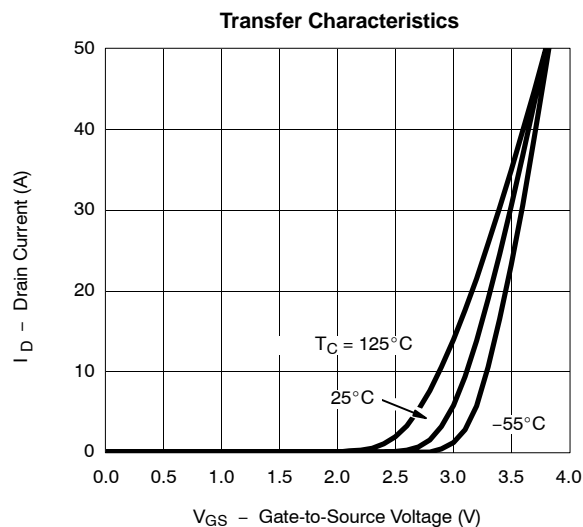
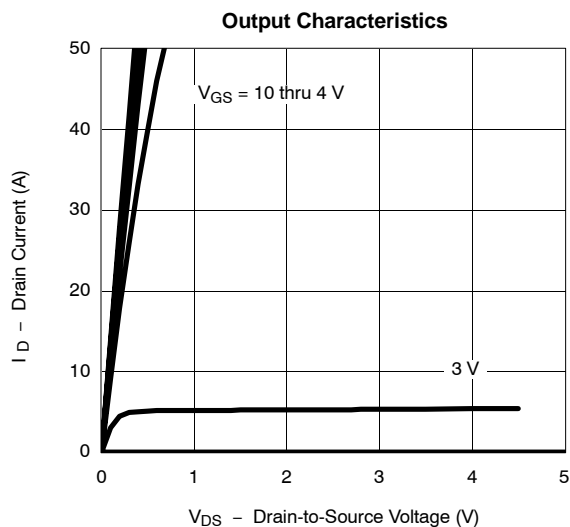
SPECIFICATIONS (T_J = 25 °C UNLESS OTHERWISE NOTED)

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	2.0	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} = 30 V, V _{GS} = 0 V			1	μA
		V _{DS} = 30 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 = 13.5 A		0.0075	0.009	Ω
		V _{GS} = 4.5 V, I _D = 11 A		0.010	0.013	
Forward Transconductance ^a	g _{fs}	V _{DS} = 15 V, I _D = 13.5 A		50		S
Diode Forward Voltage ^a	V _{SD}	I _S = 2.3 A, V _{GS} = 0 V			1.1	V
Dynamic^b						
Gate Charge	Q _g	V _{DS} = 15 V, V _{GS} = 5 V, I _D = 13.5 A		29	45	nC
Total Gate Charge	Q _{gt}	V _{DS} = 15 V, V _{GS} = 10 V, I _D = 13.5 A		58	90	
Gate-Source Charge	Q _{gs}			12		
Gate-Drain Charge	Q _{gd}			9.5		
Gate Resistance	R _g		0.5	2.1	4.6	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		22	35	ns
Rise Time	t _r			13	20	
Turn-Off Delay Time	t _{d(off)}			82	125	
Fall Time	t _f			30	45	
Source-Drain Reverse Recovery Time	t _{rr}		I _F = 2.3 A, di/dt = 100 A/μs		50	

Notes

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

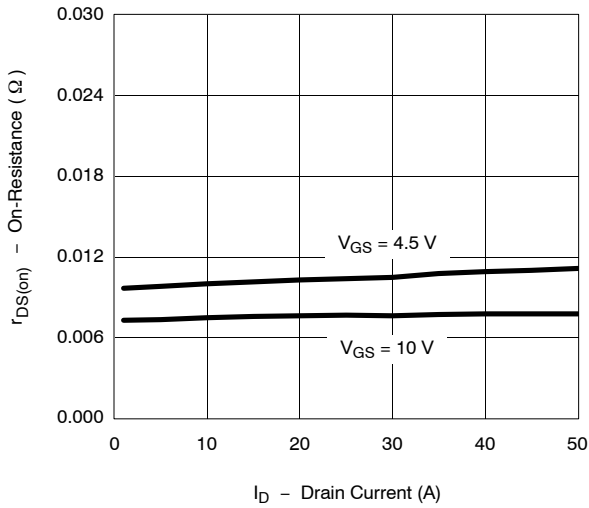
TYPICAL CHARACTERISTICS (25 °C UNLESS NOTED)



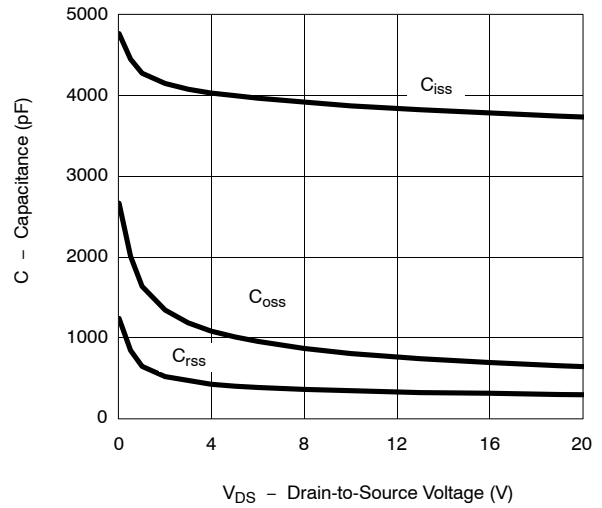


TYPICAL CHARACTERISTICS (25 °C UNLESS NOTED)

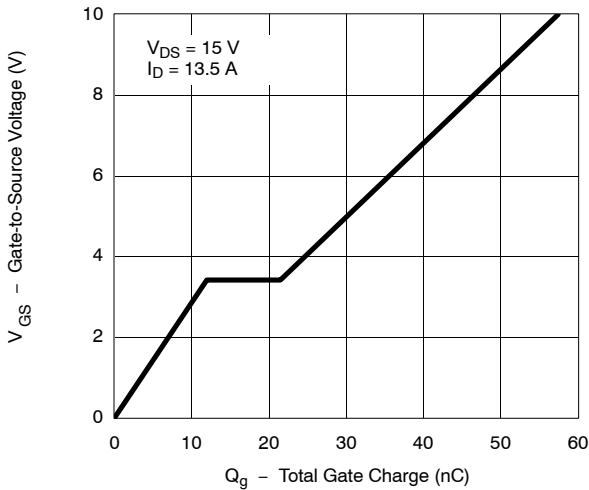
On-Resistance vs. Drain Current



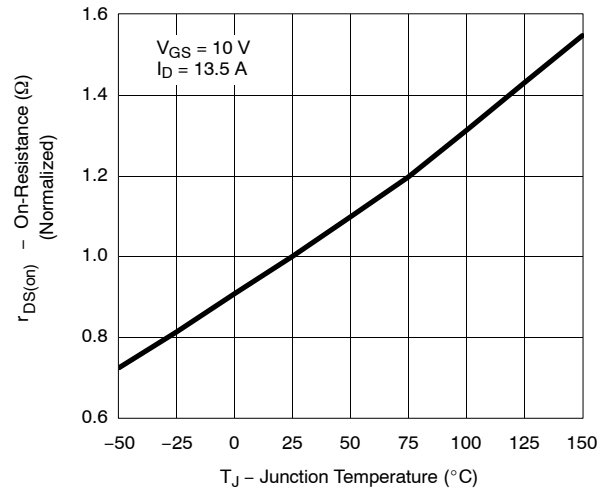
Capacitance



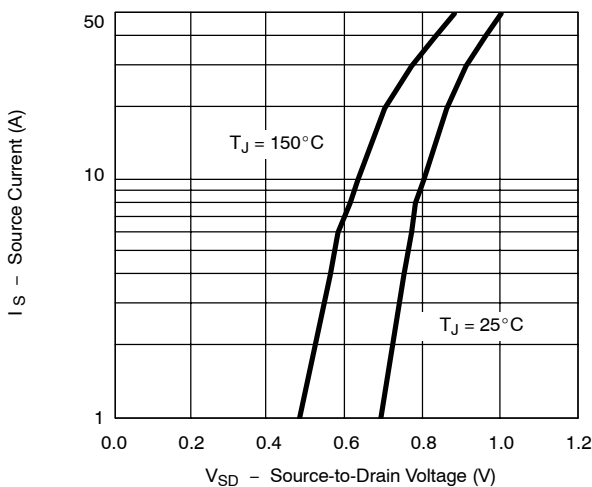
Gate Charge



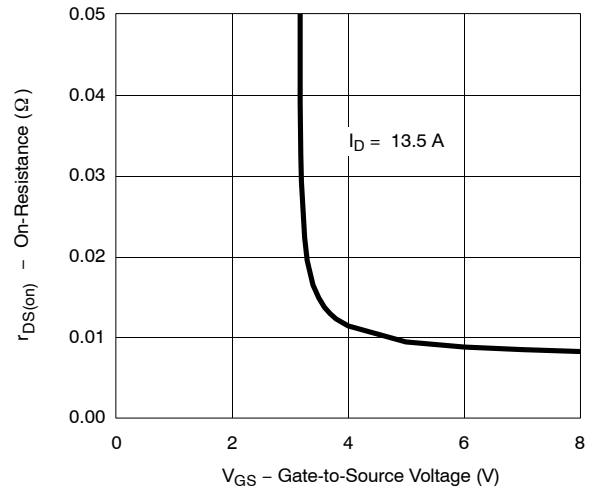
On-Resistance vs. Junction Temperature



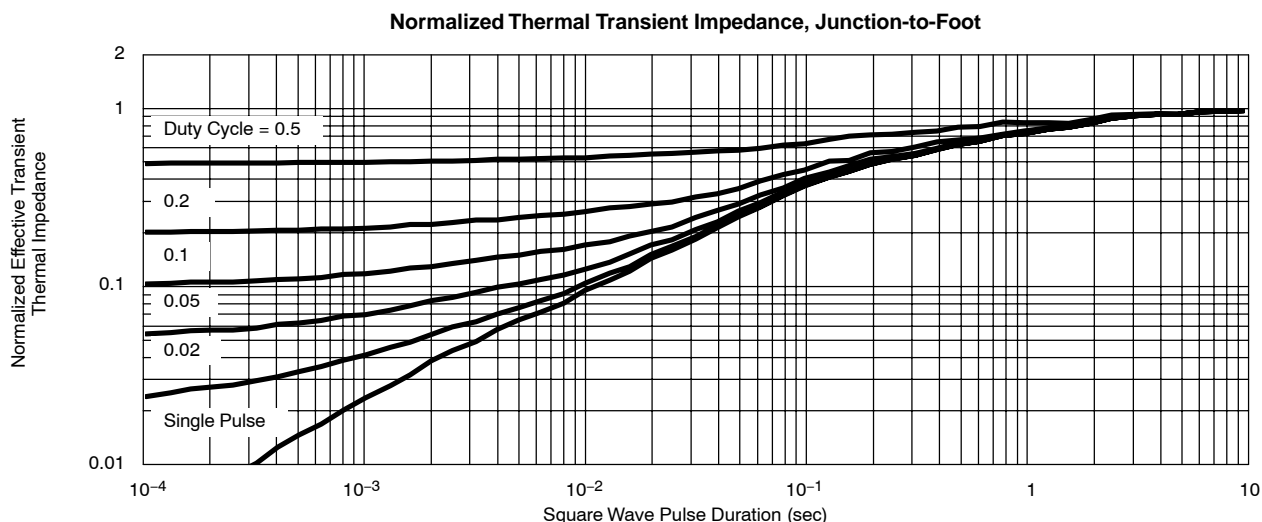
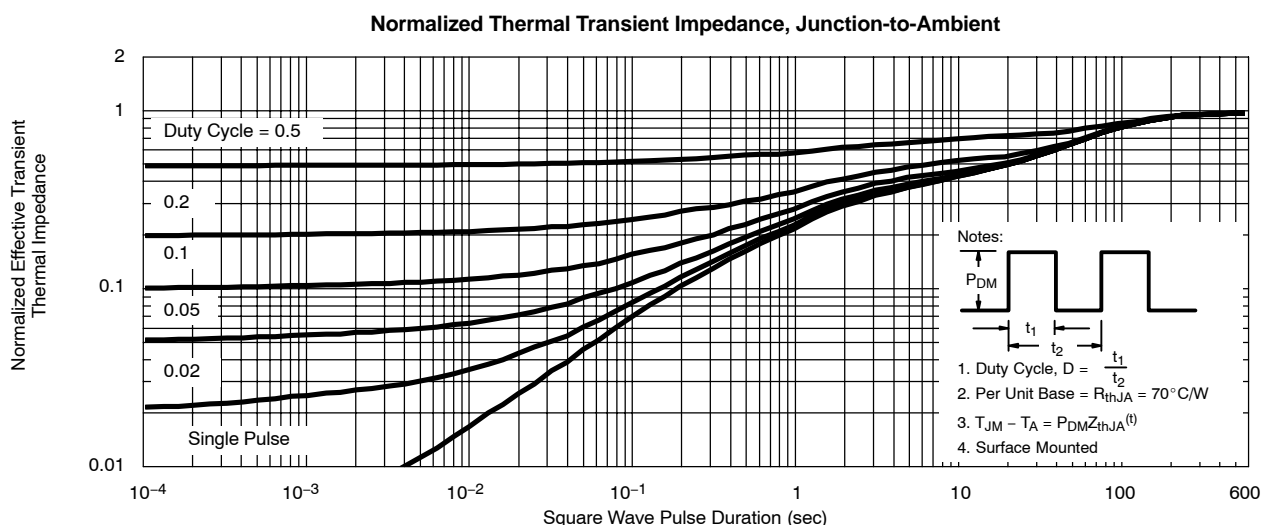
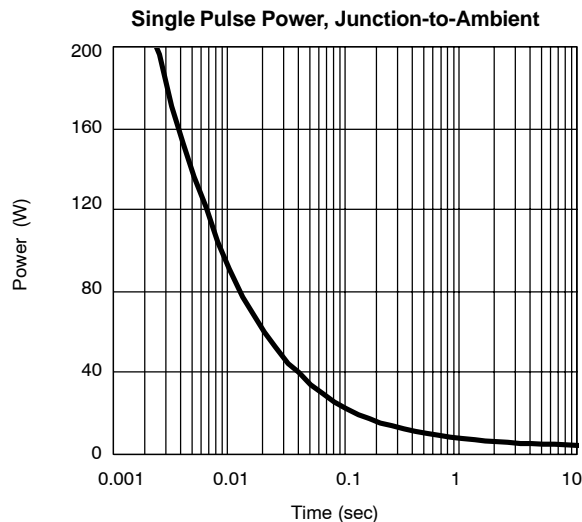
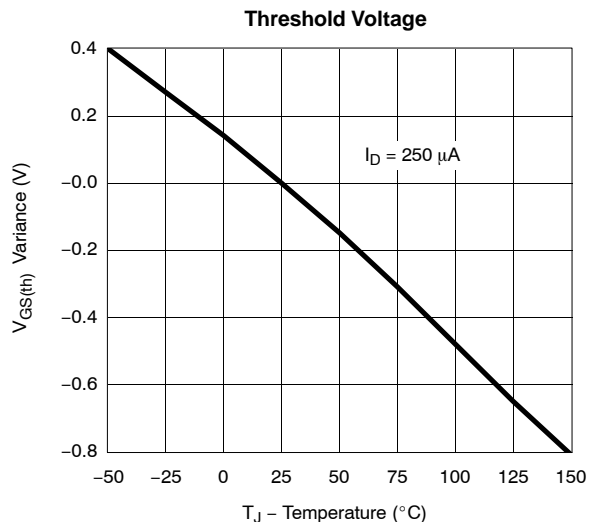
Source-Drain Diode Forward Voltage



On-Resistance vs. Gate-to-Source Voltage



TYPICAL CHARACTERISTICS (25 °C UNLESS NOTED)





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