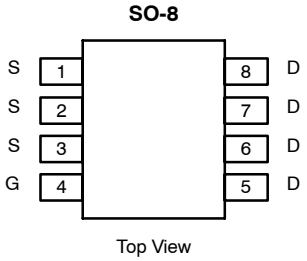
N-Channel 30-V (D-S) MOSFET

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

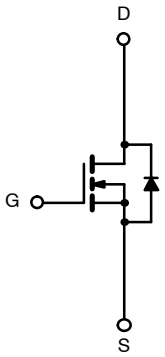
FEATURES

- TrenchFET® Power MOSFET
- 100% R_g Tested



Top View

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



N-Channel MOSFET

ABSOLUTE MAXIMUM RATINGS (T_A = 25°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°C)[NO TAG]	T_A = 25°C	I_D	13.5	9.5	A
	T_A = 70°C		10.8	7.5	
Pulsed Drain Current		I_{DM}	50		
Continuous Source Current (Diode Conduction)[NO TAG]		I_S	2.7	1.36	
Maximum Power Dissipation[NO TAG]	T_A = 25°C	P_D	3.0	1.5	W
	T_A = 70°C		1.9	0.95	
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[NO TAG]	t < 10 sec	R_{thJA}	33	42	°C/W
	Steady State		70	84	
Maximum Junction-to-Foot (Drain)	Steady State	R_{thJF}	16	21	

Notes
a. Surface Mounted on FR4 Board, t ≤ 10 sec.

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

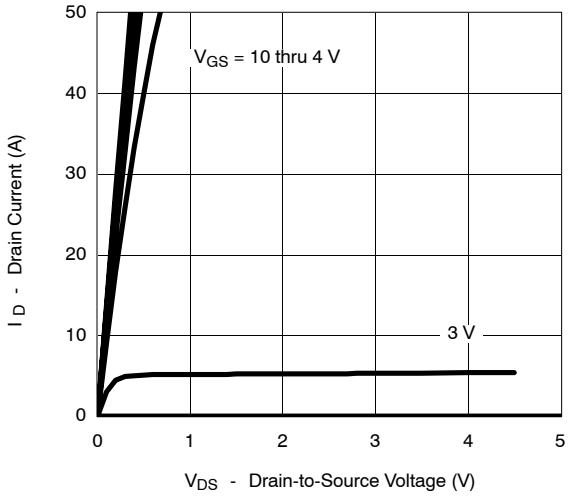
SPECIFICATIONS (T_J = 25°C UNLESS OTHERWISE NOTED)

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[NO TAG]	$I_{D(on)}$	V_{DS} ≥ 5 V, V_{GS} = 10 V	30			A
Drain-Source On-State Resistance[NO TAG]	$r_{DS(on)}$	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[NO TAG]	g_{fs}	V_{DS} = 15 V, I_D = 13.5 A		50		S
Diode Forward Voltage[NO TAG]	V_{SD}	I_S = 2.3 A, V_{GS} = 0 V			1.1	V
Dynamic[NO TAG]						
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	75	

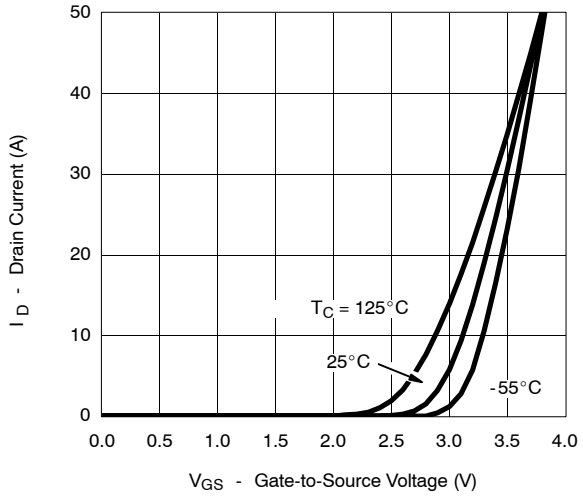
Notes
a. Pulse test; pulse width ≤ 300 μs, duty cycle ≤ 2%.
b. Guaranteed by design, not subject to production testing.

TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)

Output Characteristics

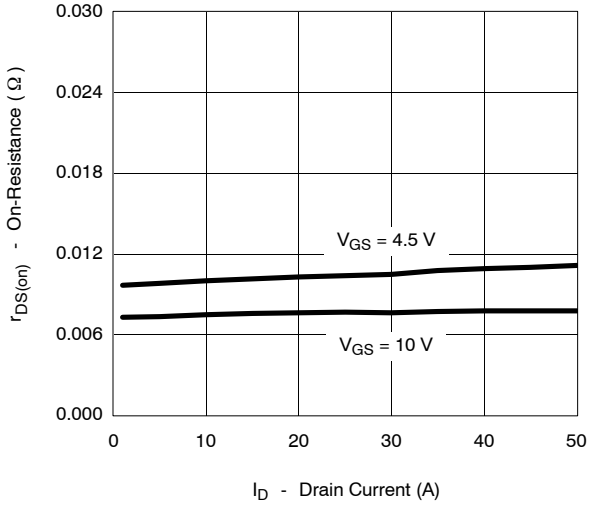


Transfer Characteristics

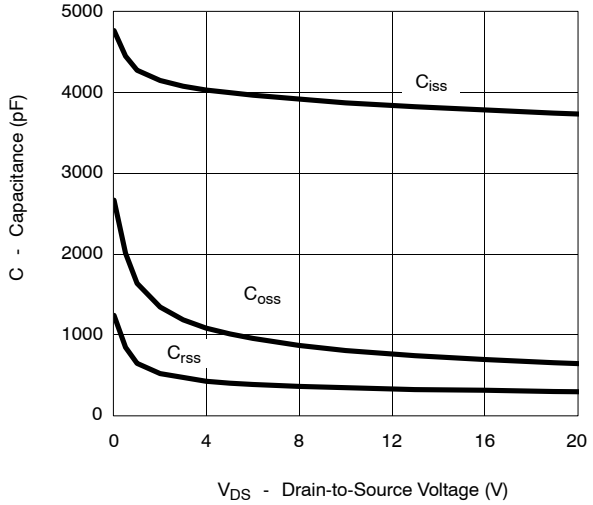


TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)

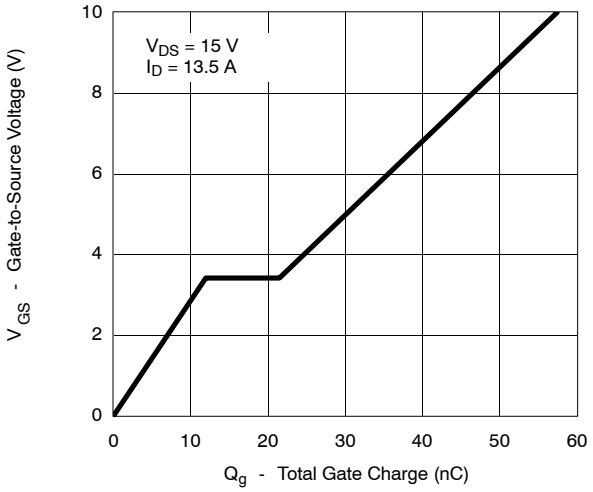
On-Resistance vs. Drain Current



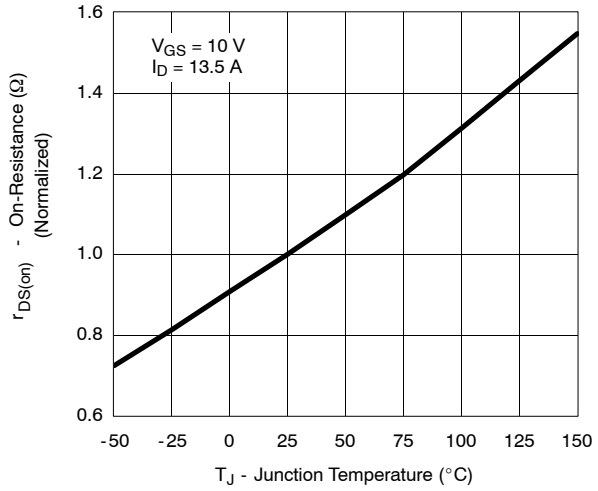
Capacitance



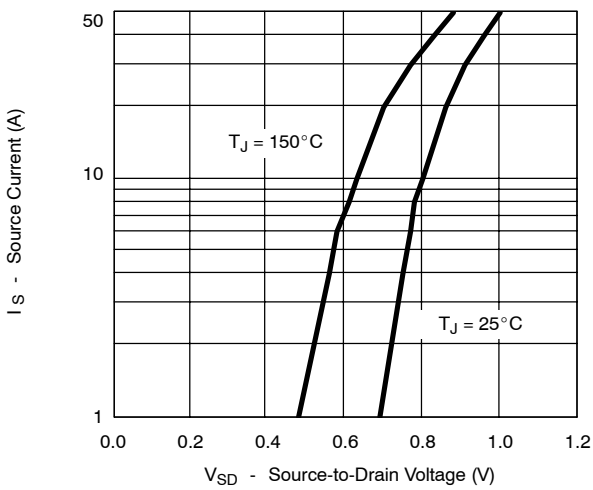
Gate Charge



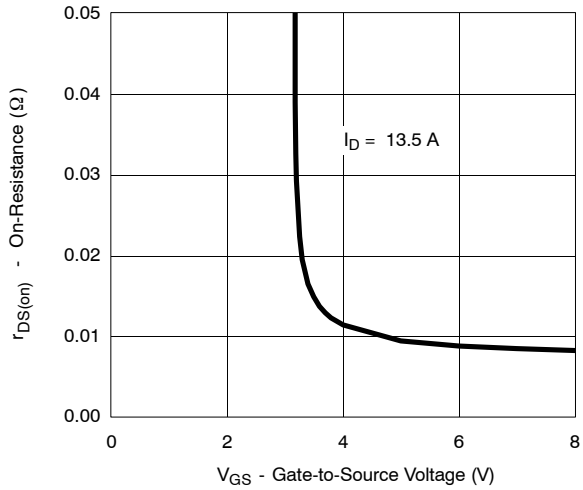
On-Resistance vs. Junction Temperature



Source-Drain Diode Forward Voltage

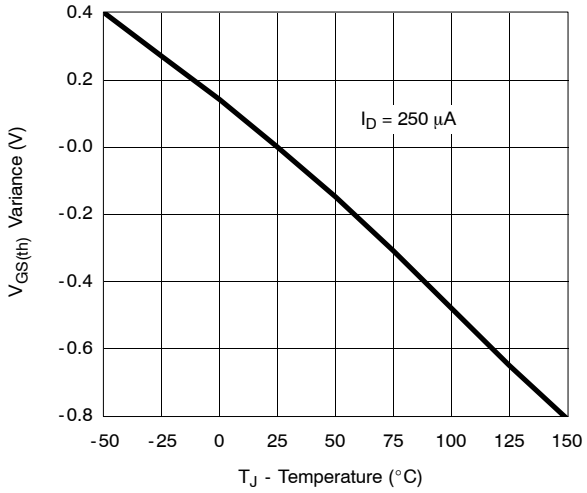


On-Resistance vs. Gate-to-Source Voltage

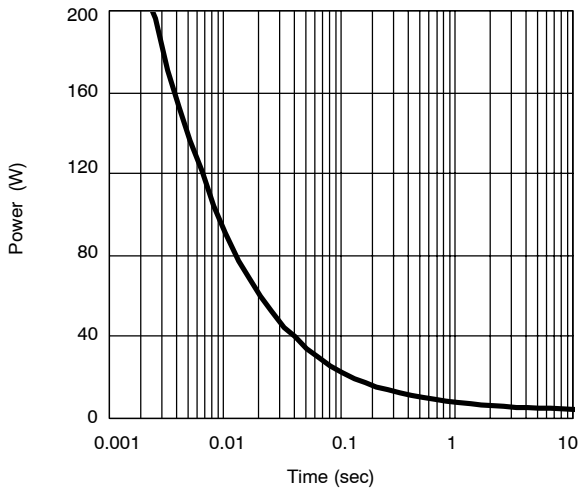


TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)

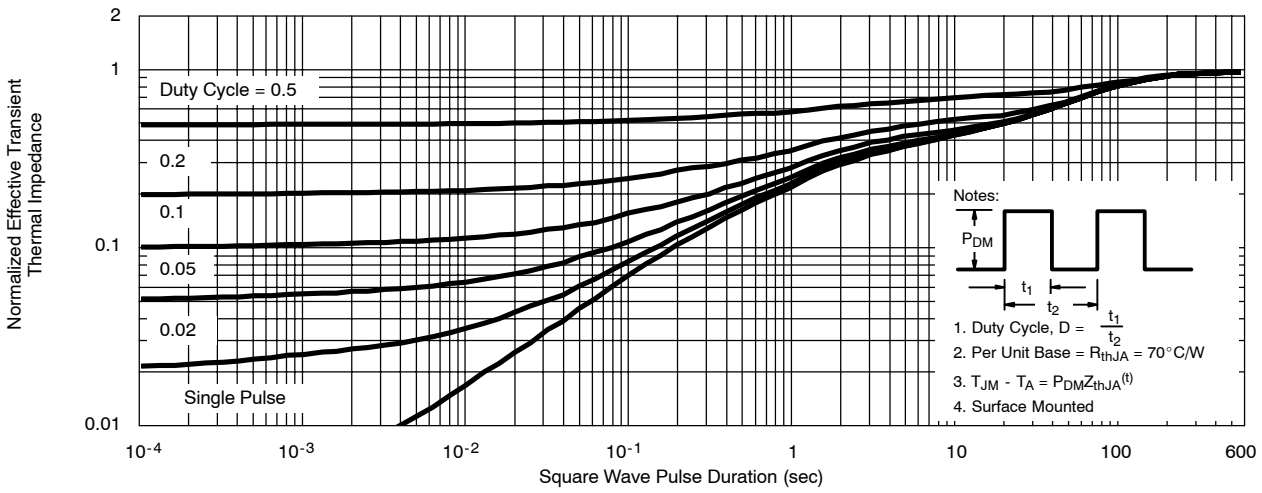
Threshold Voltage



Single Pulse Power, Junction-to-Ambient



Normalized Thermal Transient Impedance, Junction-to-Ambient



Normalized Thermal Transient Impedance, Junction-to-Foot

