



N-Channel 200-V (D-S) MOSFET

PRODUCT SUMMARY

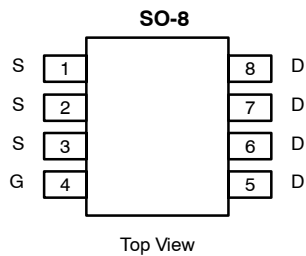
V_{DS} (V)	$r_{DS(on)}$ (Ω)	I_D (A)
200	0.130 @ $V_{GS} = 10$ V	3
	0.142 @ $V_{GS} = 6.0$ V	2.8

FEATURES

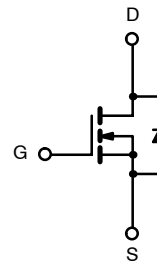
- TrenchFET® Power MOSFET
- 100% Rg Tested

APPLICATIONS

- Primary Side Switch



Ordering Information: Si4418DY—E3
Si4418DY-T1—E3 (with Tape and Reel)



N-Channel MOSFET

ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ UNLESS OTHERWISE NOTED)

Parameter		Symbol	10 secs	Steady State	Unit
Drain-Source Voltage		V _{DS}	200		V
Gate-Source Voltage		V _{GS}	± 20		
Continuous Drain Current (T _J = 150°C) ^a	T _A = 25°C	I _D	3	2.3	A
	T _A = 85°C		2.1	1.6	
Pulsed Drain Current		I _{DM}	12		
Avalanche Current	L = 0.1 mH	I _{AS}	6		
Single Avalanche Energy (Duty Cycle ≤ 1%)		E _{AS}	1.8		mJ
Continuous Source Current (Diode Conduction) ^a		I _S	2.1	1.25	A
Maximum Power Dissipation ^a	T _A = 25°C	P _D	2.5	1.5	W
	T _A = 85°C		1.3	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	$t \leq 10$ sec	R_{thJA}	36	50	$^\circ\text{C}/\text{W}$
	Steady State		71	85	
Maximum Junction-to-Foot (Drain)	Steady State	R_{thJF}	15	20	

Notes

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

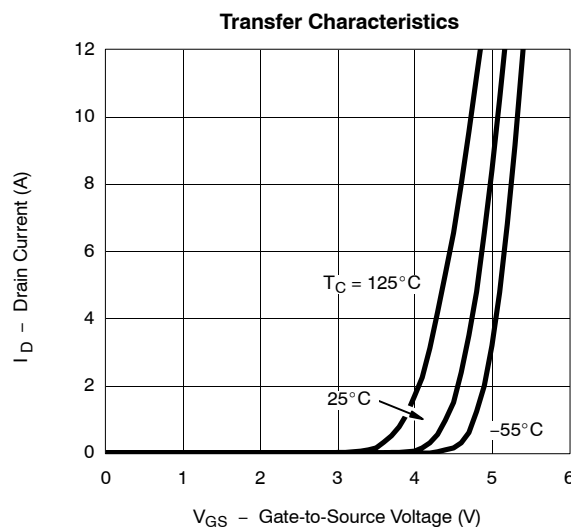
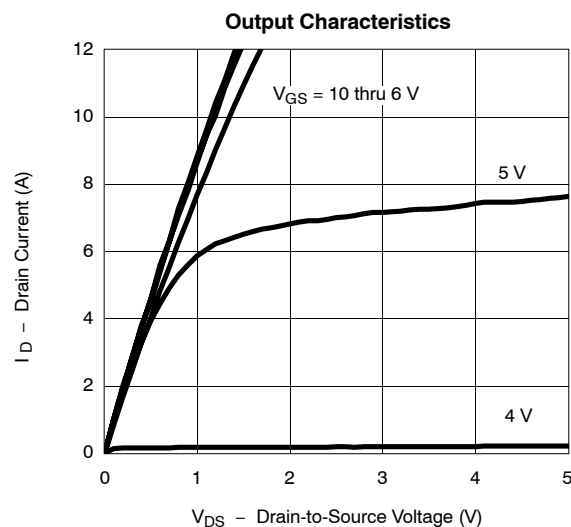
SPECIFICATIONS ($T_J = 25^\circ\text{C}$ UNLESS OTHERWISE NOTED)

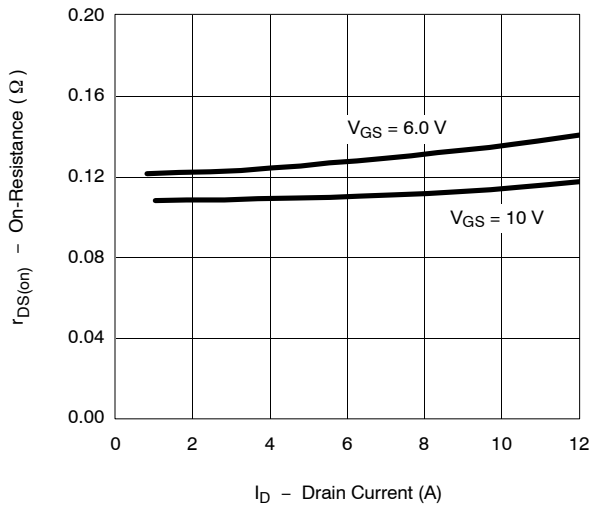
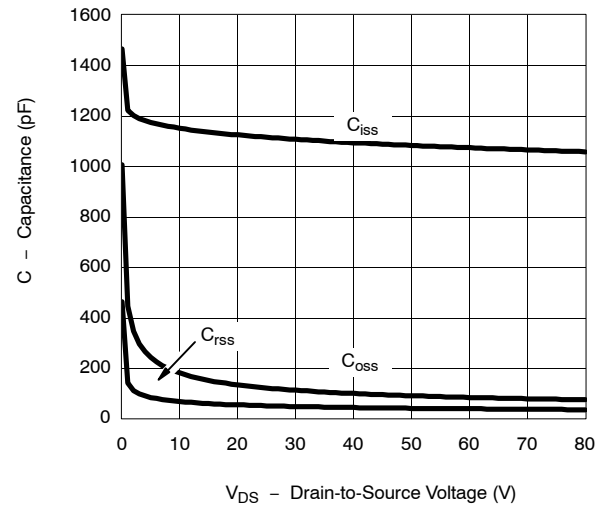
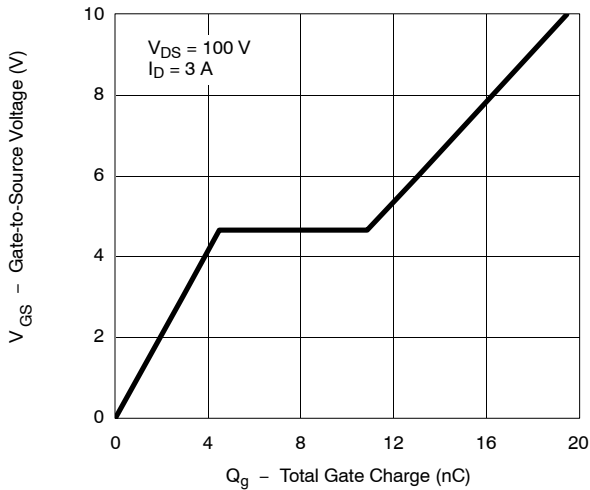
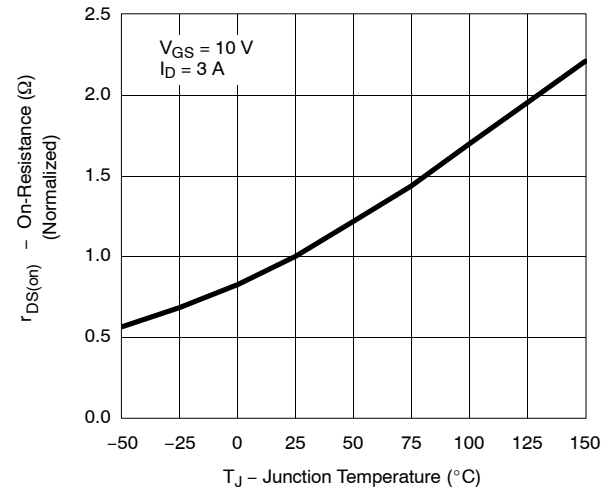
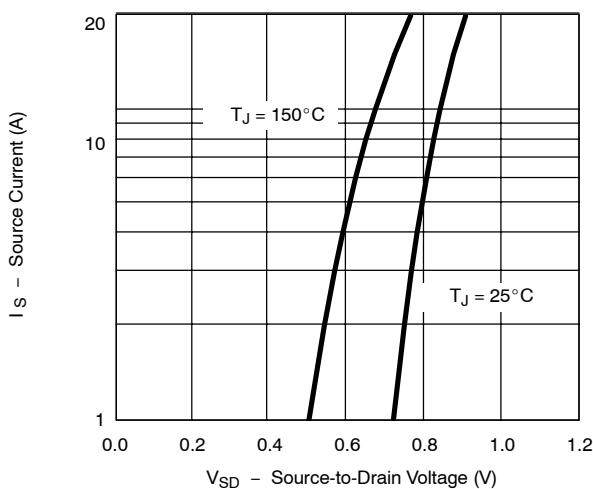
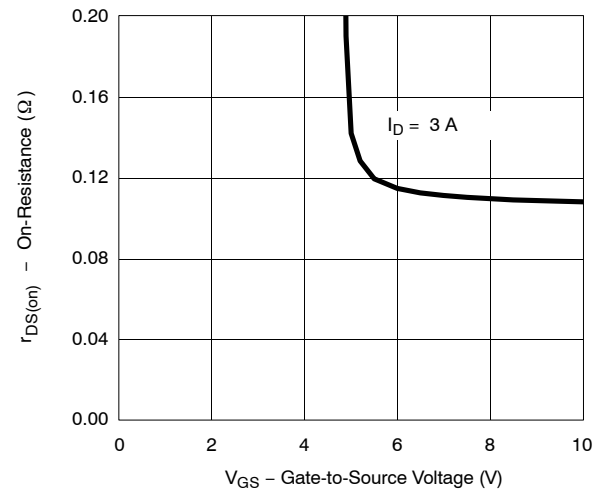
Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Static						
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}$, $I_D = 250\ \mu\text{A}$	2		4	V
Gate-Body Leakage	I_{GSS}	$V_{DS} = 0\ \text{V}$, $V_{GS} = \pm 20\ \text{V}$			± 100	nA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 200\ \text{V}$, $V_{GS} = 0\ \text{V}$			1	μA
		$V_{DS} = 200\ \text{V}$, $V_{GS} = 0\ \text{V}$, $T_J = 85^\circ\text{C}$			20	
On-State Drain Current ^a	$I_{D(on)}$	$V_{DS} \geq 5\ \text{V}$, $V_{GS} = 10\ \text{V}$	12			A
Drain-Source On-State Resistance ^a	$r_{DS(on)}$	$V_{GS} = 10\ \text{V}$, $I_D = 3\ \text{A}$		0.110	0.130	Ω
		$V_{GS} = 6.0\ \text{V}$, $I_D = 2.8\ \text{A}$		0.120	0.142	
Forward Transconductance ^a	g_{fs}	$V_{DS} = 15\ \text{V}$, $I_D = 3\ \text{A}$		13		S
Diode Forward Voltage ^a	V_{SD}	$I_S = 2.1\ \text{A}$, $V_{GS} = 0\ \text{V}$		0.8	1.2	V
Dynamic^b						
Total Gate Charge	Q_g	$V_{DS} = 100\ \text{V}$, $V_{GS} = 10\ \text{V}$, $I_D = 3\ \text{A}$		20	30	nC
Gate-Source Charge	Q_{gs}			4.5		
Gate-Drain Charge	Q_{gd}			6.5		
Gate Resistance	R_g	$f = 1\ \text{MHz}$	1	2	3.4	Ω
Turn-On Delay Time	$t_{d(on)}$	$V_{DD} = 100\ \text{V}$, $R_L = 100\ \Omega$ $I_D \cong 1\ \text{A}$, $V_{GEN} = 10\ \text{V}$, $R_G = 6\ \Omega$		15	25	ns
Rise Time	t_r			15	25	
Turn-Off Delay Time	$t_{d(off)}$			40	60	
Fall Time	t_f			20	30	
Source-Drain Reverse Recovery Time	t_{rr}	$I_F = 2.1\ \text{A}$, $di/dt = 100\ \text{A}/\mu\text{s}$		70	110	

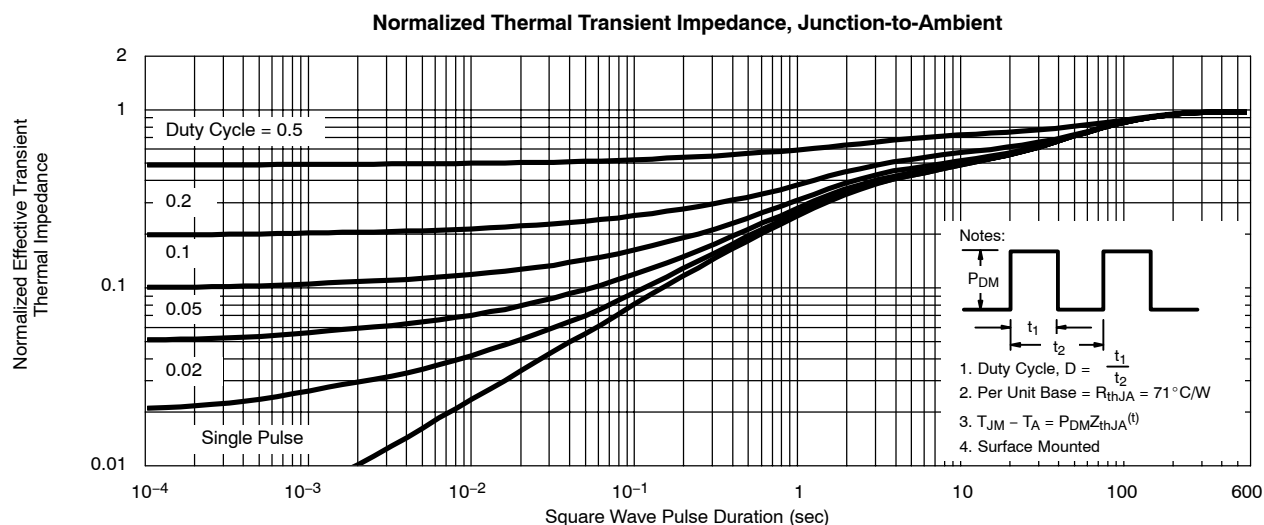
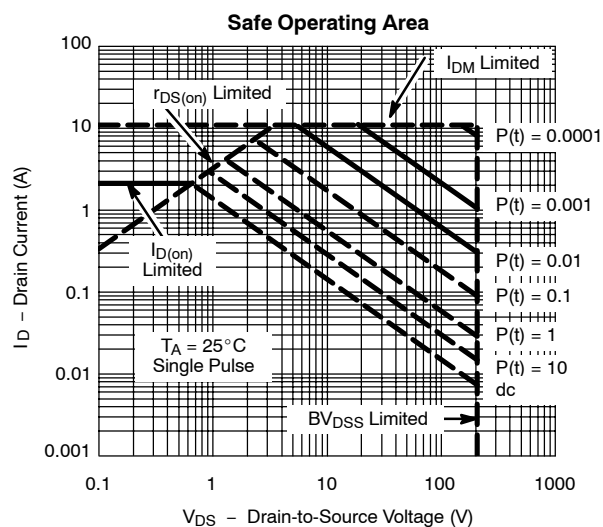
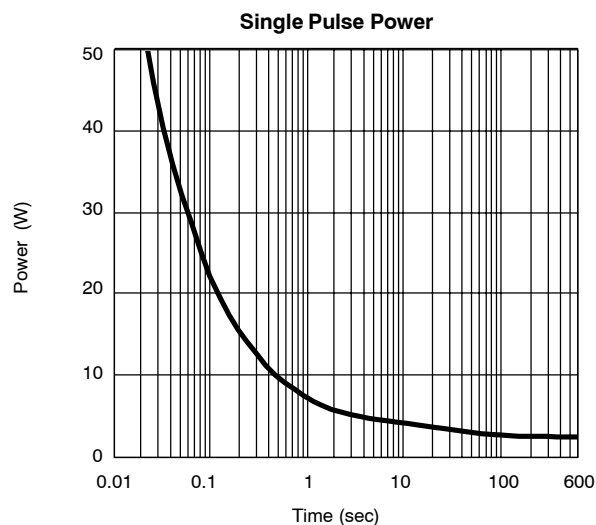
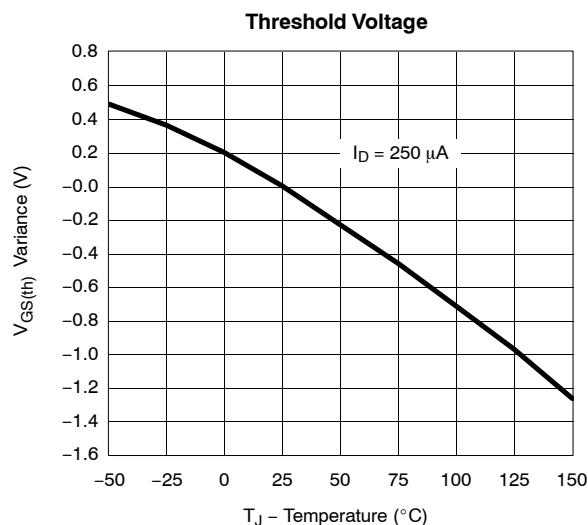
Notes

a. Pulse test; pulse width $\leq 300\ \mu\text{s}$, duty cycle $\leq 2\%$.

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)




TYPICAL CHARACTERISTICS (25 °C UNLESS NOTED)

Normalized Thermal Transient Impedance, Junction-to-Foot

