



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

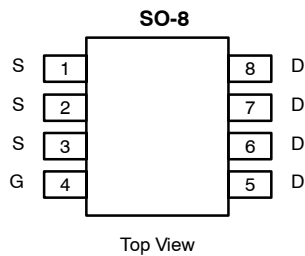
PRODUCT SUMMARY		
V <sub>DS</sub> (V)	r <sub>DS(on)</sub> (Ω)	I <sub>D</sub> (A)
200	0.130 @ V <sub>GS</sub> = 10 V	3
	0.142 @ V <sub>GS</sub> = 6.0 V	2.8

### FEATURES

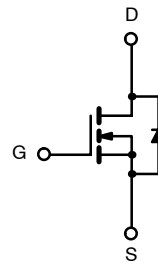
- TrenchFET® Power MOSFET
- 100% Rg Tested

### APPLICATIONS

- Primary Side Switch



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



ABSOLUTE MAXIMUM RATINGS (T <sub>A</sub> = 25°C UNLESS OTHERWISE NOTED)					
Parameter	Symbol	10 secs	Steady State	Unit	
Drain-Source Voltage	V <sub>DS</sub>	200		V	
Gate-Source Voltage	V <sub>GS</sub>	± 20			
Continuous Drain Current (T <sub>J</sub> = 150°C) <sup>a</sup>	I <sub>D</sub>	T <sub>A</sub> = 25°C	3	2.3	A
		T <sub>A</sub> = 85°C	2.1	1.6	
Pulsed Drain Current	I <sub>DM</sub>	12			
Avalanche Current	I <sub>AS</sub>	6			
Single Avalanche Energy (Duty Cycle ≤ 1%)	E <sub>AS</sub>	L = 0.1 mH	1.8		mJ
Continuous Source Current (Diode Conduction) <sup>a</sup>			I <sub>S</sub>	2.1	
Maximum Power Dissipation <sup>a</sup>	P <sub>D</sub>	T <sub>A</sub> = 25°C	2.5	1.5	W
		T <sub>A</sub> = 85°C	1.3	0.8	
Operating Junction and Storage Temperature Range	T <sub>J</sub> , T <sub>stg</sub>	-55 to 150		°C	

THERMAL RESISTANCE RATINGS					
Parameter	Symbol	Typical	Maximum	Unit	
Maximum Junction-to-Ambient <sup>a</sup>	R <sub>thJA</sub>	t ≤ 10 sec	36	50	°C/W
		Steady State	71	85	
Maximum Junction-to-Foot (Drain)	R <sub>thJF</sub>	15	20		

Notes

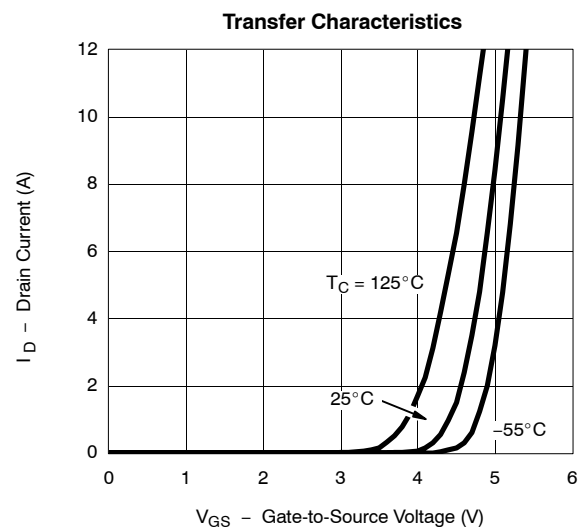
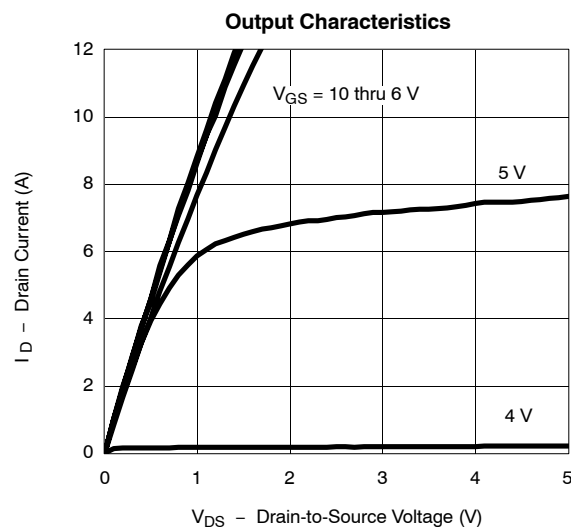
a. Surface Mounted on 1" x 1" FR4 Board.

**SPECIFICATIONS (T<sub>J</sub> = 25 °C UNLESS OTHERWISE NOTED)**

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
<b>Static</b>						
Gate Threshold Voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = 250 μA	2		4	V
Gate-Body Leakage	I <sub>GSS</sub>	V <sub>DS</sub> = 0 V, V <sub>GS</sub> = ±20 V			±100	nA
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> = 200 V, V <sub>GS</sub> = 0 V			1	μA
		V <sub>DS</sub> = 200 V, V <sub>GS</sub> = 0 V, T <sub>J</sub> = 85 °C			20	
On-State Drain Current <sup>a</sup>	I <sub>D(on)</sub>	V <sub>DS</sub> ≥ 5 V, V <sub>GS</sub> = 10 V	12			A
Drain-Source On-State Resistance <sup>a</sup>	r <sub>DS(on)</sub>	V <sub>GS</sub> = 10 V, I <sub>D</sub> = 3 A		0.110	0.130	Ω
		V <sub>GS</sub> = 6.0 V, I <sub>D</sub> = 2.8 A		0.120	0.142	
Forward Transconductance <sup>a</sup>	g <sub>fs</sub>	V <sub>DS</sub> = 15 V, I <sub>D</sub> = 3 A		13		S
Diode Forward Voltage <sup>a</sup>	V <sub>SD</sub>	I <sub>S</sub> = 2.1 A, V <sub>GS</sub> = 0 V		0.8	1.2	V
<b>Dynamic<sup>b</sup></b>						
Total Gate Charge	Q <sub>g</sub>	V <sub>DS</sub> = 100 V, V <sub>GS</sub> = 10 V, I <sub>D</sub> = 3 A		20	30	nC
Gate-Source Charge	Q <sub>gs</sub>		4.5			
Gate-Drain Charge	Q <sub>gd</sub>		6.5			
Gate Resistance	R <sub>g</sub>	f = 1 MHz	1	2	3.4	Ω
Turn-On Delay Time	t <sub>d(on)</sub>	V <sub>DD</sub> = 100 V, R <sub>L</sub> = 100 Ω I <sub>D</sub> ≅ 1 A, V <sub>GEN</sub> = 10 V, R <sub>G</sub> = 6 Ω		15	25	ns
Rise Time	t <sub>r</sub>		15	25		
Turn-Off Delay Time	t <sub>d(off)</sub>		40	60		
Fall Time	t <sub>f</sub>		20	30		
Source-Drain Reverse Recovery Time	t <sub>rr</sub>	I <sub>F</sub> = 2.1 A, di/dt = 100 A/μs		70	110	

## Notes

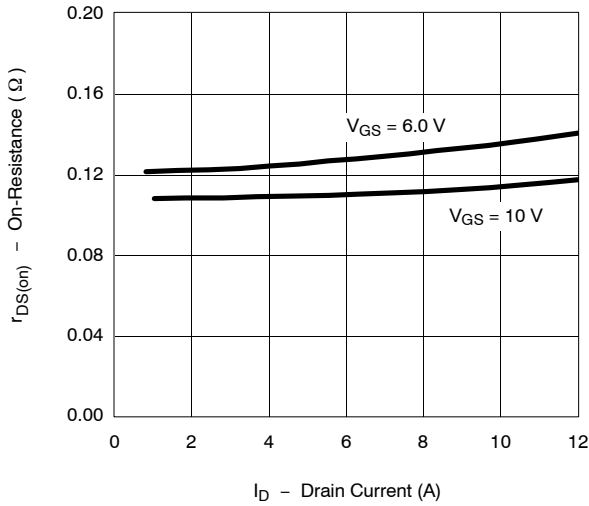
- a. Pulse test; pulse width ≤ 300 μs, duty cycle ≤ 2%.  
b. Guaranteed by design, not subject to production testing.

**TYPICAL CHARACTERISTICS (25 °C UNLESS NOTED)**

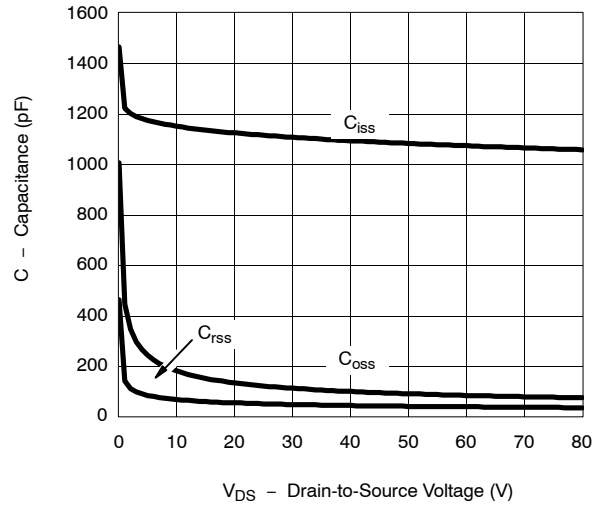


**TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)**

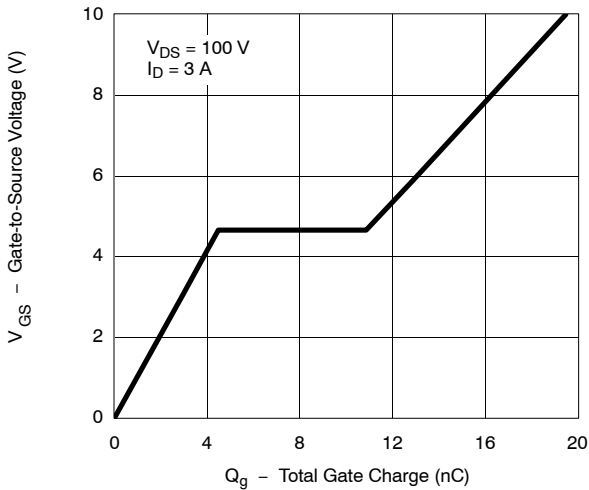
On-Resistance vs. Drain Current



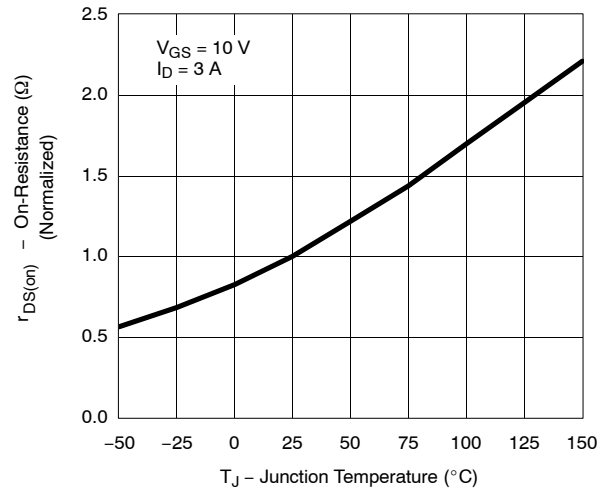
Capacitance



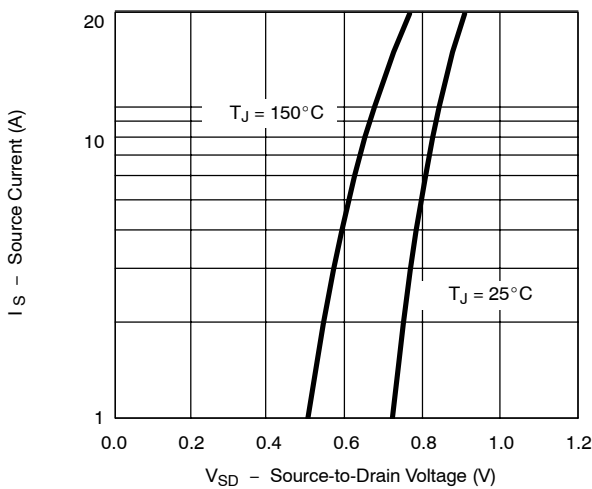
Gate Charge



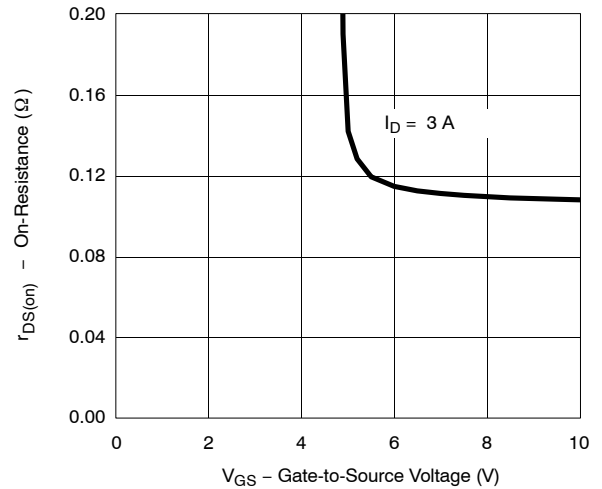
On-Resistance vs. Junction Temperature



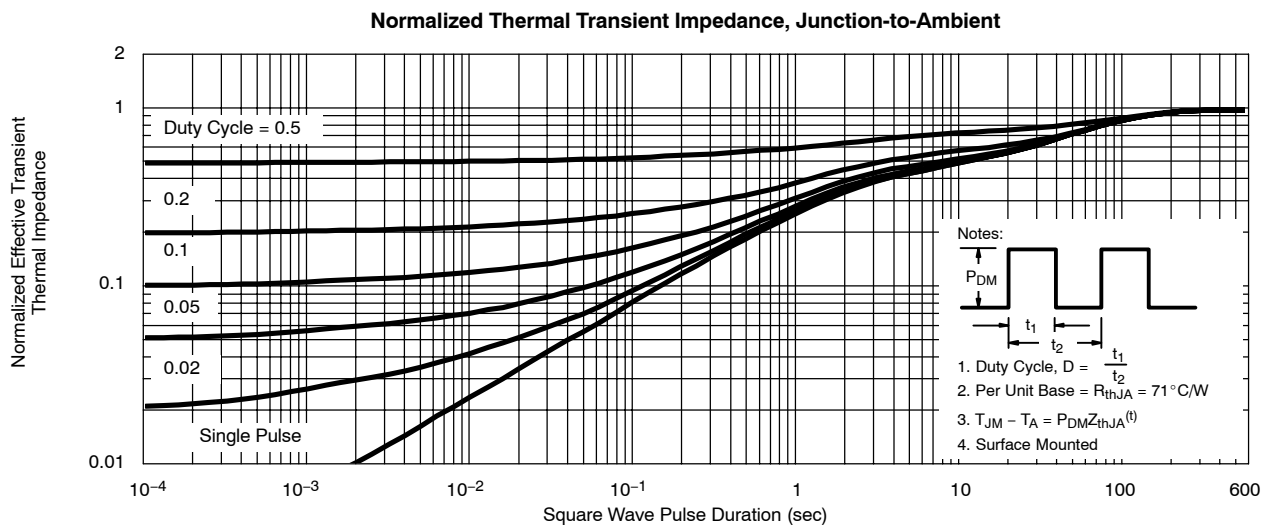
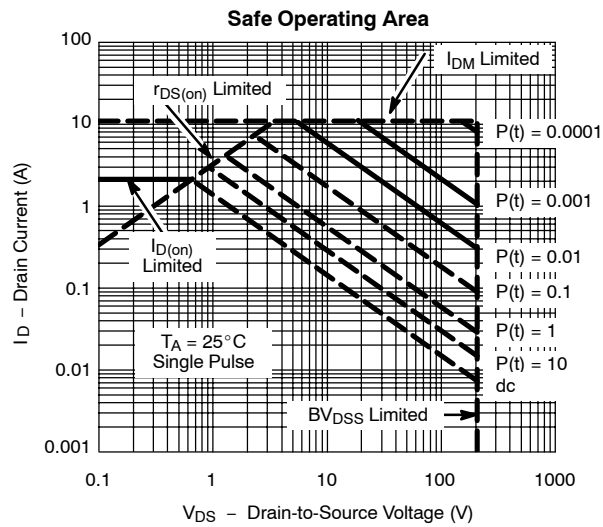
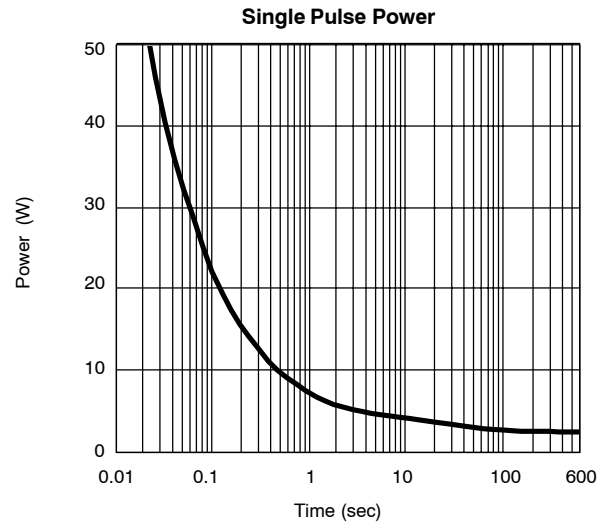
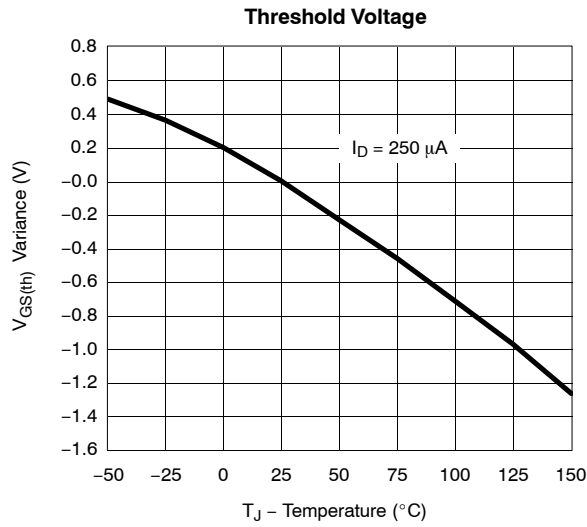
Source-Drain Diode Forward Voltage



On-Resistance vs. Gate-to-Source Voltage



**TYPICAL CHARACTERISTICS (25 °C UNLESS NOTED)**





**TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)**

Normalized Thermal Transient Impedance, Junction-to-Foot

