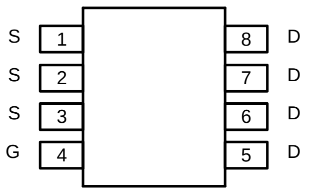
N-Channel 2.5-V (G-S) MOSFET

2.5-V Rated

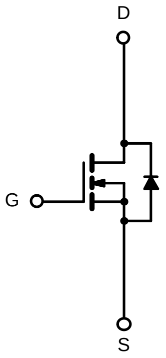
PRODUCT SUMMARY		
V_{DS} (V)	$r_{DS(on)}$ (Ω)	I_D (A)
20	0.0135 @ V_{GS} = 4.5 V	10
	0.0160 @ V_{GS} = 2.5 V	9.3

SO-8



Top View

Ordering Information: Si9426DY
Si9426DY-T1 (with Tape and Reel)



N-Channel MOSFET

ABSOLUTE MAXIMUM RATINGS (T_A = 25°C UNLESS OTHERWISE NOTED)

Parameter		Symbol	Limit	Unit
Drain-Source Voltage		V_{DS}	20	V
Gate-Source Voltage		V_{GS}	± 8	
Continuous Drain Current (T_J = 150°C)[a]	T_A = 25°C	I_D	10	A
	T_A = 70°C		8	
Pulsed Drain Current		I_{DM}	30	
Continuous Source Current (Diode Conduction)[a]		I_S	2.3	
Maximum Power Dissipation[a]	T_A = 25°C	P_D	2.5	W
	T_A = 70°C		1.6	
Operating Junction and Storage Temperature Range		T_J, T_{stg}	-55 to 150	°C

THERMAL RESISTANCE RATINGS

Parameter	Symbol	Limit	Unit
Maximum Junction-to-Ambient[a]	R_{thJA}	50	°C/W

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

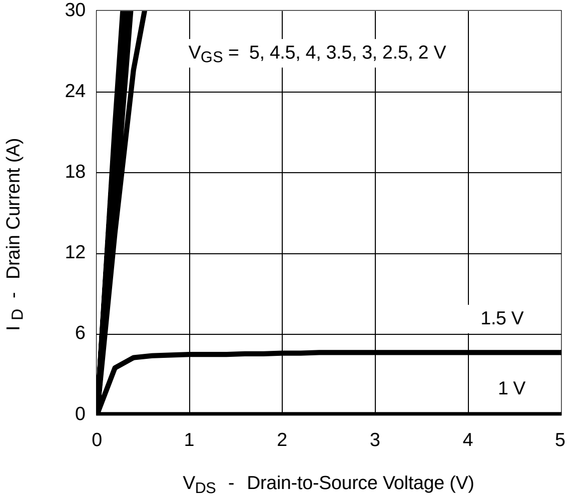
SPECIFICATIONS (T_J = 25°C UNLESS OTHERWISE NOTED)

Parameter	Symbol	Test Condition	Min	Typ[a]	Max	Unit
Static						
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}$, I_D = 250 µA	0.6			V
Gate-Body Leakage	I_{GSS}	V_{DS} = 0 V, V_{GS} = ±8 V			±100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 20 V, V_{GS} = 0 V			1	µA
		V_{DS} = 20 V, V_{GS} = 0 V, T_J = 55°C			5	
On-State Drain Current[b]	$I_{D(on)}$	$V_{DS} \geq$ 5 V, V_{GS} = 4.5 V	30			A
Drain-Source On-State Resistance[b]	$r_{DS(on)}$	V_{GS} = 4.5 V, I_D = 10 A		0.0098	0.0135	Ω
		V_{GS} = 2.5 V, I_D = 8 A		0.011	0.0160	
Forward Transconductance[b]	g_{fs}	V_{DS} = 10 V, I_D = 10 A		57		S
Diode Forward Voltage[b]	V_{SD}	I_S = 2.3 A, V_{GS} = 0 V		0.71	1.2	V
Dynamic[a]						
Total Gate Charge	Q_g	V_{DS} = 6 V, V_{GS} = 4.5 V, I_D = 10 A		46.5	80	nC
Gate-Source Charge	Q_{gs}			5.5		
Gate-Drain Charge	Q_{gd}			13.5		
Gate Resistance	R_g		1		3.9	Ω
Turn-On Delay Time	$t_{d(on)}$	V_{DD} = 6 V, R_L = 6 Ω $I_D \cong$ 1 A, V_{GEN} = 4.5 V, R_G = 6 Ω		50	100	ns
Rise Time	t_r			110	200	
Turn-Off Delay Time	$t_{d(off)}$			150	300	
Fall Time	t_f			55	100	
Source-Drain Reverse Recovery Time	t_{rr}	I_F = 2.3 A, di/dt = 100 A/µs		59	100	

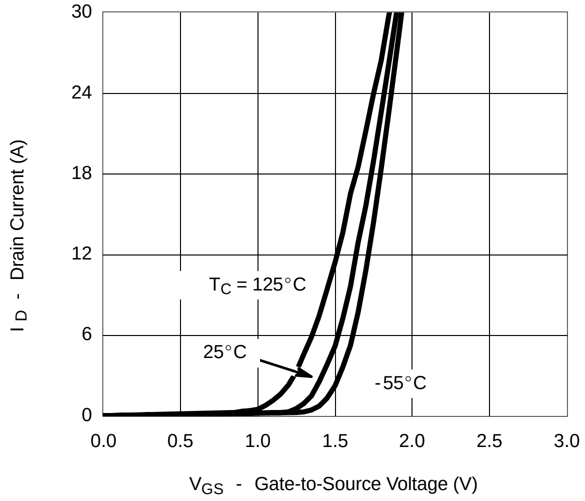
Notes
a. Guaranteed by design, not subject to production testing.
b. Pulse test; pulse width ≤ 300 µs, duty cycle ≤ 2%.

TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)

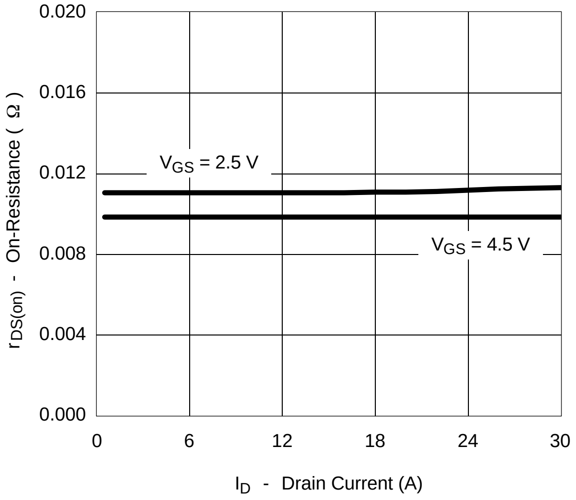
Output Characteristics



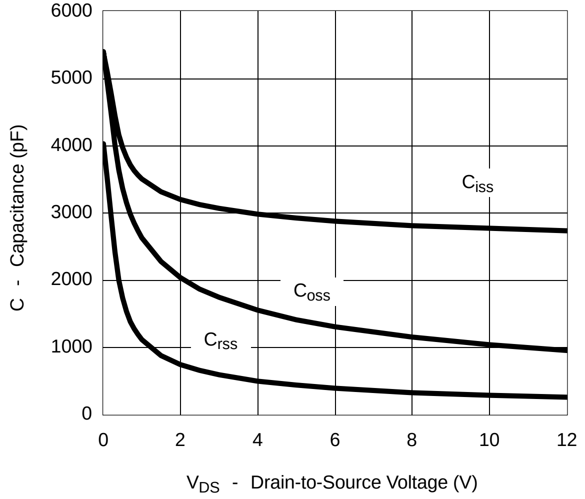
Transfer Characteristics



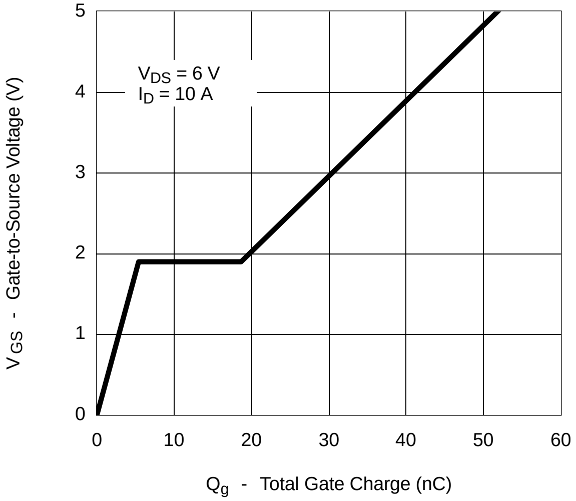
On-Resistance vs. Drain Current



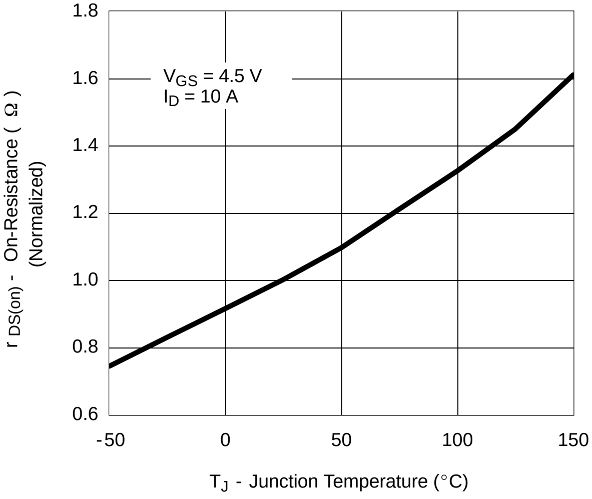
Capacitance



Gate Charge

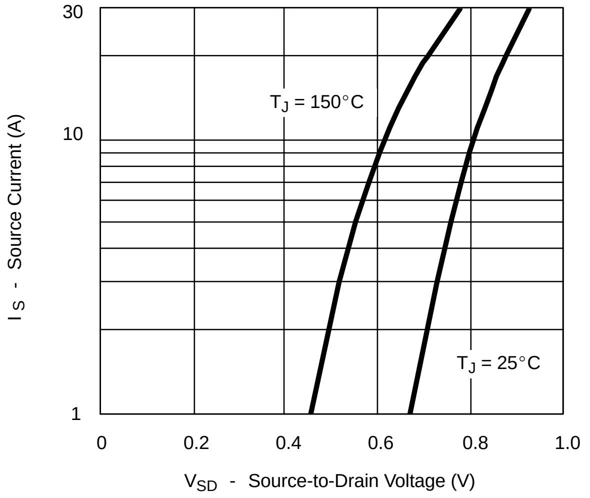


On-Resistance vs. Junction Temperature

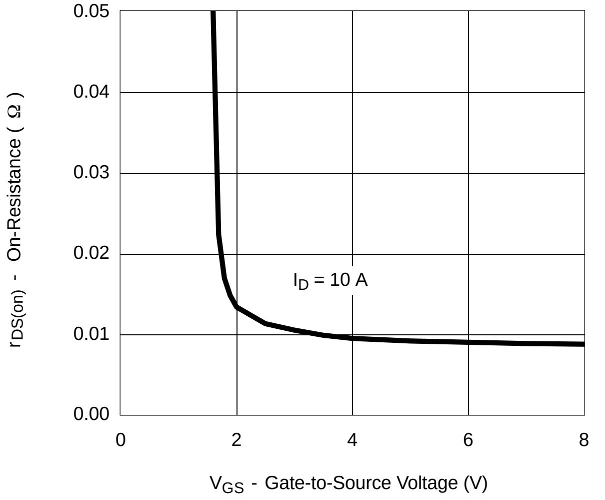


TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)

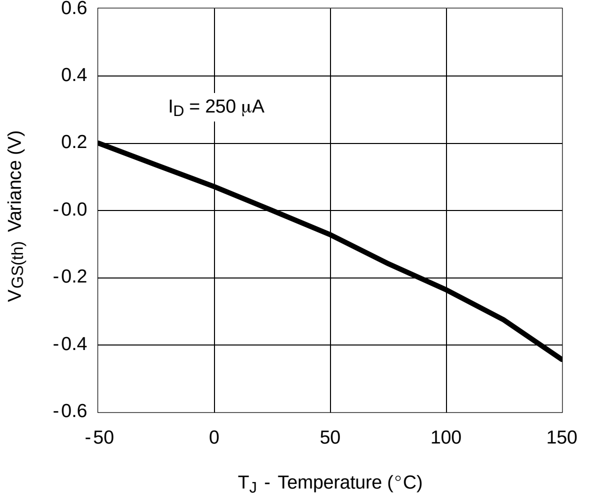
Source-Drain Diode Forward Voltage



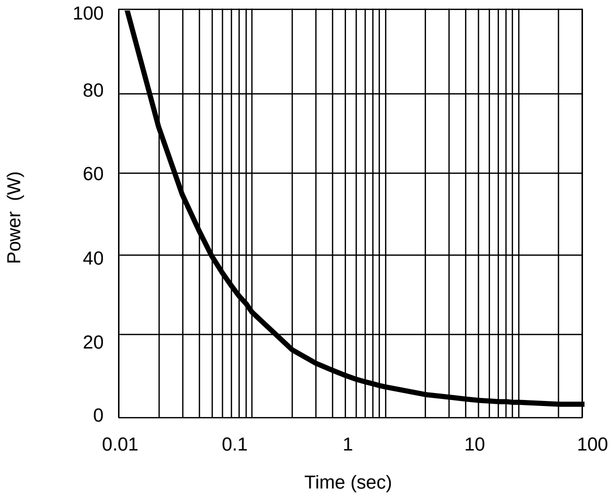
On-Resistance vs. Gate-to-Source Voltage



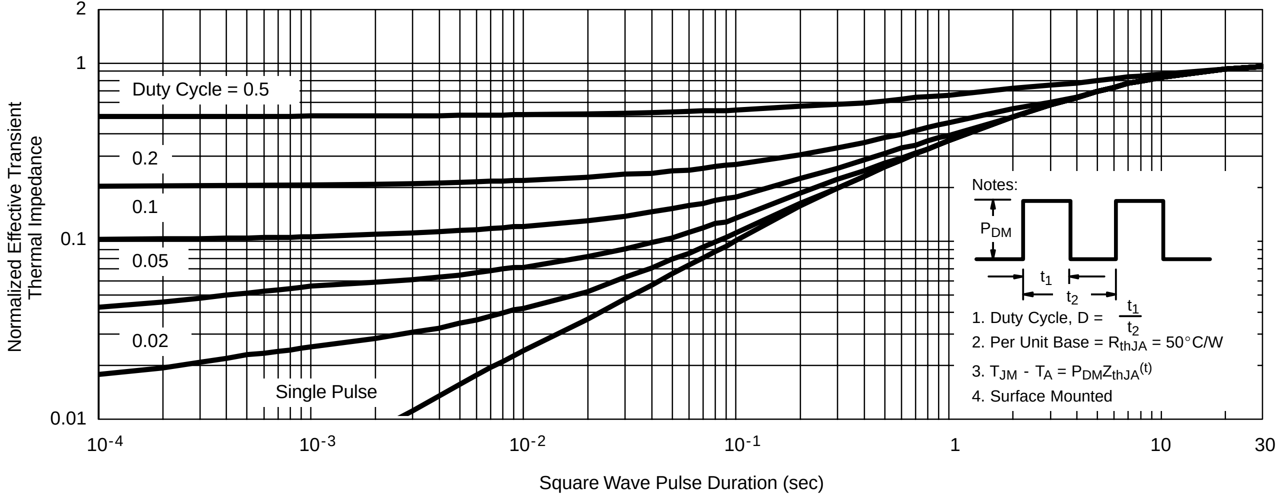
Threshold Voltage



Single Pulse Power



Normalized Thermal Transient Impedance, Junction-to-Ambient



Notes:

1. Duty Cycle, D = $\frac{t_1}{t_2}$
2. Per Unit Base = R_{thJA} = 50°C/W
3. $T_{JM} - T_A = P_{DM}Z_{thJA}^{(t)}$
4. Surface Mounted