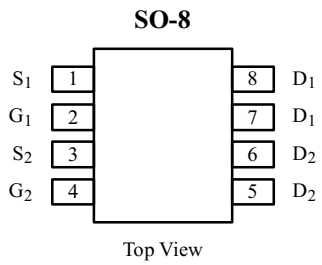
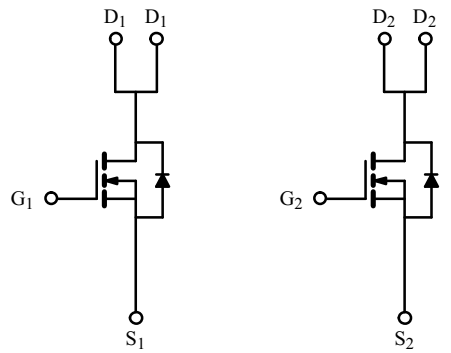
Dual N-Channel Enhancement-Mode MOSFET

Product Summary

V_{DS} (V)	$r_{DS(on)}$ (Ω)	I_D (A)
20	0.10 @ V_{GS} = 10 V	±3.5
	0.20 @ V_{GS} = 4.5 V	±2.0

Recommended upgrade: Si4936DY or Si9936DY
Lower profile/smaller size see: Si6956DQ





N-Channel MOSFET 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}	±20	
Continuous Drain Current (T_J = 150°C)[a]	T_A = 25°C	I_D	±3.5	A
	T_A = 70°C		±2.8	
Pulsed Drain Current		I_{DM}	±14	
Continuous Source Current (Diode Conduction)[a]		I_S	1.7	
Maximum Power Dissipation[a]	T_A = 25°C	P_D	2.0	W
	T_A = 70°C		1.3	
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}	62.5	°C/W

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

Updates to this data sheet may be obtained via facsimile by calling Siliconix FaxBack, 1-408-970-5600. Please request FaxBack document #70140.
A SPICE Model data sheet is available for this product (FaxBack document #70522).

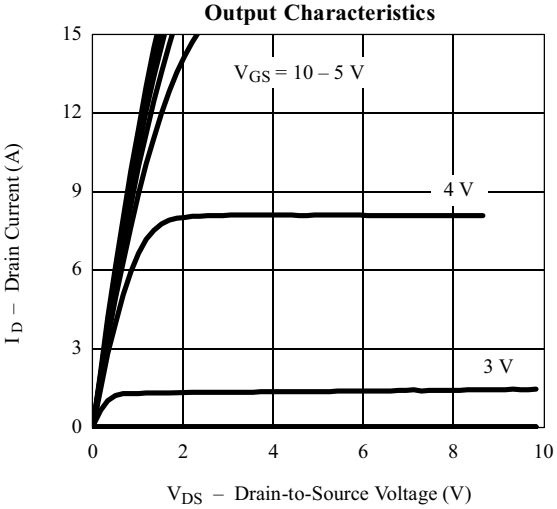
Specifications (T_J = 25°C Unless Otherwise Noted)

Parameter	Symbol	Test Condition	Min	Typ[a]	Max	Unit
Static						
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}$, I_D = 250 µA	1.0			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} = 16 V, V_{GS} = 0 V			2	µA
		V_{DS} = 16 V, V_{GS} = 0 V, T_J = 55°C			25	
On-State Drain Current[b]	$I_{D(on)}$	$V_{DS} \geq$ 5 V, V_{GS} = 10 V	14			A
Drain-Source On-State Resistance[b]	$r_{DS(on)}$	V_{GS} = 10 V, I_D = 2.2 A		0.082	0.10	Ω
		V_{GS} = 4.5 V, I_D = 1 A		0.12	0.20	
Forward Transconductance[b]	g_{fs}	V_{DS} = 15 V, I_D = 3.5 A		6.5		S
Diode Forward Voltage[b]	V_{SD}	I_S = 1.7 A, V_{GS} = 0 V		0.75	1.2	V
Dynamic[a]						
Total Gate Charge	Q_g	V_{DS} = 10 V, V_{GS} = 10 V, I_D = 1.8 A		7	30	nC
Gate-Source Charge	Q_{gs}			1.2		
Gate-Drain Charge	Q_{gd}			2.1		
Turn-On Delay Time	$t_{d(on)}$	V_{DD} = 10 V, R_L = 10 Ω $I_D \cong$ 1 A, V_{GEN} = 10 V, R_G = 6 Ω		8	20	ns
Rise Time	t_r			12	20	
Turn-Off Delay Time	$t_{d(off)}$			21	90	
Fall Time	t_f			8	50	
Source-Drain Reverse Recovery Time	t_{rr}	I_F = 1.7 A, di/dt = 100 A/µs		50	100	

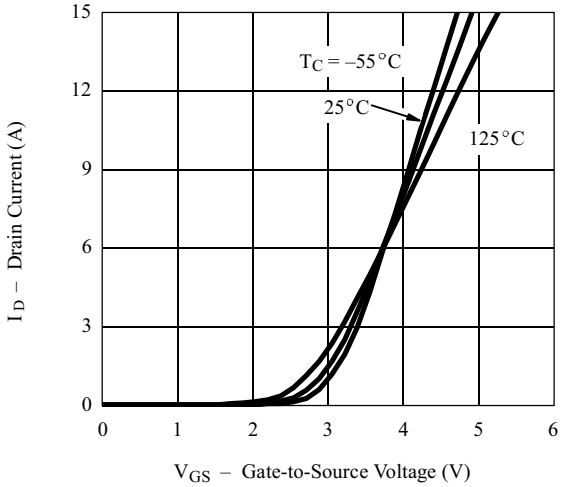
Notes
a. Guaranteed by design, not subject to production testing.
b. Pulse test; pulse width ≤ 300 µs, duty cycle ≤ 2%.

Typical Characteristics (25°C Unless Otherwise Noted)

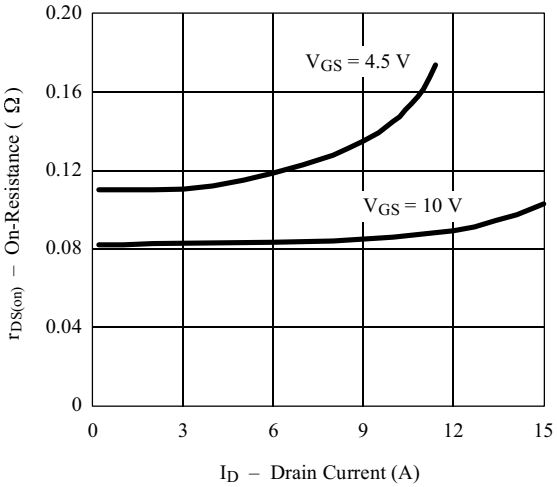
Output Characteristics



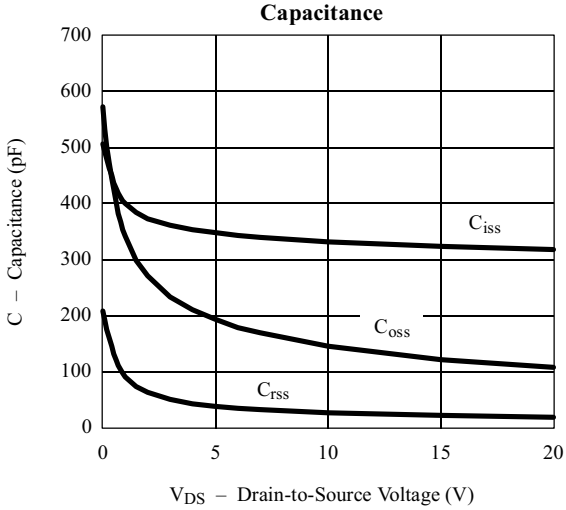
Transfer Characteristics



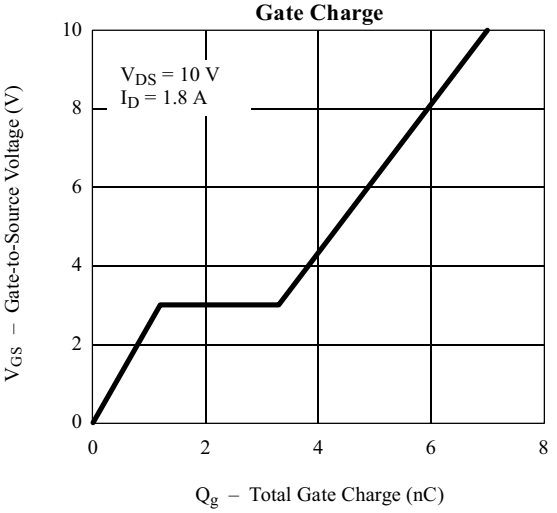
On-Resistance vs. Drain Current



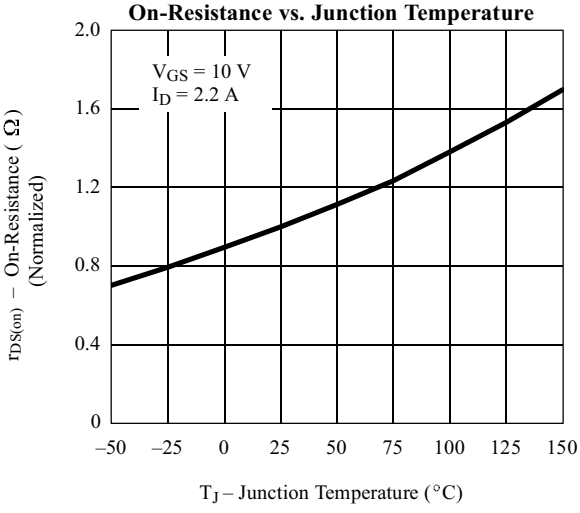
Capacitance



Gate Charge

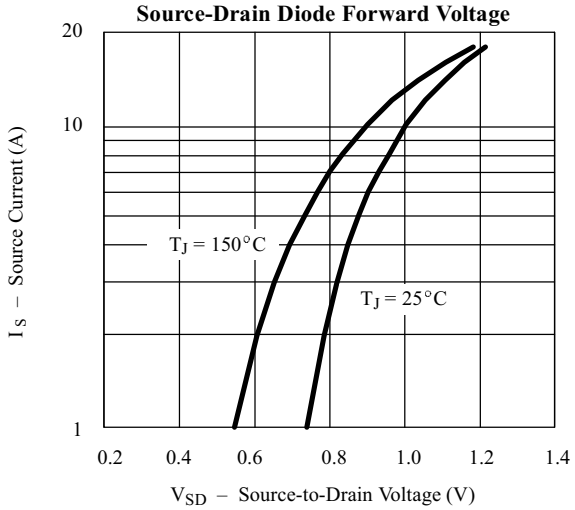


On-Resistance vs. Junction Temperature

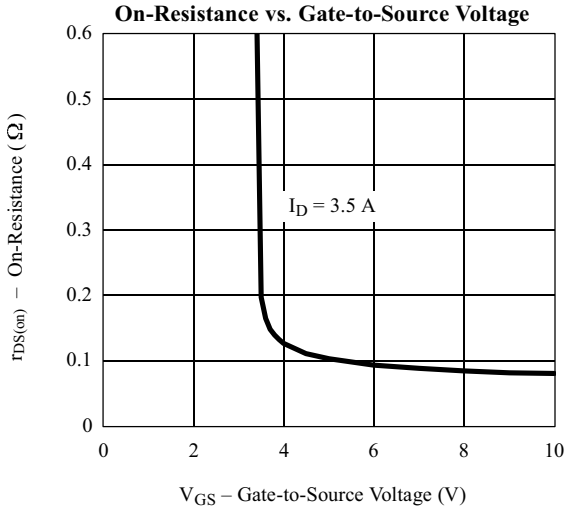


Typical Characteristics (25°C Unless Otherwise Noted)

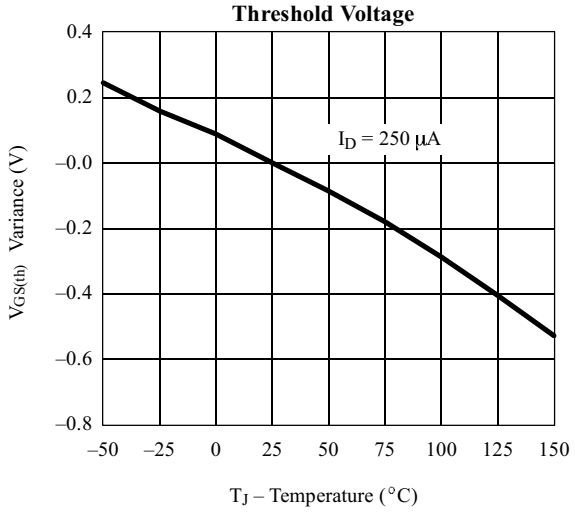
Source-Drain Diode Forward Voltage



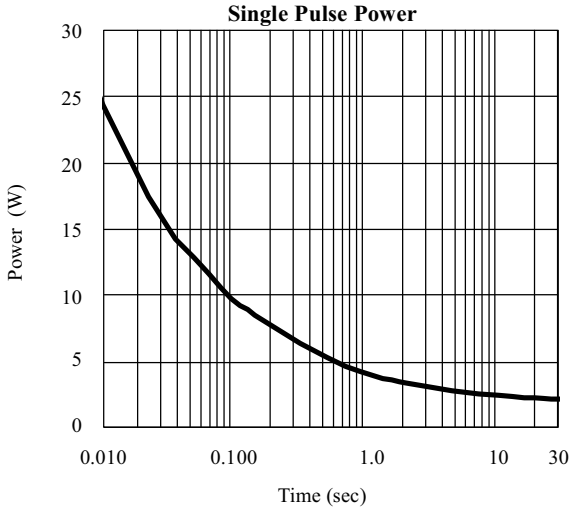
On-Resistance vs. Gate-to-Source Voltage



Threshold Voltage



Single Pulse Power



Normalized Thermal Transient Impedance, Junction-to-Ambient