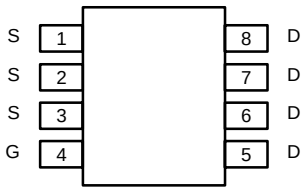
N-Channel 30-V (D-S) MOSFET

New Product

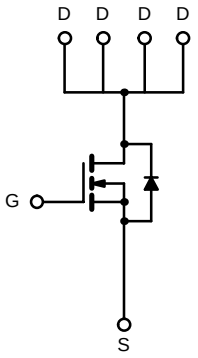
PRODUCT SUMMARY		
V_{DS} (V)	$R_{DS(ON)}$ (Ω)	I_D (A)
30	0.018 @ V_{GS} = 10 V	±9.0
	0.028 @ V_{GS} = 4.5 V	±7.3

TrenchFET® Power MOSFETs

SO-8



Top View



N-Channel MOSFET

ABSOLUTE MAXIMUM RATINGS (T_A = 25°C UNLESS OTHERWISE NOTED)				
PARAMETER		SYMBOL	LIMIT	UNIT
Drain-Source Voltage		V_{DS}	30	V
Gate-Source Voltage		V_{GS}	±20	
Continuous Drain Current (T_J = 150°C)[A]	T_A = 25°C	I_D	±9.0	A
	T_A = 70°C		±7.2	
Pulsed Drain Current (10 μs Pulse Width)		I_{DM}	±50	
Continuous Source Current (Diode Conduction)[A]		I_S	2.1	
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.

Updates to this data sheet may be obtained via facsimile by calling Siliconix FaxBack, 1-408-970-5600. Please request FaxBack document #70752.

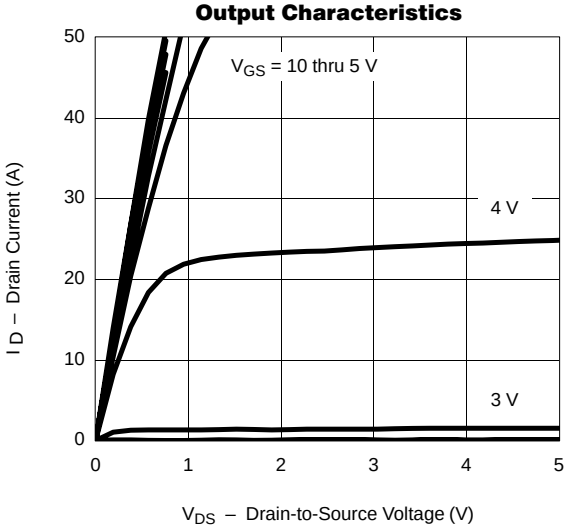
SPECIFICATIONS (T_J = 25°C UNLESS OTHERWISE NOTED)						
PARAMETER	**SYMBOL**	**TEST CONDITION**	**MIN**	**TYP**	**MAX**	**UNIT**
STATIC						
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250 µA	1			V
Gate-Body Leakage	I_{GSS}	V_{DS} = 0 V, V_{GS} = ±20 V			±100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 24 V, V_{GS} = 0 V			1	µA
		V_{DS} = 24 V, V_{GS} = 0 V, T_J = 55°C			25	
On-State Drain Current[A]	$I_{D(on)}$	V_{DS} ≥ 5 V, V_{GS} = 10 V	20			A
Drain-Source On-State Resistance[A]	$r_{DS(on)}$	V_{GS} = 10 V, I_D = 9.0 A		0.014	0.018	Ω
		V_{GS} = 4.5 V, I_D = 7.3 A		0.021	0.028	
Forward Transconductance[A]	g_{fs}	V_{DS} = 15 V, I_D = 9.0 A		27		S
Diode Forward Voltage[A]	V_{SD}	I_S = 2.1 A, V_{GS} = 0 V			1.2	V
DYNAMIC[B]						
Gate Charge	Q_g	V_{DS} = 15 V, V_{GS} = 5 V, I_D = 9.0 A		13	20	nC
Total Gate Charge	Q_{gt}	V_{DS} = 15 V, V_{GS} = 10 V, I_D = 9.0 A		24	35	
Gate-Source Charge	Q_{gs}			6		
Gate-Drain Charge	Q_{gd}			4		
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		12	20	ns
Rise Time	t_r			10	20	
Turn-Off Delay Time	$t_{d(off)}$			32	50	
Fall Time	t_f			11	20	
Source-Drain Reverse Recovery Time	t_{rr}	I_F = 2.1 A, di/dt = 100 A/µs		50	90	

Notes

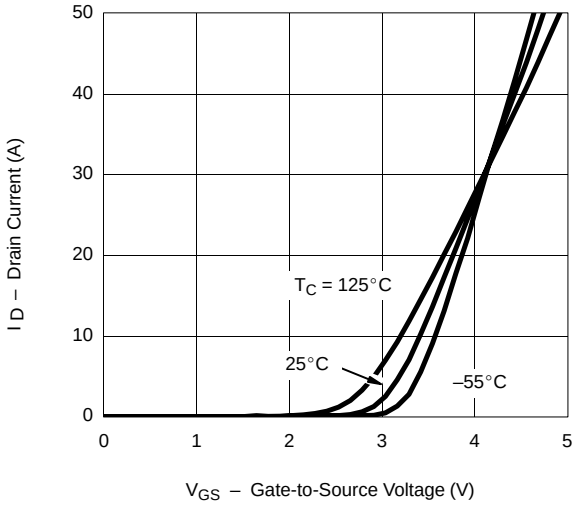
A. Pulse test; pulse width ≤ 300 µs, duty cycle ≤ 2%.
B. Guaranteed by design, not subject to production testing.

TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)

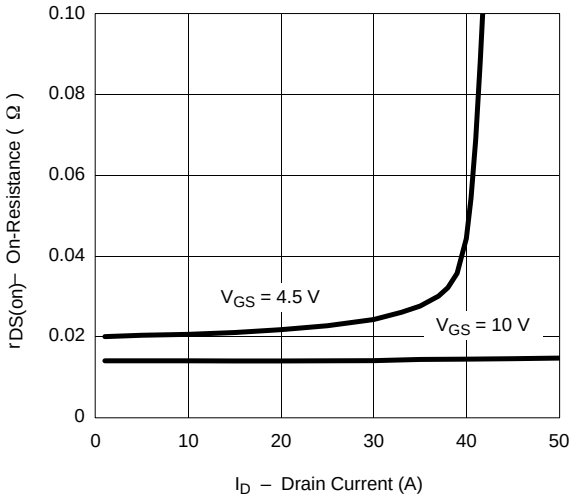
Output Characteristics



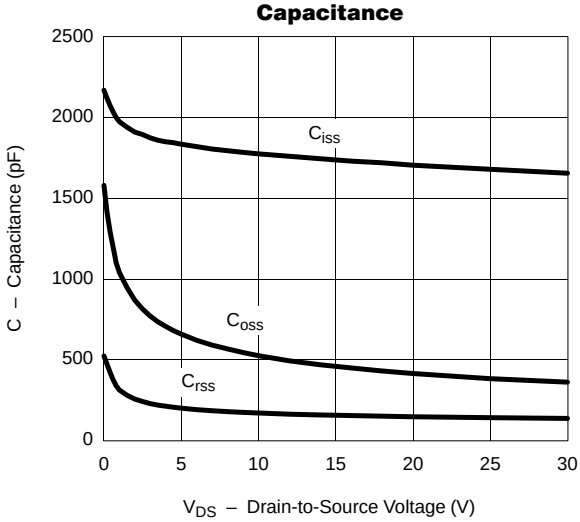
Transfer Characteristics



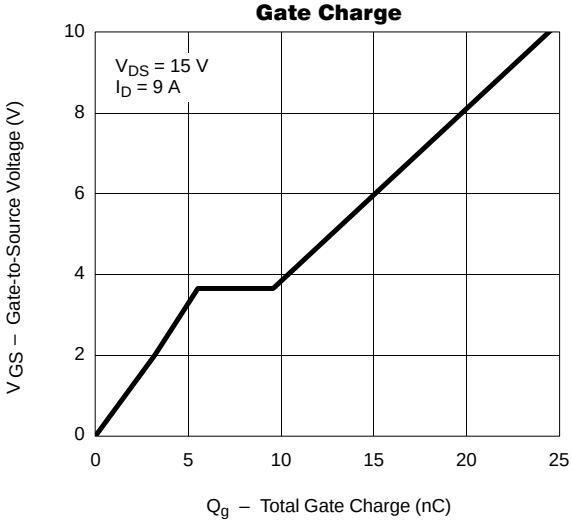
On-Resistance vs. Drain Current



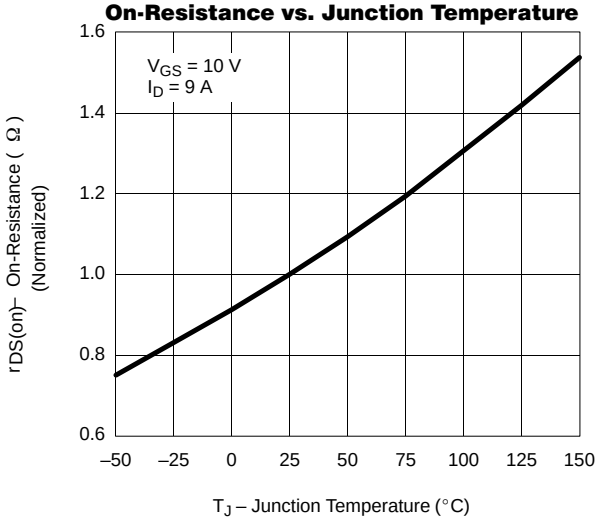
Capacitance



Gate Charge

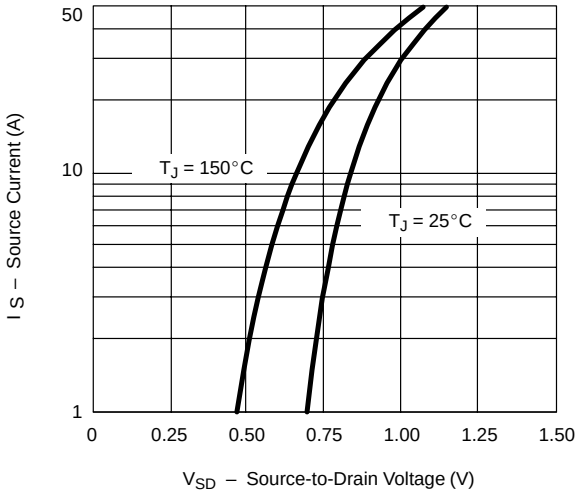


On-Resistance vs. Junction Temperature

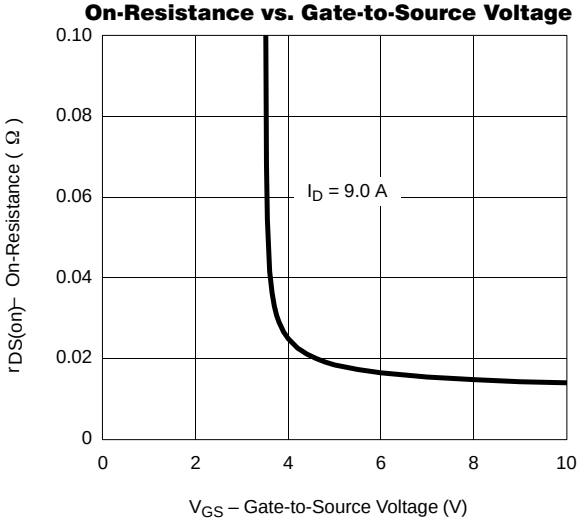


TYPICAL CHARACTERISTICS (25°C UNLESS OTHERWISE NOTED)

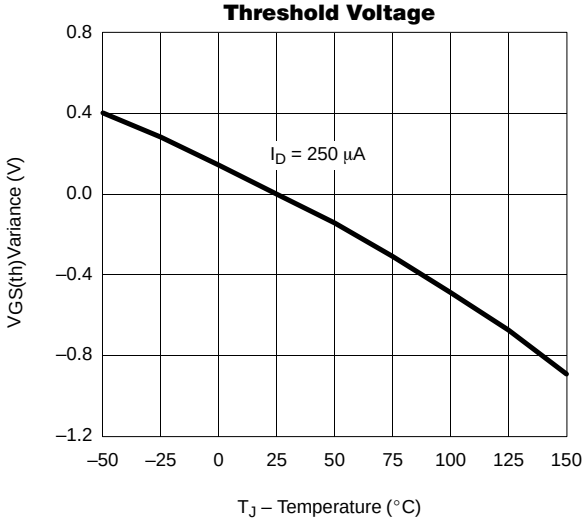
Source-Drain Diode Forward Voltage



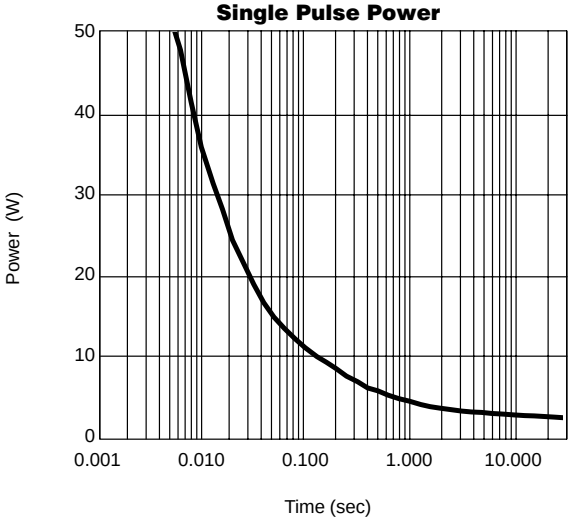
On-Resistance vs. Gate-to-Source Voltage



Threshold Voltage



Single Pulse Power



Normalized Thermal Transient Impedance, Junction-to-Ambient