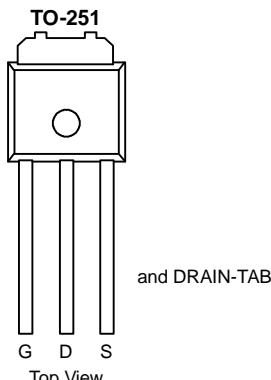


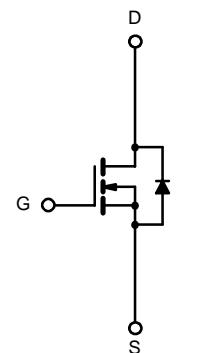
N-Channel 30-V (D-S), 175°C, MOSFET PWM Optimized

175°C Rated
Maximum Junction Temperature
TrenchFET®
Power MOSFETs

PRODUCT SUMMARY		
$V_{(BR)DSS}$ (V)	$r_{DS(on)}$ (Ω)	I_D (A) ^a
30	0.010 @ $V_{GS} = 10$ V	20
	0.014 @ $V_{GS} = 4.5$ V	18



Order Number:
SUU50N03-10P



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 = 175°C) ^a	I_D	20	A	
		14		
Pulsed Drain Current	I_{DM}	100		
Continuous Source Current (Diode Conduction) ^a	I_S	20		
Maximum Power Dissipation	P_D	71 ^b	W	
		8.3 ^a		
Operating Junction and Storage Temperature Range	T_J, T_{Stg}	-55 to 175	°C	

THERMAL RESISTANCE RATINGS				
Parameter	Symbol	Typical	Maximum	Unit
Maximum Junction-to-Ambient ^a	R_{thJA}	15	18	°C/W
Steady State		40	50	
Maximum Junction-to-Case	R_{thJC}	1.75	2.1	

Notes:

- a. Surface mounted on 1" x 1" FR4 Board, t ≤ 10 sec.
- b. See SOA curve for voltage derating.

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

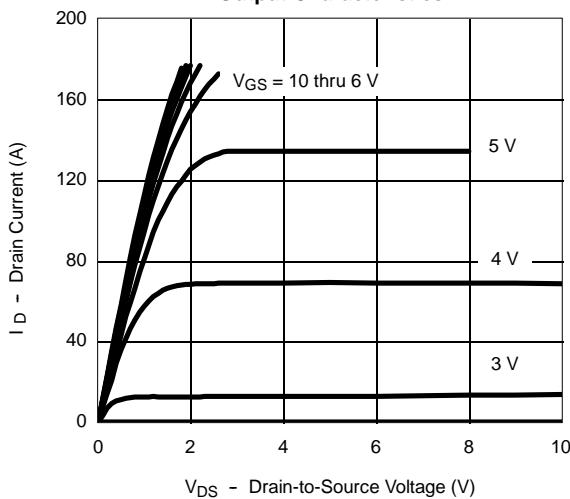
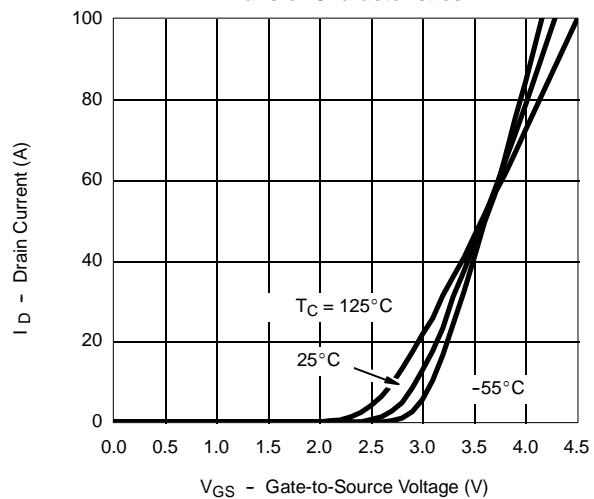
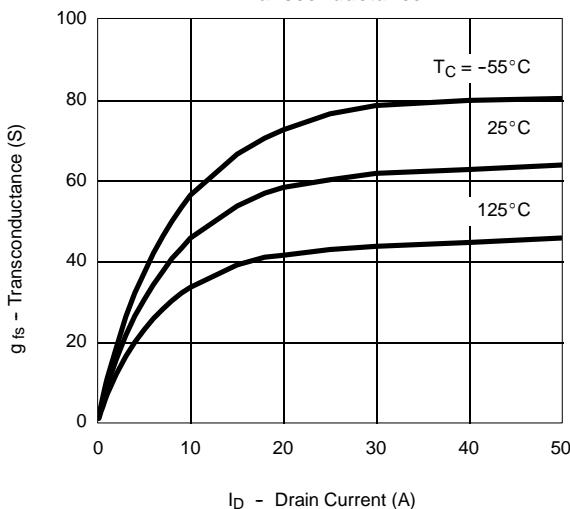
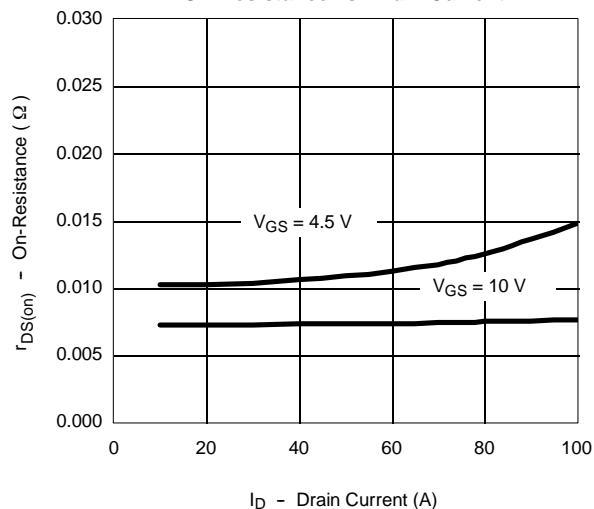
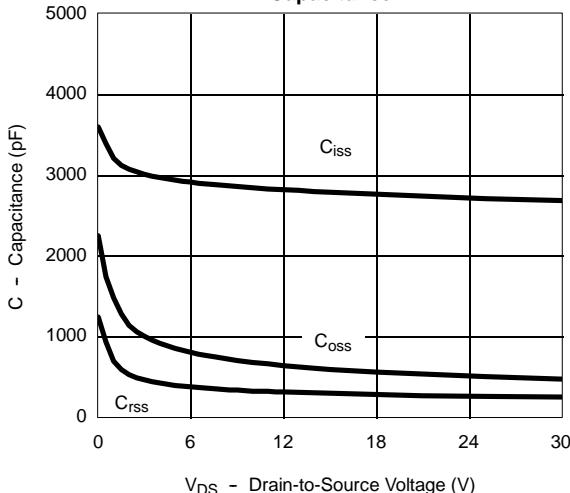
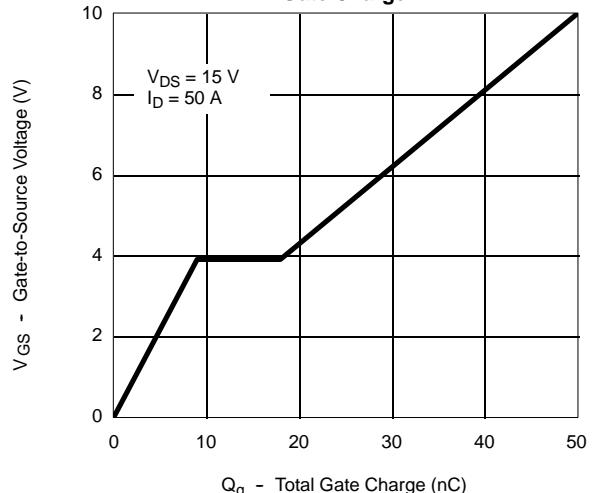
Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Static						
Drain-Source Breakdown Voltage	$V_{(\text{BR})\text{DSS}}$	$V_{\text{GS}} = 0 \text{ V}, I_D = 250 \mu\text{A}$	30			V
Gate Threshold Voltage	$V_{\text{GS}(\text{th})}$	$V_{\text{DS}} = V_{\text{GS}}, I_{\text{DS}} = 250 \mu\text{A}$	1	2		
Gate-Body Leakage	I_{GSS}	$V_{\text{DS}} = 0 \text{ V}, V_{\text{GS}} = \pm 20 \text{ V}$			± 100	nA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{\text{DS}} = 30 \text{ V}, V_{\text{GS}} = 0 \text{ V}$			1	μA
		$V_{\text{DS}} = 30 \text{ V}, V_{\text{GS}} = 0 \text{ V}, T_J = 125^\circ\text{C}$			50	
		$V_{\text{DS}} = 30 \text{ V}, V_{\text{GS}} = 0 \text{ V}, T_J = 175^\circ\text{C}$			150	
On-State Drain Current ^a	$I_{\text{D}(\text{on})}$	$V_{\text{DS}} = 5 \text{ V}, V_{\text{GS}} = 10 \text{ V}$	50			A
Drain-Source On-State Resistance ^a	$r_{\text{DS}(\text{on})}$	$V_{\text{GS}} = 10 \text{ V}, I_D = 15 \text{ A}$		0.0075	0.010	Ω
		$V_{\text{GS}} = 10 \text{ V}, I_D = 15 \text{ A}, T_J = 125^\circ\text{C}$			0.016	
		$V_{\text{GS}} = 10 \text{ V}, I_D = 15 \text{ A}, T_J = 175^\circ\text{C}$			0.019	
		$V_{\text{GS}} = 4.5 \text{ V}, I_D = 15 \text{ A}$		0.011	0.014	
Forward Transconductance ^a	g_{fs}	$V_{\text{DS}} = 15 \text{ V}, I_D = 15 \text{ A}$	20			S
Dynamic^b						
Input Capacitance	C_{iss}	$V_{\text{GS}} = 0 \text{ V}, V_{\text{DS}} = 25 \text{ V}, f = 1 \text{ MHz}$		2710	6000	pF
Output Capacitance	C_{oss}			500		
Reversen Transfer Capacitance	C_{rss}			250		
Total Gate Charge ^c	Q_g	$V_{\text{DS}} = 15 \text{ V}, V_{\text{GS}} = 10 \text{ V}, I_D = 20 \text{ A}$		55	100	nC
Gate-Source Charge ^c	Q_{gs}			10		
Gate-Drain Charge ^c	Q_{gd}			9		
Turn-On Delay Time ^c	$t_{\text{d}(\text{on})}$	$V_{\text{DD}} = 15 \text{ V}, R_L = 0.3 \Omega$ $I_D \approx 20 \text{ A}, V_{\text{GEN}} = 10 \text{ V}, R_g = 2.5 \Omega$		16	30	ns
Rise Time ^c	t_r			90	135	
Turn-Off Delay Time ^c	$t_{\text{d}(\text{off})}$			33	60	
Fall Time ^c	t_f			20	40	

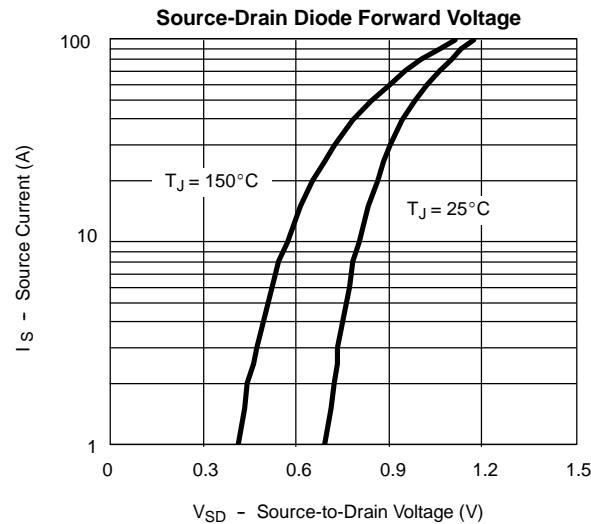
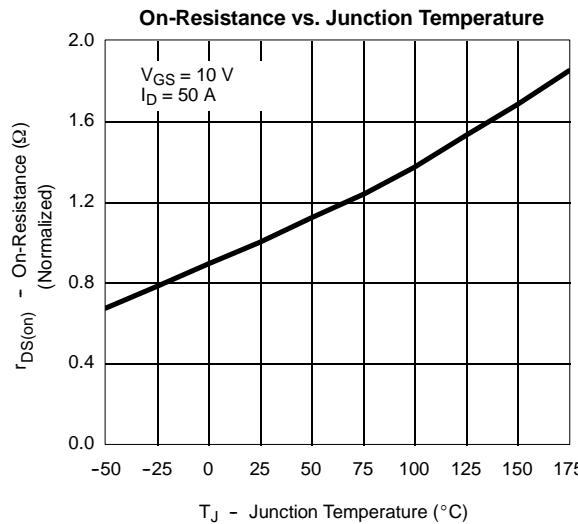
Source-Drain Diode Ratings and Characteristics ($T_C = 25^\circ\text{C}$)^b

Continuous Current	I_S			20		A
Pulsed Current	I_{SM}				100	
Forward Voltage ^a	V_{SD}	$I_F = 100 \text{ A}, V_{\text{GS}} = 0 \text{ V}$		1.2	1.5	V
Reverse Recovery Time	t_{rr}	$I_F = 20 \text{ A}, \text{di/dt} = 100 \text{ A}/\mu\text{s}$		55	100	ns

Notes:

- a. Pulse test; pulse width $\leq 300 \mu\text{s}$, duty cycle $\leq 2\%$.
- b. Guaranteed by design, not subject to production testing.
- c. Independent of operating temperature.

TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)
Output Characteristics

Transfer Characteristics

Transconductance

On-Resistance vs. Drain Current

Capacitance

Gate Charge


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