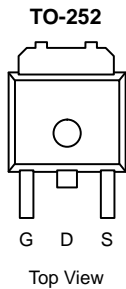




N-Ch 30-V (D-S), 175 °C, MOSFET PWM Optimized  
New Product

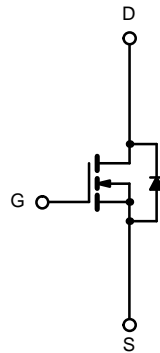
**175 °C Rated**  
Maximum Junction Temperature  
**TrenchFET®**  
Power MOSFETS

PRODUCT SUMMARY		
V <sub>(BR)DSS</sub> (V)	R <sub>DS(ON)</sub> (Ω)	I <sub>D</sub> (A)
30	0.010 @ V <sub>GS</sub> = 10 V	±50 <sup>A</sup>
	0.015 @ V <sub>GS</sub> = 4.5 V	±45



Order Number:  
SUD50N03-10P

Drain Connected to Tab



N-Channel MOSFET

ABSOLUTE MAXIMUM RATINGS (T <sub>C</sub> = 25 °C UNLESS OTHERWISE NOTED)			
PARAMETER	SYMBOL	LIMIT	UNIT
Drain-Source Voltage	V <sub>DS</sub>	±30	V
Gate-Source Voltage	V <sub>GS</sub>	±20	
Continuous Drain Current (T <sub>J</sub> = 175 °C)	I <sub>D</sub>	T <sub>C</sub> = 25 °C	±50 <sup>A</sup>
		T <sub>C</sub> = 100 °C	±40
Pulsed Drain Current	I <sub>DM</sub>	±180	A
Continuous Source Current (Diode Conduction) <sup>A</sup>	I <sub>S</sub>	±50	
Maximum Power Dissipation	P <sub>D</sub>	T <sub>C</sub> = 25 °C	65 <sup>C</sup>
		T <sub>A</sub> = 25 °C	5 <sup>B</sup>
Operating Junction and Storage Temperature Range	T <sub>J</sub> , T <sub>stg</sub>	-55 to 175	°C

THERMAL RESISTANCE RATINGS			
PARAMETER	SYMBOL	LIMIT	UNIT
Maximum Junction-to-Ambient <sup>B</sup>	R <sub>thJA</sub>	30	°C/W
Maximum Junction-to-Case	R <sub>thJC</sub>	2.3	

Notes:

- A. Package limited.
- B. Surface mounted on FR4 Board, t ≤ 10 sec.
- C. See SOA curve for voltage derating.

Updates to this data sheet may be obtained via facsimile by calling Siliconix FaxBack, 1-408-970-5600. Please request FaxBack document #70822.



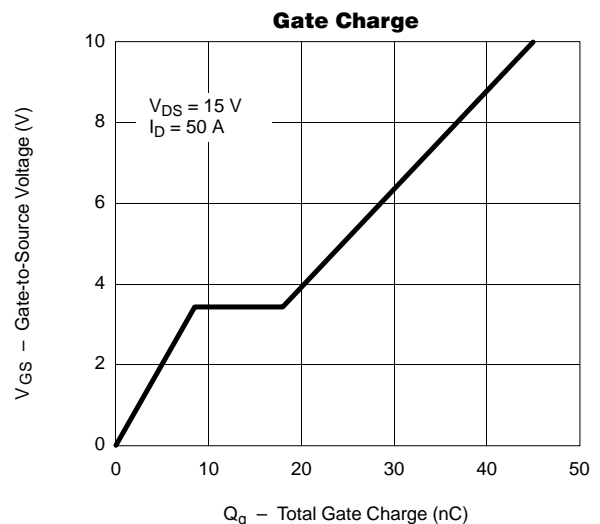
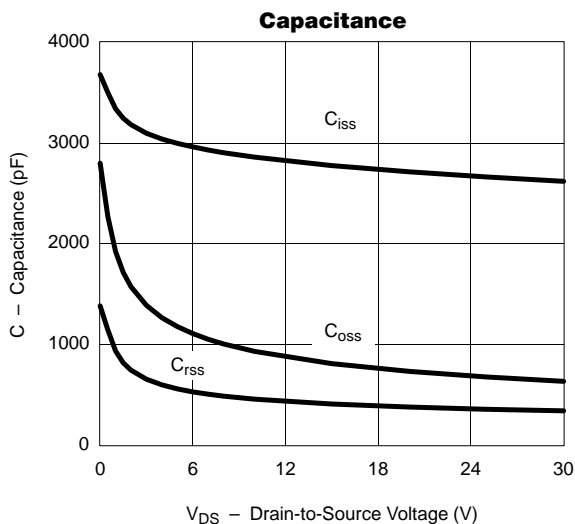
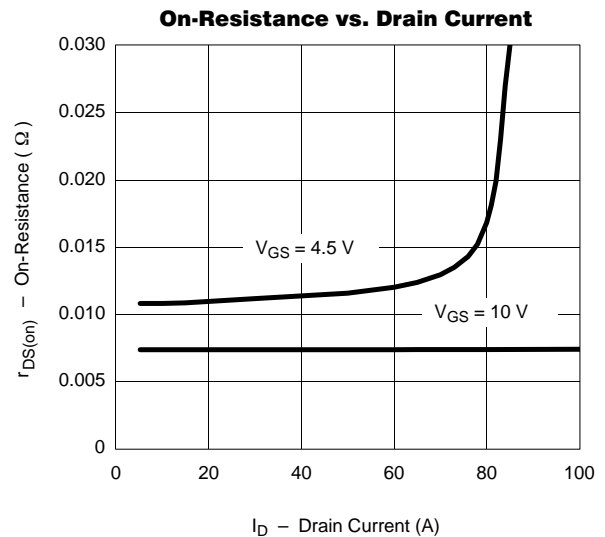
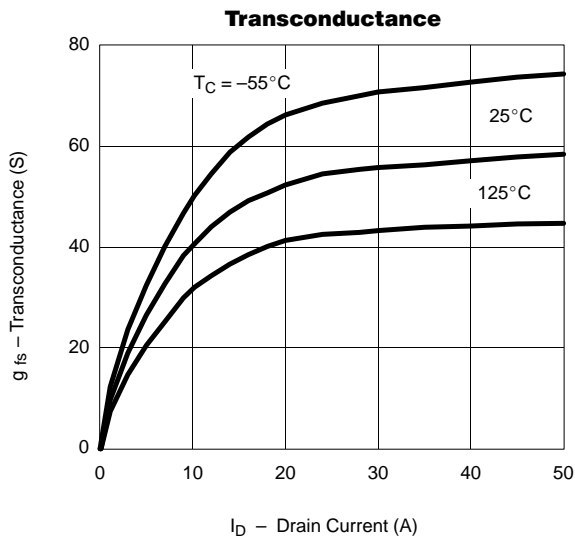
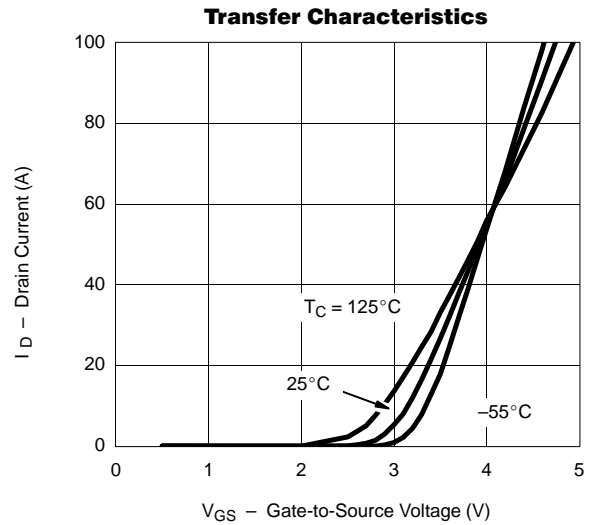
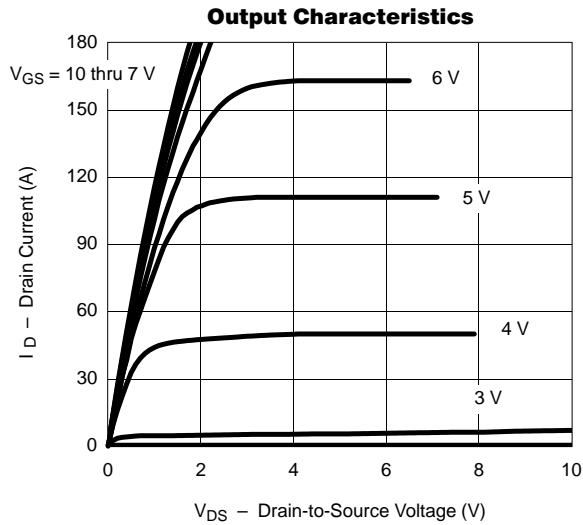
MOSFET SPECIFICATIONS (T <sub>J</sub> = 25 °C UNLESS OTHERWISE NOTED)						
PARAMETER	SYMBOL	TEST CONDITION	MIN	TYP	MAX	UNIT
<b>STATIC</b>						
Drain-Source Breakdown Voltage	V <sub>(BR)DSS</sub>	V <sub>GS</sub> = 0 V, I <sub>D</sub> = 250 μA	30			V
Gate Threshold Voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>DS</sub> = 250 μA	1	2		
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> = 24 V, V <sub>GS</sub> = 0 V			1	μA
		V <sub>DS</sub> = 24 V, V <sub>GS</sub> = 0 V, T <sub>J</sub> = 125 °C			50	
		V <sub>DS</sub> = 24 V, V <sub>GS</sub> = 0 V, T <sub>J</sub> = 175 °C			150	
On-State Drain Current <sup>B</sup>	I <sub>D(on)</sub>	V <sub>DS</sub> = 5 V, V <sub>GS</sub> = 10 V	50			A
Drain-Source On-State Resistance <sup>B</sup>	r <sub>DS(on)</sub>	V <sub>GS</sub> = 10 V, I <sub>D</sub> = 25 A		0.0075	0.010	Ω
		V <sub>GS</sub> = 10 V, I <sub>D</sub> = 15 A, T <sub>J</sub> = 125 °C			0.016	
		V <sub>GS</sub> = 10 V, I <sub>D</sub> = 15 A, T <sub>J</sub> = 175 °C			0.019	
		V <sub>GS</sub> = 4.5 V, I <sub>D</sub> = 15 A		0.011	0.015	
Forward Transconductance <sup>B</sup>	g <sub>fs</sub>	V <sub>DS</sub> = 15 V, I <sub>D</sub> = 15 A	20	40		S
<b>DYNAMIC<sup>A</sup></b>						
Input Capacitance	C <sub>iss</sub>	V <sub>GS</sub> = 0 V, V <sub>DS</sub> = 25 V, f = 1 MHz		2700		pF
Output Capacitance	C <sub>oss</sub>			680		
Reverse Transfer Capacitance	C <sub>rss</sub>			360		
Total Gate Charge <sup>C</sup>	Q <sub>g</sub>	V <sub>DS</sub> = 15 V, V <sub>GS</sub> = 10 V, I <sub>D</sub> = 50 A		45	70	nC
Gate-Source Charge <sup>C</sup>	Q <sub>gs</sub>			8.5		
Gate-Drain Charge <sup>C</sup>	Q <sub>gd</sub>			9.5		
Turn-On Delay Time <sup>C</sup>	t <sub>d(on)</sub>	V <sub>DD</sub> = 15 V, R <sub>L</sub> = 0.3 Ω I <sub>D</sub> ≈ 50 A, V <sub>GEN</sub> = 10 V, R <sub>G</sub> = 2.5 Ω		12	20	ns
Rise Time <sup>C</sup>	t <sub>r</sub>			7	15	
Turn-Off Delay Time <sup>C</sup>	t <sub>d(off)</sub>			35	60	
Fall Time <sup>C</sup>	t <sub>f</sub>			12	20	
<b>SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T<sub>C</sub> = 25 °C)<sup>A</sup></b>						
Continuous Current	I <sub>S</sub>				50	A
Pulsed Current	I <sub>SM</sub>				180	
Forward Voltage <sup>B</sup>	V <sub>SD</sub>	I <sub>F</sub> = 50 A, V <sub>GS</sub> = 0 V		1.2	1.5	V
Reverse Recovery Time	t <sub>rr</sub>	I <sub>F</sub> = 50 A, di/dt = 100 A/μs		40	80	ns

Notes:

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



### Typical Characteristics (25°C Unless Otherwise Noted)

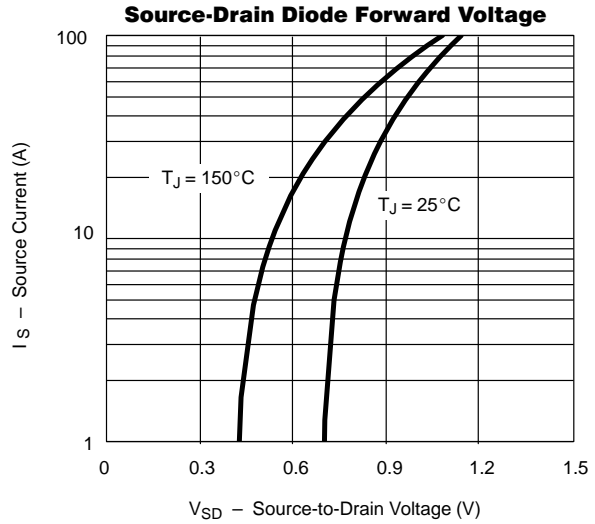
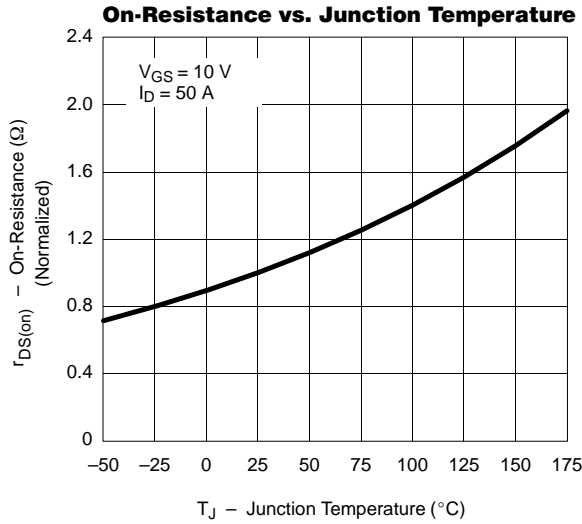


# SUD50N03-10P

Siliconix



## Typical Characteristics (25°C Unless Otherwise Noted)



## Thermal Ratings

