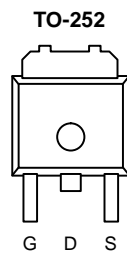




## N-Channel 60-V (D-S), 175 °C MOSFET, Logic Level

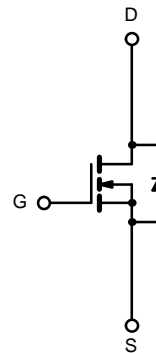
PRODUCT SUMMARY		
V <sub>DS</sub> (V)	r <sub>DS(on)</sub> (Ω)	I <sub>D</sub> (A)
60	0.065 @ V <sub>GS</sub> = 10 V	15
	0.090 @ V <sub>GS</sub> = 4.5 V	14

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



Drain Connected to Tab

Order Number:  
SUD15N06-90L



ABSOLUTE MAXIMUM RATINGS (T <sub>C</sub> = 25 °C UNLESS OTHERWISE NOTED)			
Parameter	Symbol	Limit	Unit
Gate-Source Voltage	V <sub>GS</sub>	±20	V
Continuous Drain Current (T <sub>J</sub> = 175 °C)	I <sub>D</sub>	T <sub>C</sub> = 25 °C	15
		T <sub>C</sub> = 100 °C	12
Pulsed Drain Current	I <sub>DM</sub>	30	A
Continuous Source Current (Diode Conduction)	I <sub>S</sub>	15	
Avalanche Current	I <sub>AR</sub>	15	
Repetitive Avalanche Energy (Duty Cycle ≤ 1%)	E <sub>AR</sub>	11	mJ
Maximum Power Dissipation	P <sub>D</sub>	T <sub>C</sub> = 25 °C	37
		T <sub>A</sub> = 25 °C	2 <sup>a</sup>
Operating Junction and Storage Temperature Range	T <sub>J</sub> , T <sub>stg</sub>	-55 to 175	°C

THERMAL RESISTANCE RATINGS				
Parameter	Symbol	Typical	Maximum	Unit
Junction-to-Ambient Free Air, FR4 Board Mount <sup>a</sup>	R <sub>thJA</sub>	60	70	°C/W
Junction-to-Case	R <sub>thJC</sub>	3.7	4.0	

Notes:

a. 1.36 x 2.1 surface mounted on 1" x 1" FR4 Board.



SPECIFICATIONS (T <sub>J</sub> = 25 °C UNLESS OTHERWISE NOTED)						
Parameter	Symbol	Test Condition	Min	Typ <sup>a</sup>	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	60			V
Gate Threshold Voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = 250 μA	1.0	2.0	3.0	
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> = 60 V, V <sub>GS</sub> = 0 V			1	μA
		V <sub>DS</sub> = 60 V, V <sub>GS</sub> = 0 V, T <sub>J</sub> = 125 °C			50	
		V <sub>DS</sub> = 60 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	15			A
Drain-Source On-State Resistance <sup>b</sup>	r <sub>DS(on)</sub>	V <sub>GS</sub> = 10 V, I <sub>D</sub> = 10 A		0.050	0.065	Ω
		V <sub>GS</sub> = 10 V, I <sub>D</sub> = 10 A, T <sub>J</sub> = 125 °C			0.12	
		V <sub>GS</sub> = 10 V, I <sub>D</sub> = 10 A, T <sub>J</sub> = 175 °C			0.15	
		V <sub>GS</sub> = 4.5 V, I <sub>D</sub> = 5 A		0.065	0.090	
Forward Transconductance <sup>b</sup>	g <sub>fs</sub>	V <sub>DS</sub> = 15 V, I <sub>D</sub> = 10 A		11		S
<b>Dynamic</b>						
Input Capacitance	C <sub>iss</sub>	V <sub>GS</sub> = 0 V, V <sub>DS</sub> = 25 V, f = 1 MHz		524		pF
Output Capacitance	C <sub>oss</sub>			98		
Reverse Transfer Capacitance	C <sub>rss</sub>			28		
Total Gate Charge <sup>c</sup>	Q <sub>g</sub>	V <sub>DS</sub> = 30 V, V <sub>GS</sub> = 10 V, I <sub>D</sub> = 15 A		12	20	nC
Gate-Source Charge <sup>c</sup>	Q <sub>gs</sub>			2		
Gate-Drain Charge <sup>c</sup>	Q <sub>gd</sub>			3.5		
Turn-On Delay Time <sup>c</sup>	t <sub>d(on)</sub>	I <sub>D</sub> ≅ 15 A, V <sub>DD</sub> = 30 V, R <sub>L</sub> = 2 Ω V <sub>GEN</sub> = 10 V, R <sub>G</sub> = 2.5 Ω		7	20	ns
Rise Time <sup>c</sup>	t <sub>r</sub>			8	25	
Turn-Off Delay Time <sup>c</sup>	t <sub>d(off)</sub>			15	40	
Fall Time <sup>c</sup>	t <sub>f</sub>			7	20	
<b>Source-Drain Diode Ratings and Characteristics (T<sub>C</sub> = 25 °C)</b>						
Pulsed Current	I <sub>SM</sub>				30	A
Diode Forward Voltage	V <sub>SD</sub>	I <sub>F</sub> = 15 A, V <sub>GS</sub> = 0 V		0.9	1.2	V
Reverse Recovery Time	t <sub>rr</sub>	I <sub>F</sub> = 15 A, di/dt = 100 A/μs		29	60	ns

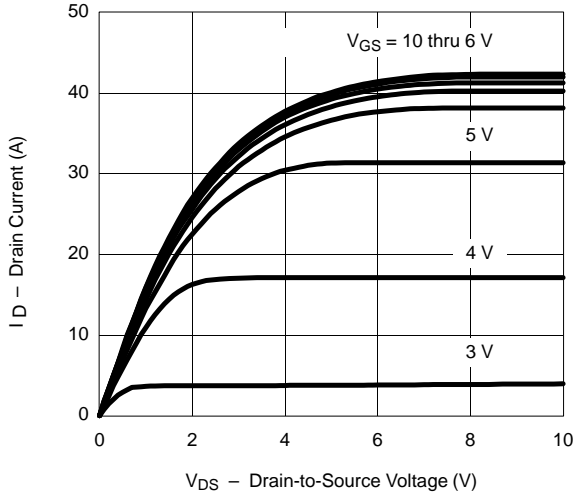
## Notes:

- For design aid only; not subject to production testing.
- Pulse test; pulse width ≤ 300 μs, duty cycle ≤ 2%.
- Independent of operating temperature.

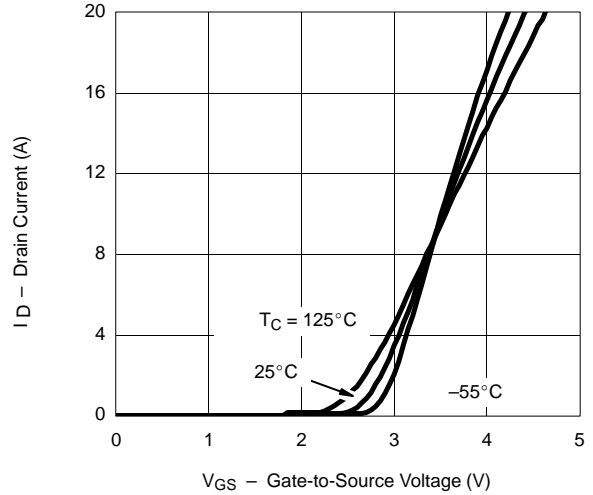


**TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)**

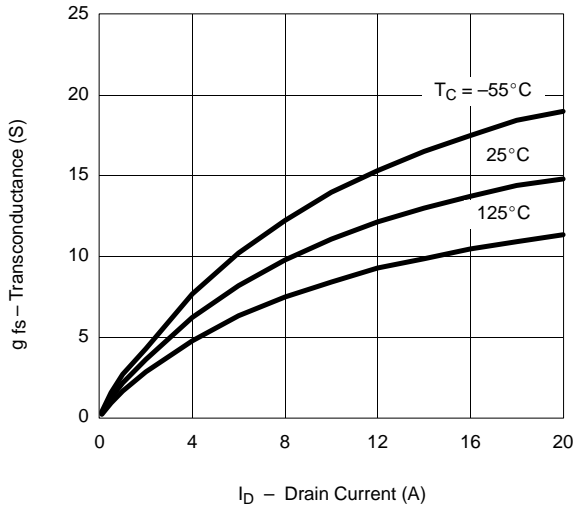
**Output Characteristics**



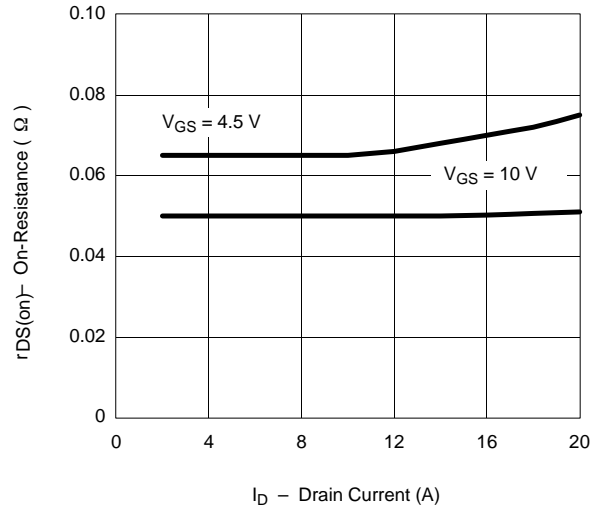
**Transfer Characteristics**



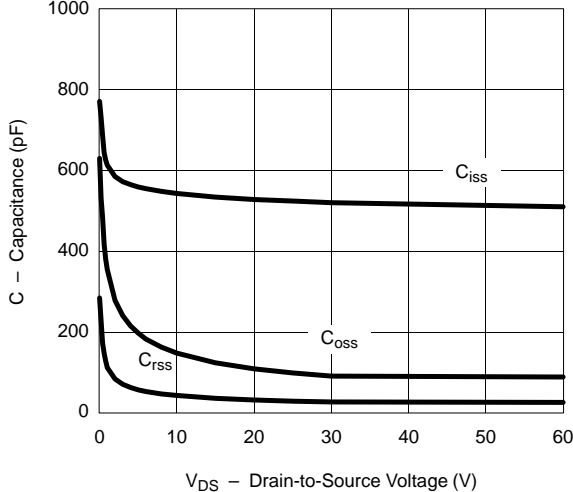
**Transconductance**



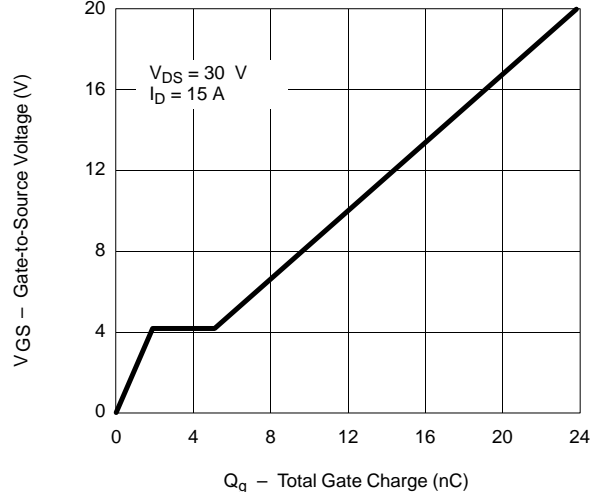
**On-Resistance vs. Drain Current**



**Capacitance**

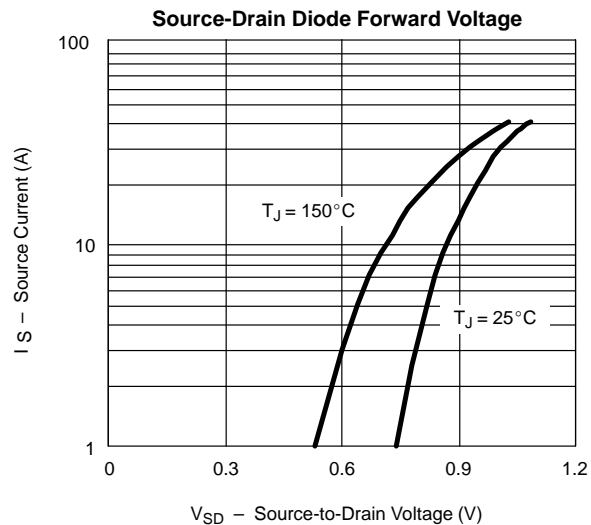
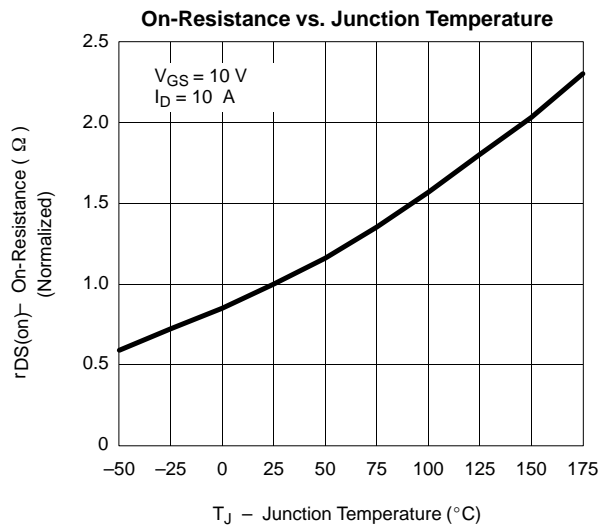


**Gate Charge**





### TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)



### THERMAL RATINGS

