



## N-Channel 150-V (D-S) 175°C MOSFET

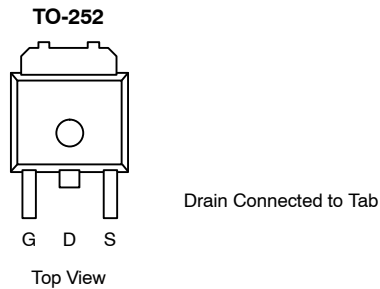
PRODUCT SUMMARY		
$V_{DS}$ (V)	$r_{DS(on)}$ ( $\Omega$ )	$I_D$ (A)
150	0.095 @ $V_{GS} = 10$ V	15
	0.100 @ $V_{GS} = 6$ V	15

### FEATURES

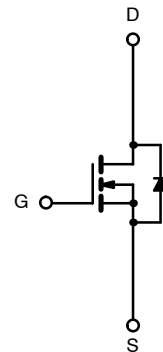
- TrenchFET® Power MOSFETS
- 175°C Junction Temperature
- 100%  $R_g$  Tested

### APPLICATIONS

- Primary Side Switch



Ordering Information: SUD15N15-95



ABSOLUTE MAXIMUM RATINGS ( $T_C = 25^\circ\text{C}$ UNLESS OTHERWISE NOTED)					
Parameter		Symbol	Limit	Unit	
Drain-Source Voltage		$V_{DS}$	150	V	
Gate-Source Voltage		$V_{GS}$	$\pm 20$		
Continuous Drain Current ( $T_J = 175^\circ\text{C}$ ) <sup>b</sup>	$T_C = 25^\circ\text{C}$	$I_D$	15	A	
	$T_C = 125^\circ\text{C}$		8.7		
Pulsed Drain Current		$I_{DM}$	25		
Continuous Source Current (Diode Conduction)		$I_S$	15		
Avalanche Current		$I_{AR}$	15	mJ	
Repetitive Avalanche Energy (Duty Cycle $\leq 1\%$ )	$L = 0.1$ mH	$E_{AR}$	11.3		
Maximum Power Dissipation	$T_C = 25^\circ\text{C}$	$P_D$	62 <sup>b</sup>	W	
	$T_A = 25^\circ\text{C}$		2.7 <sup>a</sup>		
Operating Junction and Storage Temperature Range		$T_J, T_{stg}$	-55 to 175	°C	

THERMAL RESISTANCE RATINGS					
Parameter		Symbol	Typical	Maximum	Unit
Junction-to-Ambient <sup>a</sup>	$t \leq 10$ sec	$R_{thJA}$	16	20	°C/W
	Steady State		45	55	
Junction-to-Case		$R_{thJC}$	2	2.4	

**Notes**

- Surface Mounted on 1" x 1" FR4 Board.
- See SOA curve for voltage derating.

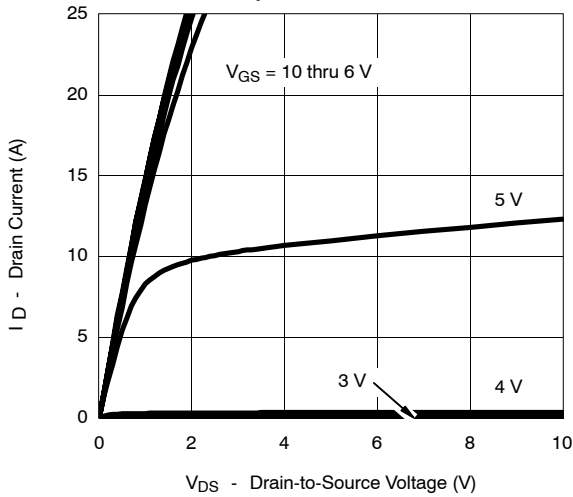
SPECIFICATIONS (T <sub>J</sub> = 25 °C UNLESS OTHERWISE NOTED)						
Parameter	Symbol	Test Condition	Min	Typ <sup>a</sup>	Max	Unit
<b>Static</b>						
Drain-Source Breakdown Voltage	V <sub>(BR)DSS</sub>	V <sub>GS</sub> = 0 V, I <sub>D</sub> = 250 μA	150			V
Gate Threshold Voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = 250 μA	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> = 120 V, V <sub>GS</sub> = 0 V			1	μA
		V <sub>DS</sub> = 120 V, V <sub>GS</sub> = 0 V, T <sub>J</sub> = 125 °C			50	
		V <sub>DS</sub> = 120 V, V <sub>GS</sub> = 0 V, T <sub>J</sub> = 175 °C			250	
On-State Drain Current <sup>b</sup>	I <sub>D(on)</sub>	V <sub>DS</sub> = 5 V, V <sub>GS</sub> = 10 V	25			A
Drain-Source On-State Resistance <sup>b</sup>	r <sub>DS(on)</sub>	V <sub>GS</sub> = 10 V, I <sub>D</sub> = 15 A		0.077	0.095	Ω
		V <sub>GS</sub> = 10 V, I <sub>D</sub> = 15 A, T <sub>J</sub> = 125 °C			0.190	
		V <sub>GS</sub> = 10 V, I <sub>D</sub> = 15 A, T <sub>J</sub> = 175 °C			0.250	
		V <sub>GS</sub> = 6 V, I <sub>D</sub> = 10 A		0.081	0.100	
Forward Transconductance <sup>b</sup>	g <sub>fs</sub>	V <sub>DS</sub> = 15 V, I <sub>D</sub> = 15 A		25		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		900		pF
Output Capacitance	C <sub>oss</sub>			115		
Reverse Transfer Capacitance	C <sub>rss</sub>			70		
Total Gate Charge <sup>c</sup>	Q <sub>g</sub>	V <sub>DS</sub> = 75 V, V <sub>GS</sub> = 10 V, I <sub>D</sub> = 15 A		20	25	nC
Gate-Source Charge <sup>c</sup>	Q <sub>gs</sub>			5.5		
Gate-Drain Charge <sup>c</sup>	Q <sub>gd</sub>			7		
Gate Resistance	R <sub>g</sub>		1		3.2	Ω
Turn-On Delay Time <sup>c</sup>	t <sub>d(on)</sub>	V <sub>DD</sub> = 75 V, R <sub>L</sub> = 5 Ω I <sub>D</sub> ≅ 15 A, V <sub>GEN</sub> = 10 V, R <sub>G</sub> = 2.5 Ω		8	12	ns
Rise Time <sup>c</sup>	t <sub>r</sub>			35	55	
Turn-Off Delay Time <sup>c</sup>	t <sub>d(off)</sub>			17	25	
Fall Time <sup>c</sup>	t <sub>f</sub>			30	45	
<b>Source-Drain Diode Ratings and Characteristic (T<sub>C</sub> = 25 °C)</b>						
Pulsed Current	I <sub>SM</sub>				25	A
Diode Forward Voltage <sup>b</sup>	V <sub>SD</sub>	I <sub>F</sub> = 15 A, V <sub>GS</sub> = 0 V		0.9	1.5	V
Source-Drain Reverse Recovery Time	t <sub>rr</sub>	I <sub>F</sub> = 15 A, di/dt = 100 A/μs		55	85	ns

## Notes

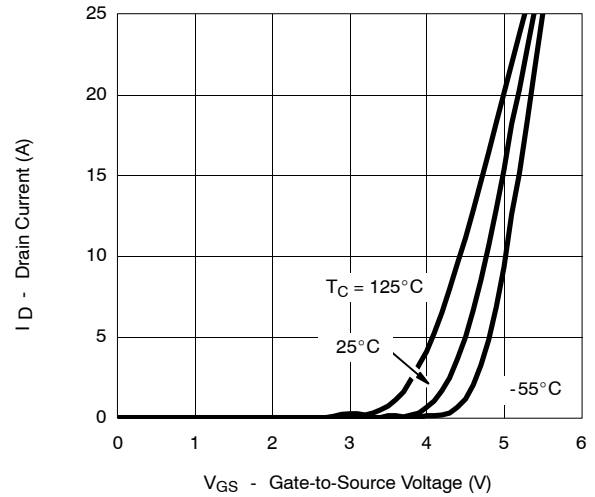
- Guaranteed by design, not subject to production testing.
- Pulse test; pulse width ≤ 300 μs, duty cycle ≤ 2%.
- Independent of operating temperature.

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

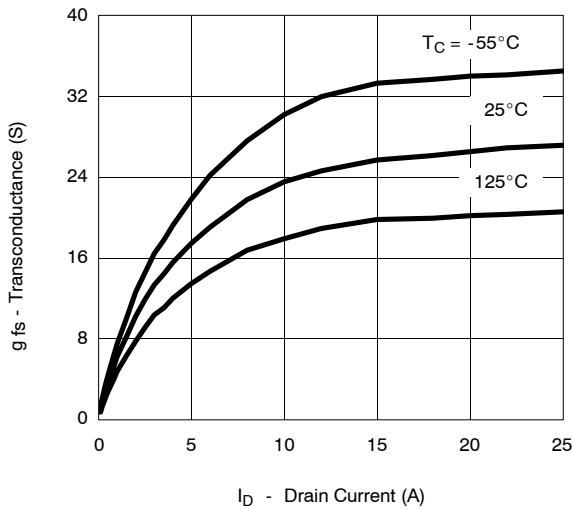
**Output Characteristics**



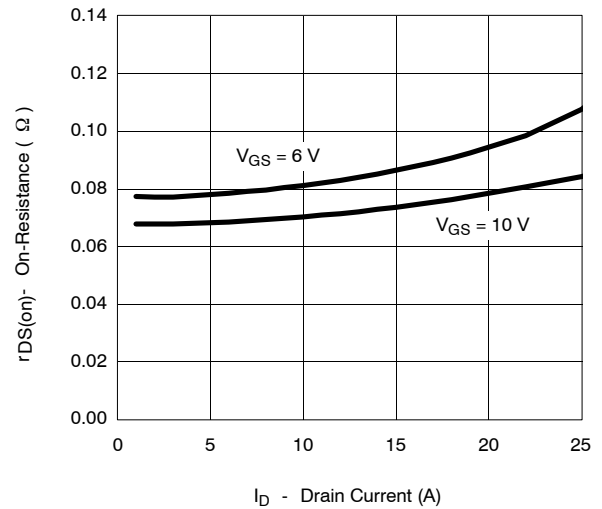
**Transfer Characteristics**



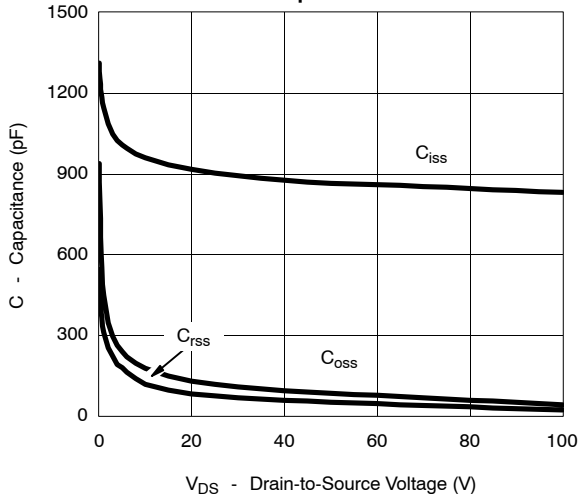
**Transconductance**



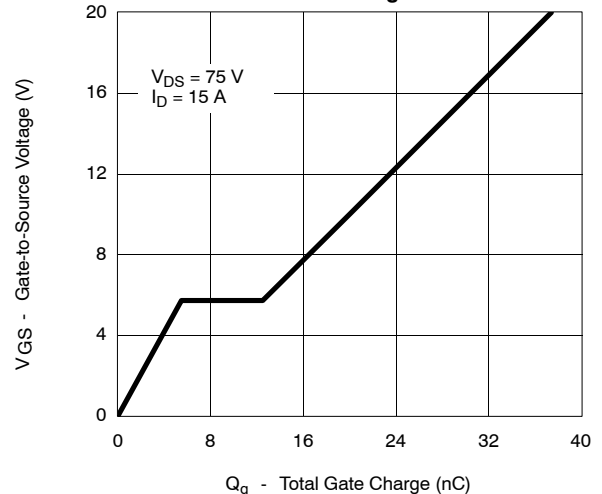
**On-Resistance vs. Drain Current**



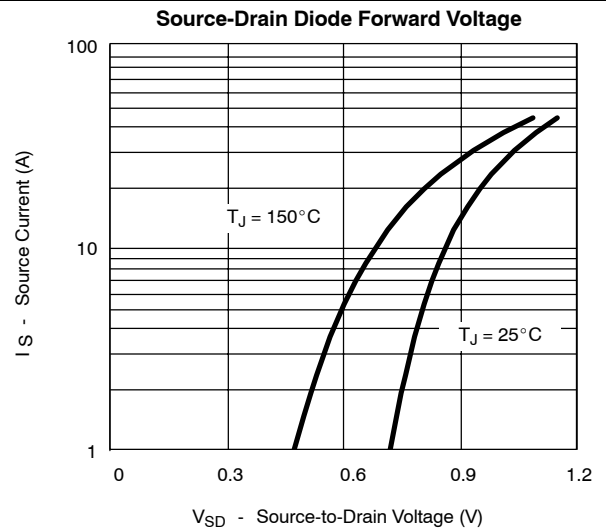
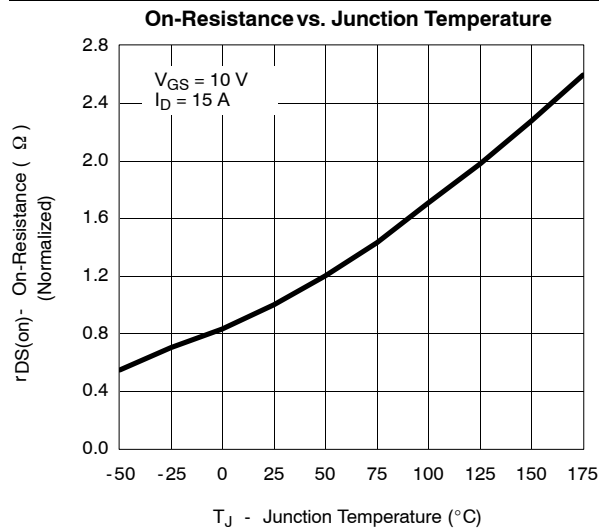
**Capacitance**



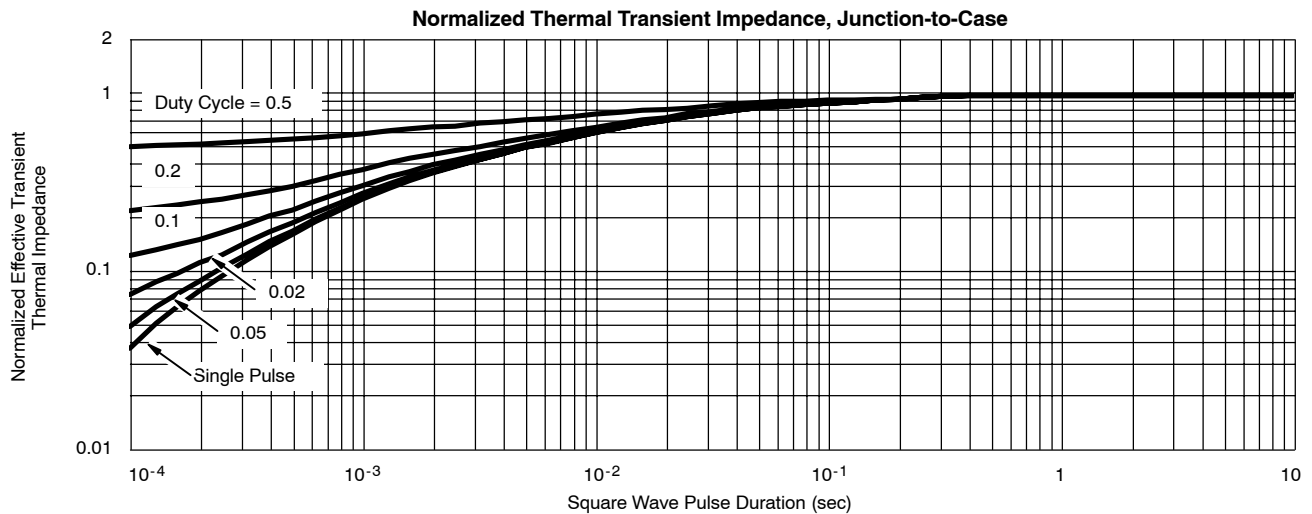
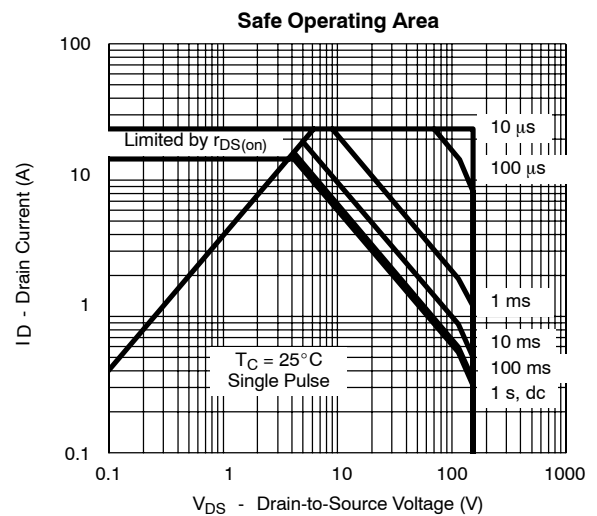
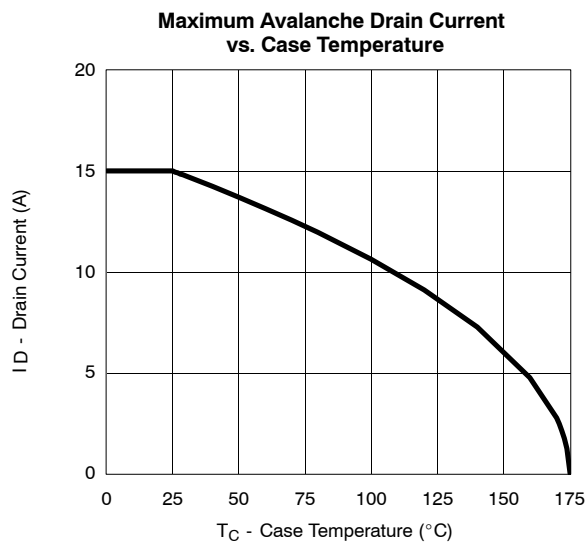
**Gate Charge**



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



### THERMAL RATINGS





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