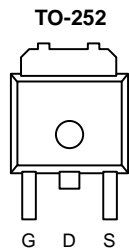




N-Channel 60-V (D-S), 175 °C MOSFET, Logic Level

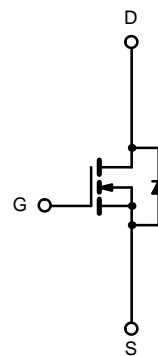
PRODUCT SUMMARY		
V <sub>DS</sub> (V)	r <sub>DS(on)</sub> (Ω)	I <sub>D</sub> (A)
60	0.035 @ V <sub>GS</sub> = 10 V	25
	0.045 @ V <sub>GS</sub> = 4.5 V	22

**175 °C Rated**  
Maximum Junction Temperature  
**TrenchFET<sup>®</sup>**  
Power MOSFETs



Top View  
Order Number:  
SUD25N06-45L

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>	60	V
Gate-Source Voltage		V <sub>GS</sub>	± 20	
Continuous Drain Current (T <sub>J</sub> = 175 °C)	T <sub>C</sub> = 25 °C	I <sub>D</sub>	25	A
	T <sub>C</sub> = 100 °C		16	
Pulsed Drain Current		I <sub>DM</sub>	30	
Continuous Source Current (Diode Conduction)		I <sub>S</sub>	25	
Avalanche Current		I <sub>AR</sub>	25	
Repetitive Avalanche Energy (Duty Cycle ≤ 1%)	L = 0.1 mH	E <sub>AR</sub>	31	mJ
Maximum Power Dissipation	T <sub>C</sub> = 25 °C	P <sub>D</sub>	50	W
	T <sub>A</sub> = 25 °C		2.5 <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	Limit	Unit
Maximum Junction-to-Ambient <sup>a</sup>	R <sub>thJA</sub>	60	°C/W
Maximum Junction-to-Case	R <sub>thJC</sub>	3.0	

Notes:  
a. Surface mounted on 1" x 1" FR4 Board.

For SPICE model information via the Worldwide Web: <http://www.vishay.com/www/product/spice.htm>



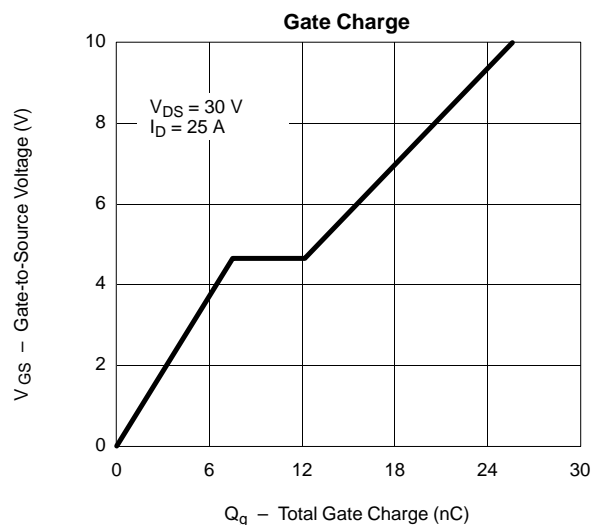
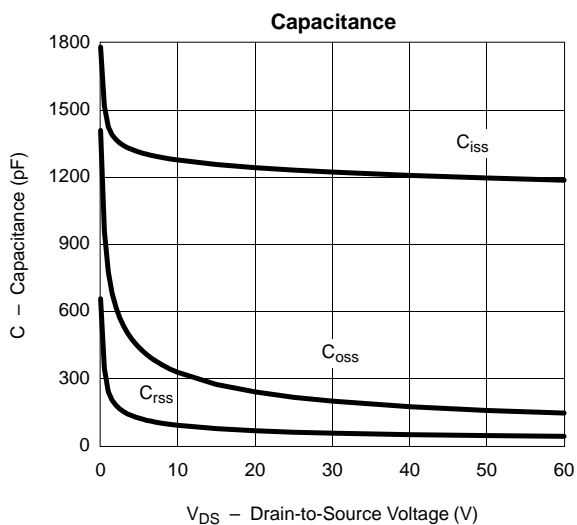
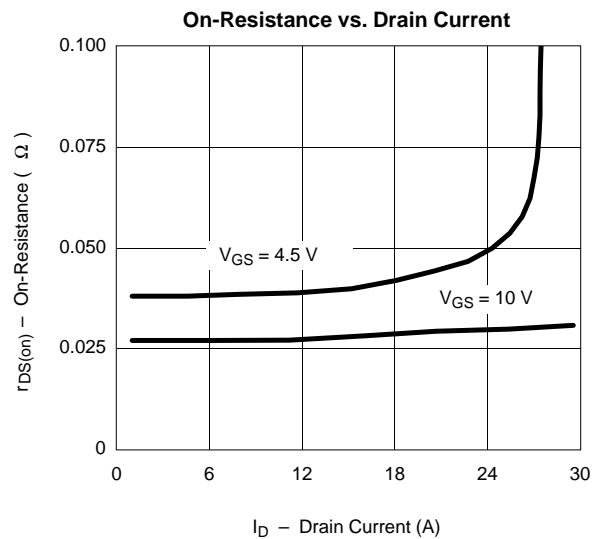
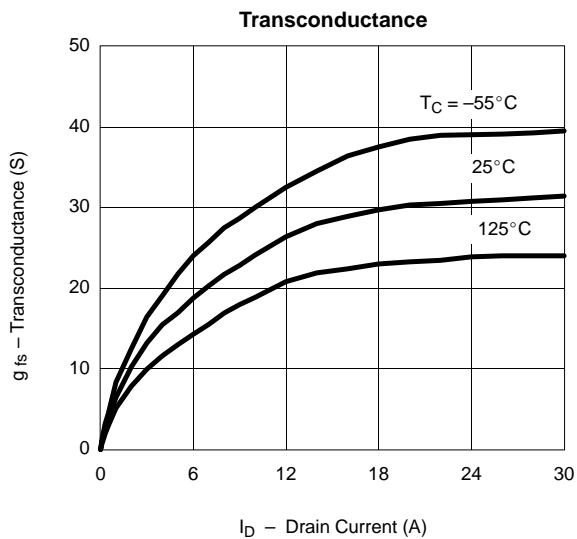
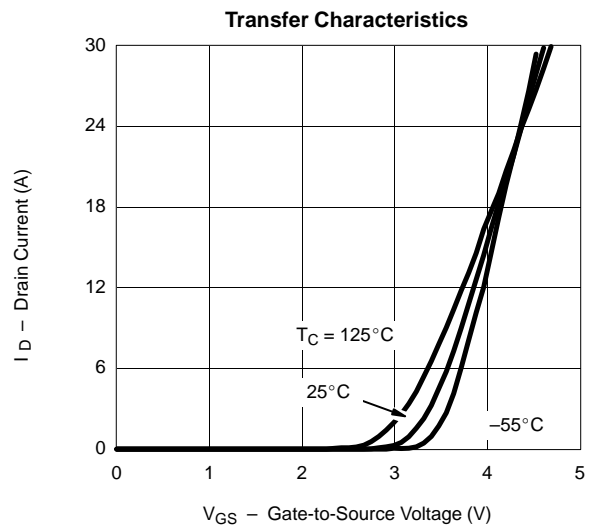
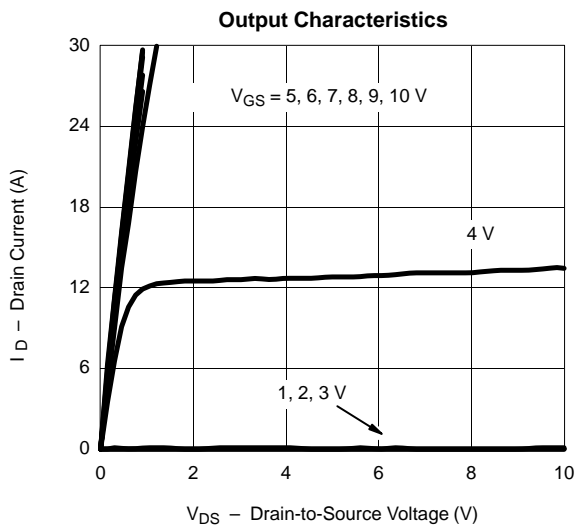
SPECIFICATIONS (T <sub>J</sub> = 25 °C UNLESS OTHERWISE NOTED)						
Parameter	Symbol	Test Condition	Min	Typ <sup>a</sup>	Max	Unit
<b>Static</b>						
Drain-Source Breakdown Voltage	V <sub>(BR)DSS</sub>	V <sub>GS</sub> = 0 V, I <sub>D</sub> = 250 μA	60			V
Gate Threshold Voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = 250 μA	1.0		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> = 10V	20			A
Drain-Source On-State Resistance <sup>b</sup>	r <sub>DS(on)</sub>	V <sub>GS</sub> = 10 V, I <sub>D</sub> = 12 A		0.025	0.035	Ω
		V <sub>GS</sub> = 10 V, I <sub>D</sub> = 12 A, T <sub>J</sub> = 125 °C		0.045	0.063	
		V <sub>GS</sub> = 10 V, I <sub>D</sub> = 12 A, T <sub>J</sub> = 175 °C		0.058	0.081	
		V <sub>GS</sub> = 4.5 V, I <sub>D</sub> = 12 A		0.036	0.045	
Forward Transconductance <sup>b</sup>	g <sub>fs</sub>	V <sub>DS</sub> = 15 V, I <sub>D</sub> = 12 A	15	25		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		1320		pF
Output Capacitance	C <sub>oss</sub>			210		
Reverse Transfer Capacitance	C <sub>rss</sub>			56		
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> = 25 A		26	40	nC
Gate-Source Charge <sup>c</sup>	Q <sub>gs</sub>			7.5		
Gate-Drain Charge <sup>c</sup>	Q <sub>gd</sub>			4.5		
Turn-On Delay Time <sup>c</sup>	t <sub>d(on)</sub>	V <sub>DD</sub> = 30 V, R <sub>L</sub> = 1.2 Ω I <sub>D</sub> ≅ 25 A, V <sub>GEN</sub> = 10 V, R <sub>G</sub> = 7.5 Ω		10	20	ns
Rise Time <sup>c</sup>	t <sub>r</sub>			10	20	
Turn-Off Delay Time <sup>c</sup>	t <sub>d(off)</sub>			31	45	
Fall Time <sup>c</sup>	t <sub>f</sub>			10	20	
<b>Source-Drain Diode Ratings and Characteristics (T<sub>C</sub> = 25 °C)<sup>a</sup></b>						
Pulsed Current	I <sub>SM</sub>				30	A
Diode Forward Voltage	V <sub>SD</sub>	I <sub>F</sub> = 25 A, V <sub>GS</sub> = 0 V			1.5	V
Reverse Recovery Time	t <sub>rr</sub>	I <sub>F</sub> = 25 A, di/dt = 100 A/μs		60	90	ns
Reverse Recovery Charge	Q <sub>rr</sub>				0.13	

## Notes:

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

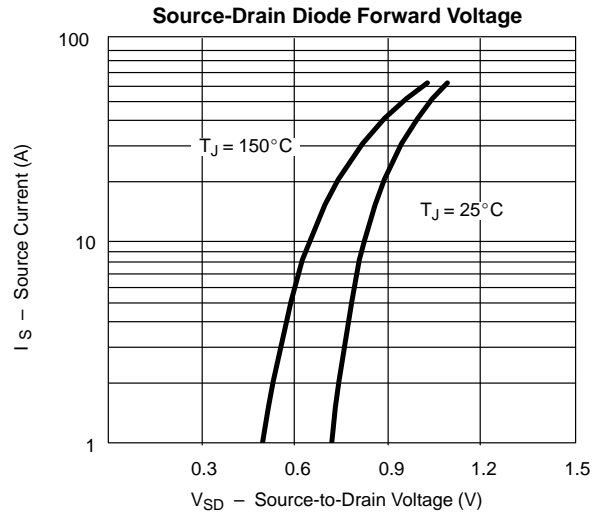
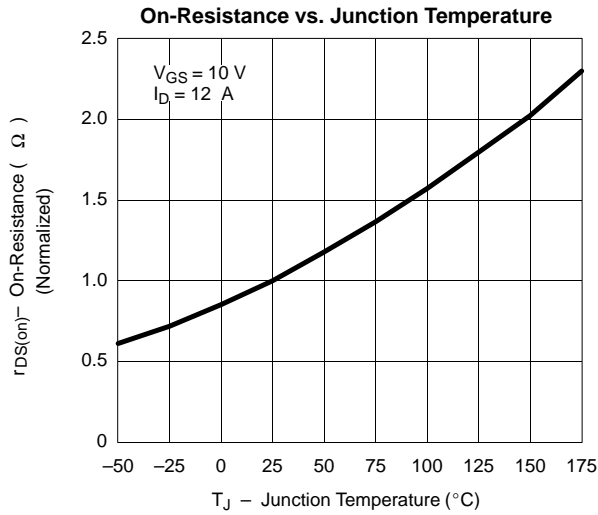


**TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)**





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



### THERMAL RATINGS

