



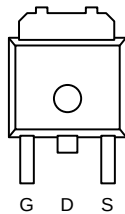
N-Channel 60-V (D-S), 175°C MOSFET, Logic Level

PRODUCT SUMMARY

V_{DS} (V)	$r_{DS(on)}$ (Ω)	I_D (A)
60	0.035 @ $V_{GS} = 10$ V	25
	0.045 @ $V_{GS} = 4.5$ V	22

175°C Rated
Maximum Junction Temperature
TrenchFET®
Power MOSFETs

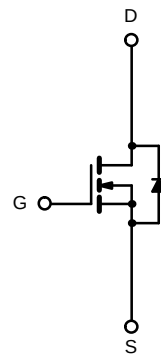
TO-252



Top View

Order Number:
SUD25N06-45L

Drain Connected to Tab



N-Channel MOSFET

ABSOLUTE MAXIMUM RATINGS ($T_C = 25^\circ\text{C}$ UNLESS OTHERWISE NOTED)

Parameter		Symbol	Limit	Unit
Drain-Source Voltage		V_{DS}	60	V
Gate-Source Voltage		V_{GS}	± 20	
Continuous Drain Current ($T_J = 175^\circ\text{C}$)	$T_C = 25^\circ\text{C}$	I_D	25	A
	$T_C = 100^\circ\text{C}$		16	
Pulsed Drain Current		I_{DM}	30	
Continuous Source Current (Diode Conduction)		I_S	25	
Avalanche Current		I_{AR}	25	mJ
Repetitive Avalanche Energy (Duty Cycle $\leq 1\%$)		E_{AR}	31	
Maximum Power Dissipation	$T_C = 25^\circ\text{C}$	P_D	50	W
	$T_A = 25^\circ\text{C}$		2.5 ^a	
Operating Junction and Storage Temperature Range		T_J, T_{stg}	-55 to 175	$^\circ\text{C}$

THERMAL RESISTANCE RATINGS

Parameter	Symbol	Limit	Unit
Maximum Junction-to-Ambient ^a	R_{thJA}	60	$^\circ\text{C/W}$
Maximum Junction-to-Case	R_{thJC}	3.0	

Notes:

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

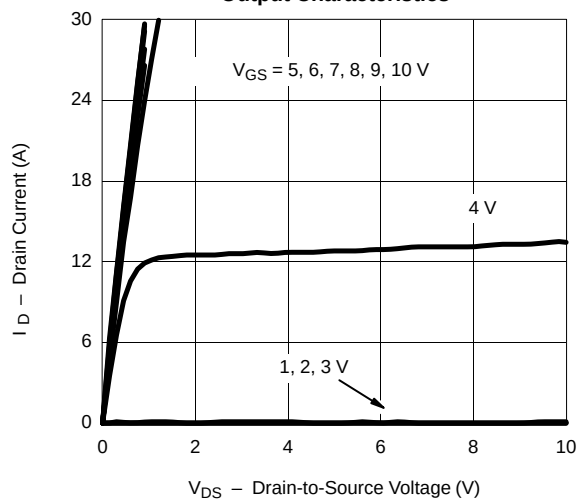
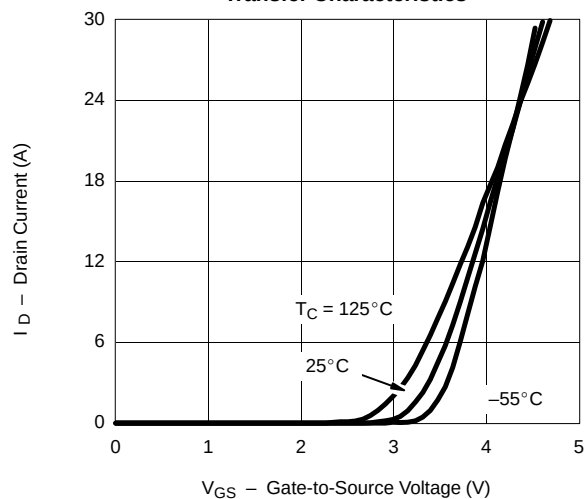
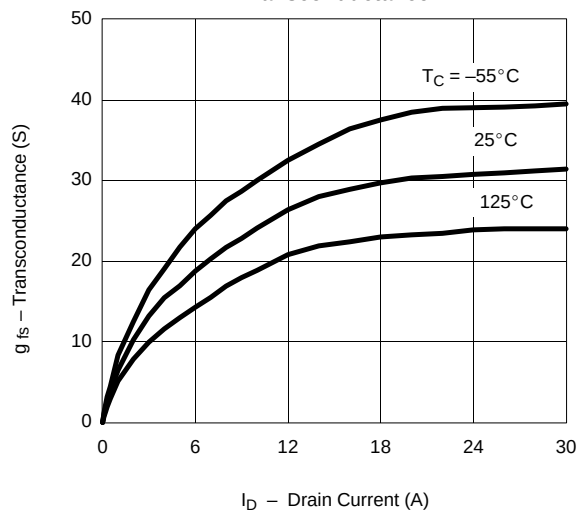
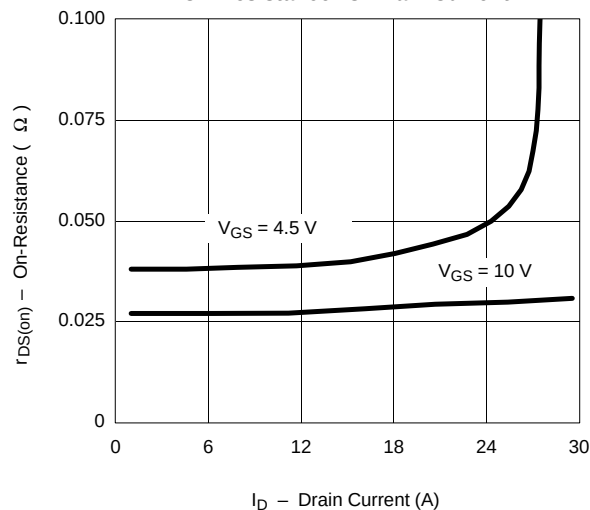
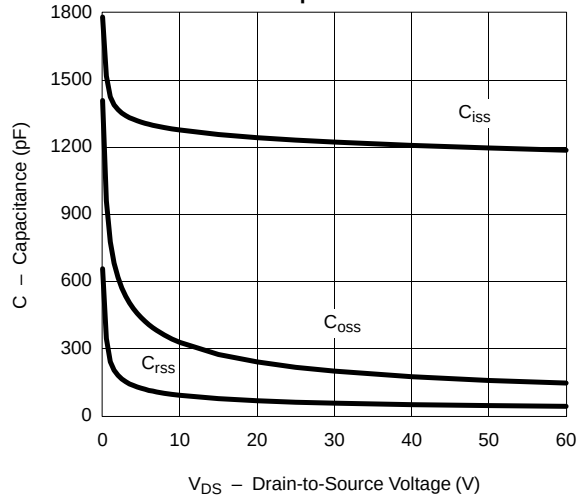
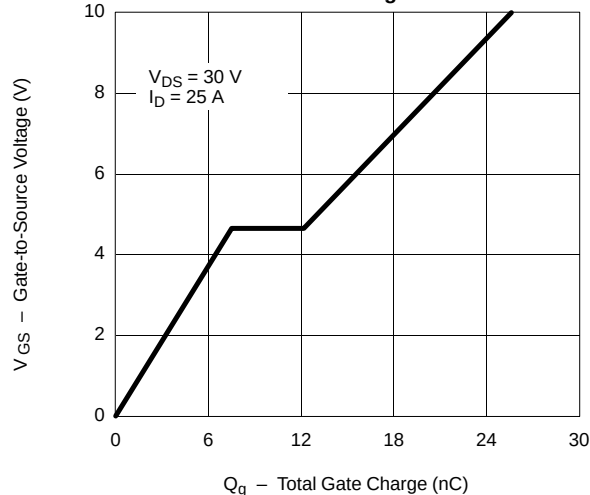
For SPICE model information via the Worldwide Web: <http://www.vishay.com/www/product/spice.htm>

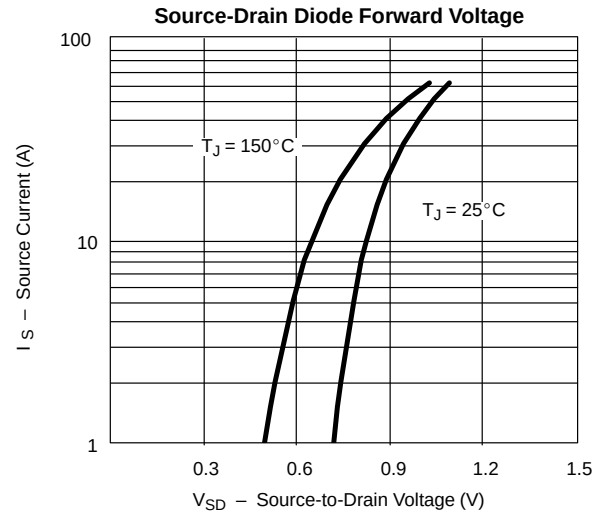
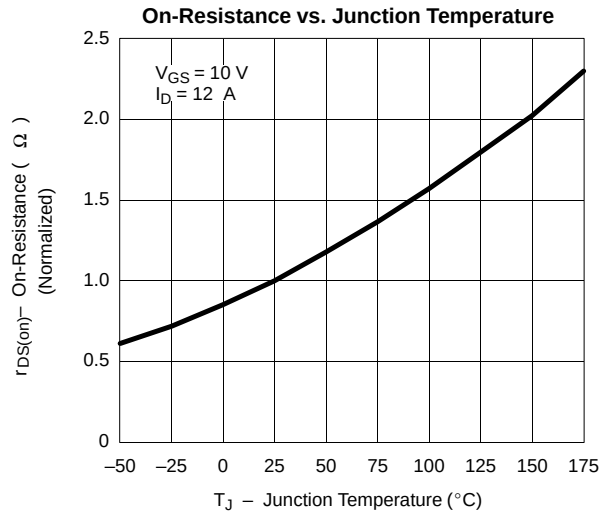


SPECIFICATIONS (T _J = 25 °C UNLESS OTHERWISE NOTED)						
Parameter	Symbol	Test Condition	Min	Typ ^a	Max	Unit
Static						
Drain-Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} = 0 V, I _D = 250 μA	60			V
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250 μA	1.0		3.0	
Gate-Body Leakage	I _{GSS}	V _{DS} = 0 V, V _{GS} = ±20 V			±100	nA
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 60 V, V _{GS} = 0 V			1	μA
		V _{DS} = 60 V, V _{GS} = 0 V, T _J = 125 °C			50	
		V _{DS} = 60 V, V _{GS} = 0 V, T _J = 175 °C			150	
On-State Drain Current ^b	I _{D(on)}	V _{DS} = 5 V, V _{GS} = 10V	20			A
Drain-Source On-State Resistance ^b	r _{DS(on)}	V _{GS} = 10 V, I _D = 12 A		0.025	0.035	Ω
		V _{GS} = 10 V, I _D = 12 A, T _J = 125 °C		0.045	0.063	
		V _{GS} = 10 V, I _D = 12 A, T _J = 175 °C		0.058	0.081	
		V _{GS} = 4.5 V, I _D = 12 A		0.036	0.045	
Forward Transconductance ^b	g _{fs}	V _{DS} = 15 V, I _D = 12 A	15	25		S
Dynamic						
Input Capacitance	C _{iss}	V _{GS} = 0 V, V _{DS} = 25 V, f = 1 MHz		1320		pF
Output Capacitance	C _{oss}			210		
Reverse Transfer Capacitance	C _{rss}			56		
Total Gate Charge ^c	Q _g	V _{DS} = 30 V, V _{GS} = 10 V, I _D = 25 A		26	40	nC
Gate-Source Charge ^c	Q _{gs}			7.5		
Gate-Drain Charge ^c	Q _{gd}			4.5		
Turn-On Delay Time ^c	t _{d(on)}	V _{DD} = 30 V, R _L = 1.2 Ω I _D ≅ 25 A, V _{GEN} = 10 V, R _G = 7.5 Ω		10	20	ns
Rise Time ^c	t _r			10	20	
Turn-Off Delay Time ^c	t _{d(off)}			31	45	
Fall Time ^c	t _f			10	20	
Source-Drain Diode Ratings and Characteristics (T _C = 25 °C) ^a						
Pulsed Current	I _{SM}				30	A
Diode Forward Voltage	V _{SD}	I _F = 25 A, V _{GS} = 0 V			1.5	V
Reverse Recovery Time	t _{rr}	I _F = 25 A, di/dt = 100 A/μs		60	90	ns
Reverse Recovery Charge	Q _{rr}			0.13		μC

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
