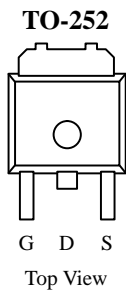


N-Channel Enhancement-Mode MOSFETs, Logic Level

Product Summary

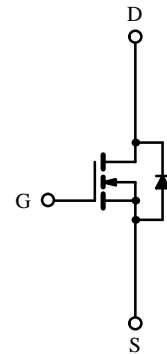
V_{DS} (V)	$r_{DS(on)}$ (Ω)	I_D (A)
60	0.035 @ $V_{GS} = 10$ V	25
	0.045 @ $V_{GS} = 4.5$ V	22

175°C Rated
Maximum Junction Temperature
TrenchFET™
Power MOSFETs



Drain Connected to Tab

Order Number:
SUD25N06-45L



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	V
Continuous Drain Current ($T_J = 175^\circ\text{C}$)	I_D	$T_C = 25^\circ\text{C}$	A
		$T_C = 100^\circ\text{C}$	
Pulsed Drain Current	I_{DM}	30	A
Continuous Source Current (Diode Conduction)	I_S	25	A
Avalanche Current	I_{AR}	25	A
Repetitive Avalanche Energy (Duty Cycle $\leq 1\%$)	$L = 0.1$ mH E_{AR}	31	mJ
Maximum Power Dissipation	P_D	$T_C = 25^\circ\text{C}$	W
		$T_A = 25^\circ\text{C}$	
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	$^\circ\text{C}/\text{W}$
Maximum Junction-to-Case	R_{thJC}	3.0	

Notes:

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

Updates to this data sheet may be obtained via facsimile by calling Siliconix FaxBack, 1-408-970-5600. Please request FaxBack document #1420. A SPICE Model data sheet is available for this product (FaxBack document #5161).

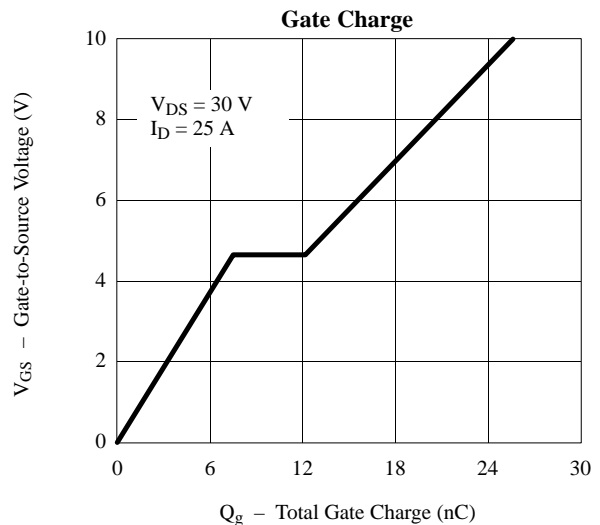
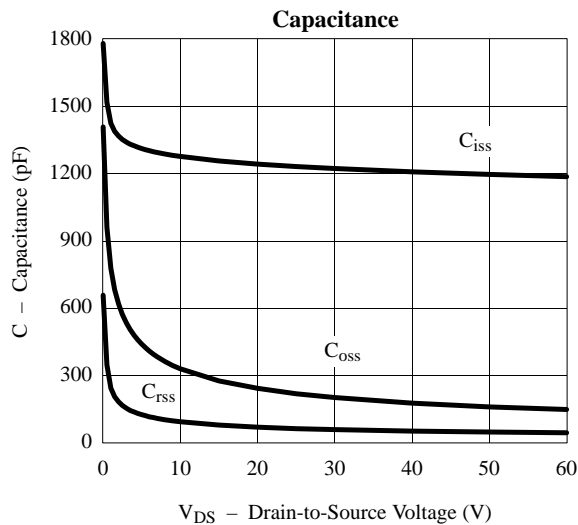
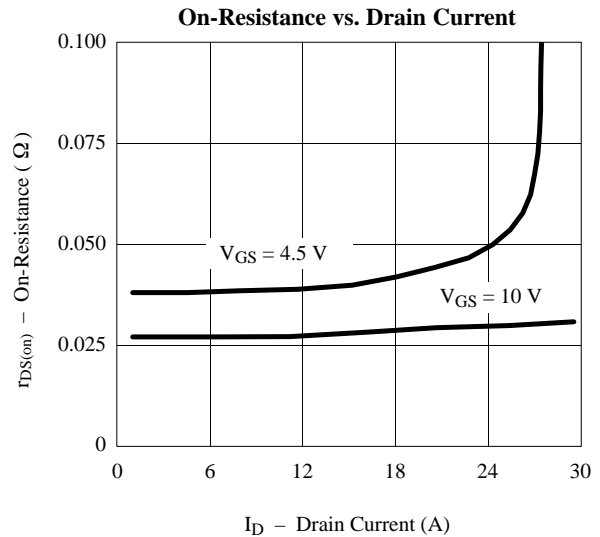
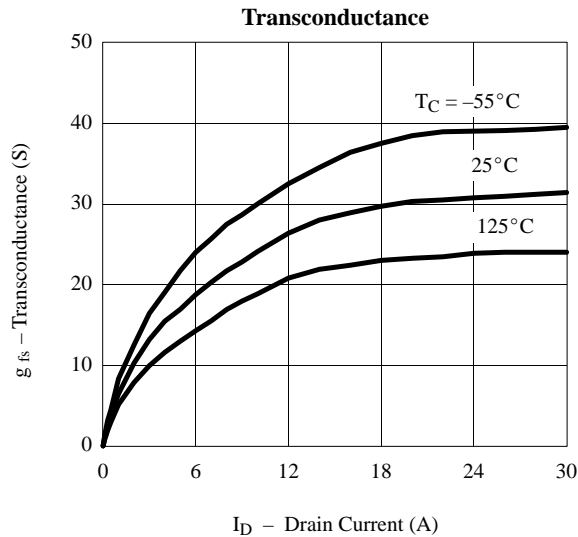
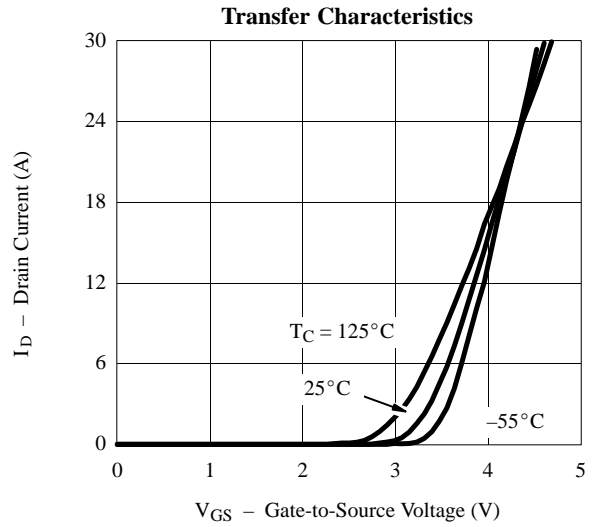
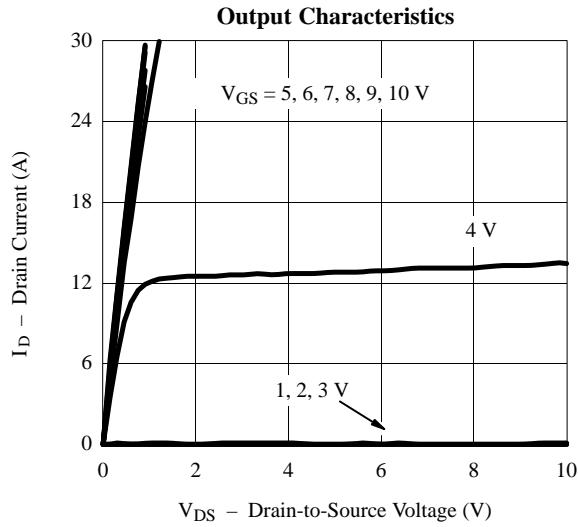
Specifications ($T_J = 25^\circ\text{C}$ Unless Otherwise Noted)

Parameter	Symbol	Test Condition	Min	Typ ^a	Max	Unit
Static						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS} = 0\text{ V}, I_D = 250\ \mu\text{A}$	60			V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\ \mu\text{A}$	1.0		3.0	
Gate-Body Leakage	I_{GSS}	$V_{DS} = 0\text{ V}, V_{GS} = \pm 20\text{ V}$			± 100	nA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 60\text{ V}, V_{GS} = 0\text{ V}$			1	μA
		$V_{DS} = 60\text{ V}, V_{GS} = 0\text{ V}, T_J = 125^\circ\text{C}$			50	
		$V_{DS} = 60\text{ V}, V_{GS} = 0\text{ V}, T_J = 175^\circ\text{C}$			150	
On-State Drain Current ^b	$I_{D(on)}$	$V_{DS} = 5\text{ V}, V_{GS} = 10\text{V}$	20			A
Drain-Source On-State Resistance ^b	$r_{DS(on)}$	$V_{GS} = 10\text{ V}, I_D = 12\text{ A}$		0.025	0.035	Ω
		$V_{GS} = 10\text{ V}, I_D = 12\text{ A}, T_J = 125^\circ\text{C}$		0.045	0.063	
		$V_{GS} = 10\text{ V}, I_D = 12\text{ A}, T_J = 175^\circ\text{C}$		0.058	0.081	
		$V_{GS} = 4.5\text{ V}, I_D = 12\text{ A}$		0.036	0.045	
Forward Transconductance ^b	g_{fs}	$V_{DS} = 15\text{ V}, I_D = 12\text{ A}$	15	25		S
Dynamic						
Input Capacitance	C_{iss}	$V_{GS} = 0\text{ V}, V_{DS} = 25\text{ V}, f = 1\text{ MHz}$		1320		pF
Output Capacitance	C_{oss}			210		
Reverse Transfer Capacitance	C_{rss}			56		
Total Gate Charge ^c	Q_g	$V_{DS} = 30\text{ V}, V_{GS} = 10\text{ V}, I_D = 25\text{ A}$		26	40	nC
Gate-Source Charge ^c	Q_{gs}			7.5		
Gate-Drain Charge ^c	Q_{gd}			4.5		
Turn-On Delay Time ^c	$t_{d(on)}$	$V_{DD} = 20\text{ V}, R_L = 1.2\ \Omega$ $I_D \cong 25\text{ A}, V_{GEN} = 10\text{ V}, R_G = 7.5\ \Omega$		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 ($T_C = 25^\circ\text{C}$)^b						
Pulsed Current	I_{SM}				30	A
Diode Forward Voltage	V_{SD}	$I_F = 25\text{ A}, V_{GS} = 0\text{ V}$			1.5	V
Reverse Recovery Time	t_{rr}	$I_F = 25\text{ A}, di/dt = 100\text{ A}/\mu\text{s}$		60	90	ns
Reverse Recovery Charge	Q_{rr}			0.13		μC

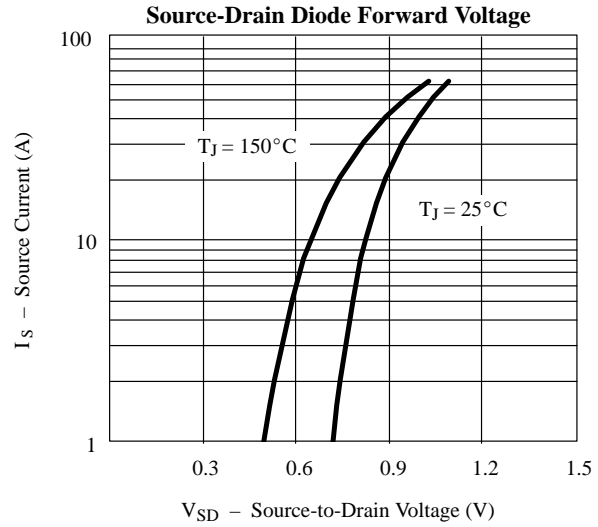
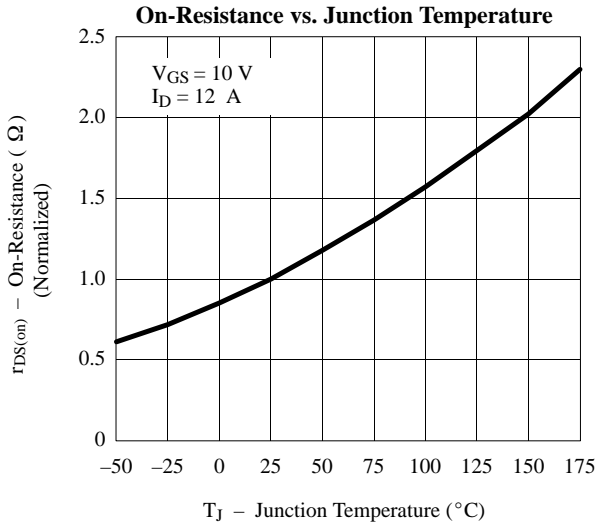
Notes:

- For design aid only; not subject to production testing.
- Pulse test; pulse width $\leq 300\ \mu\text{s}$, duty cycle $\leq 2\%$.
- Independent of operating temperature.

Typical Characteristics (25°C Unless Otherwise Noted)



Typical Characteristics (25°C Unless Otherwise Noted)



Thermal Ratings

