

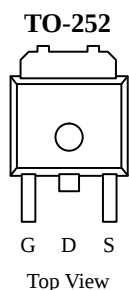


N-Channel 60-V (D-S), 175 °C MOSFET, Logic Level

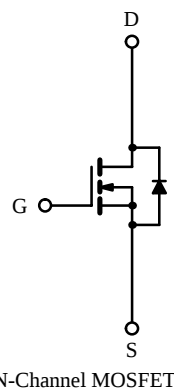
Product Summary

V _{DS} (V)	r _{DS(on)} (Ω)	I _D (A) ^a
60	0.022 @ V _{GS} = 10 V	30
	0.025 @ V _{GS} = 4.5 V	30

175 °C Rated
Maximum Junction Temperature
TrenchFET™
Power MOSFETs



Order Number:
SUD40N06-25L

Absolute Maximum Ratings (T_C = 25 °C Unless Otherwise Noted)

Parameter		Symbol	Limit	Unit
Gate-Source Voltage		V _{GS}	± 20	V
Continuous Drain Current (T _J = 175 °C) ^b	T _C = 25 °C	I _D	30	A
	T _C = 100 °C		30	
Pulsed Drain Current		I _{DM}	100	
Continuous Source Current (Diode Conduction)		I _S	34	
Avalanche Current		I _{AR}	34	
Repetitive Avalanche Energy (Duty Cycle ≤ 1%)		L = 0.1 mH E _{AR}	58	mJ
Maximum Power Dissipation	T _C = 25 °C	P _D	75	W
	T _A = 25 °C		1.4 ^b , 2.5 ^c	
Operating Junction and Storage Temperature Range		T _J , T _{stg}	-55 to 175	°C

Thermal Resistance Ratings

Parameter		Symbol	Limit	Unit
Maximum Junction-to-Ambient	Free Air, FR4 Board Mount	R _{thJA}	60	°C/W
	Free Air, Vertical Mount		110	
Maximum Junction-to-Case		R _{thJC}	2.0	

Notes:

- a. Package limited.
- b. Free air, vertical mount.
- c. Surface mounted on 1" x 1" FR4 Board, t ≤ 10 sec.

Updates to this data sheet may be obtained via facsimile by calling Siliconix FaxBack, 1-408-970-5600. Please request FaxBack document #70264.

A SPICE Model data sheet is available for this product (FaxBack document #70567).

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

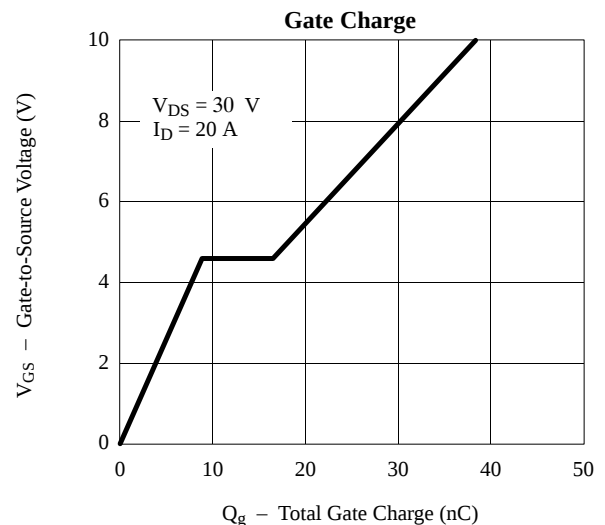
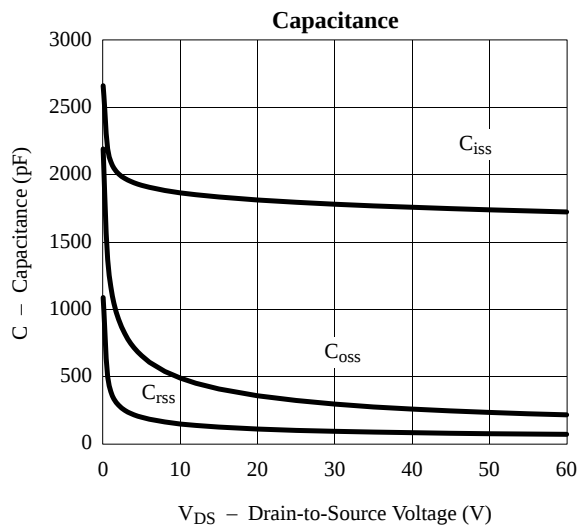
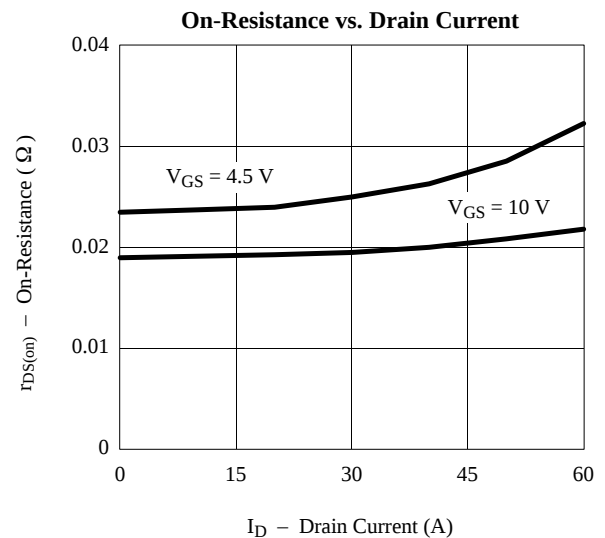
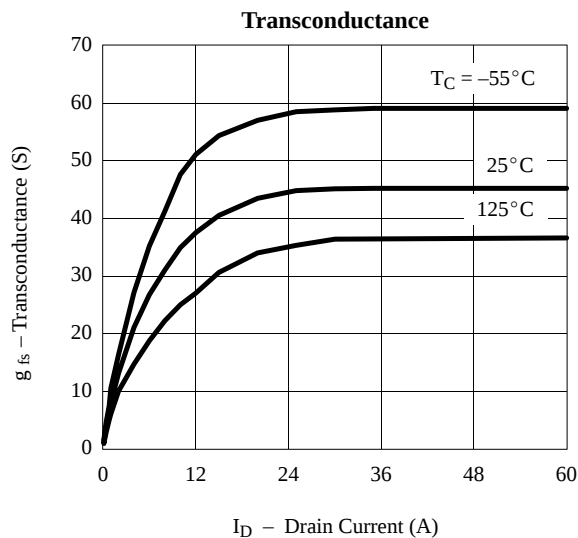
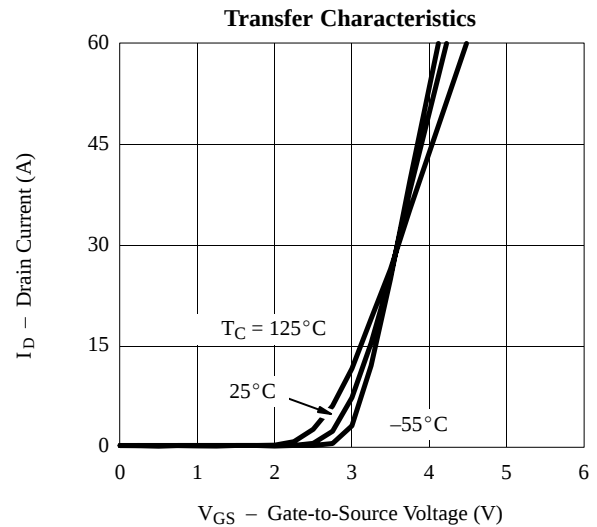
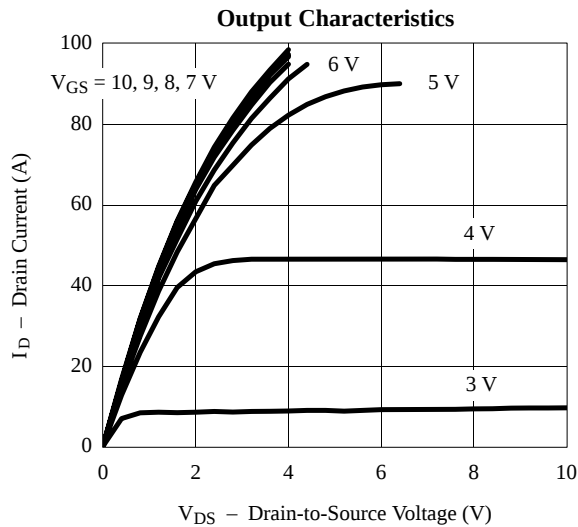
Parameter	Symbol	Test Condition	Min	Typ ^a	Max	Unit
Static						
Drain-Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} = 0 V, I _D = 250 μA	60			V
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250 μA	1.0	2.0	3.0	
Gate-Body Leakage	I _{GSS}	V _{DS} = 0 V, V _{GS} = ± 20 V			± 100	nA
Zero 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} = 10 V	20			A
Drain-Source On-State Resistance ^b	r _{DS(on)}	V _{GS} = 10 V, I _D = 20 A			0.022	Ω
		V _{GS} = 10 V, I _D = 20 A, T _J = 125°C			0.043	
		V _{GS} = 10 V, I _D = 20 A, T _J = 175°C			0.053	
		V _{GS} = 4.5 V, I _D = 20 A			0.025	
Forward Transconductance ^b	g _{fs}	V _{DS} = 15 V, I _D = 20 A				S
Dynamic						
Input Capacitance	C _{iss}	V _{GS} = 0 V, V _{DS} = 25 V, f = 1 MHz		1800		pF
Output Capacitance	C _{oss}			350		
Reverse Transfer Capacitance	C _{rss}			100		
Total Gate Charge ^c	Q _g	V _{DS} = 30 V, V _{GS} = 10 V, I _D = 40 A		40	60	nC
Gate-Source Charge ^c	Q _{gs}			9		
Gate-Drain Charge ^c	Q _{gd}			10		
Turn-On Delay Time ^c	t _{d(on)}	V _{DD} = 30 V, R _L = 0.9 Ω I _D ≅ 20 A, V _{GEN} = 10 V, R _G = 2.5 Ω		10	20	ns
Rise Time ^c	t _r			9	20	
Turn-Off Delay Time ^c	t _{d(off)}			28	50	
Fall Time ^c	t _f			7	15	
Source-Drain Diode Ratings and Characteristics (T _C = 25°C)						
Pulsed Current	I _{SM}				20	A
Diode Forward Voltage	V _{SD}	I _F = 20 A, V _{GS} = 0 V		1.0	1.5	V
Reverse Recovery Time	t _{rr}	I _F = 20 A, di/dt = 100 A/μs		48	100	ns

Notes:

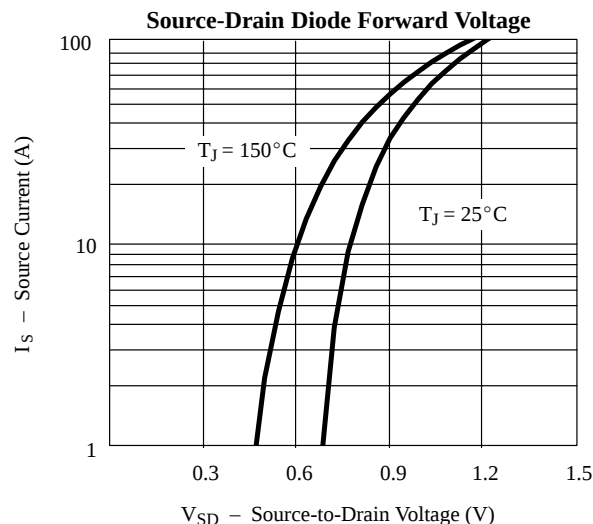
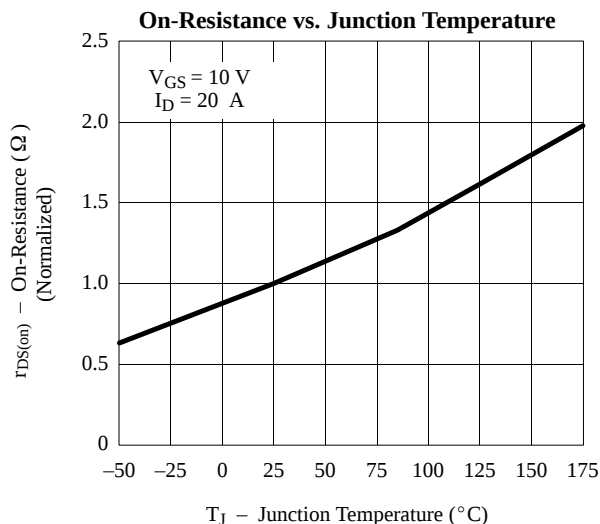
- For design aid only; not subject to production testing.
- Pulse test; pulse width $\leq 300\text{ }\mu\text{s}$, duty cycle $\leq 2\%$.
- Independent of operating temperature.



Typical Characteristics (25°C Unless Otherwise Noted)



Typical Characteristics (25°C Unless Otherwise Noted)



Thermal Ratings

