



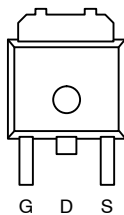
N-Channel 100-V (D-S) 175°C MOSFET

PRODUCT SUMMARY

V_{DS} (V)	$r_{DS(on)}$ (Ω)	I_D (A)	Q_g (Typ)
100	0.200 @ $V_{GS} = 10$ V	6.5	2.7
	0.225 @ $V_{GS} = 4.5$ V	6.0	

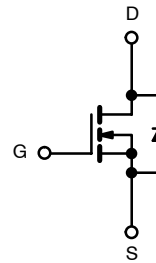
175°C Rated
Maximum Junction Temperature
TrenchFET®
Power MOSFETs

TO-252



Top View

Drain Connected to Tab



N-Channel MOSFET

Order Number: SUD06N10-225L
SUD06N10-225L—E3 (Lead (Pb)-Free)

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

Parameter		Symbol	Limit	Unit
Drain-Source Voltage		V_{DS}	100	V
Gate-Source Voltage		V_{GS}	± 20	
Continuous Drain Current ($T_J = 175^\circ\text{C}$) ^b	$T_C = 25^\circ\text{C}$	I_D	6.5	A
	$T_C = 125^\circ\text{C}$		3.75	
Pulsed Drain Current		I_{DM}	8.0	
Continuous Source Current (Diode Conduction)		I_S	6.5	
Avalanche Current		I_{AR}	5.0	
Repetitive Avalanche Energy (Duty Cycle $\leq 1\%$)	$L = 0.1$ mH	E_{AR}	1.25	mJ
Maximum Power Dissipation	$T_C = 25^\circ\text{C}$	P_D	20 ^b	W
	$T_A = 25^\circ\text{C}$		1.5 ^a	
Operating Junction and Storage Temperature Range		T_J, T_{stg}	-55 to 175	$^\circ\text{C}$

THERMAL RESISTANCE RATINGS

Parameter		Symbol	Typical	Maximum	Unit
Junction-to-Ambient ^a	$t \leq 10$ sec	R_{thJA}	40	50	$^\circ\text{C/W}$
	Steady State		80	100	
Junction-to-Case		R_{thJC}	6.0	7.5	

Notes

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

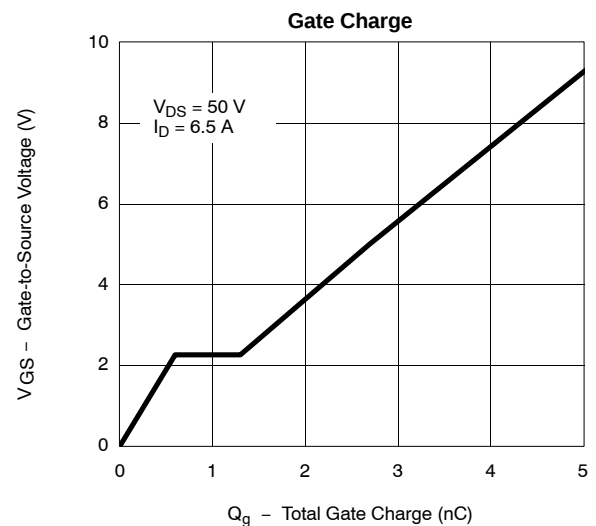
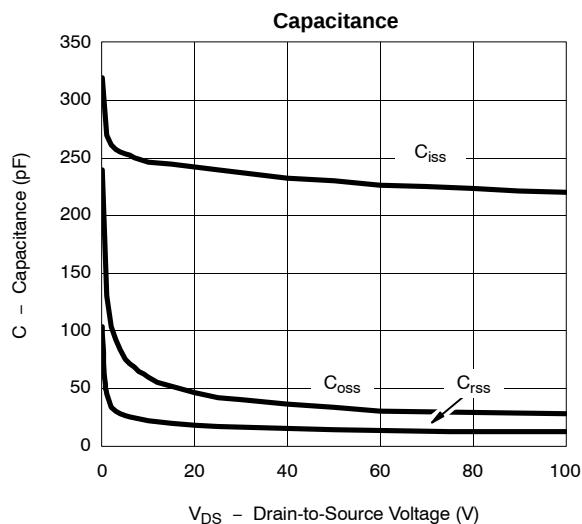
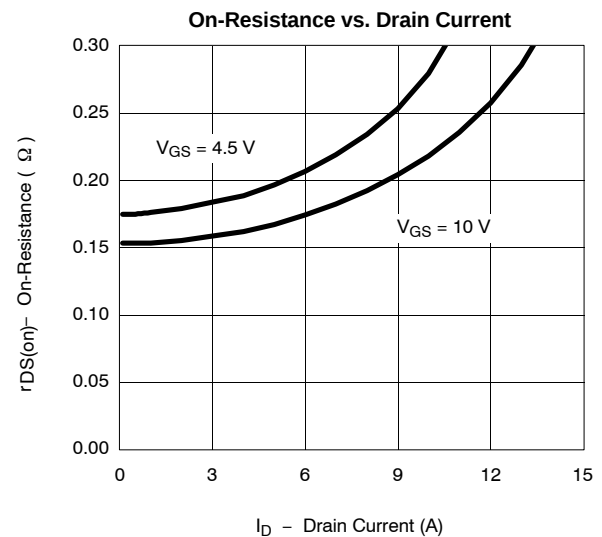
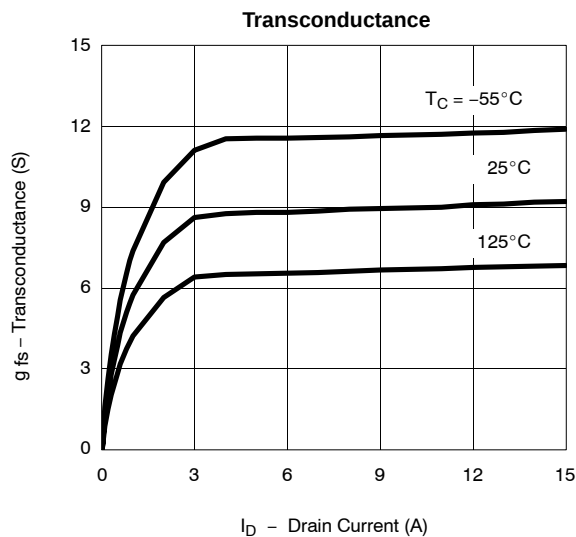
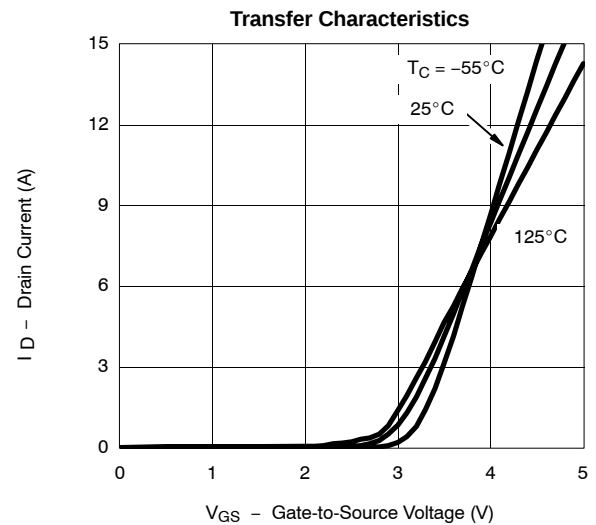
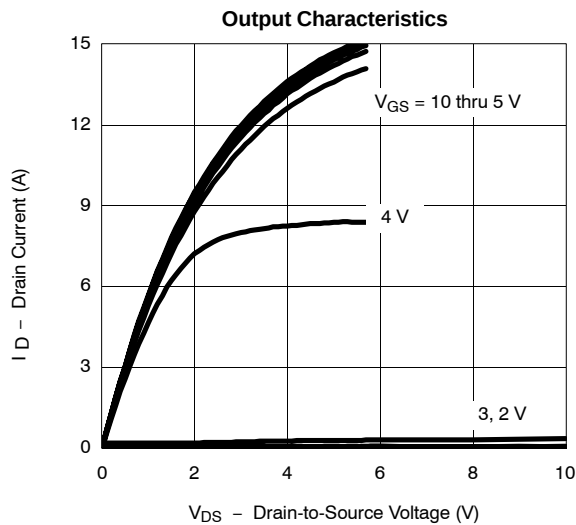
SPECIFICATIONS ($T_J = 25^\circ\text{C}$ UNLESS OTHERWISE NOTED)

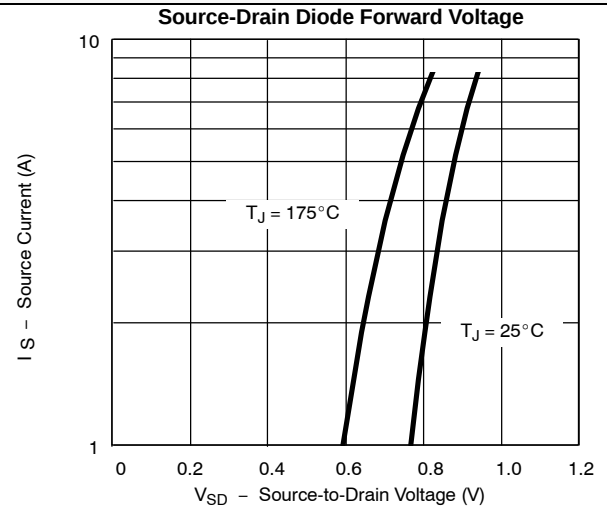
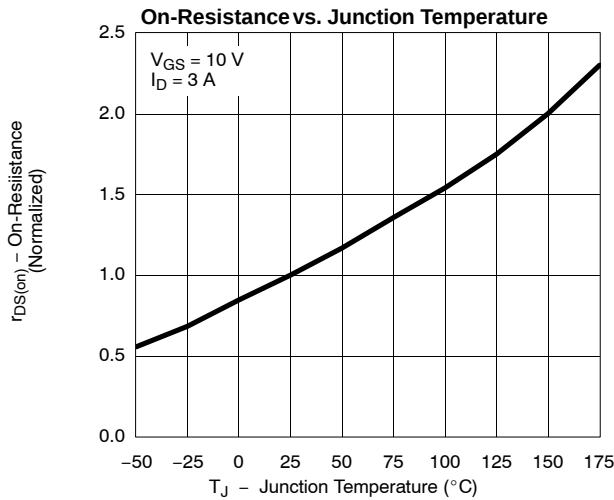
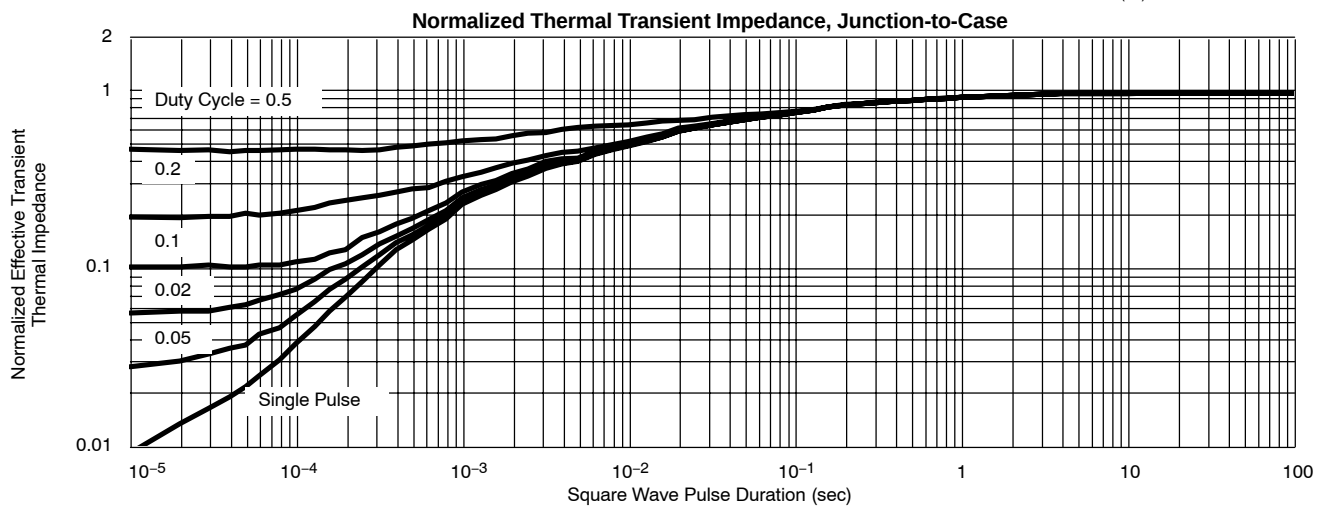
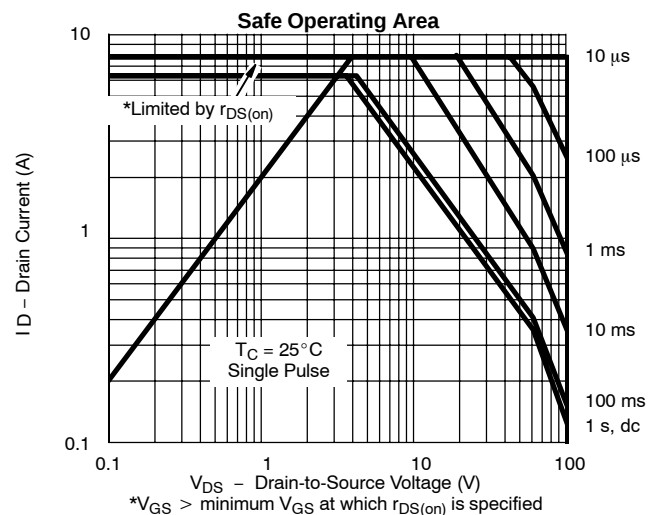
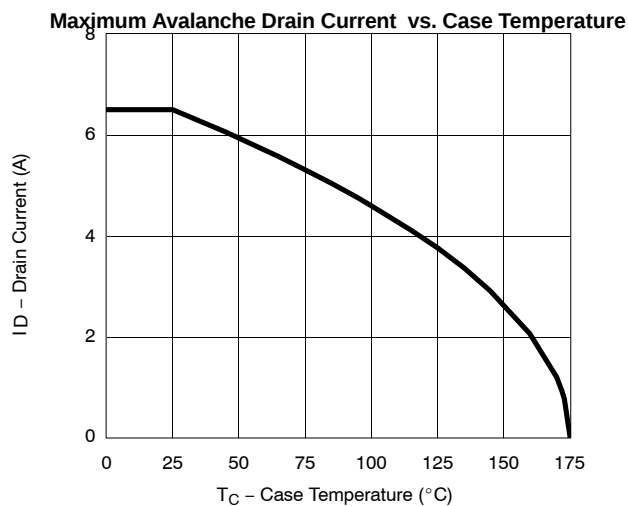
Parameter	Symbol	Test Condition	Min	Typ ^a	Max	Unit
Static						
Drain-Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} = 0 V, I _D = 250 μA	100			V
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250 μA	1.0		3.0	
Gate-Body Leakage	I _{GSS}	V _{DS} = 0 V, V _{GS} = ±20 V			±100	nA
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 100 V, V _{GS} = 0 V			1	μA
		V _{DS} = 100 V, V _{GS} = 0 V, T _J = 125°C			50	
		V _{DS} = 100 V, V _{GS} = 0 V, T _J = 175°C			250	
On-State Drain Current ^b	I _{D(on)}	V _{DS} = 5 V, V _{GS} = 10 V	8.0			A
Drain-Source On-State Resistance ^b	r _{DS(on)}	V _{GS} = 10 V, I _D = 3 A		0.160	0.200	Ω
		V _{GS} = 10 V, I _D = 3 A, T _J = 125°C			0.350	
		V _{GS} = 10 V, I _D = 3 A, T _J = 175°C			0.450	
		V _{GS} = 4.5 V, I _D = 1.0 A		0.180	0.225	
Forward Transconductance ^b	g _{fs}	V _{DS} = 15 V, I _D = 3 A		8.5		S
Dynamic ^a						
Input Capacitance	C _{iss}	V _{GS} = 0 V, V _{DS} = 25 V, F = 1 MHz		240		pF
Output Capacitance	C _{oss}			42		
Reverse Transfer Capacitance	C _{rss}			17		
Total Gate Charge ^c	Q _g	V _{DS} = 50 V, V _{GS} = 5 V, I _D = 6.5 A		2.7	4.0	nC
Gate-Source Charge ^c	Q _{gs}			0.6		
Gate-Drain Charge ^c	Q _{gd}			0.7		
Turn-On Delay Time ^c	t _{d(on)}	V _{DD} = 50 V, R _L = 7.5 Ω I _D ≅ 6.5 A, V _{GEN} = 10 V, R _g = 2.5 Ω		7	11	ns
Rise Time ^c	t _r			8	12	
Turn-Off Delay Time ^c	t _{d(off)}			8	12	
Fall Time ^c	t _f			9	14	
Source-Drain Diode Ratings and Characteristic (T _C = 25°C)						
Pulsed Current	I _{SM}				8.0	A
Diode Forward Voltage ^b	V _{SD}	I _F = 6.5 A, V _{GS} = 0 V		0.9	1.3	V
Source-Drain Reverse Recovery Time	t _{rr}	I _F = 6.5 A, di/dt = 100 A/μs		35	60	ns

Notes

- a. Guaranteed by design, not subject to production testing.
b. Pulse test; pulse width $\leq 300\text{ }\mu\text{s}$, duty cycle $\leq 2\%$.
c. Independent of operating temperature.

Stresses beyond those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated in the operational sections of the specifications is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

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

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

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