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SUD06N10-225L

Vishay Siliconix

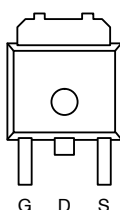
N-Channel 100-V (D-S) 175°C MOSFET

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	

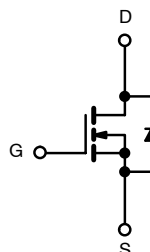
175°C Rated
Maximum Junction Temperature
TrenchFET®
Power MOSFETs

TO-252



Drain Connected to Tab

Top View



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	$T_C = 25^\circ\text{C}$	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	mJ
Repetitive Avalanche Energy (Duty Cycle $\leq 1\%$)	$L = 0.1$ mH	1.25	
Maximum Power Dissipation	$T_C = 25^\circ\text{C}$	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	R_{thJA}	40	50	$^\circ\text{C/W}$
		80	100	
Junction-to-Case	R_{thJC}	6.0	7.5	

Notes

- a. Surface Mounted on 1" x1" FR4 Board.
b. See SOA curve for voltage derating.



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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	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

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

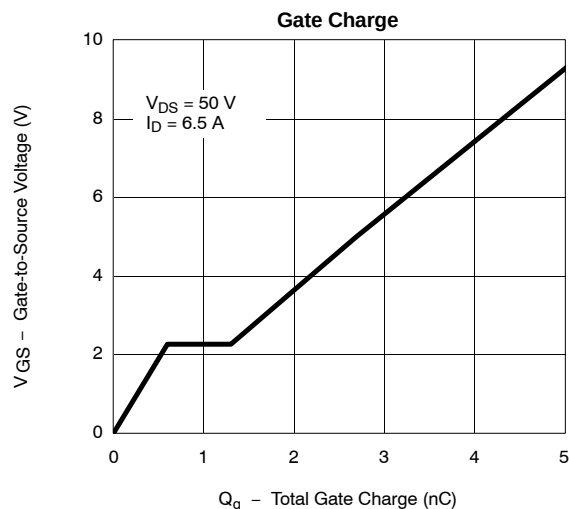
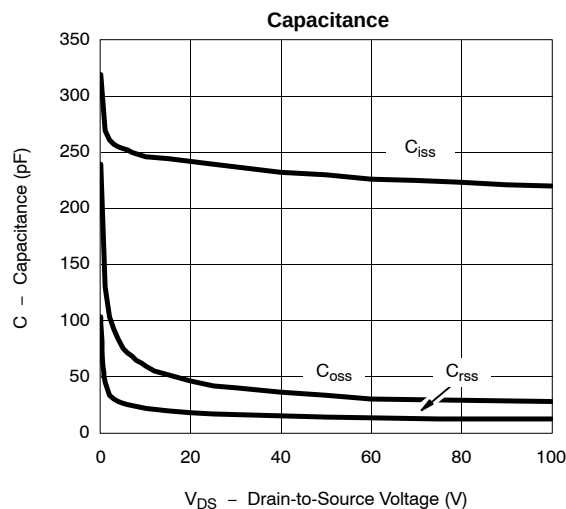
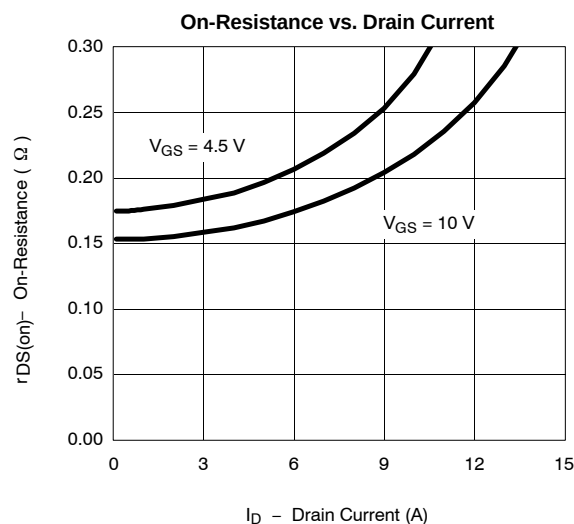
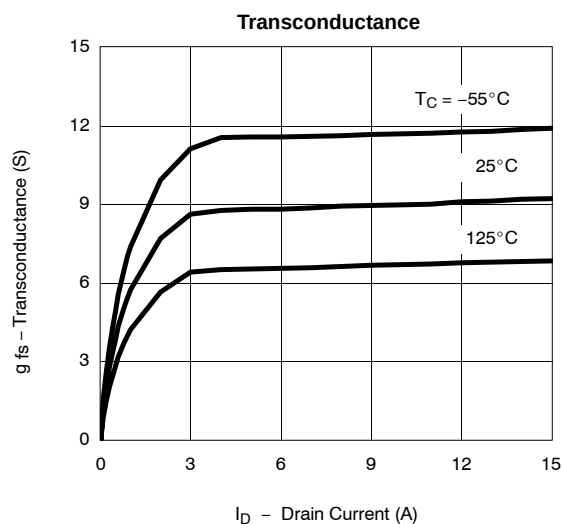
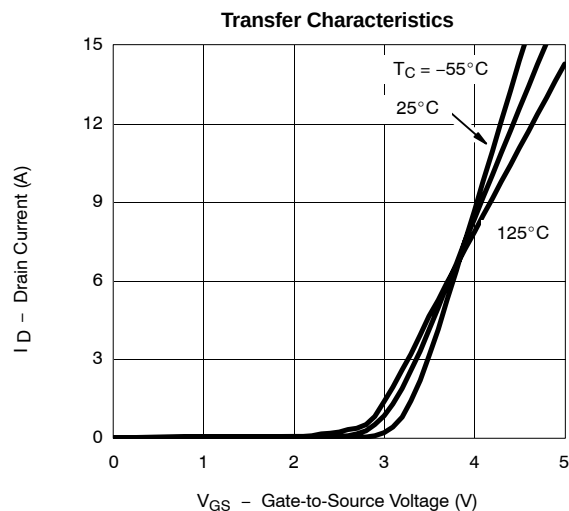
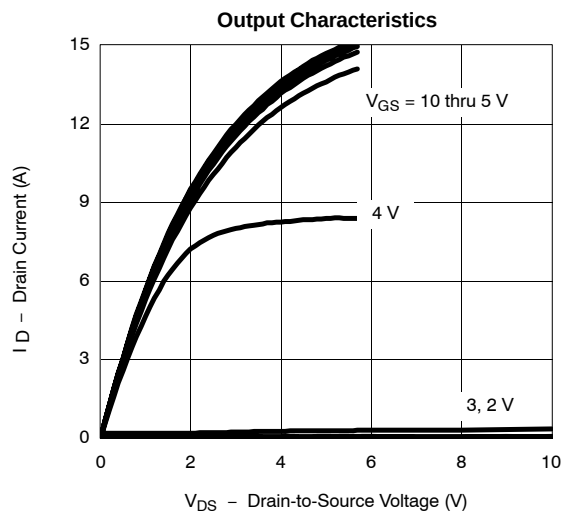
Stresses beyond those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated in the operational sections of the specifications is not implied. Exposure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



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TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)

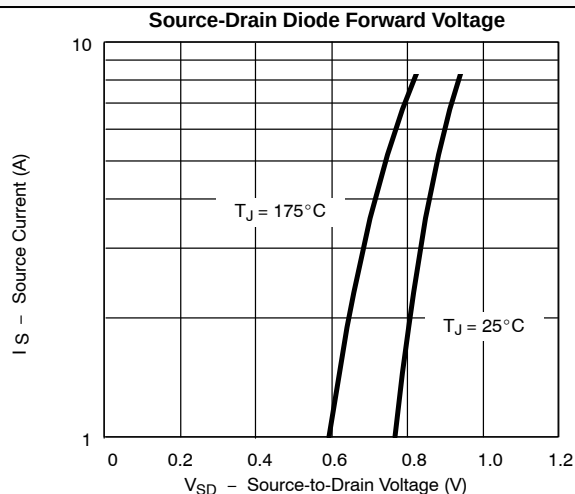
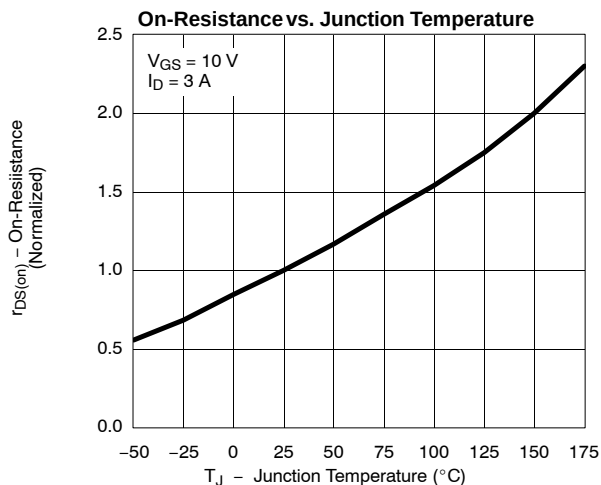




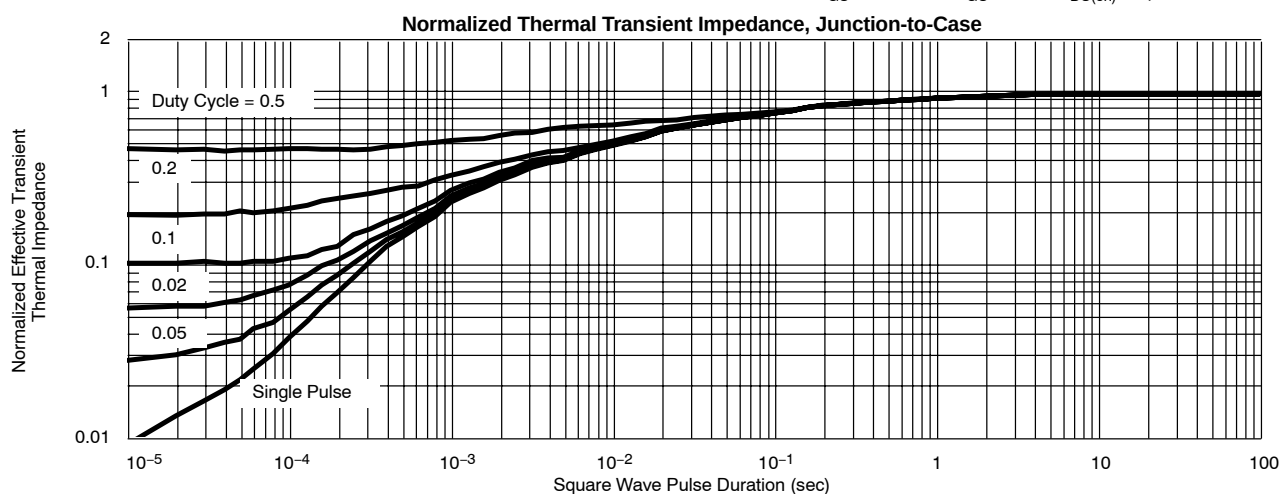
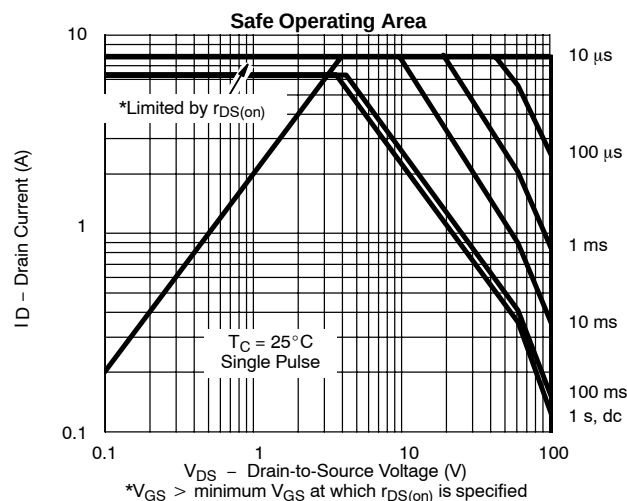
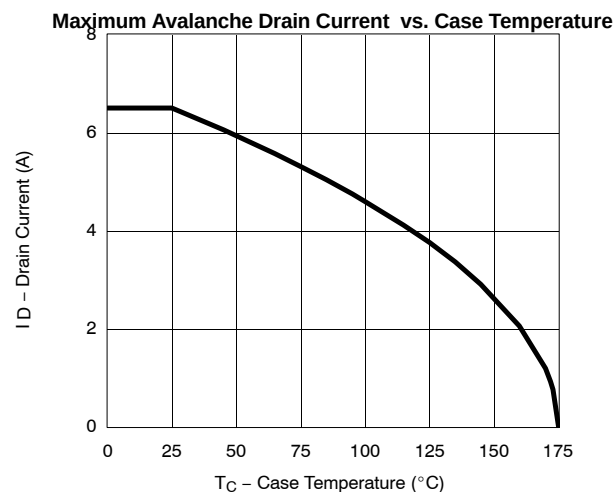
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TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)



THERMAL RATINGS



Vishay Siliconix maintains worldwide manufacturing capability. Products may be manufactured at one of several qualified locations. Reliability data for Silicon Technology and Package Reliability represent a composite of all qualified locations. For related documents such as package/tape drawings, part marking, and reliability data, see <http://www.vishay.com/ppg?71253>.



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