

N-Channel 55 V (D-S) 175 °C MOSFET

PRODUCT SUMMARY

V_{DS} (V)	$R_{DS(on)}$ (Ω)	I_D (A) ^a
55	0.0200 at $V_{GS} = 10$ V	35
	0.0260 at $V_{GS} = 4.5$ V	30

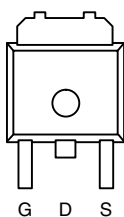
FEATURES

- TrenchFET® Power MOSFETS
- 175 °C Rated Maximum Junction Temperature
- Low Input Capacitance
- Material categorization: For definitions of compliance please see www.vishay.com/doc?99912



Available
RoHS*
COMPLIANT

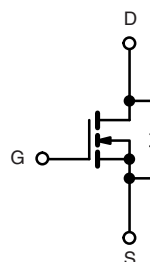
TO-252



Top View

Drain Connected to Tab

Ordering Information:
SUD35N05-26L-E3 (Lead (Pb)-free)



N-Channel MOSFET

ABSOLUTE MAXIMUM RATINGS ($T_A = 25$ °C, unless otherwise noted)

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V_{DS}	55	V
Gate-Source Voltage	V_{GS}	± 20	
Continuous Drain Current ($T_J = 175$ °C) ^b	I_D	$T_C = 25$ °C	A
		$T_C = 100$ °C	
Pulsed Drain Current	I_{DM}	80	
Continuous Source Current (Diode Conduction) ^a	I_S	35	
Maximum Power Dissipation	P_D	$T_C = 25$ °C	W
		$T_A = 25$ °C	
Operating Junction and Storage Temperature Range	T_J, T_{stg}	- 55 to 175	°C

THERMAL RESISTANCE RATINGS

Parameter	Symbol	Typical	Maximum	Unit
Junction-to-Ambient ^b	R_{thJA}	$t \leq 10$ s	17	°C/W
		Steady State	20	
Junction-to-Case	R_{thJC}	50	60	
Junction-to-Lead	R_{thJL}	2.5	3	
		5	6	

Notes:

- Package limited.
- Surface mounted on 1" x1" FR4 board, $t \leq 10$ s.
- See SOA curve for voltage derating.

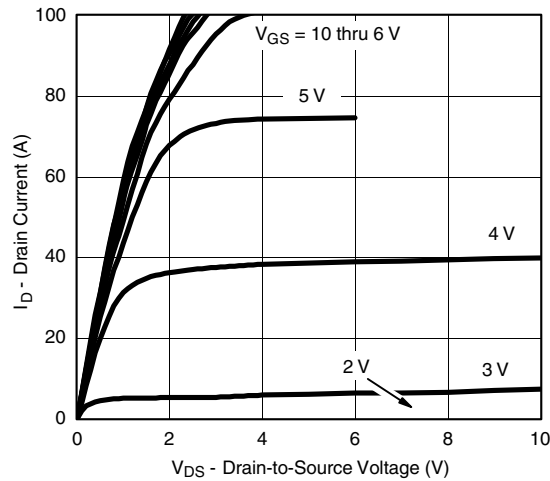
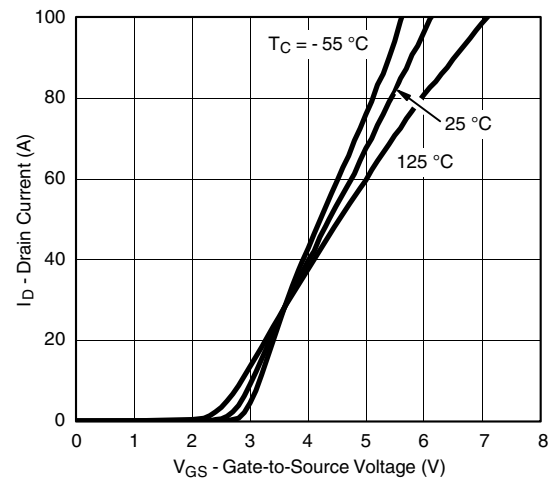
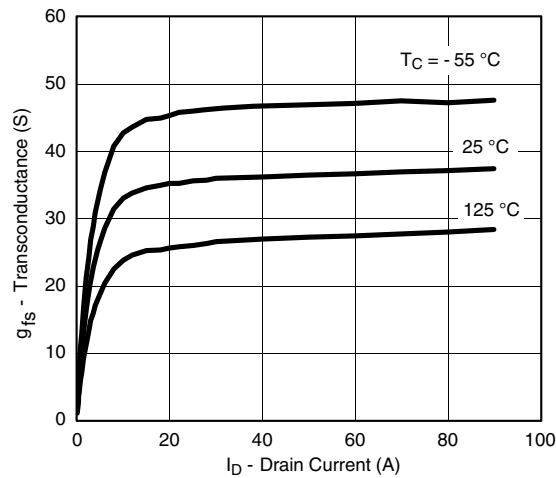
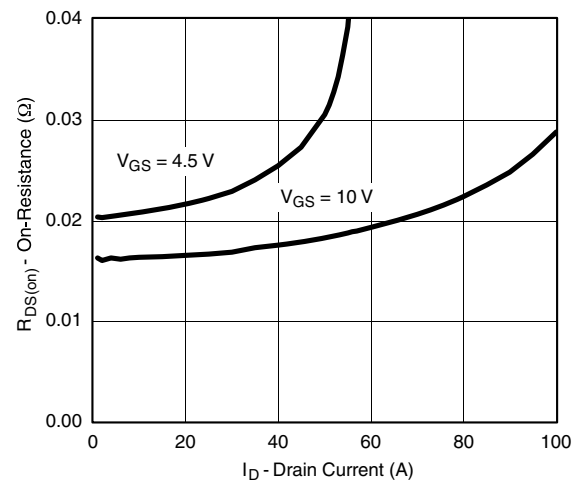
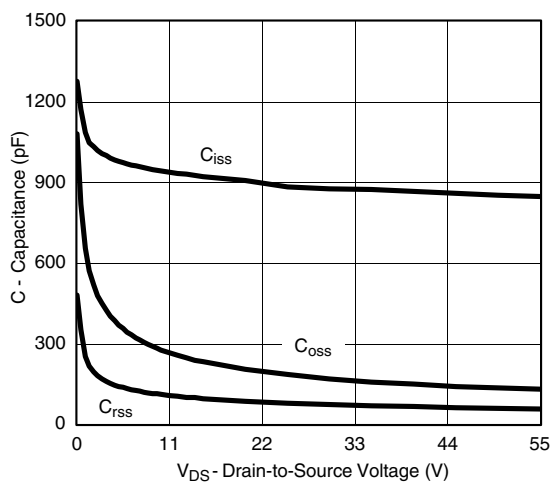
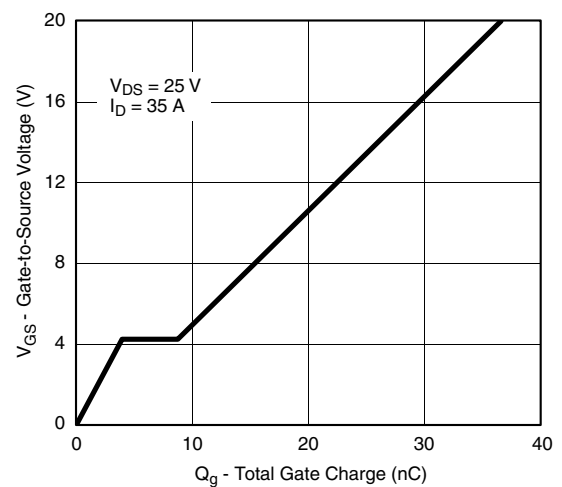
* Pb containing terminations are not RoHS compliant, exemptions may apply.

SPECIFICATIONS (T _J = 25 °C, unless otherwise noted)						
Parameter	Symbol	Test Conditions	Min.	Typ ^a	Max.	Unit
Static						
Drain-Source Breakdown Voltage	V _{BR}	V _{GS} = 0 V, I _D = 250 μA	55			V
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250 μA	1			
Gate-Body Leakage	I _{GSS}	V _{DS} = 0 V, V _{GS} = ± 20 V			± 100	nA
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 44 V, V _{GS} = 0 V			1	μA
		V _{DS} = 44 V, V _{GS} = 0 V, T _J = 125 °C			50	
On-State Drain Current ^b	I _{D(on)}	V _{DS} = 5 V, V _{GS} = 5 V	35			A
Drain-Source On-State Resistance ^b	R _{DS(on)}	V _{GS} = 10 V, I _D = 20 A		0.0165	0.0200	Ω
		V _{GS} = 10 V, I _D = 10 A, T _J = 125 °C			0.0350	
		V _{GS} = 4.5 V, I _D = 15 A		0.0215	0.0260	
Forward Transconductance ^b	g _{fs}	V _{DS} = 15 V, I _D = 20 A		25		S
Dynamic ^a						
Input Capacitance	C _{iss}	V _{GS} = 0 V, V _{DS} = 25 V, f = 1 MHz		885		pF
Output Capacitance	C _{oss}			185		
Reverse Transfer Capacitance	C _{rss}			80		
Total Gate Charge ^c	Q _g	V _{DS} = 25 V, V _{GS} = 5 V, I _D = 35 A		10.5	13	nC
Gate-Source Charge ^c	Q _{gs}			4		
Gate-Drain Charge ^c	Q _{gd}			4.8		
Turn-On Delay Time ^c	t _{d(on)}	V _{DD} = 25 V, R _L = 0.3 Ω I _D ≅ 35 A, V _{GEN} = 10 V, R _G = 2.5 Ω		5	8	ns
Rise Time ^c	t _r			18	30	
Turn-Off Delay Time ^c	t _{d(off)}			20	30	
Fall Time ^c	t _f			100	150	
Source-Drain Diode Ratings and Characteristic (T _C = 25 °C)						
Continuous Current	I _S				35	A
Pulsed Current	I _{SM}				80	
Diode Forward Voltage ^b	V _{SD}	I _F = 80 A, V _{GS} = 0 V			1.5	V
Source-Drain Reverse Recovery Time	t _{rr}	I _F = 35 A, di/dt = 100 A/μs		25	40	ns

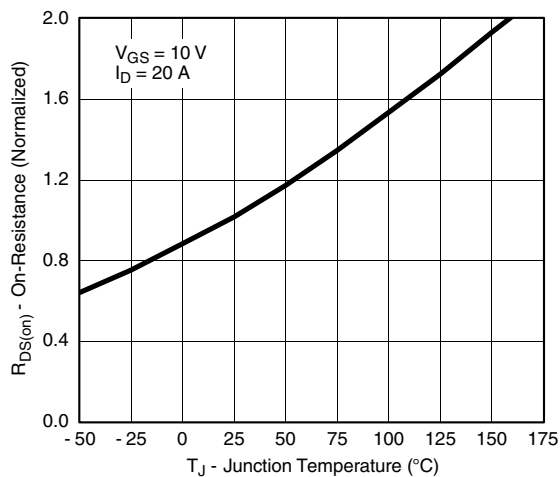
Notes:

- 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.

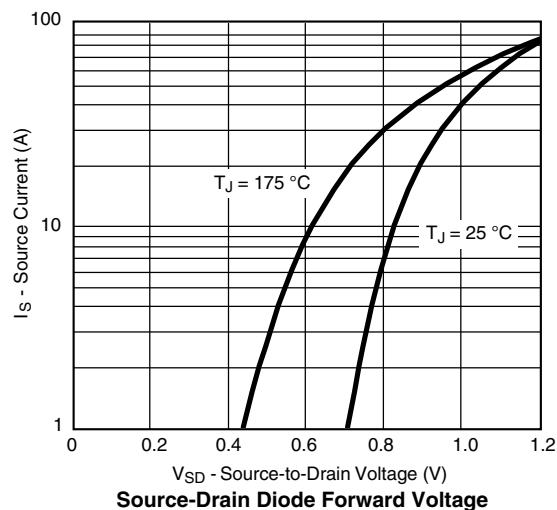
Stresses beyond those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated in the operational sections of the specifications is not implied. Exposure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

**TYPICAL CHARACTERISTICS** (25 °C unless noted)**Output Characteristics****Transfer Characteristics****Transconductance****On-Resistance vs. Drain Current****Capacitance****Gate Charge**

TYPICAL CHARACTERISTICS (25 °C unless noted)

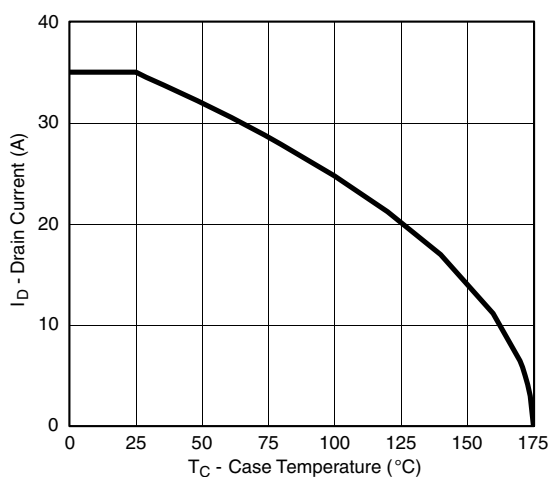


On-Resistance vs. Junction Temperature

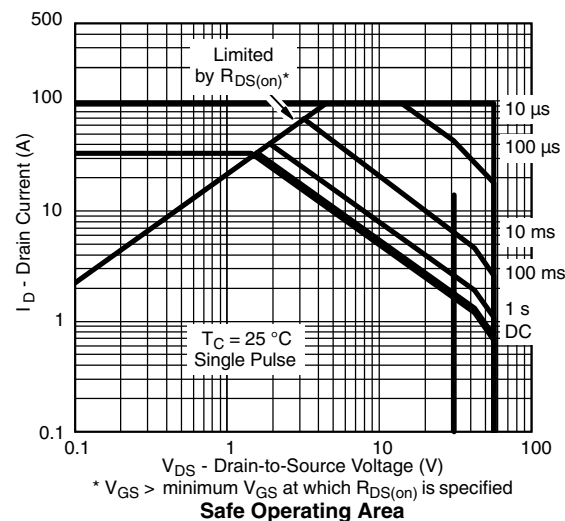


Source-Drain Diode Forward Voltage

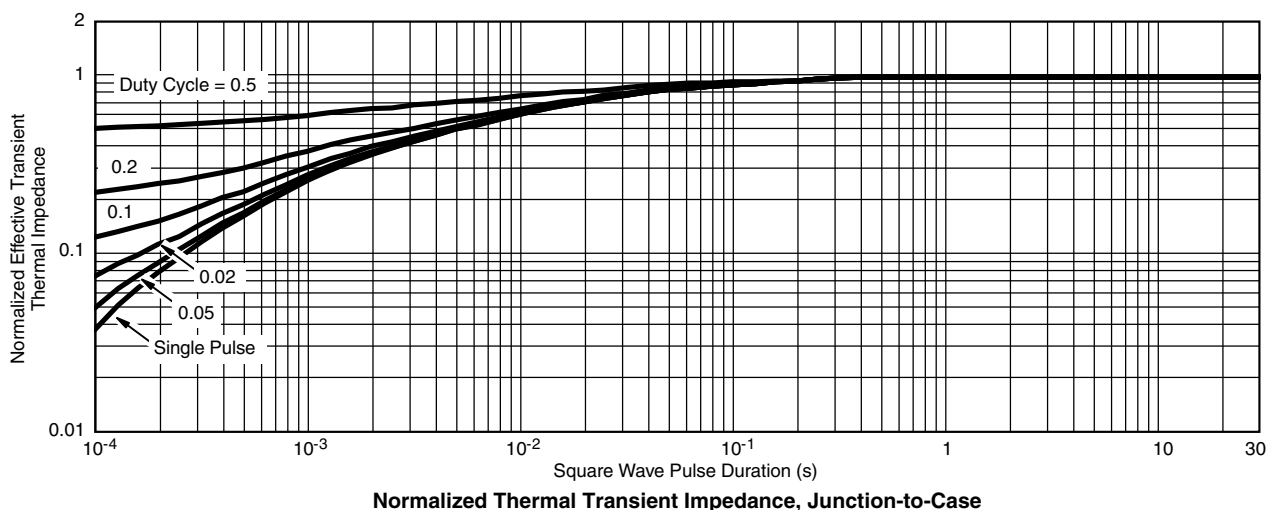
THERMAL RATINGS



Max. Avalanche and Drain Current vs. Case Temperature



* $V_{GS} >$ minimum V_{GS} at which $R_{DS(on)}$ is specified
Safe Operating Area



Normalized Thermal Transient Impedance, Junction-to-Case

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