

N-Channel 55 V (D-S) 175 °C MOSFET

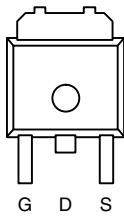
PRODUCT SUMMARY

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

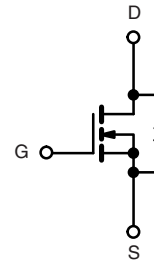
TO-252


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	35
		T _C = 100 °C	25
Pulsed Drain Current	I _{DM}	80	A
Continuous Source Current (Diode Conduction) ^a	I _S	35	
Maximum Power Dissipation	P _D	T _C = 25 °C	50 ^c
		T _A = 25 °C	7.5 ^b
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 ≤ 10 s	17	°C/W
		Steady State	50	
Junction-to-Case	R _{thJC}	2.5	3	
Junction-to-Lead	R _{thJL}	5	6	

Notes:

a. Package limited.

b. Surface mounted on 1" x1" FR4 board, t ≤ 10 s.

c. See SOA curve for voltage derating.

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

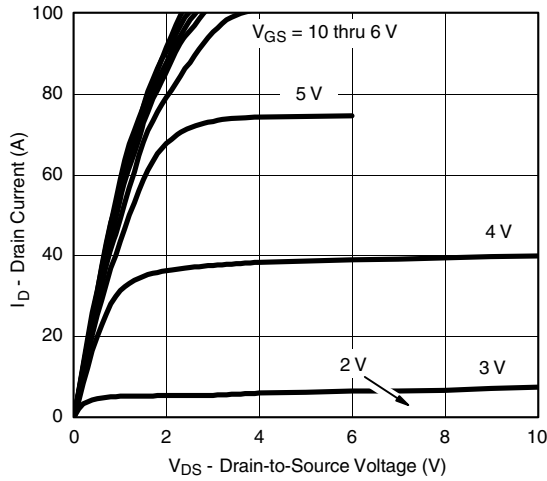
SPECIFICATIONS ($T_J = 25\text{ }^\circ\text{C}$, unless otherwise noted)						
Parameter	Symbol	Test Conditions	Min.	Typ ^a	Max.	Unit
Static						
Drain-Source Breakdown Voltage	V_{BR}	$V_{GS} = 0\text{ V}, I_D = 250\text{ }\mu\text{A}$	55			V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\text{ }\mu\text{A}$	1			
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}	$V_{DS} = 44\text{ V}, V_{GS} = 0\text{ V}$			1	μA
		$V_{DS} = 44\text{ V}, V_{GS} = 0\text{ V}, T_J = 125\text{ }^\circ\text{C}$			50	
On-State Drain Current ^b	$I_{D(on)}$	$V_{DS} = 5\text{ V}, V_{GS} = 5\text{ V}$	35			A
Drain-Source On-State Resistance ^b	$R_{DS(on)}$	$V_{GS} = 10\text{ V}, I_D = 20\text{ A}$		0.0165	0.0200	Ω
		$V_{GS} = 10\text{ V}, I_D = 10\text{ A}, T_J = 125\text{ }^\circ\text{C}$			0.0350	
		$V_{GS} = 4.5\text{ V}, I_D = 15\text{ A}$		0.0215	0.0260	
Forward Transconductance ^b	g_{fs}	$V_{DS} = 15\text{ V}, I_D = 20\text{ A}$		25		S
Dynamic^a						
Input Capacitance	C_{iss}	$V_{GS} = 0\text{ V}, V_{DS} = 25\text{ V}, f = 1\text{ MHz}$		885		pF
Output Capacitance	C_{oss}			185		
Reverse Transfer Capacitance	C_{rss}			80		
Total Gate Charge ^c	Q_g	$V_{DS} = 25\text{ V}, V_{GS} = 5\text{ V}, I_D = 35\text{ A}$		10.5	13	nC
Gate-Source Charge ^c	Q_{gs}			4		
Gate-Drain Charge ^c	Q_{gd}			4.8		
Turn-On Delay Time ^c	$t_{d(on)}$	$V_{DD} = 25\text{ V}, R_L = 0.3\text{ }\Omega$ $I_D \cong 35\text{ A}, V_{GEN} = 10\text{ V}, R_G = 2.5\text{ }\Omega$		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 ($T_C = 25\text{ }^\circ\text{C}$)						
Continuous Current	I_S				35	A
Pulsed Current	I_{SM}				80	
Diode Forward Voltage ^b	V_{SD}	$I_F = 80\text{ A}, V_{GS} = 0\text{ V}$			1.5	V
Source-Drain Reverse Recovery Time	t_{rr}	$I_F = 35\text{ A}, di/dt = 100\text{ A}/\mu\text{s}$		25	40	ns

Notes:

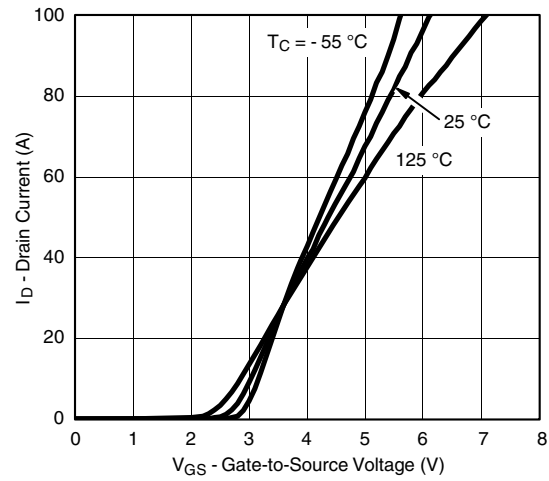
- Guaranteed by design, not subject to production testing.
- Pulse test; pulse width $\leq 300\text{ }\mu\text{s}$, duty cycle $\leq 2\%$.
- Independent of operating temperature.

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.

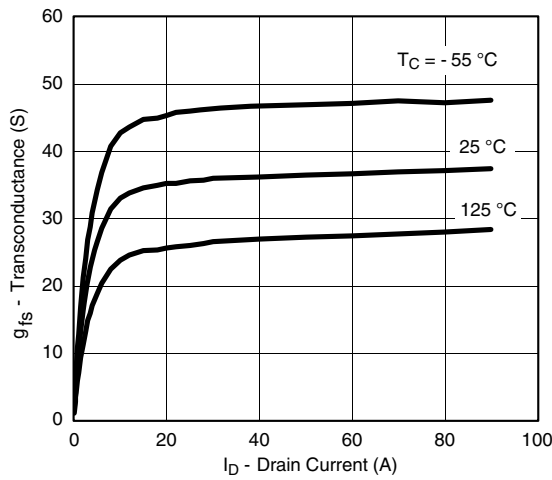
TYPICAL CHARACTERISTICS (25 °C unless noted)



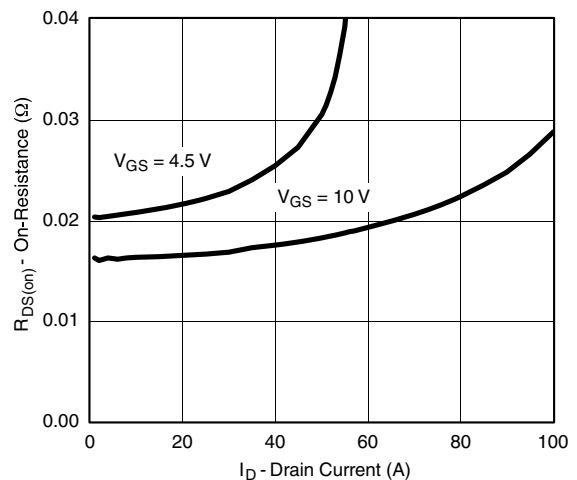
Output Characteristics



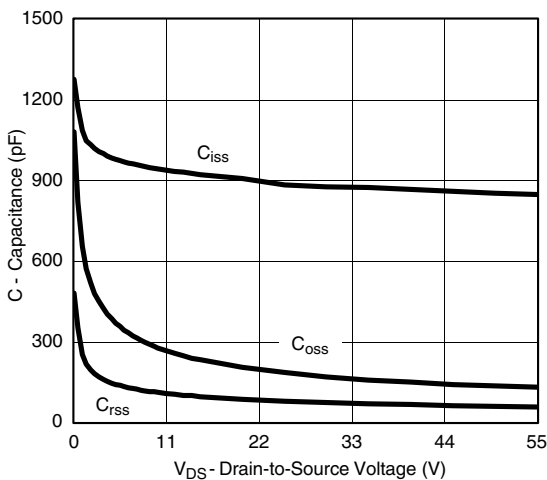
Transfer Characteristics



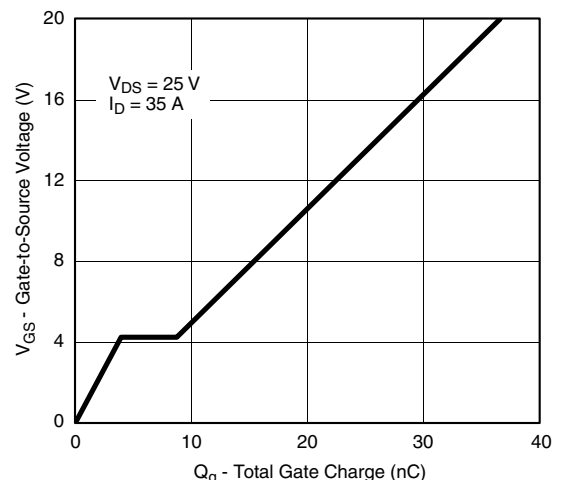
Transconductance



On-Resistance vs. Drain Current

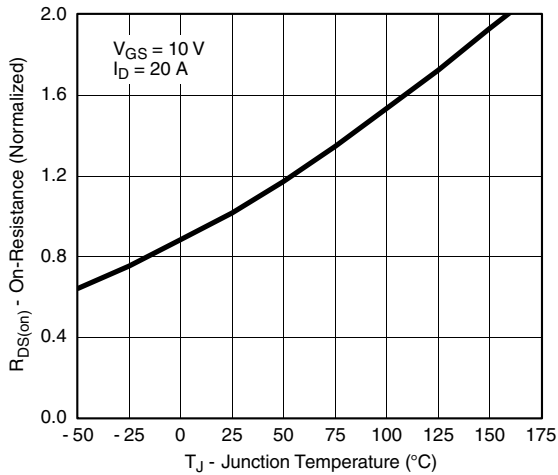


Capacitance

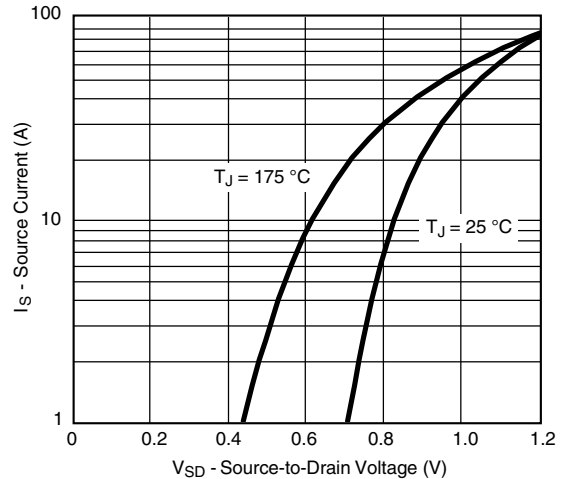


Gate Charge

TYPICAL CHARACTERISTICS (25 °C unless noted)

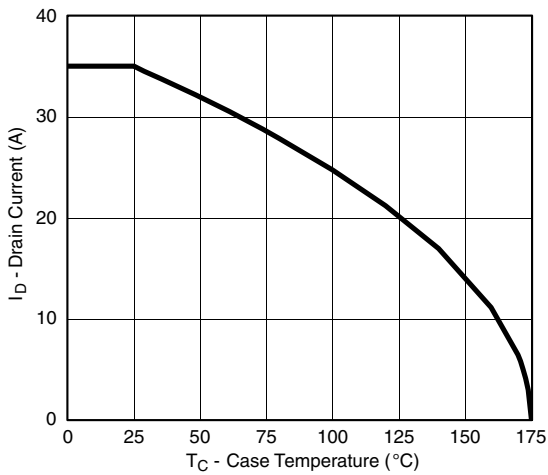


On-Resistance vs. Junction Temperature

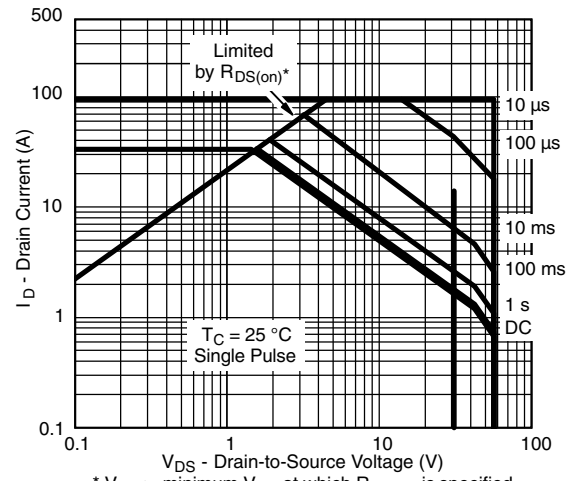


Source-Drain Diode Forward Voltage

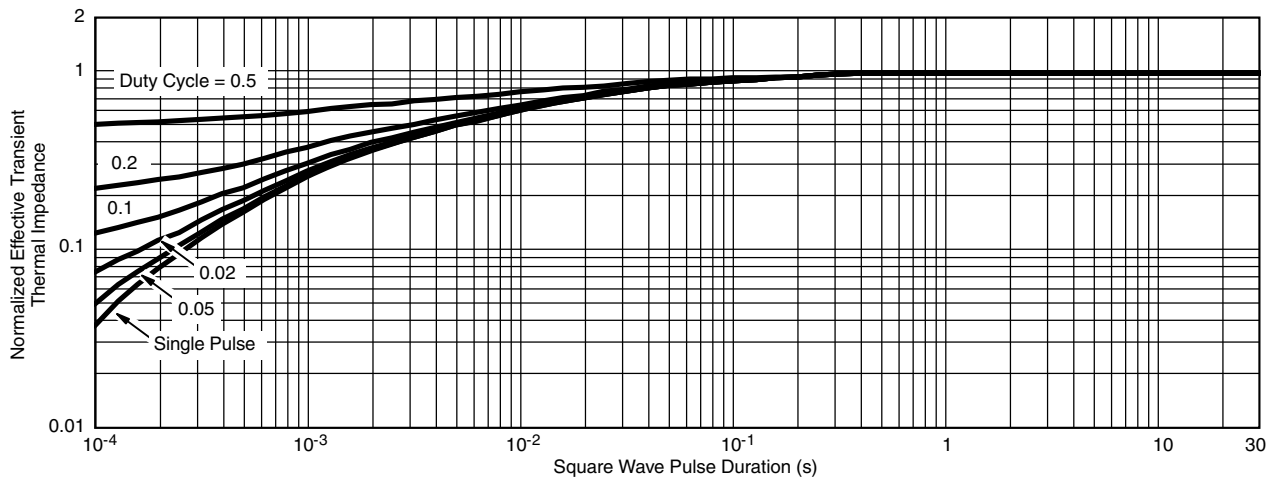
THERMAL RATINGS



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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