



**THE DATASHEET OF
SUD25N04-25-T4-E3**

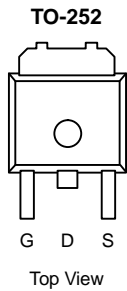




N-Channel 40-V (D-S) 175°C MOSFET

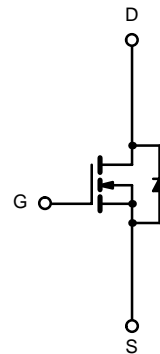
PRODUCT SUMMARY		
V _{DS} (V)	r _{DS(on)} (Ω)	I _D (A)
40	0.025 @ V _{GS} = 10 V	25
	0.040 @ V _{GS} = 4.5 V	20

175°C Rated
Maximum Junction Temperature
TrenchFET®
Power MOSFETS



Order Number:
SUD25N04-25

Drain Connected to Tab



N-Channel MOSFET

ABSOLUTE MAXIMUM RATINGS (T _A = 25°C UNLESS OTHERWISE NOTED)				
Parameter		Symbol	Limit	Unit
Drain-Source Voltage		V _{DS}	40	V
Gate-Source Voltage		V _{GS}	±20	
Continuous Drain Current (T _J = 175°C) ^b	T _C = 25°C	I _D	25	A
	T _C = 125°C		15	
Pulsed Drain Current		I _{DM}	50	
Continuous Source Current (Diode Conduction) ^b		I _S	50	
Avalanche Current		I _{AR}	25	mJ
Repetitive Avalanche Energy (Duty Cycle ≤ 1%)	L = 0.1 mH	E _{AR}	31	
Maximum Power Dissipation	T _C = 25°C	P _D	33 ^b	W
	T _A = 25°C		3 ^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	t ≤ 10 sec	R _{thJA}	20	25	°C/W
	Steady State		40	50	
Junction-to-Case		R _{thJC}	3.7	4.5	

Notes

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

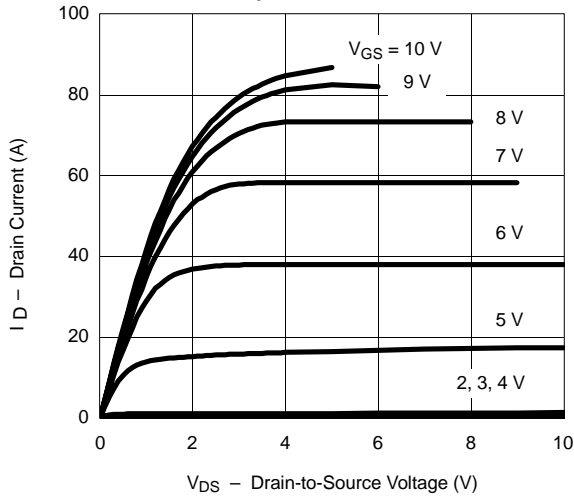
SPECIFICATIONS (T _J = 25 °C UNLESS OTHERWISE NOTED)						
Parameter	Symbol	Test Condition	Min	Typ ^a	Max	Unit
Static						
Drain-Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} = 0 V, I _D = 250 μA	40			V
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250 μA	1.0	2.0	3.0	
Gate-Body Leakage	I _{GSS}	V _{DS} = 0 V, V _{GS} = ±20 V			±100	nA
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 40 V, V _{GS} = 0 V			1	μA
		V _{DS} = 40 V, V _{GS} = 0 V, T _J = 125 °C			50	
		V _{DS} = 40 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	50			A
Drain-Source On-State Resistance ^b	r _{DS(on)}	V _{GS} = 10 V, I _D = 25 A		0.02	0.025	Ω
		V _{GS} = 10 V, I _D = 25 A, T _J = 125 °C			0.040	
		V _{GS} = 10 V, I _D = 25 A, T _J = 175 °C			0.053	
		V _{GS} = 4.5 V, I _D = 10 A		0.031	0.040	
Forward Transconductance ^b	g _{fs}	V _{DS} = 15 V, I _D = 25 A		15		S
Dynamic^a						
Input Capacitance	C _{iss}	V _{GS} = 0 V, V _{DS} = 25 V, F = 1 MHz		510		pF
Output Capacitance	C _{oss}			125		
Reverse Transfer Capacitance	C _{rss}			65		
Total Gate Charge ^c	Q _g	V _{DS} = 20 V, V _{GS} = 10 V, I _D = 25 A		13	20	nC
Gate-Source Charge ^c	Q _{gs}			2.5		
Gate-Drain Charge ^c	Q _{gd}			3		
Turn-On Delay Time ^c	t _{d(on)}	V _{DD} = 20 V, R _L = 0.8 Ω I _D = 25 A, V _{GEN} = 10 V, R _G = 2.5 Ω		5	10	ns
Rise Time ^c	t _r			47	70	
Turn-Off Delay Time ^c	t _{d(off)}			15	30	
Fall Time ^c	t _f			5	10	
Source-Drain Diode Ratings and Characteristic (T_C = 25 °C)						
Pulsed Current	I _{SM}				50	A
Diode Forward Voltage ^b	V _{SD}	I _F = 25 A, V _{GS} = 0 V		1.1	1.3	V
Source-Drain Reverse Recovery Time	t _{rr}	I _F = 25 A, di/dt = 100 A/μs		17	30	ns

Notes

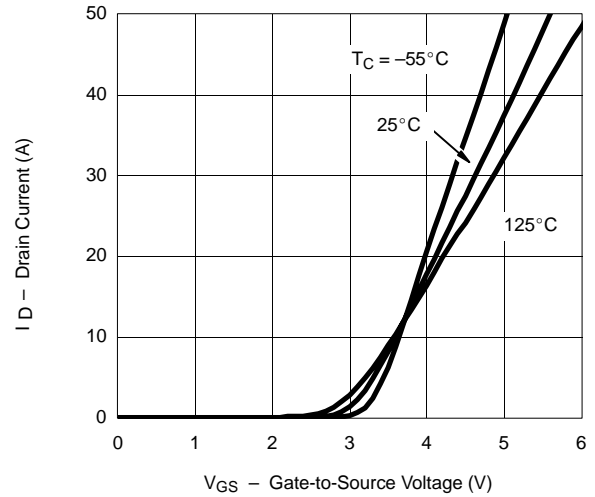
- Guaranteed by design, not subject to production testing.
- Pulse test; pulse width ≤ 300 μs, duty cycle ≤ 2%.
- Independent of operating temperature.

TYPICAL CHARACTERISTICS (25 °C UNLESS NOTED)

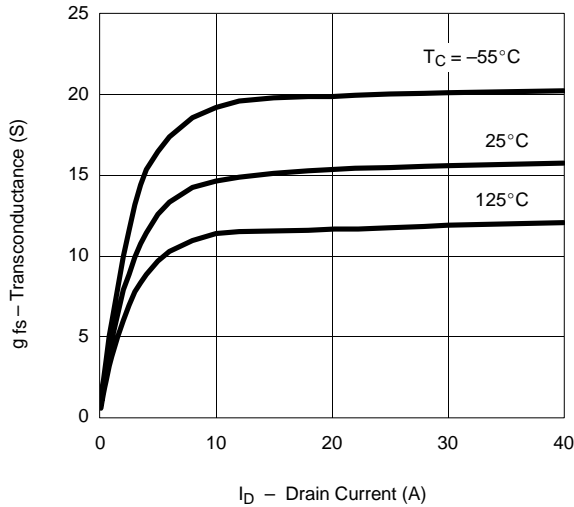
Output Characteristics



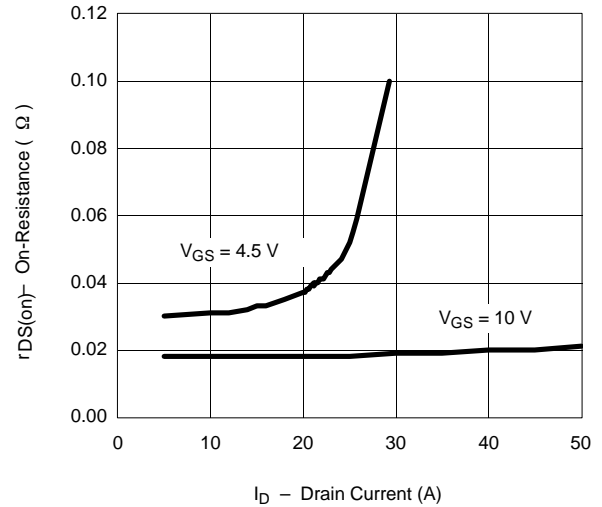
Transfer Characteristics



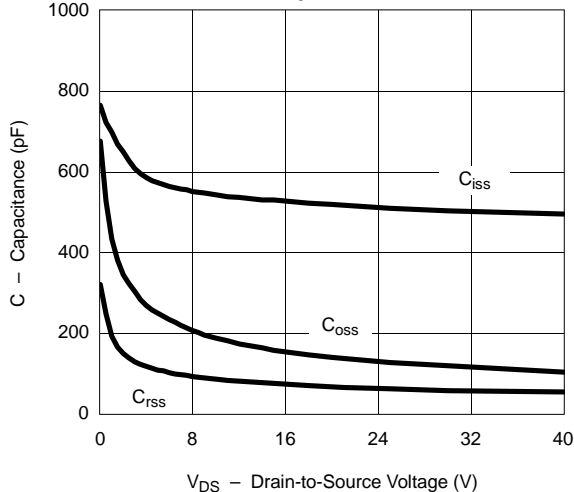
Transconductance



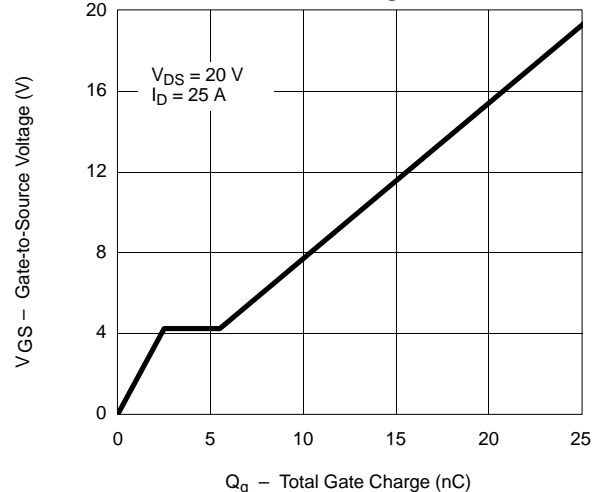
On-Resistance vs. Drain Current



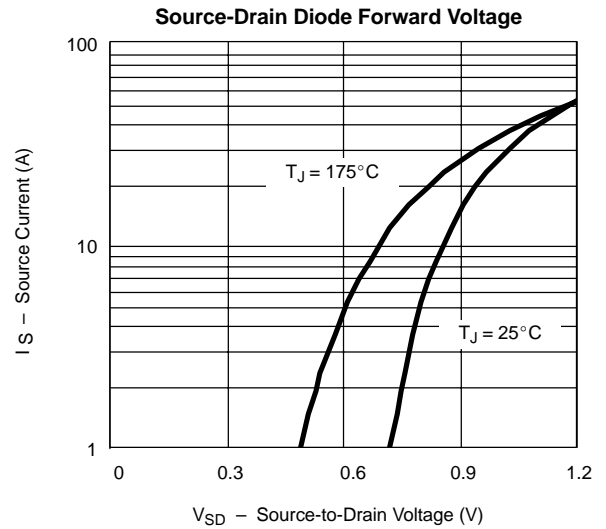
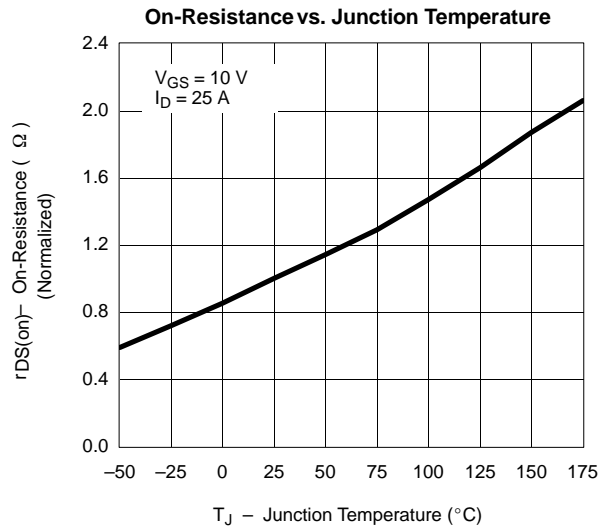
Capacitance



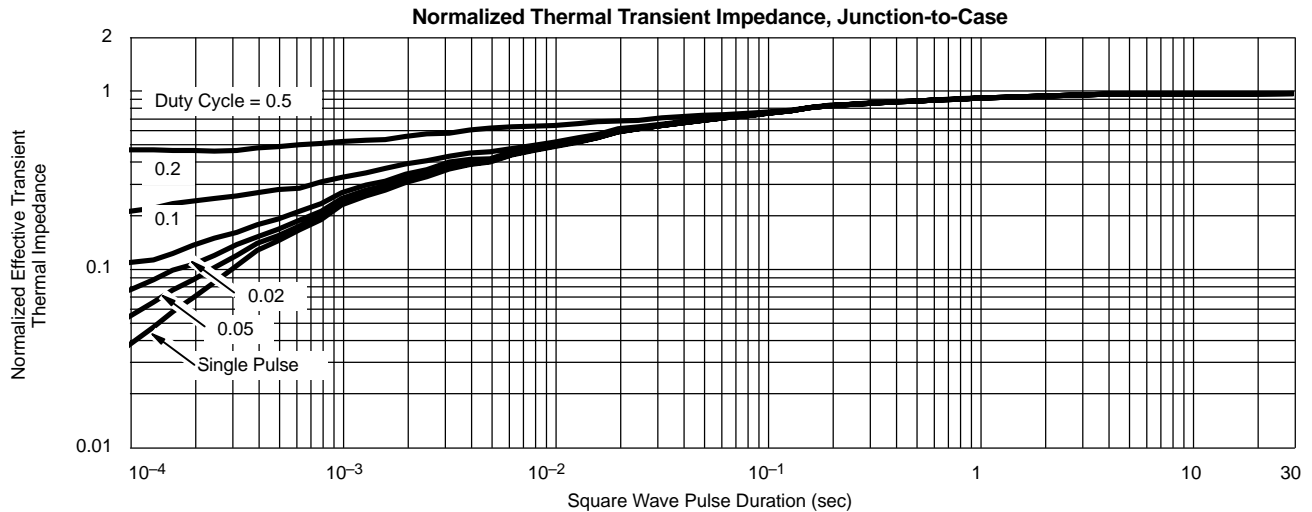
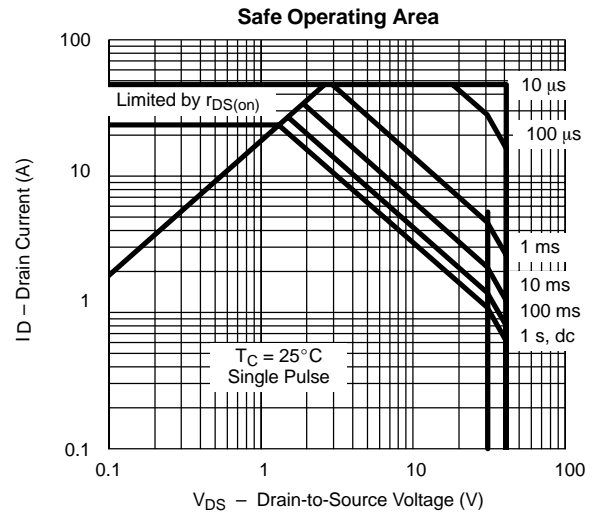
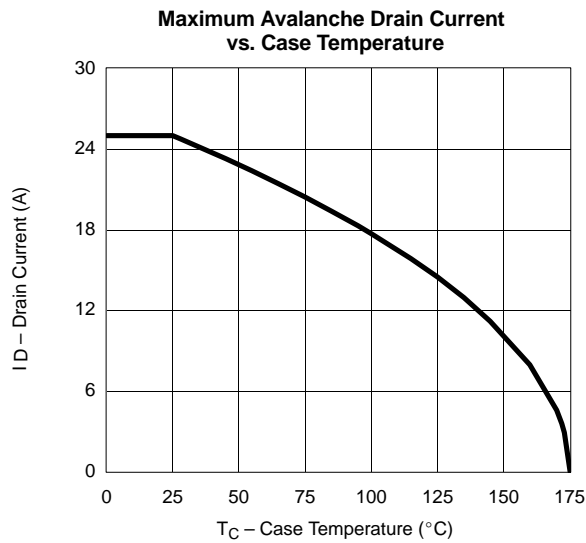
Gate Charge



TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)



THERMAL RATINGS





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