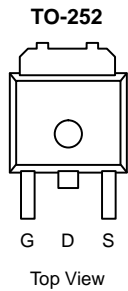




N-Channel 30-V (D-S) 175°C MOSFET

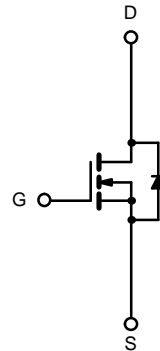
PRODUCT SUMMARY		
V _{DS} (V)	r _{DS(on)} (Ω)	I _D (A) ^a
30	0.011 @ V _{GS} = 10 V	50
	0.017 @ V _{GS} = 4.5 V	43

175°C Rated
Maximum Junction Temperature
TrenchFET®
Power MOSFETs



Order Number:
SUD50N03-11

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}	30	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}	100	A
Continuous Source Current (Diode Conduction) ^a	I _S	50	
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 ≤ 10 sec	17	20	°C/W
		Steady State	50	60	
Junction-to-Case	R _{thJC}	2	2.4	°C/W	
Junction-to-Lead	R _{thJL}	4	4.8	°C/W	

Notes

- a. Package Limited.
- b. Surface Mounted on 1" x 1" FR4 Board, t ≤ 10 sec.
- c. 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	30			V
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250 μA	0.8			
Gate-Body Leakage	I _{GSS}	V _{DS} = 0 V, V _{GS} = ±20 V			±100	nA
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 24 V, V _{GS} = 0 V			1	μA
		V _{DS} = 24 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	50			A
Drain-Source On-State Resistance ^b	r _{DS(on)}	V _{GS} = 10 V, I _D = 25 A		0.009	0.011	Ω
		V _{GS} = 5 V, I _D = 20 A, T _J = 125 °C			0.018	
		V _{GS} = 4.5 V, I _D = 15 A		0.014	0.017	
Forward Transconductance ^b	g _{fs}	V _{DS} = 15 V, I _D = 20 A	10			S
Dynamic^a						
Input Capacitance	C _{iss}	V _{GS} = 0 V, V _{DS} = 25 V, F = 1 MHz		1130		pF
Output Capacitance	C _{oss}			400		
Reverse Transfer Capacitance	C _{rss}			175		
Total Gate Charge ^c	Q _g	V _{DS} = 15 V, V _{GS} = 5 V, I _D = 50 A		12	20	nC
Gate-Source Charge ^c	Q _{gs}			4		
Gate-Drain Charge ^c	Q _{gd}			4.5		
Turn-On Delay Time ^c	t _{d(on)}	V _{DD} = 15 V, R _L = 0.3 Ω I _D ≅ 50 A, V _{GEN} = 10 V, R _G = 2.5 Ω		8	12	ns
Rise Time ^c	t _r			10	15	
Turn-Off Delay Time ^c	t _{d(off)}			18	30	
Fall Time ^c	t _f			6	9	
Source-Drain Diode Ratings and Characteristic (T_C = 25 °C)						
Continuous Current	I _S				50	A
Pulsed Current	I _{SM}				80	
Diode Forward Voltage ^b	V _{SD}	I _F = 100 A, V _{GS} = 0 V			1.5	V
Source-Drain Reverse Recovery Time	t _{rr}	I _F = 50 A, di/dt = 100 A/μs		30	50	ns

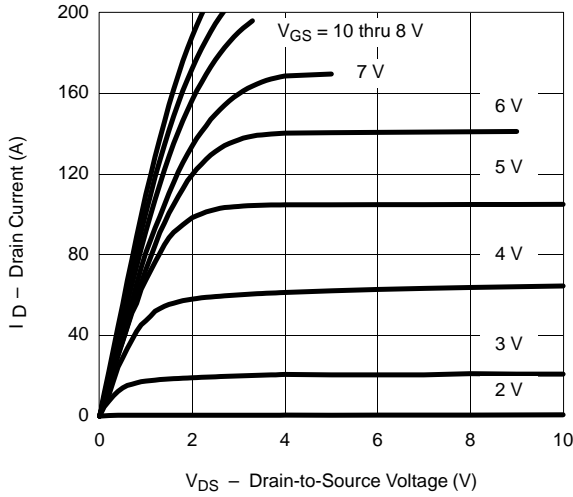
Notes

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

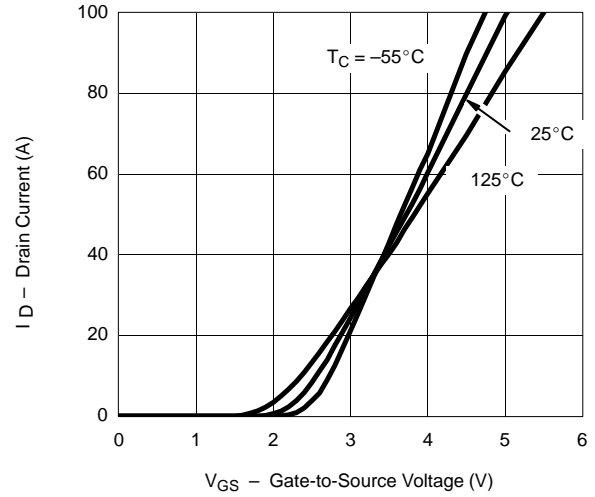


TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)

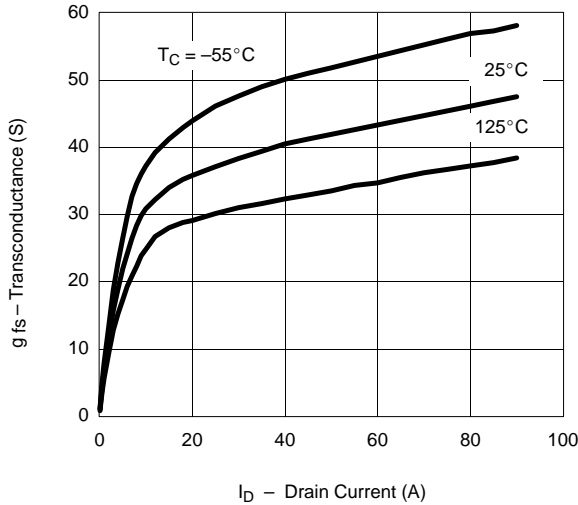
Output Characteristics



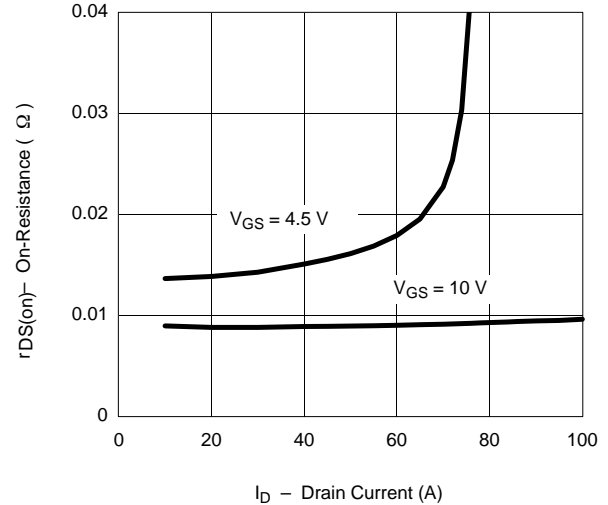
Transfer Characteristics



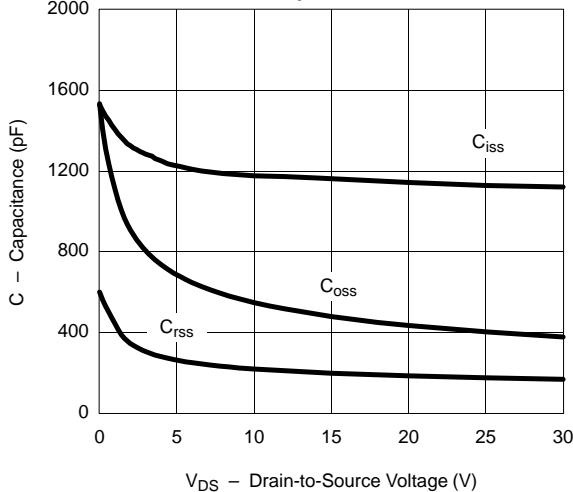
Transconductance



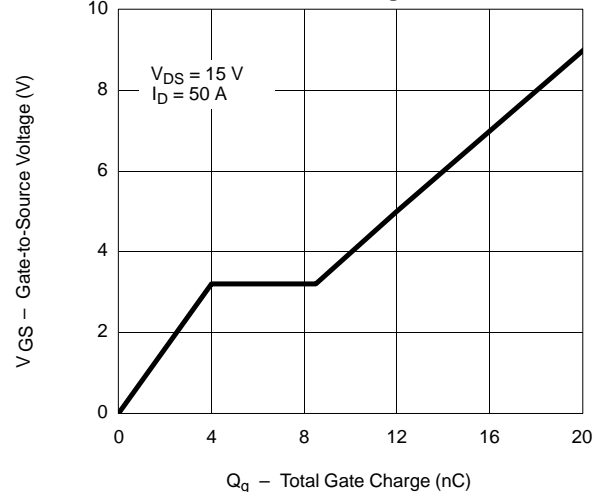
On-Resistance vs. Drain Current



Capacitance

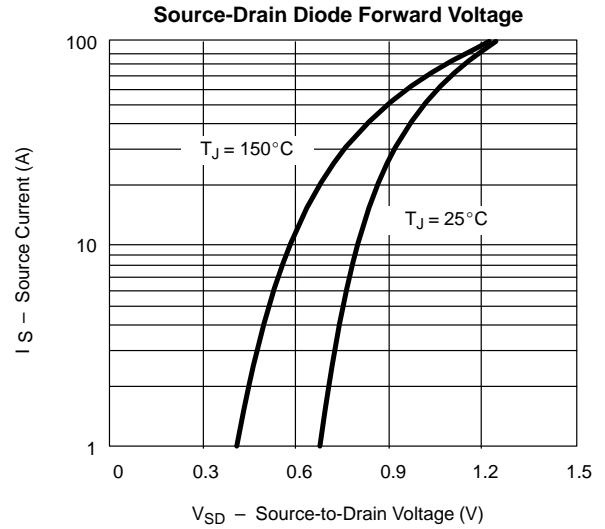
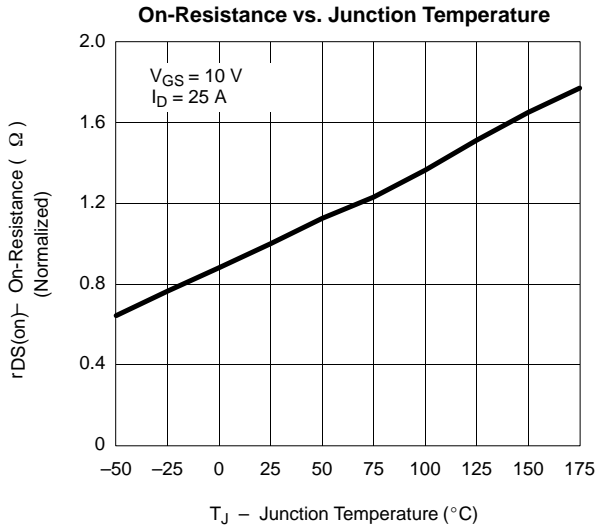


Gate Charge





TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)



THERMAL RATINGS

