

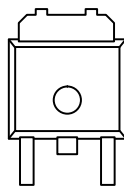


N-Channel 30-V (D-S) 175°C MOSFET

175°C Rated
Maximum Junction Temperature
TrenchFET®
Power MOSFETs

PRODUCT SUMMARY		
V _{DS} (V)	r _{DS(on)} (Ω)	I _D (A) ^{a, b}
30	0.007 @ V _{GS} = 10 V	25
	0.010 @ V _{GS} = 4.5 V	18

TO-252

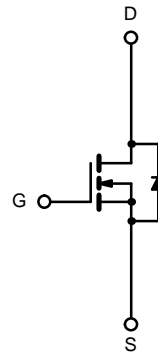


G D S

Top View

Order Number:
SUD50N03-07AP

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) ^{a, b}	T _A = 25°C	I _D	25	A
	T _A = 100°C		18	
Pulsed Drain Current		I _{DM}	100	
Continuous Source Current (Diode Conduction) ^{a, b}		I _S	25	
Maximum Power Dissipation	T _C = 25°C	P _D	88	W
	T _A = 25°C		8.3 ^{a, 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 ^a	t ≤ 10 sec	R _{thJA}	15	18	°C/W
	Steady State		40	50	
Junction-to-Case		R _{thJC}	1.4	1.7	

Notes

- a. Surface Mounted on 1" x1" FR4 Board.
- b. t ≤ 10 sec.



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	1.0	2.0		
Gate-Body Leakage	I _{GSS}	V _{DS} = 0 V, V _{GS} = ±20 V			±100	nA
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 30 V, V _{GS} = 0 V			1	μA
		V _{DS} = 30 V, V _{GS} = 0 V, T _J = 125 °C			50	
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 = 20 A			0.007	Ω
		V _{GS} = 10 V, I _D = 20 A, T _J = 125 °C			0.011	
		V _{GS} = 4.5 V, I _D = 20 A			0.010	
Forward Transconductance ^b	g _{fs}	V _{DS} = 15 V, I _D = 20 A	20			S
Dynamic^a						
Input Capacitance	C _{iss}	V _{GS} = 0 V, V _{DS} = 25 V, F = 1 MHz		3720		pF
Output Capacitance	C _{oss}			715		
Reverse Transfer Capacitance	C _{rss}			370		
Total Gate Charge ^c	Q _g	V _{DS} = 15 V, V _{GS} = 10 V, I _D = 50 A		60	120	nC
Gate-Source Charge ^c	Q _{gs}			12		
Gate-Drain Charge ^c	Q _{gd}			10		
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		11	25	ns
Rise Time ^c	t _r			6	15	
Turn-Off Delay Time ^c	t _{d(off)}			50	100	
Fall Time ^c	t _f			11	20	
Source-Drain Diode Ratings and Characteristic (T_C = 25 °C)						
Pulsed Current	I _{SM}				100	A
Diode Forward Voltage ^b	V _{SD}	I _F = 100 A, V _{GS} = 0 V		1.2	1.5	V
Source-Drain Reverse Recovery Time	t _{rr}	I _F = 50 A, di/dt = 100 A/μs		45	100	ns

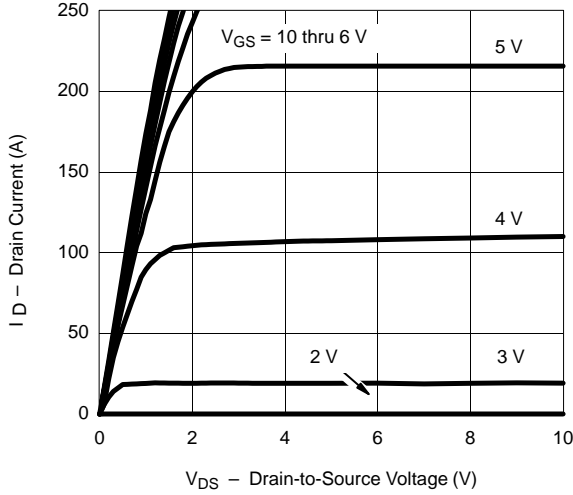
Notes

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

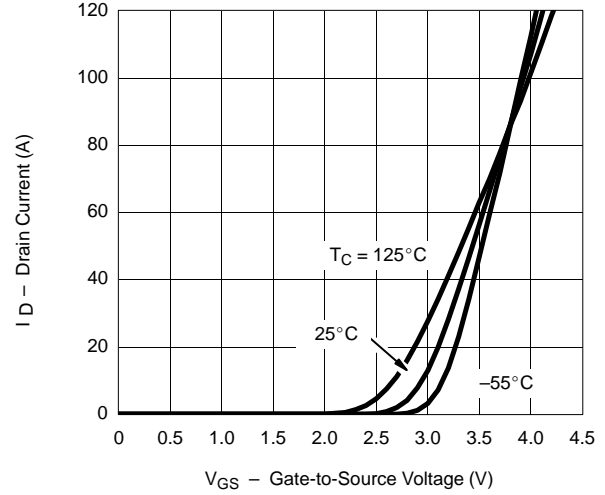


TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)

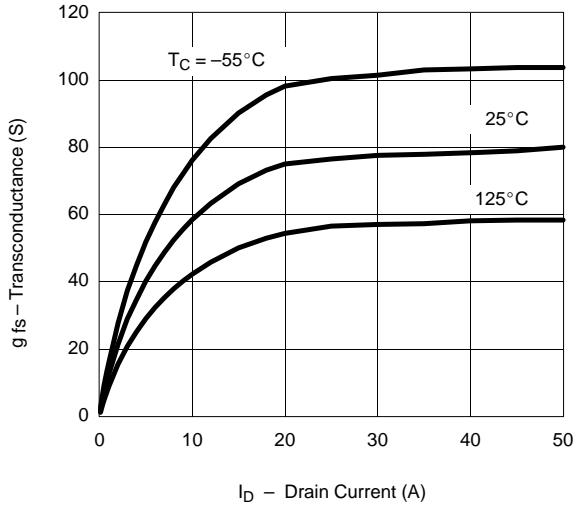
Output Characteristics



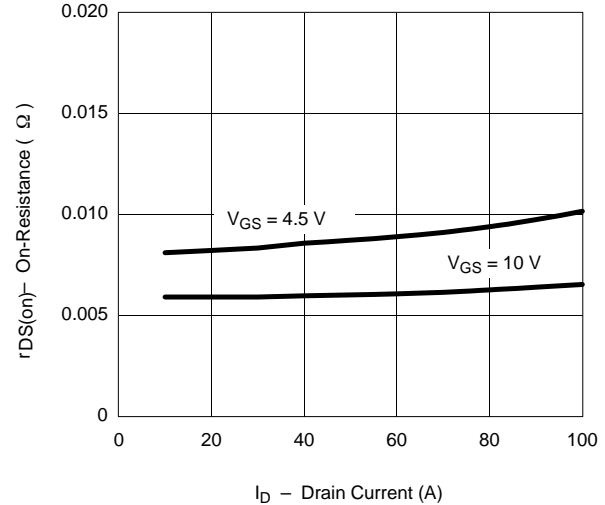
Transfer Characteristics



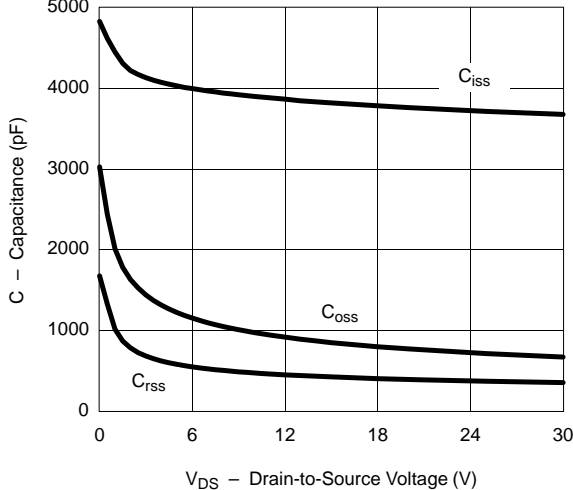
Transconductance



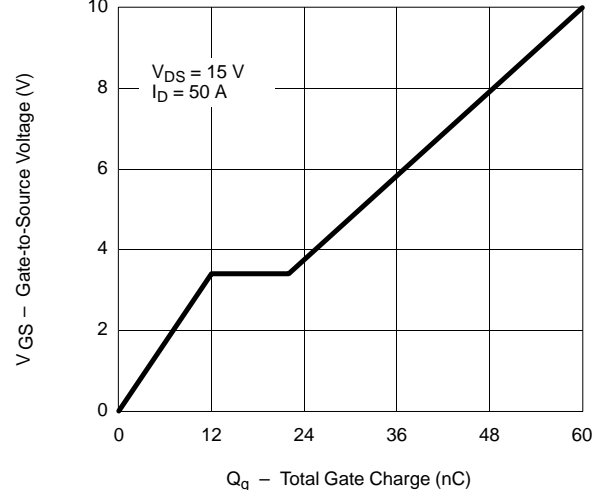
On-Resistance vs. Drain Current



Capacitance

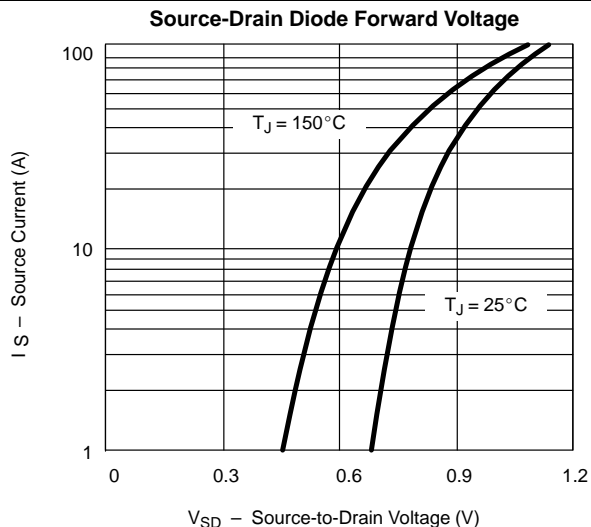
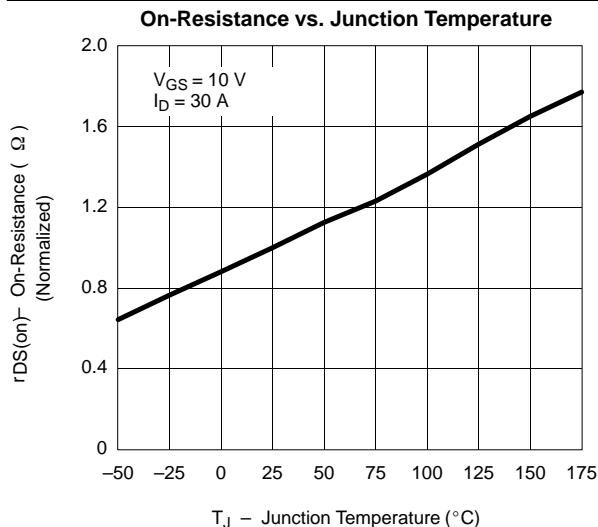


Gate Charge





TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)



THERMAL RATINGS

