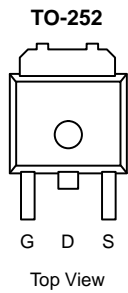




N-Channel 30-V (D-S) 175°C MOSFET

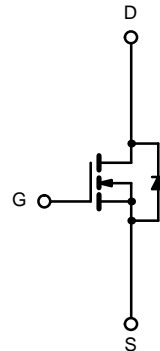
PRODUCT SUMMARY		
V_{DS} (V)	$r_{DS(on)}$ (Ω)	I_D (A) ^a
30	0.018 @ $V_{GS} = 10$ V	± 40
	0.027 @ $V_{GS} = 4.5$ V	± 34

175°C Rated
Maximum Junction Temperature
TrenchFET®
Power MOSFETs



Order Number:
SUD40N03-18P

Drain Connected to Tab



N-Channel MOSFET

ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ UNLESS OTHERWISE NOTED)			
Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V_{DS}	30	V
Gate-Source Voltage	V_{GS}	± 20	
Continuous Drain Current ($T_J = 175^\circ\text{C}$) ^b	I_D	$T_C = 25^\circ\text{C}$	± 40
		$T_C = 100^\circ\text{C}$	± 28
Pulsed Drain Current	I_{DM}	± 100	A
Continuous Source Current (Diode Conduction) ^a	I_S	40	
Maximum Power Dissipation	P_D	$T_C = 25^\circ\text{C}$	62.5 ^c
		$T_A = 25^\circ\text{C}$	7.5 ^b
Operating Junction and Storage Temperature Range	T_J, T_{stg}	-55 to 175	$^\circ\text{C}$

THERMAL RESISTANCE RATINGS					
Parameter	Symbol	Typical	Maximum	Unit	
Junction-to-Ambient ^b	R_{thJA}	$t \leq 10$ sec	17	20	$^\circ\text{C/W}$
		Steady State	50	60	
Junction-to-Case	R_{thJC}	2	2.4		
Junction-to-Lead	R_{thJL}	4	4.8	$^\circ\text{C/W}$	

Notes

- a. Package Limited.
- b. Surface Mounted on 1" x 1" FR4 Board, $t \leq 10$ 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	1.0			
Gate-Body Leakage	I _{GSS}	V _{DS} = 0 V, V _{GS} = ±20 V			±100	nA
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 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} = 10 V	40			A
Drain-Source On-State Resistance ^b	r _{DS(on)}	V _{GS} = 10 V, I _D = 20 A		0.014	0.018	Ω
		V _{GS} = 10 V, I _D = 20 A, T _J = 125 °C			0.029	
		V _{GS} = 4.5 V, I _D = 10 A		0.021	0.027	
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		1300		pF
Output Capacitance	C _{oss}			340		
Reverse Transfer Capacitance	C _{rss}			95		
Total Gate Charge ^c	Q _g	V _{DS} = 15 V, V _{GS} = 10 V, I _D = 40 A		19	30	nC
Gate-Source Charge ^c	Q _{gs}			5		
Gate-Drain Charge ^c	Q _{gd}			3		
Turn-On Delay Time ^c	t _{d(on)}	V _{DD} = 15 V, R _L = 0.37 Ω I _D ≅ 40 A, V _{GEN} = 10 V, R _G = 2.5 Ω		8	12	ns
Rise Time ^c	t _r			8.5	13	
Turn-Off Delay Time ^c	t _{d(off)}			17	25	
Fall Time ^c	t _f			6	9	
Source-Drain Diode Ratings and Characteristic (T_C = 25 °C)						
Continuous Current	I _S				40	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 = 40 A, di/dt = 100 A/μs		30	50	ns

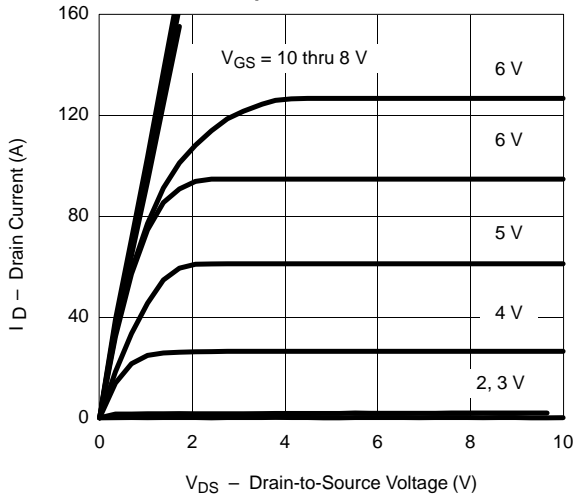
Notes

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

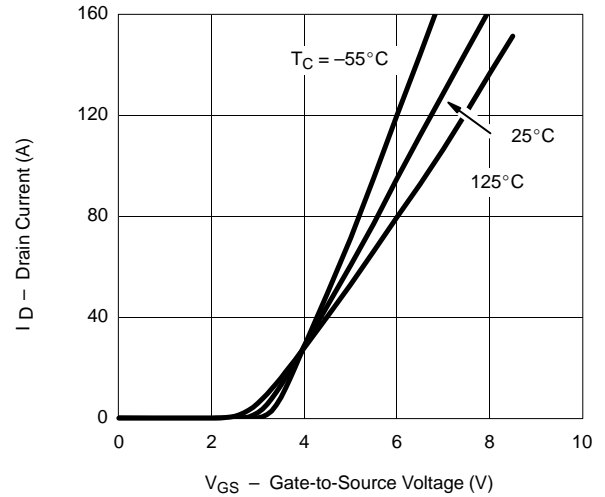


TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)

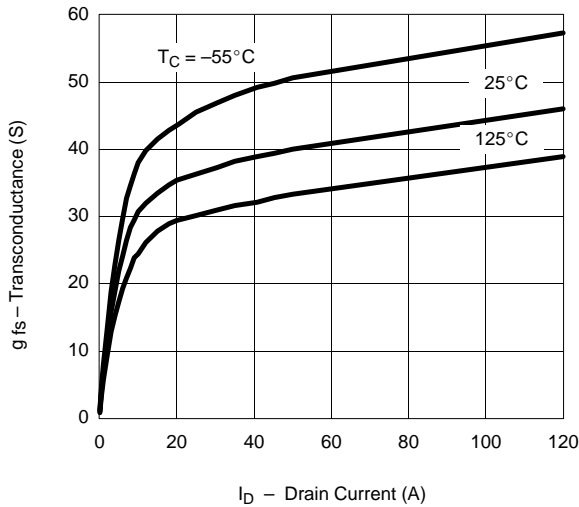
Output Characteristics



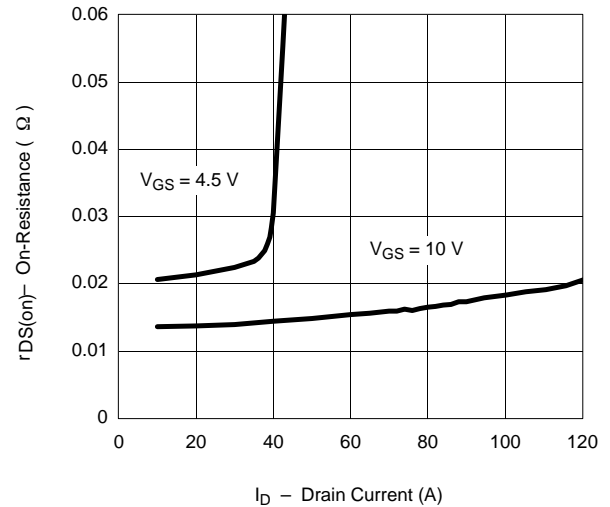
Transfer Characteristics



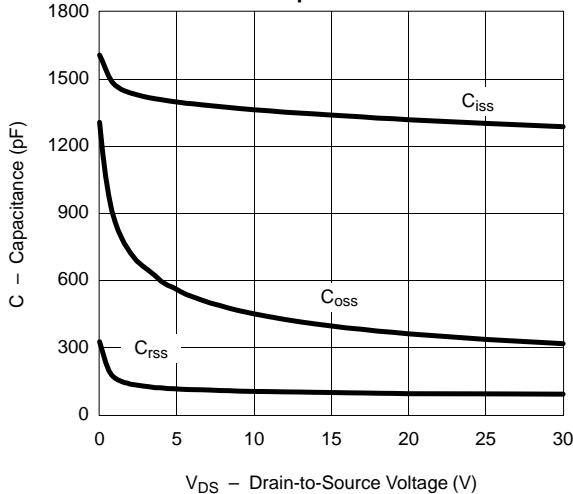
Transconductance



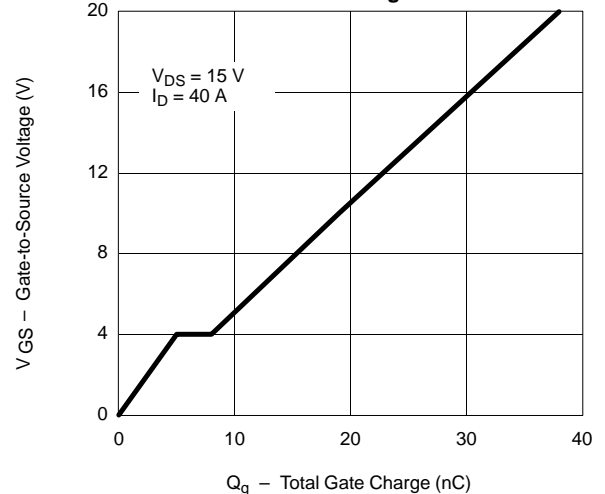
On-Resistance vs. Drain Current



Capacitance

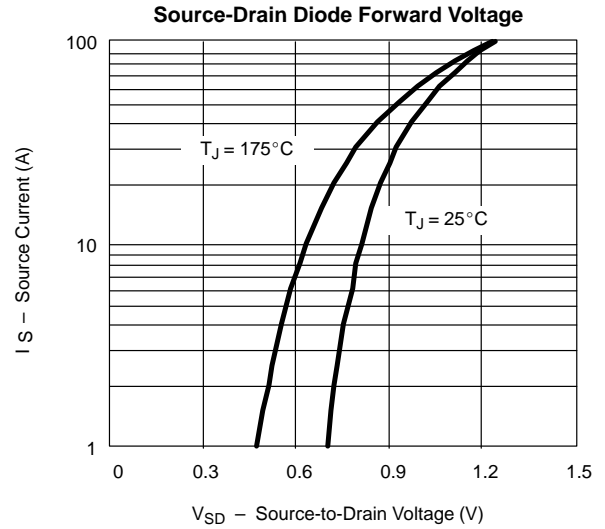
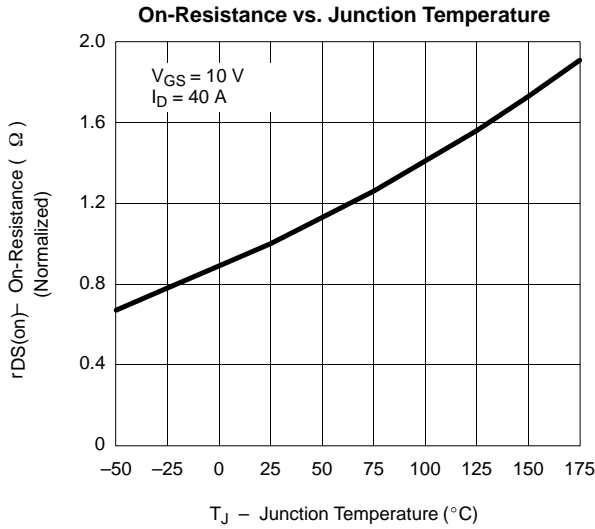


Gate Charge





TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)



THERMAL RATINGS

