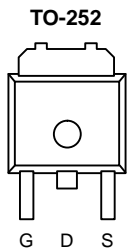




N-Channel 20-V (D-S), 175°C MOSFET

PRODUCT SUMMARY		
V_{DS} (V)	$r_{DS(on)}$ (Ω)	I_D (A) ^a
20	0.0085 @ $V_{GS} = 4.5$ V	40
	0.014 @ $V_{GS} = 2.5$ V	40

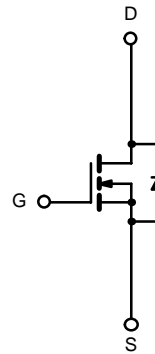
175°C Rated
Maximum Junction Temperature
TrenchFET®
Power MOSFETS



Drain Connected to Tab

Top View

Order Number:
SUD40N02-08



N-Channel MOSFET

ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ UNLESS OTHERWISE NOTED)				
Parameter		Symbol	Limit	Unit
Drain-Source Voltage		V_{DS}	20	V
Gate-Source Voltage		V_{GS}	± 12	
Continuous Drain Current ^a	$T_C = 25^\circ\text{C}$	I_D	40	A
	$T_C = 100^\circ\text{C}$		40	
Pulsed Drain Current		I_{DM}	100	
Continuous Source Current (Diode Conduction) ^a		I_S	40	
Maximum Power Dissipation	$T_C = 25^\circ\text{C}$	P_D	71	W
	$T_A = 25^\circ\text{C}$		8.3 ^{b, c}	
Operating Junction and Storage Temperature Range		T_J, T_{stg}	-55 to 175	$^\circ\text{C}$

THERMAL RESISTANCE RATINGS					
Parameter		Symbol	Typical	Maximum	Unit
Maximum Junction-to-Ambient ^b	$t \leq 10$ sec.	R_{thJA}	15	18	$^\circ\text{C/W}$
	Steady State		40	50	
Maximum Junction-to-Case		R_{thJC}	1.75	2.1	

Notes

- a. Package Limited
- b. Surface Mounted on 1" x 1" FR4 Board
- c. $t \leq 10$ sec

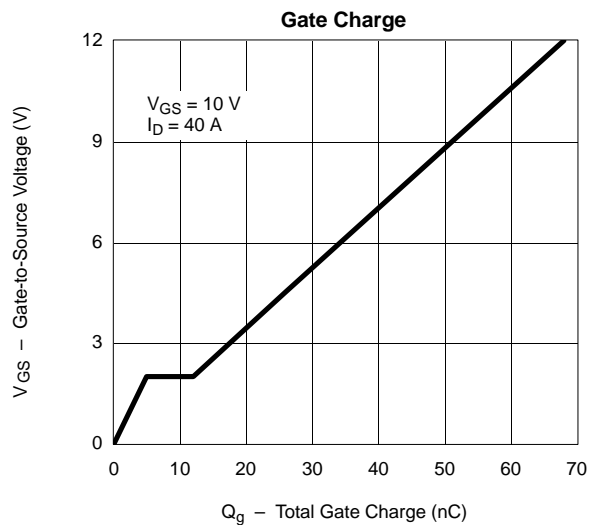
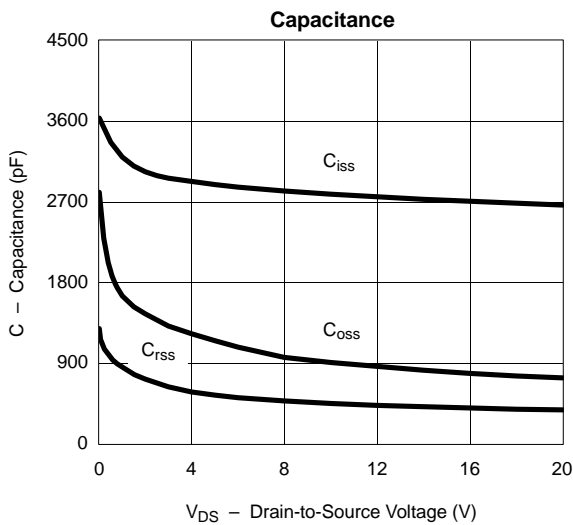
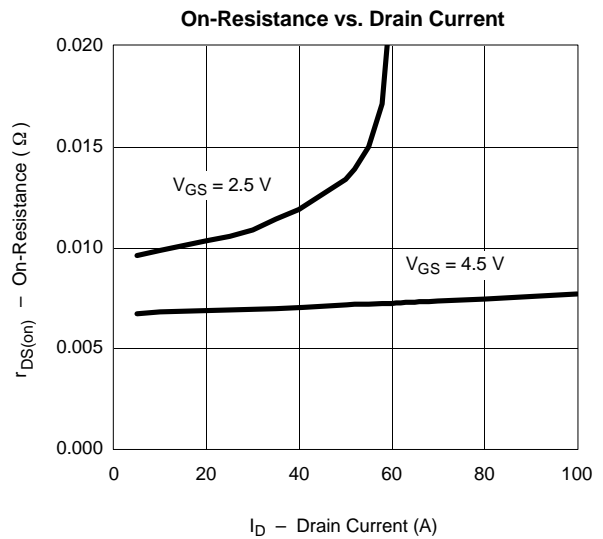
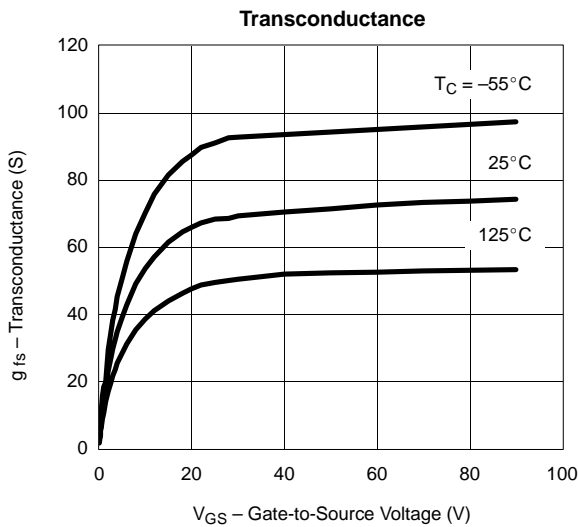
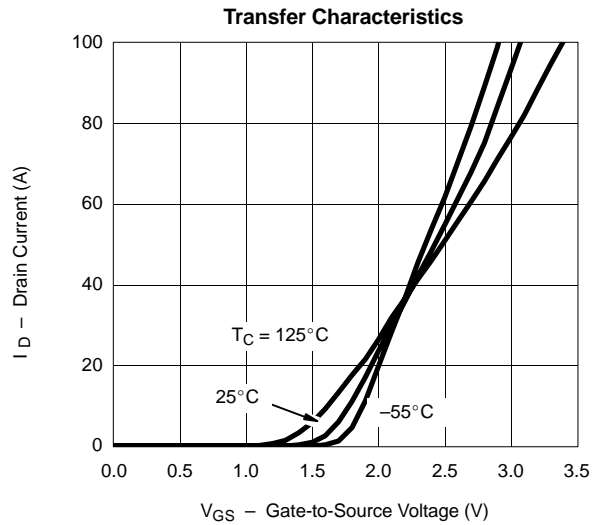
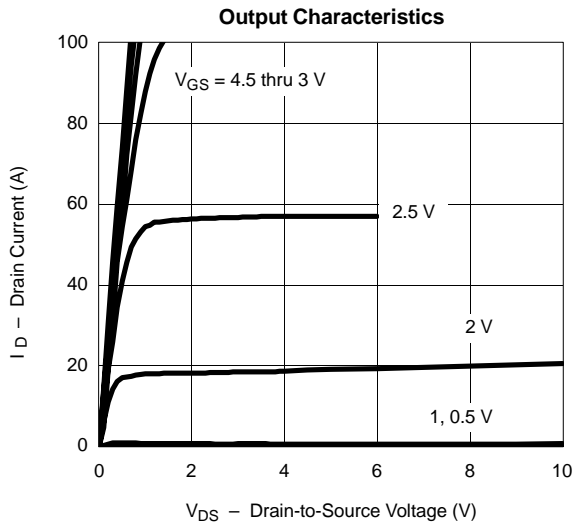
SPECIFICATIONS (T _J = 25 °C UNLESS OTHERWISE NOTED)						
Parameter	Symbol	Test Condition	Min	Typ ^a	Max	Unit
Static						
Drain-Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} = 0 V, I _D = 250 μA	20			V
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250 μA	0.6			
Gate-Body Leakage	I _{GSS}	V _{DS} = 0 V, V _{GS} = ±12 V			±100	nA
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 20 V, V _{GS} = 0 V			1	μA
		V _{DS} = 20 V, V _{GS} = 0 V, T _J = 125 °C			50	
On-State Drain Current ^b	I _{D(on)}	V _{DS} = 5 V, V _{GS} = 4.5 V	40			A
Drain-Source On-State Resistance ^b	r _{DS(on)}	V _{GS} = 4.5 V, I _D = 20 A		0.0068	0.0085	Ω
		V _{GS} = 4.5 V, I _D = 20 A, T _J = 125 °C		0.0104	0.013	
		V _{GS} = 2.5 V, I _D = 20 A		0.011	0.014	
Forward Transconductance ^b	g _{fs}	V _{DS} = 5 V, I _D = 40 A	20			S
Dynamic^a						
Input Capacitance	C _{iss}	V _{GS} = 0 V, V _{DS} = 20 V, f = 1 MHz		2660		pF
Output Capacitance	C _{oss}			730		
Reverse Transfer Capacitance	C _{rss}			375		
Total Gate Charge ^c	Q _g	V _{DS} = 10 V, V _{GS} = 4.5 V, I _D = 40 A		26	35	nC
Gate-Source Charge ^c	Q _{gs}			5		
Gate-Drain Charge ^c	Q _{gd}			7		
Turn-On Delay Time ^c	t _{d(on)}	V _{DD} = 10 V, R _L = 0.25 Ω I _D ≅ 40 A, V _{GEN} = 4.5 V, R _G = 2.5 Ω		20	35	ns
Rise Time ^c	t _r			120	190	
Turn-Off Delay Time ^c	t _{d(off)}			45	70	
Fall Time ^c	t _f			20	35	
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 = 40 A, di/dt = 100 A/μs		35	70	ns

Notes

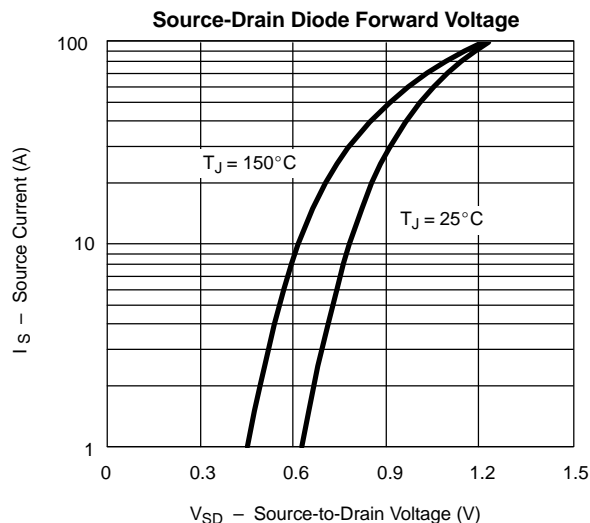
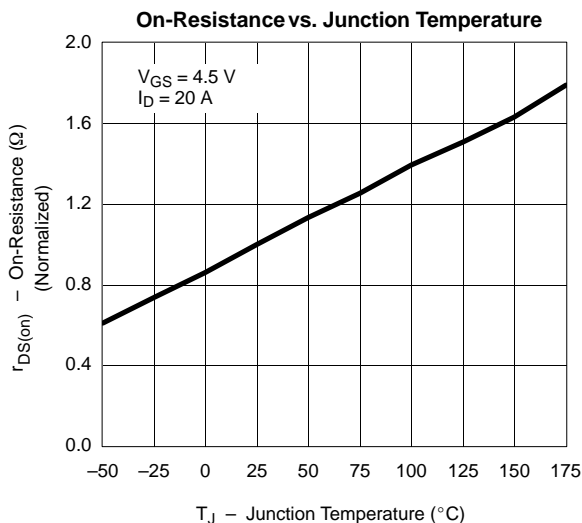
- Guaranteed by design, not subject to production testing.
- Pulse test; pulse width ≤ 300 μs, duty cycle ≤ 2%.
- Independent of operating temperature.



TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)



TYPICAL CHARACTERISTICS (25 °C UNLESS NOTED)



THERMAL RATINGS

