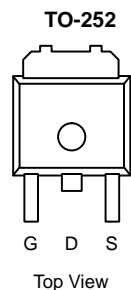




N-Channel 40-V (D-S), 175 °C MOSFET

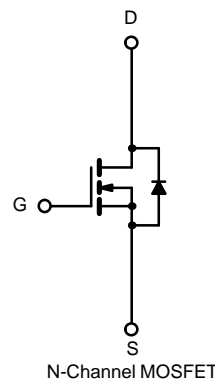
PRODUCT SUMMARY		
V _{(BR)DSS} (V)	r _{DS(on)} (Ω)	I _D (A)
40	0.010 @ V _{GS} = 10 V	30 ^a
	0.014 @ V _{GS} = 4.5 V	30 ^a

175 °C Rated
Maximum Junction Temperature



Drain Connected to Tab

Order Number:
SUD30N04-10



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)	I _D	T _C = 25 °C	30 ^a	
		T _C = 100 °C	30 ^a	
Pulsed Drain Current	I _{DM}	120	A	
Avalanche Current	I _{AR}	50		
Repetitive Avalanche Energy ^b	L = 0.1 mH	E _{AR}	125	mJ
Power Dissipation	T _C = 25 °C	P _D	97 ^c	W
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	PCB Mount ^d	R _{thJA}	45	55	°C/W
	Free Air		110	125	
Junction-to-Case		R _{thJC}	1.5	1.8	

Notes:

- a. Package limited.
- b. Duty cycle ≤ 1%.
- c. See SOA curve for voltage derating.
- d. Surface mounted on 1" FR4 board.



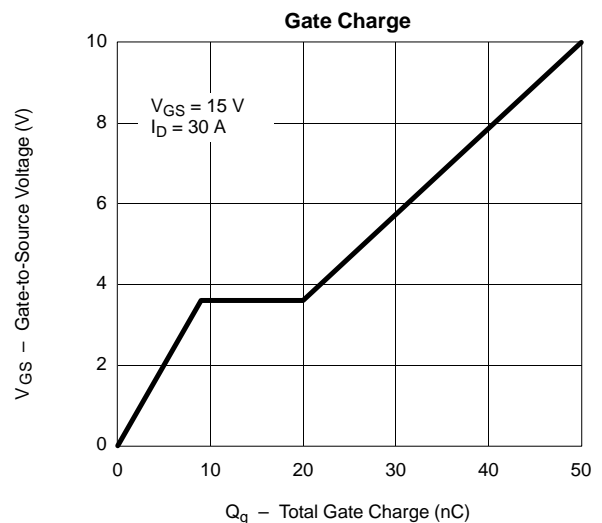
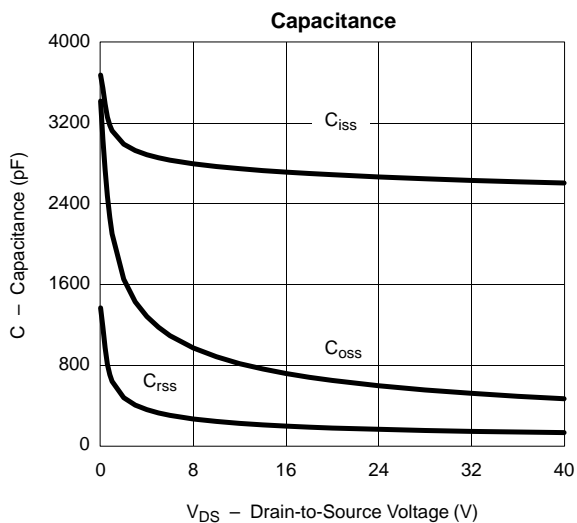
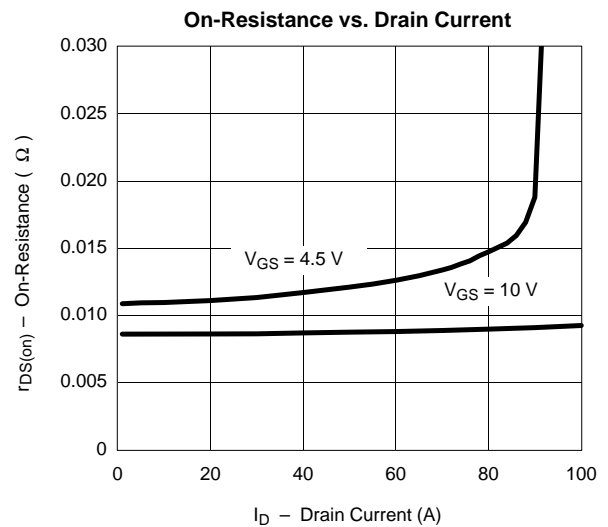
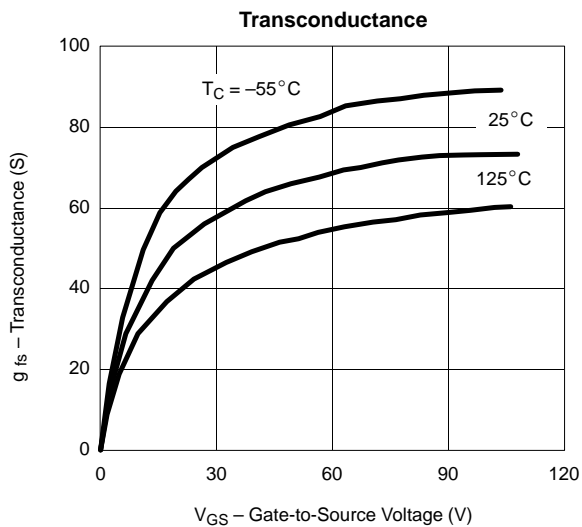
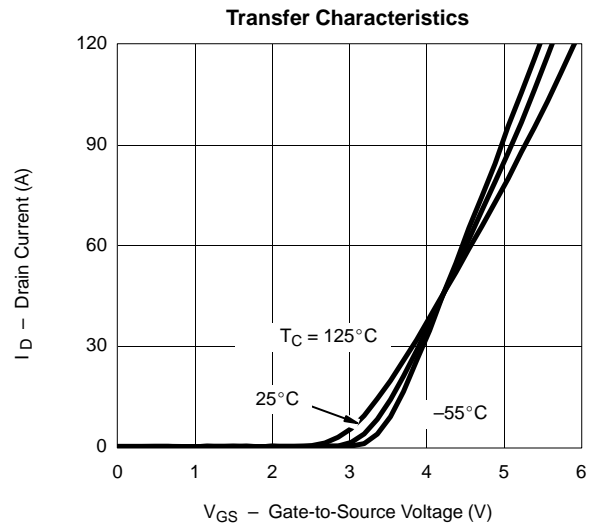
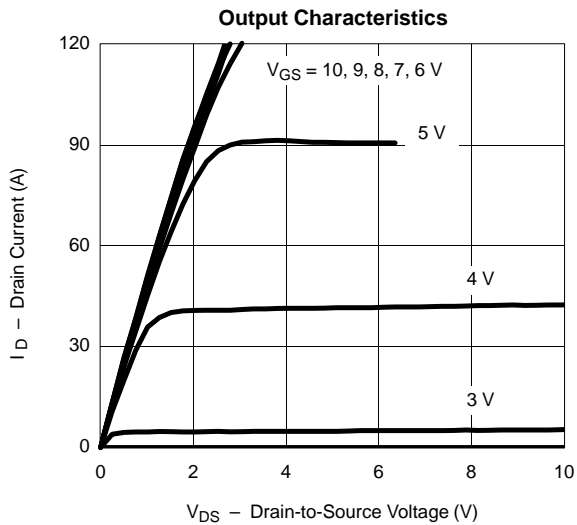
SPECIFICATIONS (T_J = 25 °C UNLESS OTHERWISE NOTED)						
Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Static						
Drain-Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} = 0 V, I _D = 250 μA	40			V
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _{DS} = 250 μA	1		3	
Gate-Body Leakage	I _{GSS}	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 ^a	I _{D(on)}	V _{DS} = 5 V, V _{GS} = 10 V	30			A
Drain-Source On-State Resistance ^a	r _{DS(on)}	V _{GS} = 10 V, I _D = 30 A		0.085	0.010	Ω
		V _{GS} = 10 V, I _D = 30 A, T _J = 125 °C		0.014	0.017	
		V _{GS} = 10 V, I _D = 30 A, T _J = 175 °C		0.0185	0.022	
		V _{GS} = 4.5 V, I _D = 10 A		0.0115	0.014	
		V _{GS} = 4.5 V, I _D = 10 A, T _J = 125 °C		0.0195	0.024	
V _{GS} = 4.5 V, I _D = 10 A, T _J = 175 °C		0.025	0.031			
Forward Transconductance ^a	g _{fs}	V _{DS} = 15 V, I _D = 30 A	20	57		S
Dynamic^b						
Input Capacitance	C _{iss}	V _{GS} = 0 V, V _{DS} = 25 V, f = 1 MHz		2700		pF
Output Capacitance	C _{oss}			600		
Reverse Transfer Capacitance	C _{rss}			160		
Total Gate Charge ^c	Q _g	V _{DS} = 15 V, V _{GS} = 10 V, I _D = 30 A		50	100	nC
Gate-Source Charge ^c	Q _{gs}			9		
Gate-Drain Charge ^c	Q _{gd}			11		
Turn-On Delay Time ^c	t _{d(on)}	V _{DD} = 15 V, R _L = 0.5 Ω I _D = 30 A, V _{GEN} = 10 V, R _G = 2.5 Ω		14	30	ns
Rise Time ^c	t _r			13	30	
Turn-Off Delay Time ^c	t _{d(off)}			45	90	
Fall Time ^c	t _f			25	50	
Source-Drain Ciode Ratings and Characteristics (T_C = 25 °C)^b						
Continuous Current	I _s				30	A
Pulsed Current	I _{SM}				120	
Forward Voltage ^a	V _{SD}	I _F = 30 A, V _{GS} = 0 V		0.90	1.50	V
Reverse Recovery Time	t _{rr}	I _F = 30 A, di/dt = 100 A/μs		50	100	ns

Notes:

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

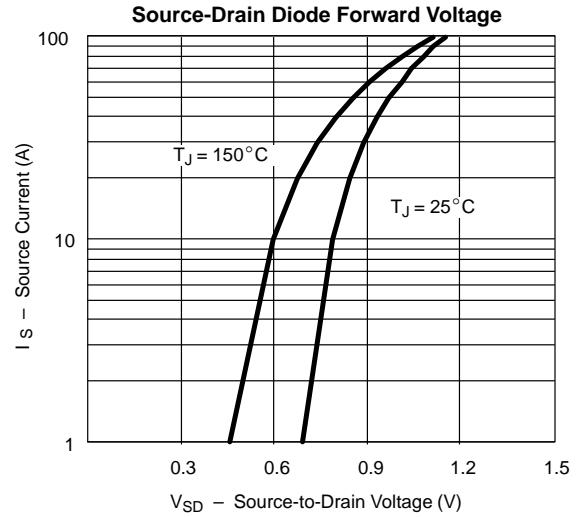
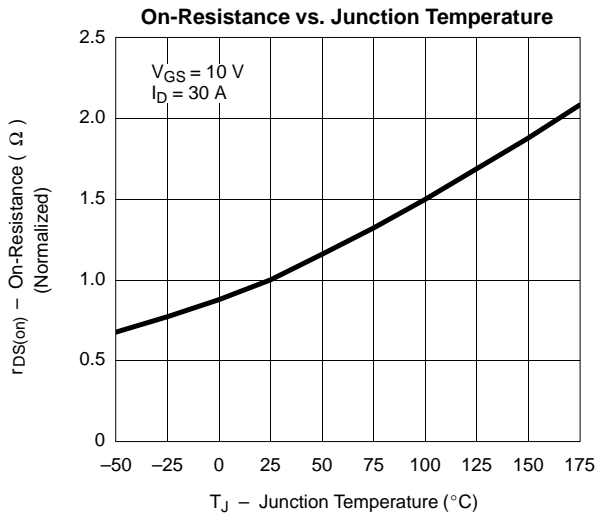


TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)





TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)



THERMAL RATINGS

