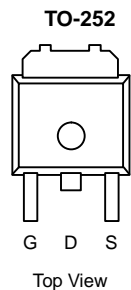




N-Channel 40-V (D-S), 175°C MOSFET

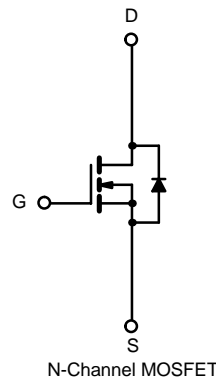
PRODUCT SUMMARY		
V _{(BR)DSS} (V)	r _{DS(on)} (Ω)	I _D (A) ^a
40	0.010 @ V _{GS} = 10 V	40
	0.014 @ V _{GS} = 4.5 V	40

175°C Rated
Maximum Junction Temperature



Drain Connected to Tab

Order Number:
SUD40N04-10A



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	40 ^a	
		T _C = 100°C	40 ^a	
Pulsed Drain Current	I _{DM}	100	A	
Avalanche Current	I _{AR}	30		
Repetitive Avalanche Energy ^b	L = 0.1 mH	E _{AR}	45	mJ
Power Dissipation	T _C = 25°C	P _D	71 ^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 ^d	R _{thJA}	t ≤ 10 sec.	15	18	°C/W
		Steady State	40	50	
Junction-to-Case	R _{thJC}	1.75	2.1		

- 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)

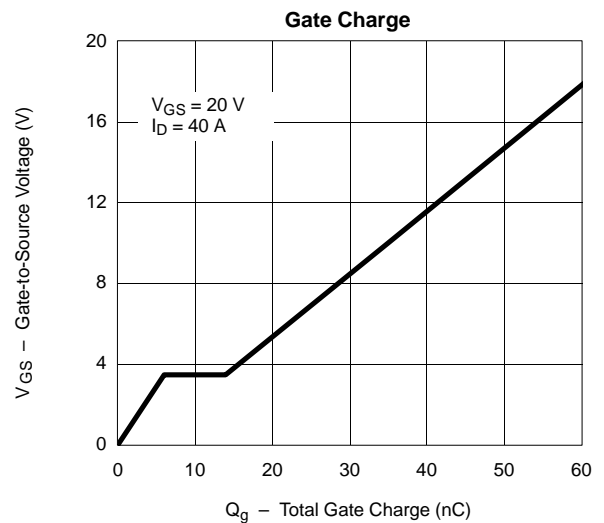
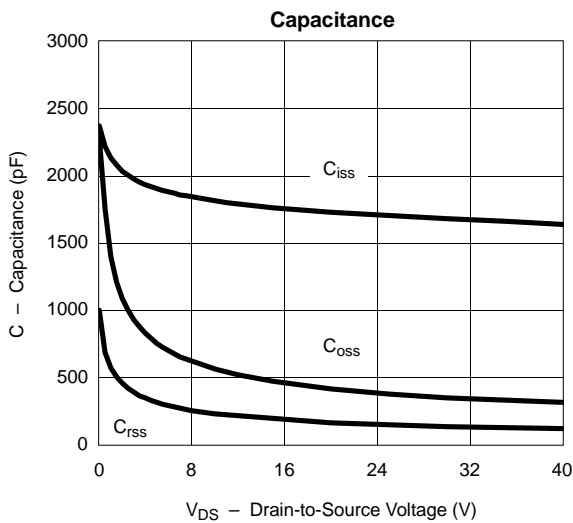
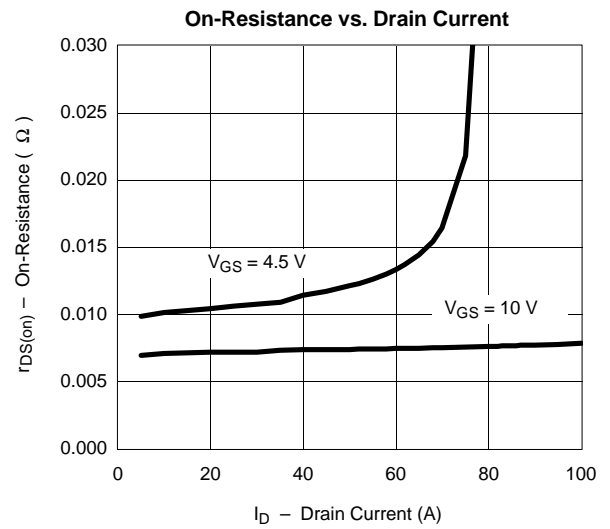
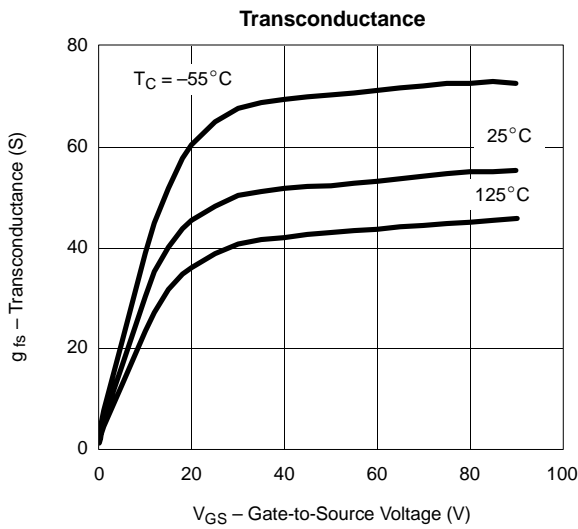
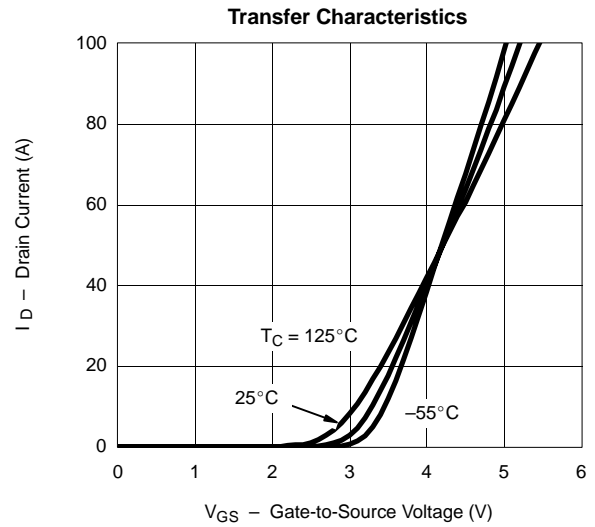
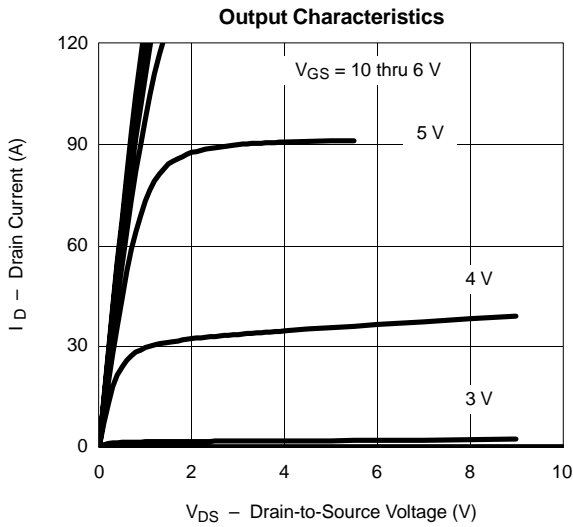
Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Static						
Drain-Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} = 0 V, I _D = 250 μA	40			V
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _{DS} = 250 μA	1		3	
Gate-Body Leakage	I _{GSS}	V _{DS} = 0 V, V _{GS} = ±20 V			±100	nA
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 32 V, V _{GS} = 0 V			1	μA
		V _{DS} = 32 V, V _{GS} = 0 V, T _J = 125 °C			50	
		V _{DS} = 32 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	40			A
Drain-Source On-State Resistance ^a	r _{DS(on)}	V _{GS} = 10 V, I _D = 40 A		0.0075	0.010	Ω
		V _{GS} = 10 V, I _D = 40 A, T _J = 125 °C		0.012	0.016	
		V _{GS} = 10 V, I _D = 40 A, T _J = 175 °C		0.015	0.020	
		V _{GS} = 4.5 V, I _D = 10 A		0.011	0.014	
		V _{GS} = 4.5 V, I _D = 10 A, T _J = 125 °C		0.018	0.022	
V _{GS} = 4.5 V, I _D = 10 A, T _J = 175 °C		0.022	0.028			
Forward Transconductance ^a	g _{fs}	V _{DS} = 15 V, I _D = 40 A	20	40		S
Dynamic^b						
Input Capacitance	C _{iss}	V _{GS} = 0 V, V _{DS} = 25 V, f = 1 MHz		1700		pF
Output Capacitance	C _{oss}			370		
Reverse Transfer Capacitance	C _{rss}			145		
Total Gate Charge ^c	Q _g	V _{DS} = 20 V, V _{GS} = 10 V, I _D = 40 A		35		nC
Gate-Source Charge ^c	Q _{gs}			6		
Gate-Drain Charge ^c	Q _{gd}			8		
Turn-On Delay Time ^c	t _{d(on)}	V _{DD} = 20 V, R _L = 0.5 Ω I _D = 40 A, V _{GEN} = 10 V, R _G = 2.5 Ω		14	30	ns
Rise Time ^c	t _r			7.5	15	
Turn-Off Delay Time ^c	t _{d(off)}			30	60	
Fall Time ^c	t _f			14	30	
Source-Drain Diode Ratings and Characteristics (T_C = 25 °C)^b						
Continuous Current	I _s				40	A
Pulsed Current	I _{SM}				100	
Forward Voltage ^a	V _{SD}	I _F = 40 A, V _{GS} = 0 V		1.0	1.50	V
Reverse Recovery Time	t _{rr}	I _F = 40 A, di/dt = 100 A/μs		30	60	ns

Notes:

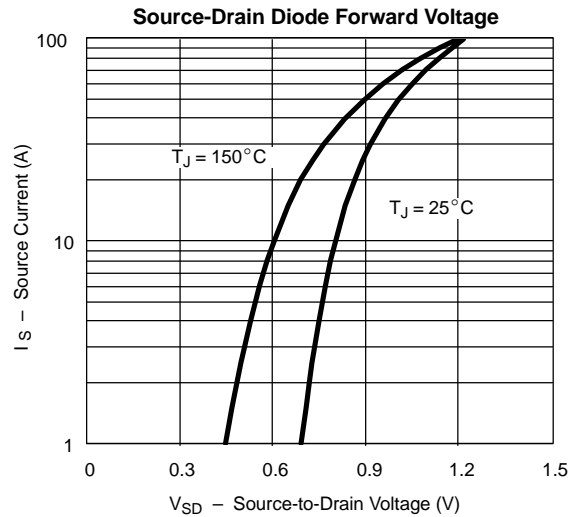
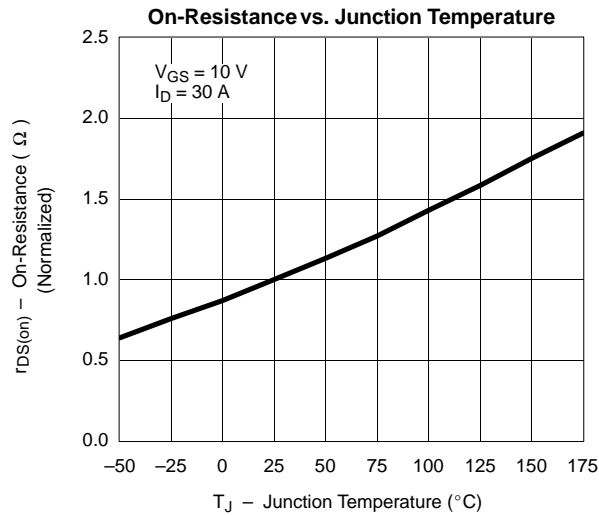
- Pulse test; pulse width ≤ 300 μs, duty cycle ≤ 2%.
- Guaranteed by design, not subject to production testing.
- Independent of operating temperature.



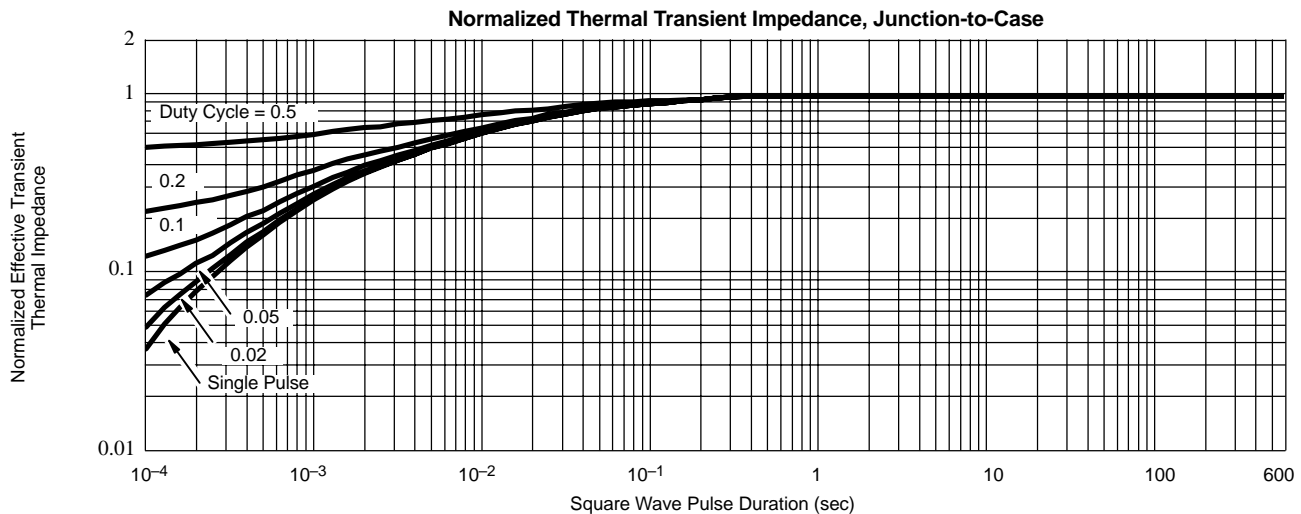
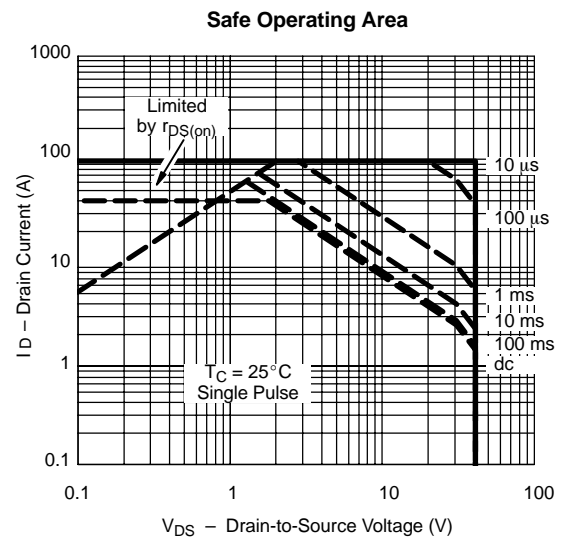
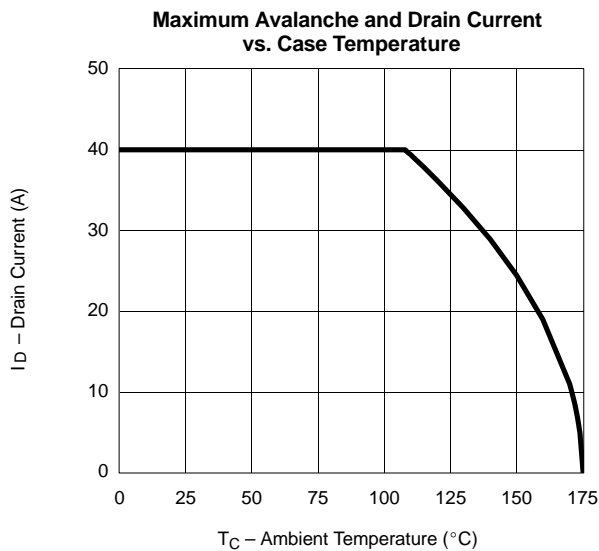
TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)



TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)



THERMAL RATINGS





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