



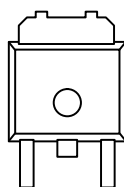
N-Channel 30-V (D-S) 175°C MOSFET

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

TO-252

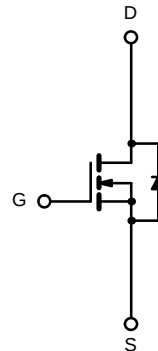


G D S

Top View

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	$T_C = 25^\circ\text{C}$	I_D	± 40	A
	$T_C = 100^\circ\text{C}$		± 28	
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	62.5 ^c	W
	$T_A = 25^\circ\text{C}$		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	$t \leq 10$ sec	R_{thJA}	17	20	$^\circ\text{C/W}$
	Steady State		50	60	
Junction-to-Case		R_{thJC}	2	2.4	$^\circ\text{C/W}$
Junction-to-Lead		R_{thJL}	4	4.8	

Notes

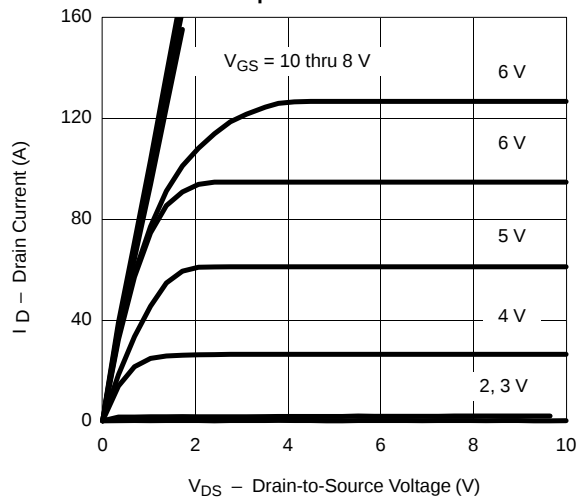
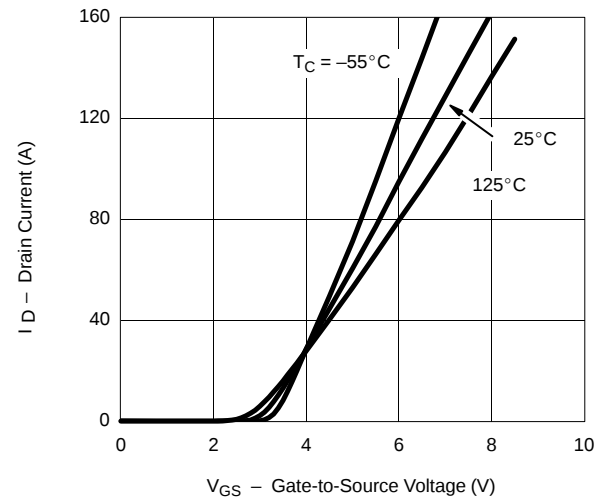
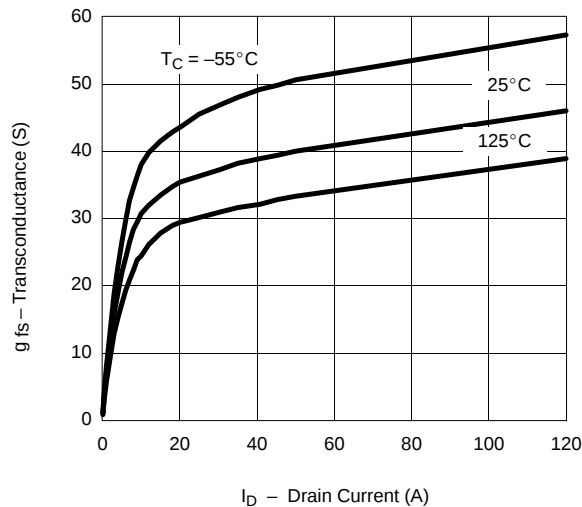
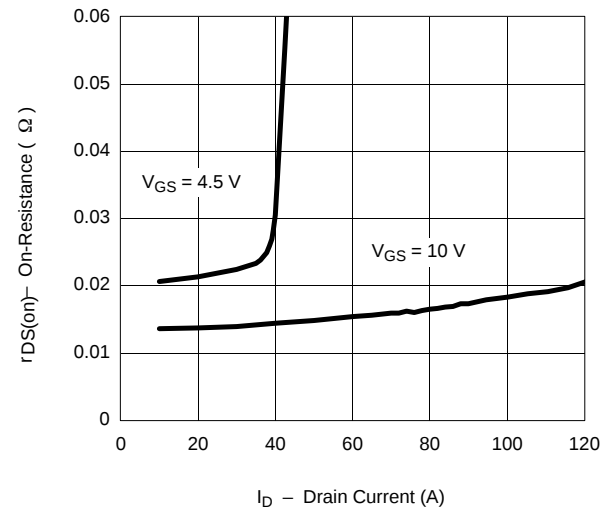
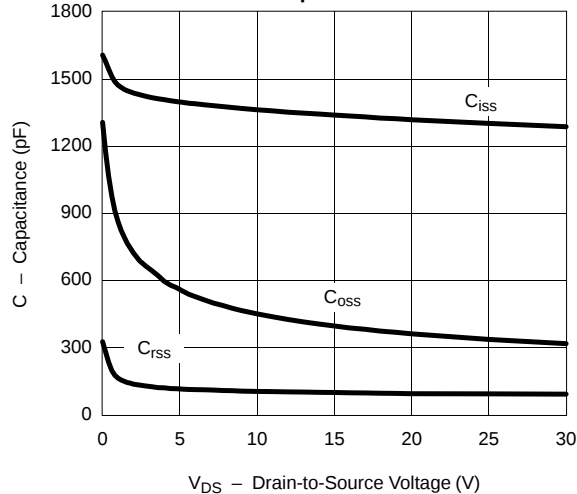
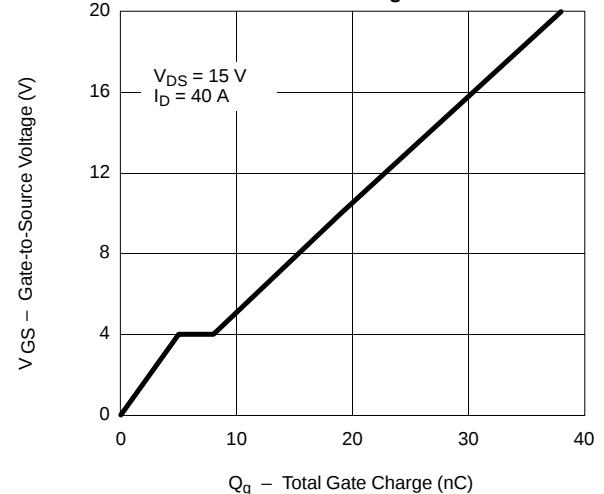
- Package Limited.
- Surface Mounted on 1" x1" FR4 Board, $t \leq 10$ sec.
- See SOA curve for voltage derating.

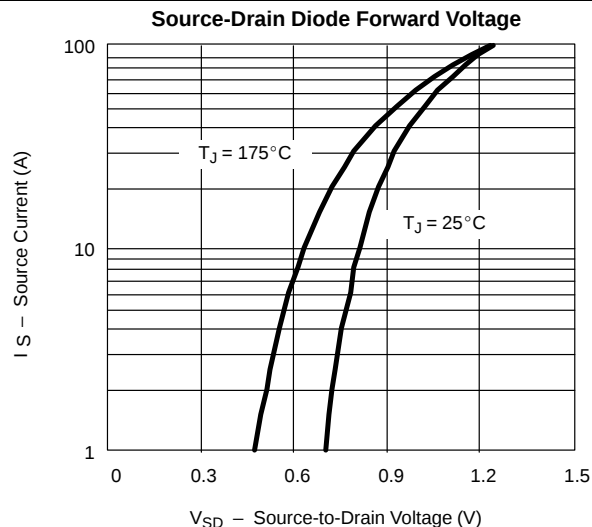
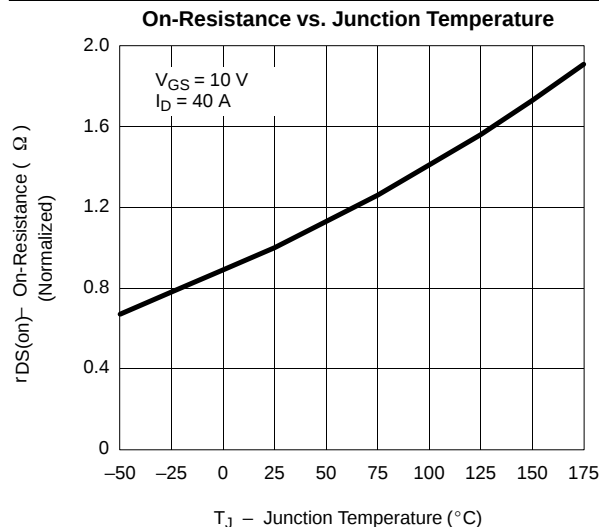
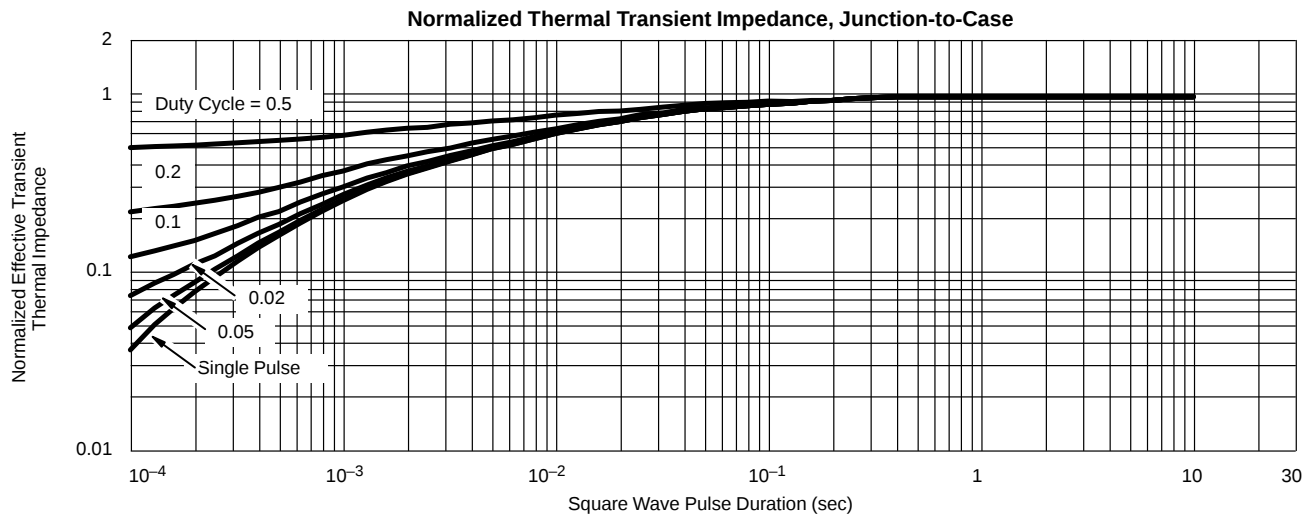
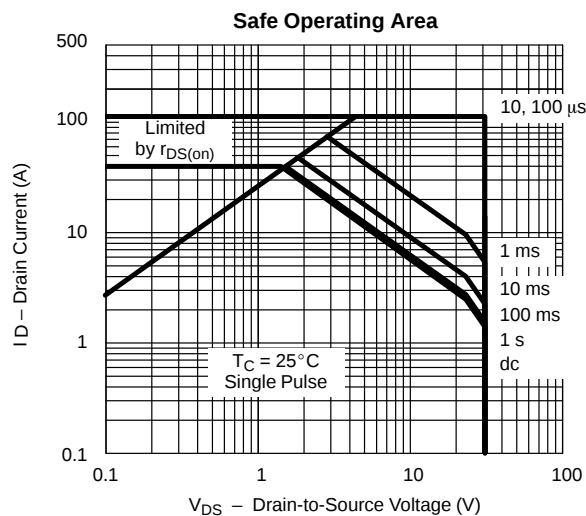
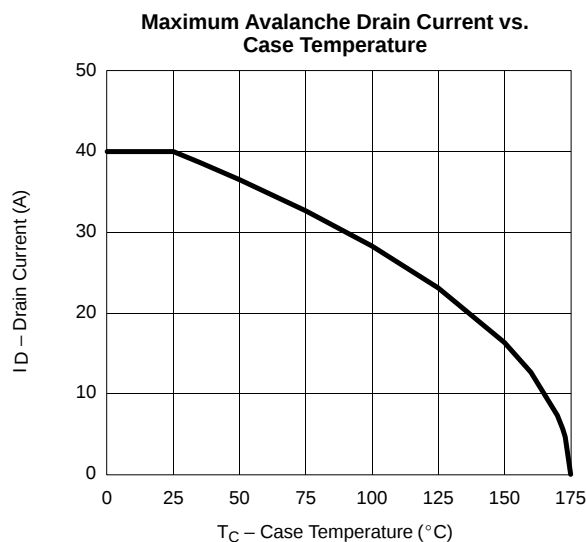


SPECIFICATIONS (T _J = 25 °C UNLESS OTHERWISE NOTED)						
Parameter	Symbol	Test Condition	Min	Typ ^a	Max	Unit
Static						
Drain-Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} = 0 V, I _D = 250 μA	30			V
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250 μA	1.0			
Gate-Body Leakage	I _{GSS}	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

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



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