

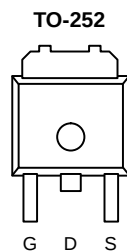


N-Channel 60-V (D-S), 175°C MOSFET, Logic Level

PRODUCT SUMMARY

V_{DS} (V)	$r_{DS(on)}$ (Ω)	I_D (A)
60	0.065 @ $V_{GS} = 10$ V	15
	0.090 @ $V_{GS} = 4.5$ V	14

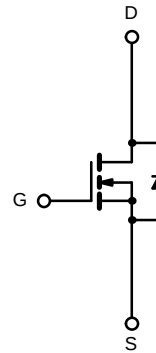
175°C Rated
Maximum Junction Temperature
TrenchFET®
Power MOSFETs



Top View

Order Number:
SUD15N06-90L

Drain Connected to Tab



N-Channel MOSFET

ABSOLUTE MAXIMUM RATINGS ($T_C = 25^\circ\text{C}$ UNLESS OTHERWISE NOTED)

Parameter		Symbol	Limit	Unit
Gate-Source Voltage		V_{GS}	± 20	V
Continuous Drain Current ($T_J = 175^\circ\text{C}$)	$T_C = 25^\circ\text{C}$	I_D	15	A
	$T_C = 100^\circ\text{C}$		12	
Pulsed Drain Current		I_{DM}	30	
Continuous Source Current (Diode Conduction)		I_S	15	
Avalanche Current		I_{AR}	15	
Repetitive Avalanche Energy (Duty Cycle $\leq 1\%$)	$L = 0.1$ mH	E_{AR}	11	mJ
Maximum Power Dissipation	$T_C = 25^\circ\text{C}$	P_D	37	W
	$T_A = 25^\circ\text{C}$		2 ^a	
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 Free Air, FR4 Board Mount ^a	R_{thJA}	60	70	$^\circ\text{C/W}$
Junction-to-Case	R_{thJC}	3.7	4.0	

Notes:

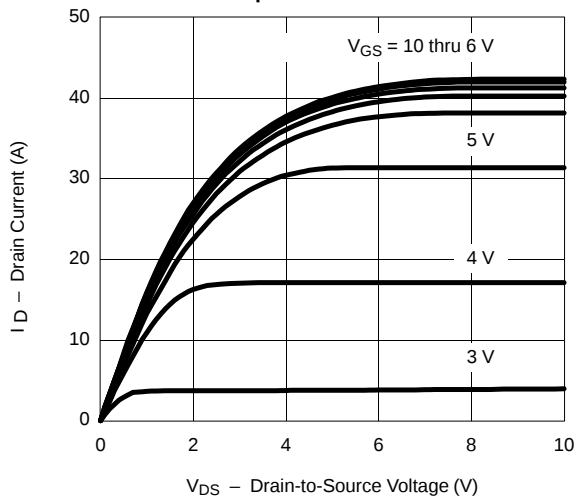
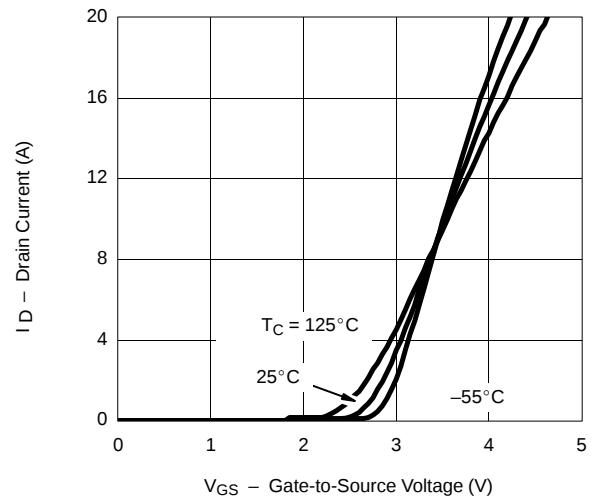
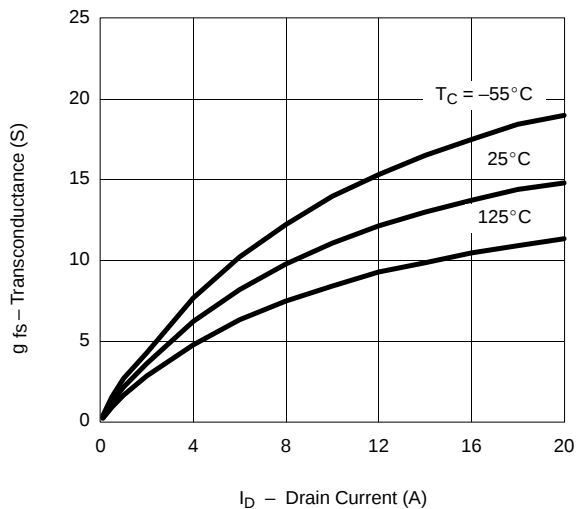
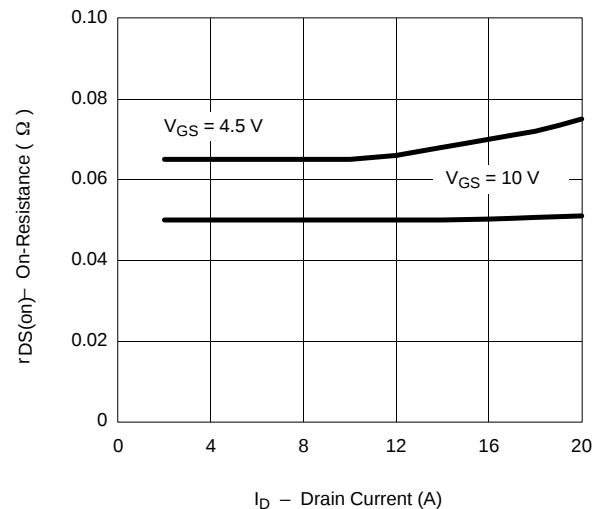
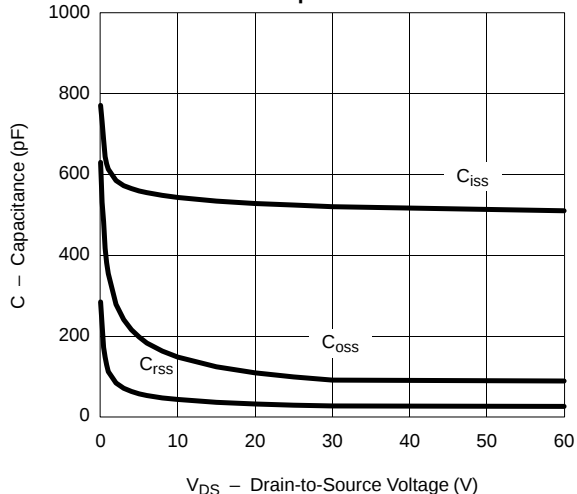
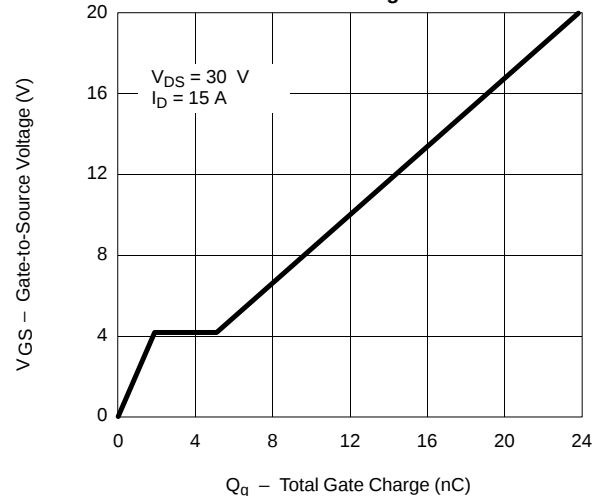
a. 1.36 x 2.1 surface mounted on 1" x 1" FR4 Board.

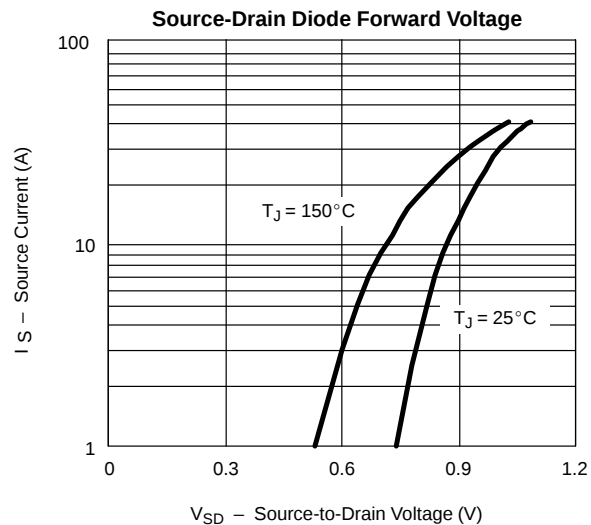
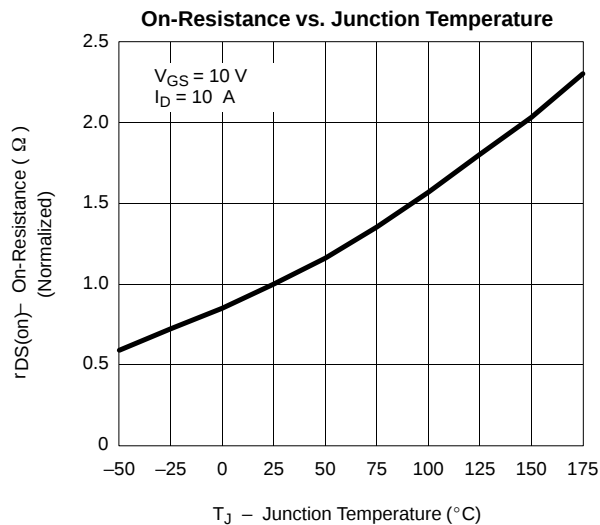


SPECIFICATIONS (T _J = 25 °C UNLESS OTHERWISE NOTED)						
Parameter	Symbol	Test Condition	Min	Typ ^a	Max	Unit
Static						
Drain-Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} = 0 V, I _D = 250 μA	60			V
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250 μA	1.0	2.0	3.0	
Gate-Body Leakage	I _{GSS}	V _{DS} = 0 V, V _{GS} = ±20 V			±100	nA
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 60 V, V _{GS} = 0 V			1	μA
		V _{DS} = 60 V, V _{GS} = 0 V, T _J = 125°C			50	
		V _{DS} = 60 V, V _{GS} = 0 V, T _J = 175°C			150	
On-State Drain Current ^b	I _{D(on)}	V _{DS} = 5 V, V _{GS} = 10 V	15			A
Drain-Source On-State Resistance ^b	r _{DS(on)}	V _{GS} = 10 V, I _D = 10 A		0.050	0.065	Ω
		V _{GS} = 10 V, I _D = 10 A, T _J = 125°C			0.12	
		V _{GS} = 10 V, I _D = 10 A, T _J = 175°C			0.15	
		V _{GS} = 4.5 V, I _D = 5 A		0.065	0.090	
Forward Transconductance ^b	g _{fs}	V _{DS} = 15 V, I _D = 10 A		11		S
Dynamic						
Input Capacitance	C _{iss}	V _{GS} = 0 V, V _{DS} = 25 V, f = 1 MHz		524		pF
Output Capacitance	C _{oss}			98		
Reverse Transfer Capacitance	C _{rss}			28		
Total Gate Charge ^c	Q _g	V _{DS} = 30 V, V _{GS} = 10 V, I _D = 15 A		12	20	nC
Gate-Source Charge ^c	Q _{gs}			2		
Gate-Drain Charge ^c	Q _{gd}			3.5		
Turn-On Delay Time ^c	t _{d(on)}	V _{DD} = 30 V, R _L = 2 Ω I _D ≅ 15 A, V _{GEN} = 10 V, R _G = 2.5 Ω		7	20	ns
Rise Time ^c	t _r			8	25	
Turn-Off Delay Time ^c	t _{d(off)}			15	40	
Fall Time ^c	t _f			7	20	
Source-Drain Diode Ratings and Characteristics (T _C = 25 °C)						
Pulsed Current	I _{SM}				30	A
Diode Forward Voltage	V _{SD}	I _F = 15 A, V _{GS} = 0 V		0.9	1.2	V
Reverse Recovery Time	t _{rr}	I _F = 15 A, di/dt = 100 A/μs		29	60	ns

Notes:

- a. For design aid only; 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**