



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

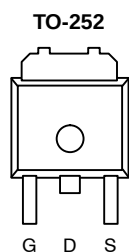
Pb-free
Available

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

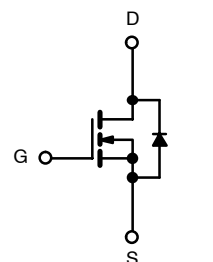
FEATURES

- TrenchFET® Power MOSFET
- 175°C Maximum Junction Temperature



Top View

Drain Connected to Tab

Ordering Information: SUD15N06-90L
SUD15N06-90L—E3 (Lead (Pb)-Free)

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}	3.3	4.0	

Notes:

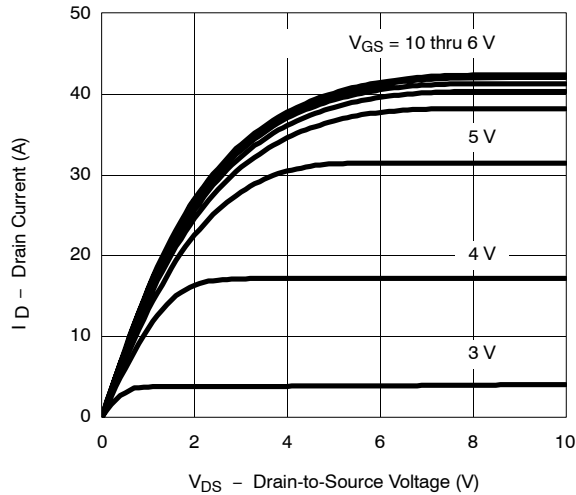
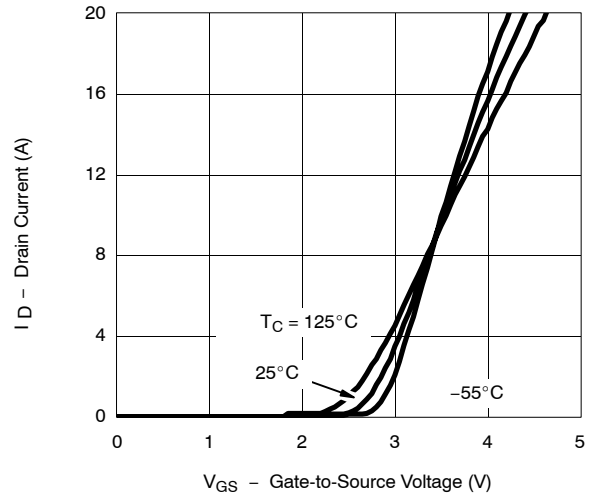
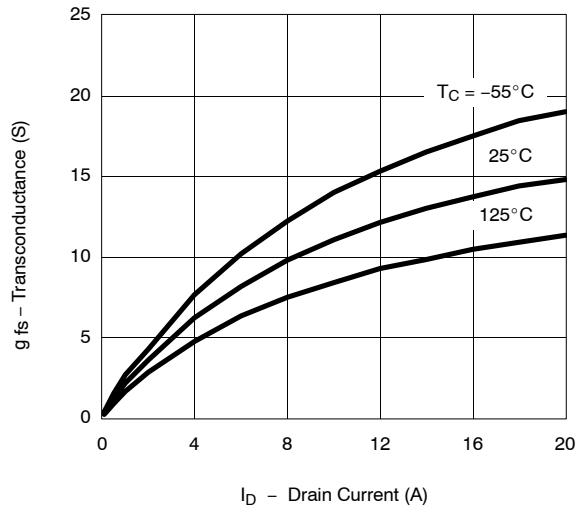
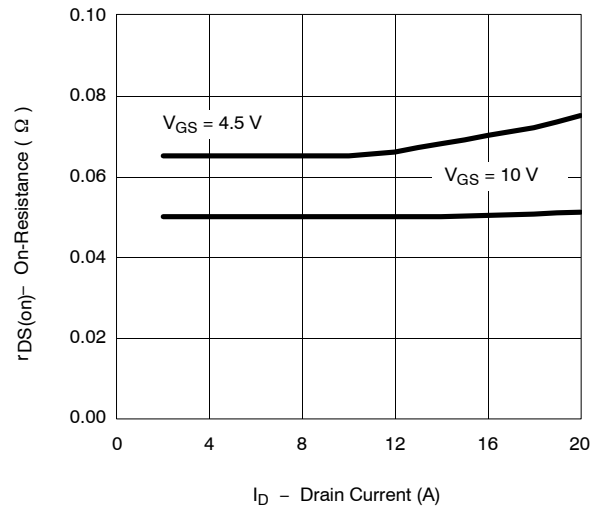
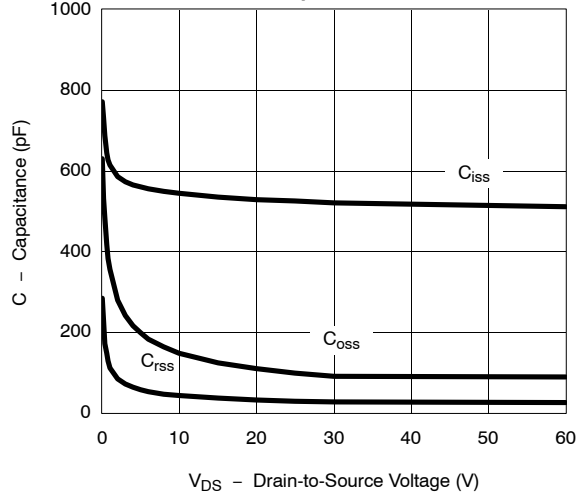
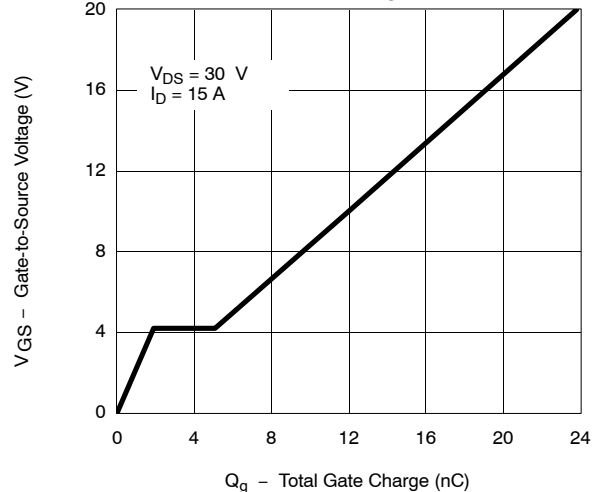
a. 1.36 x 2.1 surface mounted on 1" x 1" FR4 Board.

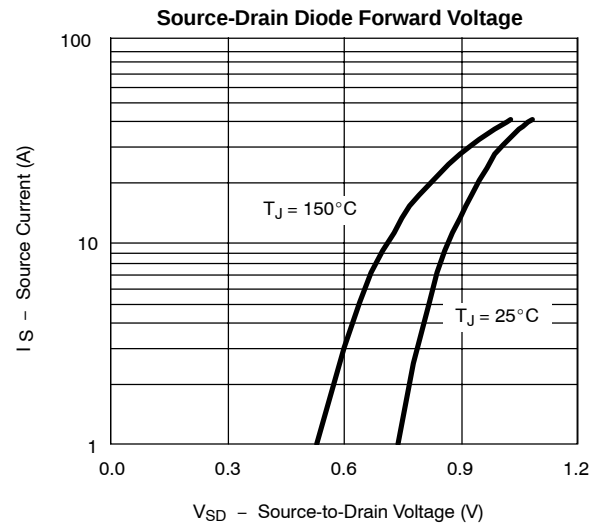
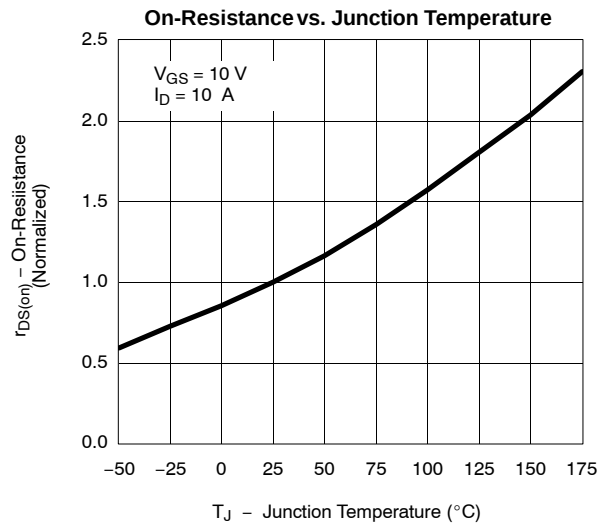
SPECIFICATIONS (T _J = 25 °C UNLESS OTHERWISE NOTED)						
Parameter	Symbol	Test Condition	Min	Typ ^a	Max	Unit
Static						
Drain-Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} = 0 V, I _D = 250 μA	60			V
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250 μA	1.0	2.0	3.0	
Gate-Body Leakage	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:

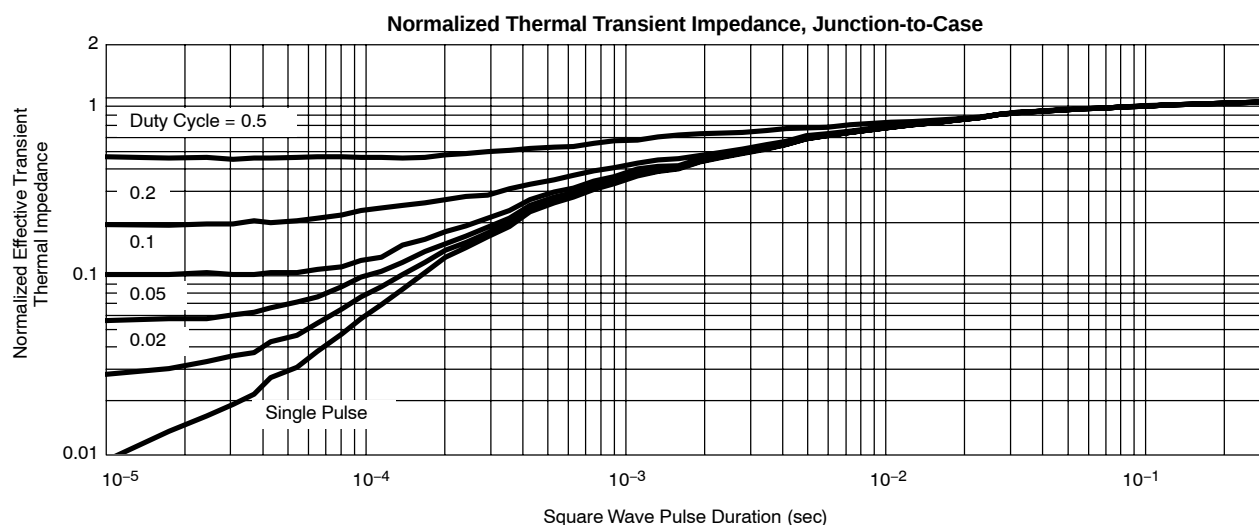
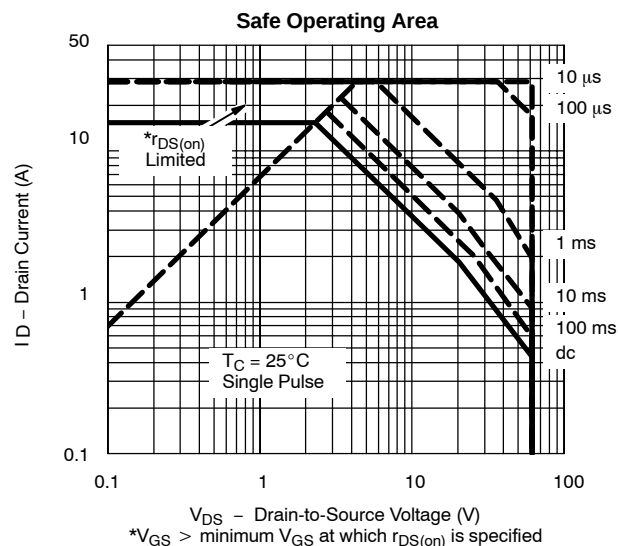
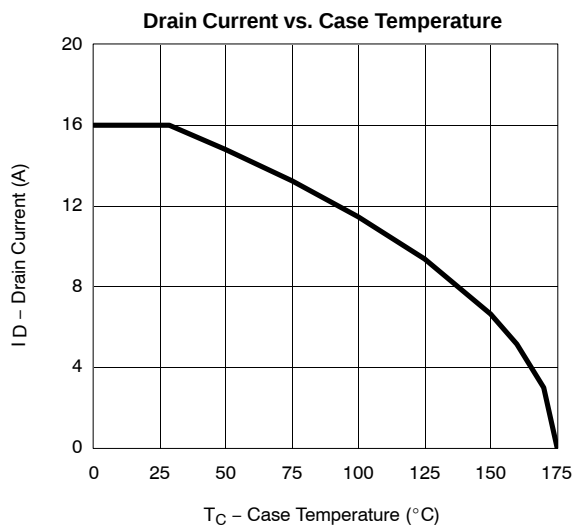
- For design aid only; not subject to production testing.
- Pulse test; pulse width $\leq 300\text{ }\mu\text{s}$, duty cycle $\leq 2\%$.
- Independent of operating temperature.

Stresses beyond those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated in the operational sections of the specifications is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

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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