



New Product

SUD50N06-09L
Vishay Siliconix

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

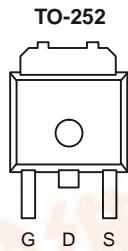
PRODUCT SUMMARY		
V _{DS} (V)	r _{DS(on)} (Ω)	I _D (A) ^a
60	0.0093 @ V _{GS} = 10 V	50
	0.0122 @ V _{GS} = 4.5 V	50

FEATURES

- TrenchFET® Power MOSFET
- 175°C Junction Temperature

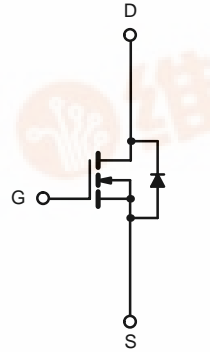
APPLICATIONS

- Automotive
 - ABS
 - Motor Drives
 - Fuel Injection



Order Number:
SUD50N06-09L

Drain Connected to Tab



N-Channel MOSFET

ABSOLUTE MAXIMUM RATINGS (T _C = 25°C UNLESS OTHERWISE NOTED)			
Parameter	Symbol	Limit	Unit
Gate-Source Voltage	V _{GS}	±20	V
Continuous Drain Current (T _J = 175°C) ^b	I _D	T _C = 25°C	50
		T _C = 100°C	50 ^a
Pulsed Drain Current	I _{DM}	100	A
Continuous Source Current (Diode Conduction)	I _S	50 ^a	
Avalanche Current	I _{AR}	50	
Repetitive Avalanche Energy (Duty Cycle ≤ 1%)	E _{AR}	125	mJ
Maximum Power Dissipation	P _D	T _C = 25°C	100
		T _A = 25°C	3 ^b , 8.3 ^{b, c}
Operating Junction and Storage Temperature Range	T _J , T _{stg}	-55 to 175	°C

THERMAL RESISTANCE RATINGS				
Parameter	Symbol	Typical	Limit	Unit
Maximum Junction-to-Ambient	R _{thJA}	t ≤ 10 sec.	15	°C/W
		Steady State	40	
Maximum Junction-to-Case	R _{thJC}	1.2	1.5	

Notes:
 a. Package limited.
 b. Surface mounted on 1" x 1" FR4 Board, t ≤ 10 sec.
 c. t ≤ 10 sec.

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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} = 48 V, V _{GS} = 0 V			1	μA
		V _{DS} = 48 V, V _{GS} = 0 V, T _J = 125 °C			50	
		V _{DS} = 48 V, V _{GS} = 0 V, T _J = 175 °C			250	
On-State Drain Current ^b	I _{D(on)}	V _{DS} = 5 V, V _{GS} = 10 V	50			A
Drain-Source On-State Resistance ^b	r _{DS(on)}	V _{GS} = 10 V, I _D = 20 A		0.0074	0.0093	Ω
		V _{GS} = 10 V, I _D = 20 A, T _J = 125 °C			0.016	
		V _{GS} = 10 V, I _D = 20 A, T _J = 175 °C			0.020	
		V _{GS} = 4.5 V, I _D = 15 A			0.0122	
Forward Transconductance ^b	g _{fs}	V _{DS} = 15 V, I _D = 20 A				S
Dynamic						
Input Capacitance	C _{iss}	V _{GS} = 0 V, V _{DS} = 25 V, f = 1 MHz		2650		pF
Output Capacitance	C _{oss}			470		
Reverse Transfer Capacitance	C _{rss}			225		
Total Gate Charge ^c	Q _g	V _{DS} = 30 V, V _{GS} = 10 V, I _D = 50 A		47	70	nC
Gate-Source Charge ^c	Q _{gs}			10		
Gate-Drain Charge ^c	Q _{gd}			12		
Turn-On Delay Time ^c	t _{d(on)}	V _{DD} = 30 V, R _L = 0.6 Ω I _D ≅ 50 A, V _{GEN} = 10 V, R _G = 2.5 Ω		10	20	ns
Rise Time ^c	t _r			15	25	
Turn-Off Delay Time ^c	t _{d(off)}			35	50	
Fall Time ^c	t _f			20	30	
Source-Drain Diode Ratings and Characteristics (T_C = 25 °C)						
Pulsed Current	I _{SM}				100	A
Diode Forward Voltage	V _{SD}	I _F = 20 A, V _{GS} = 0 V		1.0	1.5	V
Reverse Recovery Time	t _{rr}	I _F = 20 A, di/dt = 100 A/μs		45	100	ns

Notes:

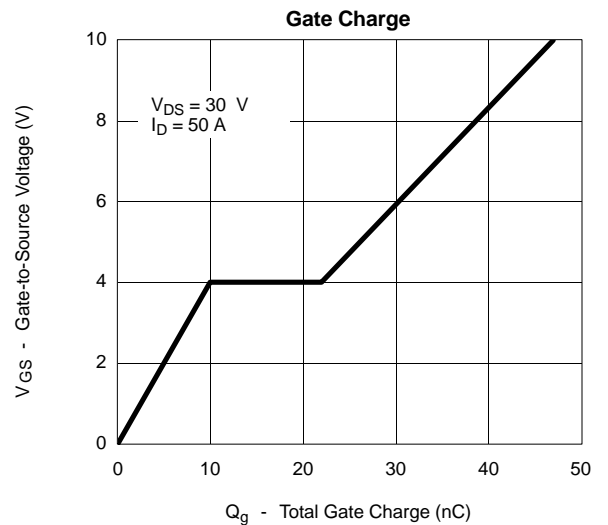
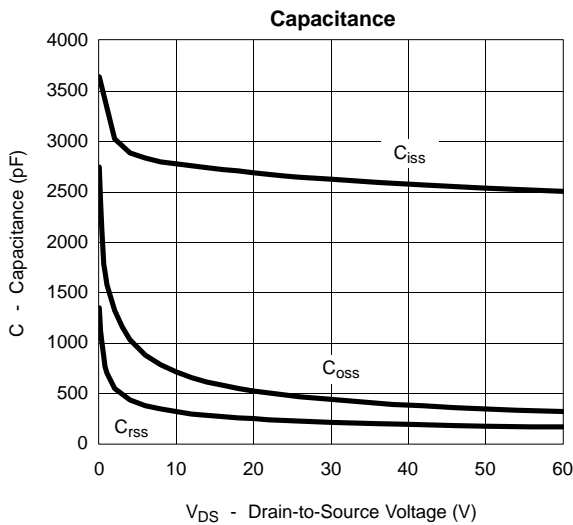
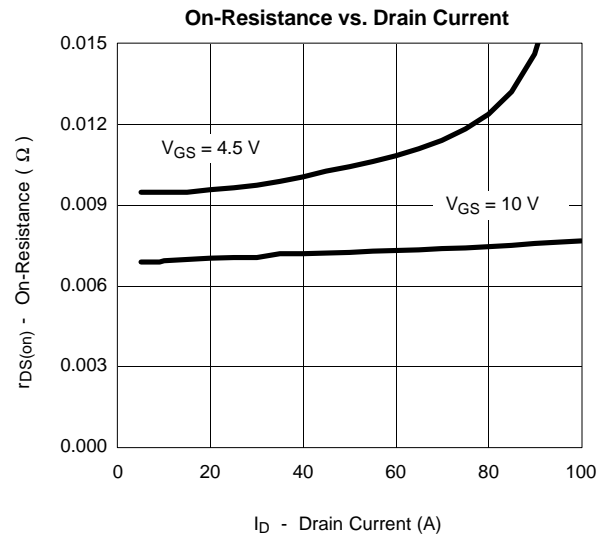
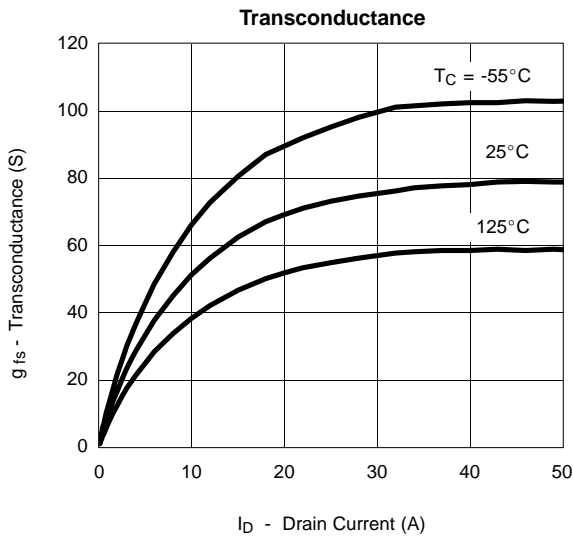
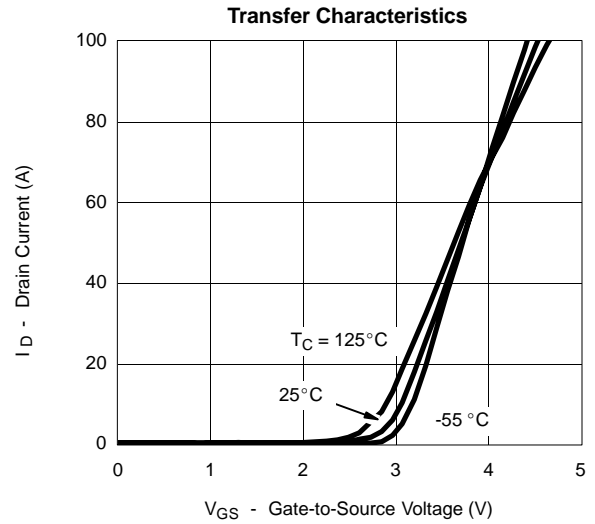
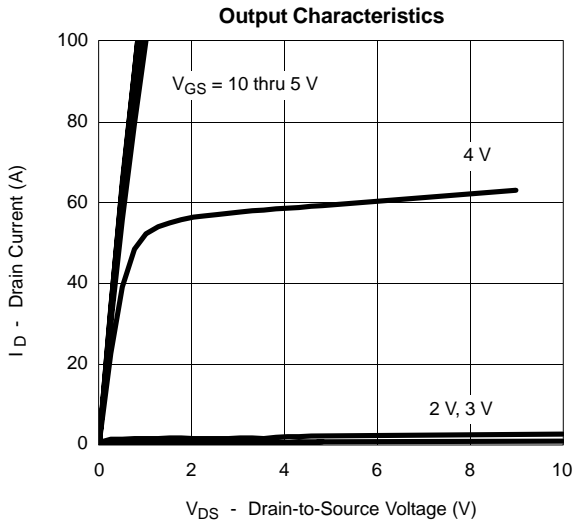
- a. For design aid only; not subject to production testing.
- b. Pulse test; pulse width ≤ 300 μs, duty cycle ≤ 2%.
- c. Independent of operating temperature.



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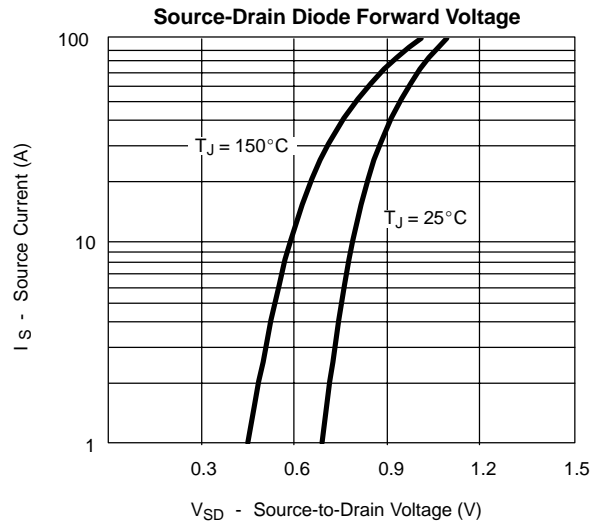
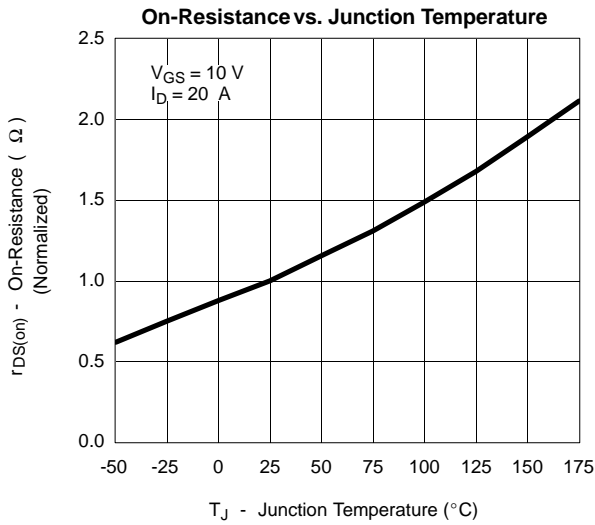
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TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)





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THERMAL RATINGS

