



TN0601L, VN0606L, VN66AFD

Vishay Siliconix

N-Channel 60-V (D-S) MOSFETs

PRODUCT SUMMARY				
Part Number	V _{(BR)DSS} Min (V)	r _{DS(on)} Max (Ω)	V _{GS(th)} (V)	I _D (A)
TN0601L	60	1.8 @ V _{GS} = 10 V	0.5 to 2	0.47
VN0606L		3 @ V _{GS} = 10 V	0.8 to 2	0.33
VN66AFD		3 @ V _{GS} = 10 V	0.8 to 2.5	1.46

FEATURES

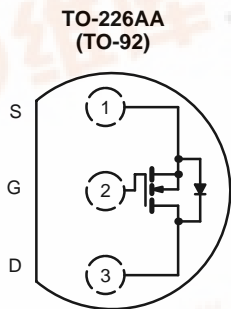
- Low On-Resistance: 1.2 Ω
- Low Threshold: <1.6 V
- Low Input Capacitance: 35 pF
- Fast Switching Speed: 9 ns
- Low Input and Output Leakage

BENEFITS

- Low Offset Voltage
- Low-Voltage Operation
- Easily Driven Without Buffer
- High-Speed Circuits
- Low Error Voltage

APPLICATIONS

- Direct Logic-Level Interface: TTL/CMOS
- Drivers: Relays, Solenoids, Lamps, Hammers, Displays, Memories, Transistors, etc.
- Battery Operated Systems
- Solid-State Relays



Top View
TN0601L
VN0606L

Device Marking
Front View

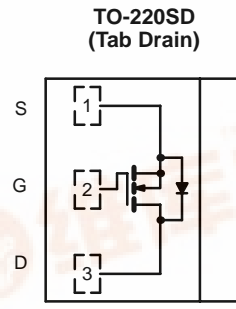
TN0601L

"S" TN
0601L
xxyy

VN0606L

"S" VN
0606L
xxyy

"S" = Siliconix Logo
xxyy = Date Code



Top View
VN66AFD

Device Marking
Front View

VN66AFD

VN66AFD
"S" xxyy

"S" = Siliconix Logo
xxyy = Date Code

ABSOLUTE MAXIMUM RATINGS (T_A = 25 °C UNLESS OTHERWISE NOTED)

Parameter	Symbol	TN0601L	VN0606L	VN66AFD ^b	Unit
Drain-Source Voltage	V _{DS}	60	60	60	V
Gate-Source Voltage	V _{GS}	±20	±30	±30	
Continuous Drain Current (T _J = 150 °C)	I _D	T _A = 25 °C	0.47	0.33	A
		T _A = 100 °C	0.29	0.21	
Pulsed Drain Current ^a	I _{DM}	1.5	1.6	3	W
Power Dissipation	P _D	T _A = 25 °C	0.8	0.8	
		T _A = 100 °C	0.32	0.32	
Thermal Resistance, Junction-to-Ambient	R _{thJA}	156	156		°C/W
Thermal Resistance, Junction-to-Case	R _{thJC}			8.3	
Operating Junction and Storage Temperature Range	T _J , T _{stg}	-55 to 150			°C

Notes:
^a Pulse width limited by maximum junction temperature.
^b Reference case for all temperature testing.

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SPECIFICATIONS (T _A = 25 °C UNLESS OTHERWISE NOTED)										
Parameter	Symbol	Test Conditions	Typ ^a	Limits						Unit
				TN0601L		VN0606L		VN66AFD		
				Min	Max	Min	Max	Min	Max	
Static										
Drain-Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} = 0 V, I _D = 10 μA	70	60		60		60		V
Gate-Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 0.25 mA	1.6	0.5	2					V
		V _{DS} = V _{GS} , I _D = 1 mA	1.7			0.8	2	0.8	2.5	
Gate-Body Leakage	I _{GSS}	V _{DS} = 0 V, V _{GS} = ±30 V					±100		±100	nA
		T _C = 125 °C							±500	
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 60 V, V _{GS} = 0 V					10			μA
		T _J = 125 °C					500			
		V _{DS} = 48 V, V _{GS} = 0 V			1				1	
		T _J = 125 °C			100					
On-State Drain Current ^b	I _{D(on)}	V _{DS} = 10 V, V _{GS} = 4.5 V	0.5	0.25						A
		V _{DS} = 10 V, V _{GS} = 10 V	2.4	1		1.5		1.5		
		T _C = 125 °C								
Drain-Source On-Resistance ^b	r _{DS(on)}	V _{GS} = 3.5 V, I _D = 0.04 A	4		5					Ω
		V _{GS} = 4.5 V, I _D = 0.25 A	2		3					
		T _J = 125 °C	3.8		6					
		V _{GS} = 5 V, I _D = 0.3 A	2.3					5		
		V _{GS} = 10 V, I _D = 0.5 A	1.2				3			
		T _J = 125 °C	2.3				6			
Forward Transconductance ^b	g _{fs}	V _{DS} = 10 V, I _D = 0.5 A	350	200		170		170		mS
		T _C = 125 °C								
Common Source Output Conductance ^b	g _{os}	V _{DS} = 10 V, I _D = 0.1 A	0.3							
Dynamic										
Input Capacitance	C _{iss}	V _{DS} = 25 V, V _{GS} = 0 V, f = 1 MHz	35		60		50		50	pF
Output Capacitance	C _{oss}		25		50		40		40	
Reverse Transfer Capacitance	C _{rss}		6		10		10		10	
Switching^c										
Turn-On Time	t _{ON}	V _{DD} = 25 V, R _L = 23 Ω I _D ≅ 1 A, V _{GEN} = 10 V R _G = 25 Ω	8		15		10		15	ns
Turn-Off Time	t _{OFF}		9		15		10		15	

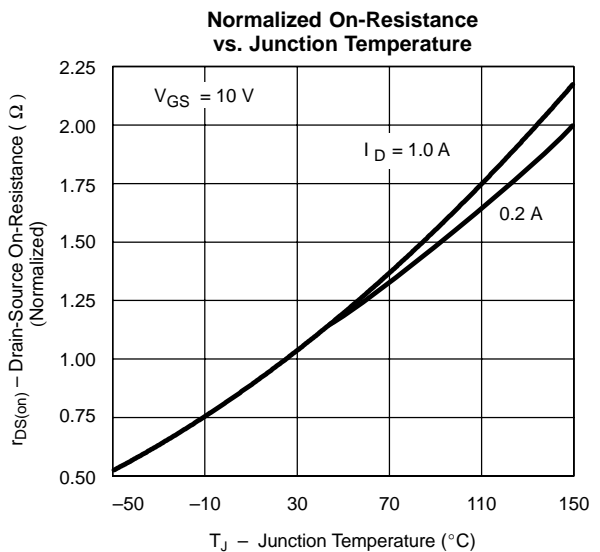
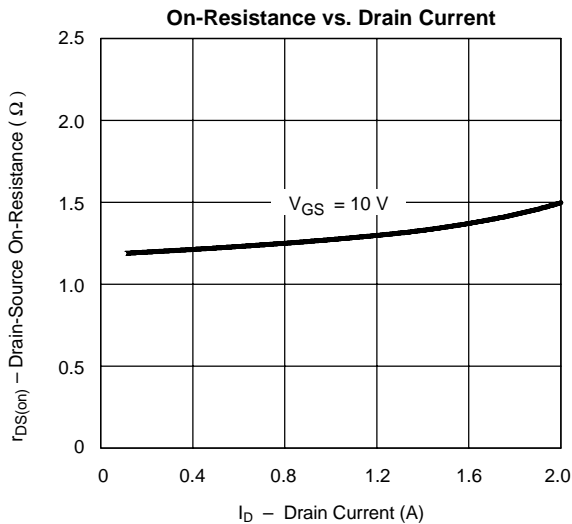
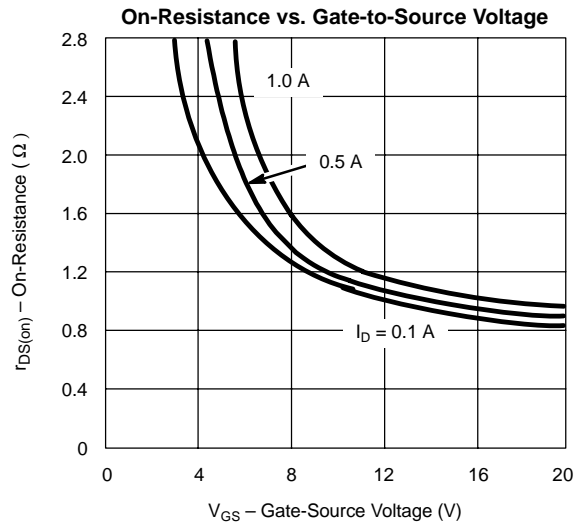
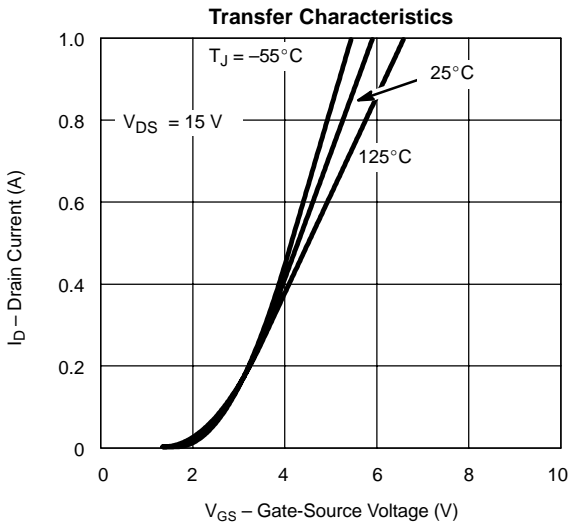
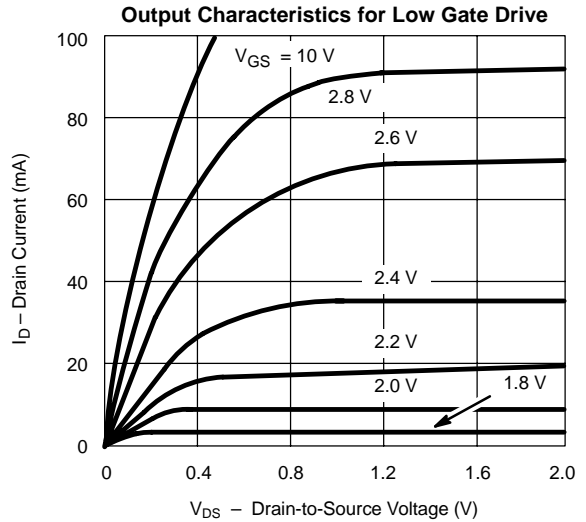
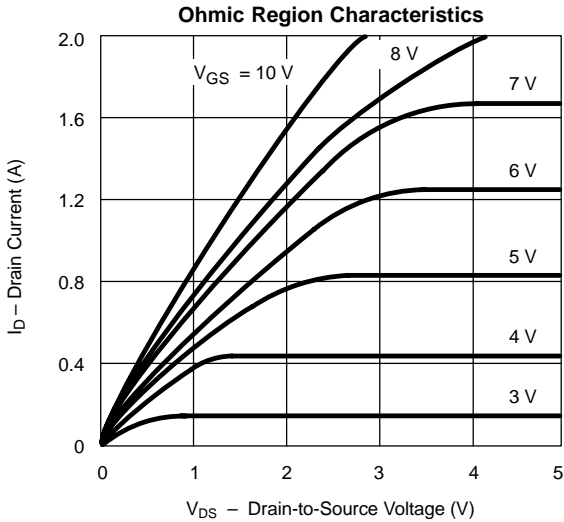
Notes

- a. For DESIGN AID ONLY, not subject to production testing..
- b. Pulse test: PW ≤ 300 μs duty cycle ≤ 2%.
- c. Switching time is essentially independent of operating temperature.

VNDQ06



TYPICAL CHARACTERISTICS (T_A = 25 °C UNLESS OTHERWISE NOTED)





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