

N-Channel Enhancement-Mode MOS Transistors

Product Summary

Part Number	$V_{(BR)DSS}$ Min (V)	$r_{DS(on)}$ Max (Ω)	$V_{GS(th)}$ (V)	I_D (A)
2N6661	90	4 @ $V_{GS} = 10$ V	0.8 to 2	0.9
VN88AFD	80	4 @ $V_{GS} = 10$ V	0.8 to 2.5	1.29

Features

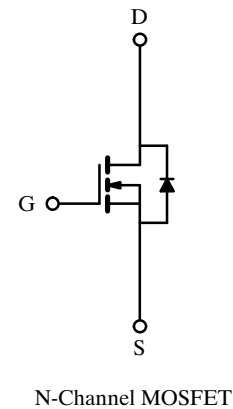
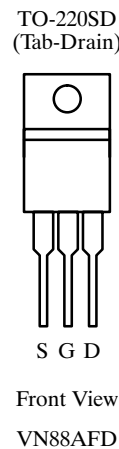
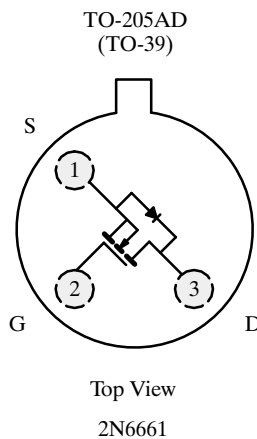
- Low On-Resistance: 3.6 Ω
- Low Threshold: 1.6 V
- Low Input Capacitance: 35 pF
- Fast Switching Speed: 6 ns
- Low Input and Output Leakage

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



Absolute Maximum Ratings ($T_C = 25^\circ\text{C}$ Unless Otherwise Noted)

Parameter	Symbol	2N6661	VN88AFD	Unit
Drain-Source Voltage	V_{DS}	90	80	V
Gate-Source Voltage	V_{GS}	± 20	± 30	
Continuous Drain Current ($T_J = 150^\circ\text{C}$)	I_D	$T_C = 25^\circ\text{C}$	0.9	A
		$T_C = 100^\circ\text{C}$	0.7	
Pulsed Drain Current	I_{DM}	± 3	± 3	
Power Dissipation	P_D	$T_C = 25^\circ\text{C}$	6.25	W
		$T_C = 100^\circ\text{C}$	2.5	
Maximum Junction-to-Ambient ^b	R_{thJA}	170		$^\circ\text{C/W}$
Maximum Junction-to-Case	R_{thJC}		8.3	
Operating Junction and Storage Temperature Range	T_J, T_{stg}	-55 to 150		$^\circ\text{C}$

Notes

- Pulse width limited by maximum junction temperature.
- This parameter not registered with JEDEC.

2N6661/VN88AFD

Specifications^a

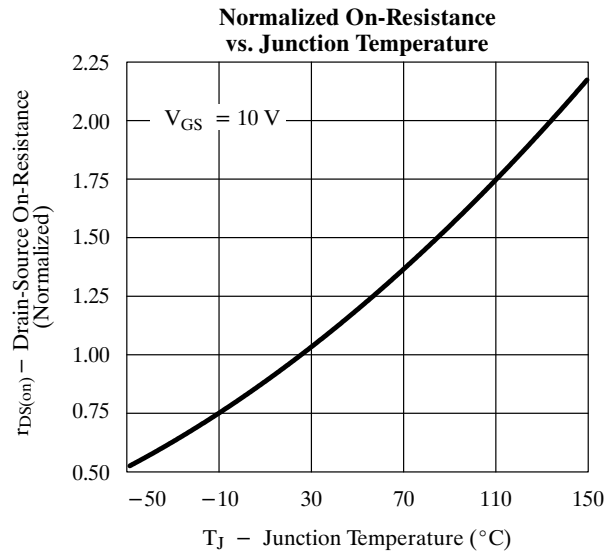
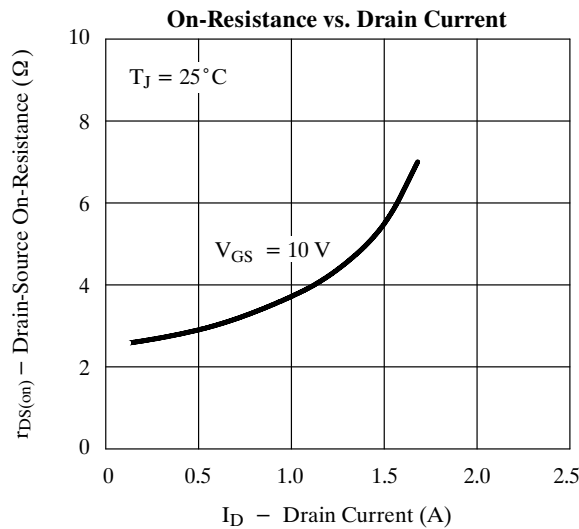
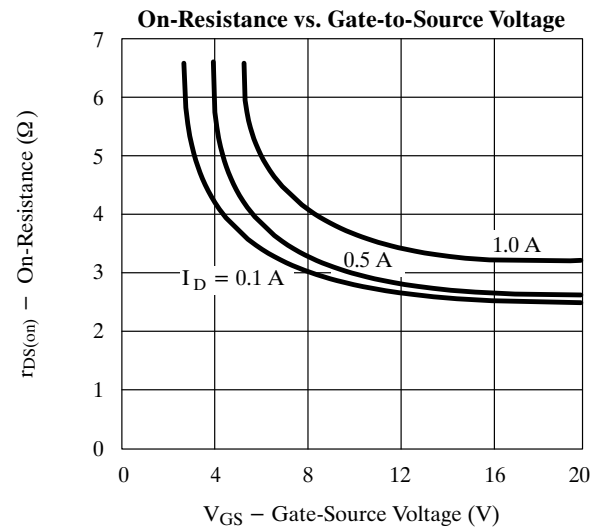
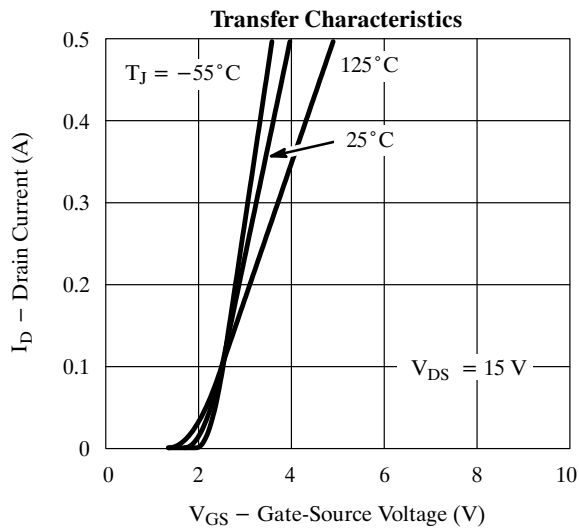
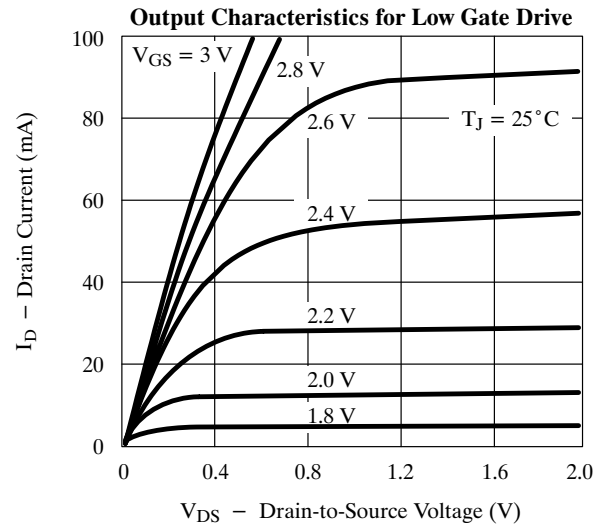
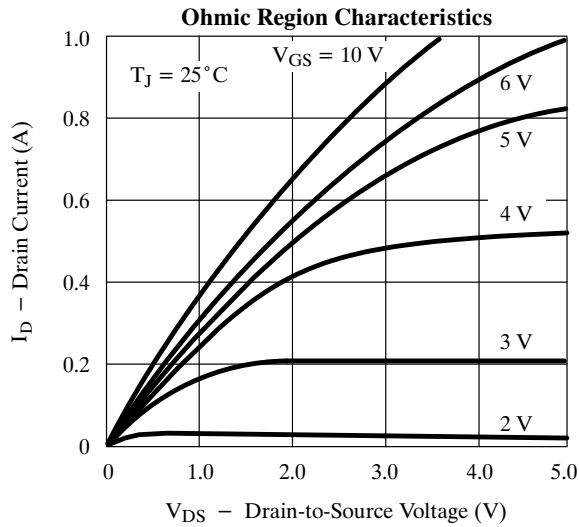
Parameter	Symbol	Test Conditions	Typ ^b	Limits				Unit
				2N6661		VN88AFD		
				Min	Max	Min	Max	
Static								
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS} = 0\text{ V}, I_D = 10\ \mu\text{A}$	125	90		80		V
Gate-Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 1\text{ mA}$	1.6	0.8	2	0.8	2.5	
		$T_C = 55^\circ\text{C}$	1.8					
		$T_C = 125^\circ\text{C}$	1.3					
Gate-Body Leakage	I_{GSS}	$V_{DS} = 0\text{ V}, V_{GS} = \pm 15\text{ V}$			± 100		± 100	nA
		$T_C = 125^\circ\text{C}$			± 500		± 500	
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 90\text{ V}, V_{GS} = 0\text{ V}$			10			μA
		$V_{DS} = 80\text{ V}, V_{GS} = 0\text{ V}$					10	
		$V_{DS} = 0.8 \times V_{(BR)DSS}, V_{GS} = 0\text{ V}$					1	
		$T_C = 125^\circ\text{C}$			500		500	
On-State Drain Current ^c	$I_{D(on)}$	$V_{DS} = 15\text{ V}, V_{GS} = 10\text{ V}$	1.8	1.5				A
		$V_{DS} = 10\text{ V}, V_{GS} = 10\text{ V}$	1.8			1.5		
Drain-Source On-Resistance ^c	$r_{DS(on)}$	$V_{GS} = 5\text{ V}, I_D = 0.3\text{ A}$	3.8		5.3		5.6	Ω
		$V_{GS} = 10\text{ V}, I_D = 1\text{ A}$	3.6		4		4	
		$T_C = 125^\circ\text{C}^e$	6.7		9		8	
Forward Transconductance ^c	g_{fs}	$V_{DS} = 10\text{ V}, I_D = 0.5\text{ A}$	350	170		170		mS
Diode Forward Voltage	V_{SD}	$I_S = 0.86\text{ A}, V_{GS} = 0\text{ V}$	0.9					V
Dynamic								
Input Capacitance	C_{iss}	$V_{DS} = 24\text{ V}, V_{GS} = 0\text{ V}$ $f = 1\text{ MHz}$	35		50		50	pF
Output Capacitance	C_{oss}		15		40		40	
Reverse Transfer Capacitance	C_{rss}		2		10		10	
Drain-Source Capacitance	C_{ds}		30		40			
Switching^d								
Turn-On Time	t_{ON}	$V_{DD} = 25\text{ V}, R_L = 23\ \Omega$ $I_D \cong 1\text{ A}, V_{GEN} = 10\text{ V}$ $R_G = 25\ \Omega$	6		10		15	ns
Turn-Off Time	t_{OFF}		8		10		15	

Notes

- $T_A = 25^\circ\text{C}$ unless otherwise noted.
- For DESIGN AID ONLY, not subject to production testing.
- Pulse test: $PW \leq 300\ \mu\text{s}$ duty cycle $\leq 2\%$.
- Switching time is essentially independent of operating temperature.
- This parameter not registered with JEDEC.

VNDQ09

Typical Characteristics (25°C Unless Otherwise Noted)



2N6661/VN88AFD

Typical Characteristics (25°C Unless Otherwise Noted) (Cont'd)

