



## JAN Qualified N-Channel 90-V (D-S) MOSFETs

PRODUCT SUMMARY			
$V_{(BR)DSS}$ Min (V)	$r_{DS(on)}$ Max ( $\Omega$ )	$V_{GS(th)}$ (V)	$I_D$ (A)
90	4 @ $V_{GS} = 10$ V	0.8 to 2	0.86

### FEATURES

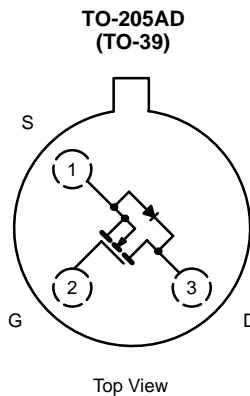
- Military Qualified
- Low On-Resistance: 3.6  $\Omega$
- Low Threshold: 1.6 V
- Low Input Capacitance: 35 pF
- Fast Switching Speed: 6 ns
- Low Input and Output Leakage

### BENEFITS

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

### APPLICATIONS

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



Device Marking  
Side View

JAN2N6661\*  
"S" flxxy

"S" = Siliconix Logo  
f = Factory Code  
ll = Lot Traceability  
xxyy = Date Code

\*Note: or JANTX2N6661  
JANTXV2N6661

ABSOLUTE MAXIMUM RATINGS ( $T_A = 25^\circ\text{C}$ UNLESS OTHERWISE NOTED)			
Parameter	Symbol	Limit	Unit
Drain-Source Voltage	$V_{DS}$	90	V
Gate-Source Voltage	$V_{GS}$	$\pm 20$	
Continuous Drain Current ( $T_J = 150^\circ\text{C}$ )	$I_D$	$T_C = 25^\circ\text{C}$	A
		$T_C = 100^\circ\text{C}$	
Pulsed Drain Current <sup>a</sup>	$I_{DM}$	3	
Power Dissipation	$P_D$	$T_C = 25^\circ\text{C}$	W
		$T_A = 25^\circ\text{C}$	
Thermal Resistance, Junction-to-Ambient <sup>b</sup>	$R_{thJA}$	170	$^\circ\text{C/W}$
Thermal Resistance, Junction-to-Case	$R_{thJC}$	20	
Operating Junction and Storage Temperature Range	$T_J, T_{stg}$	-55 to 150	$^\circ\text{C}$

Notes

- a. Pulse width limited by maximum junction temperature.  
b. Not required by Military Spec.



SPECIFICATIONS (T <sub>A</sub> = 25 °C UNLESS OTHERWISE NOTED)						
Parameter	Symbol	Test Conditions	Limits			Unit
			Min	Typ NO TAG	Max	
<b>Static</b>						
Drain-Source Breakdown Voltage	V <sub>(BR)DSS</sub>	V <sub>GS</sub> = 0 V, I <sub>D</sub> = 10 μA	90	125		V
Gate-Threshold Voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = 1 mA	0.8	1.6	2	
		T <sub>A</sub> = -55 °C		1.8	2.5	
Gate-Body Leakage	I <sub>GSS</sub>	V <sub>DS</sub> = 0 V, V <sub>GS</sub> = ±20 V			± 100	nA
		T <sub>A</sub> = 125 °C			± 500	
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> = 72 V, V <sub>GS</sub> = 0 V			1	μA
		T <sub>A</sub> = 125 °C			100	
On-State Drain Current <sup>b</sup>	I <sub>D(on)</sub>	V <sub>DS</sub> = 10 V, V <sub>GS</sub> = 10 V		1.8		mA
Drain-Source On-Resistance <sup>b</sup>	r <sub>DS(on)</sub>	V <sub>GS</sub> = 5 V, I <sub>D</sub> = 0.3 A		3.8	5.3	Ω
		V <sub>GS</sub> = 10 V, I <sub>D</sub> = 1 A		3.6	4	
		T <sub>A</sub> = 125 °C		6.7	7.5	
Forward Transconductance <sup>b</sup>	g <sub>fs</sub>	V <sub>DS</sub> = 7.5 V, I <sub>D</sub> = 0.475 A	170	340		mS
Diode Forward Voltage	V <sub>SD</sub>	I <sub>S</sub> = 0.86 A, V <sub>GS</sub> = 0 V	0.7	0.9	1.4	V
<b>Dynamic</b>						
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> = 25 V, V <sub>GS</sub> = 0 V f = 1 MHz		35	50	pF
Output Capacitance	C <sub>oss</sub>			15	40	
Reverse Transfer Capacitance	C <sub>rss</sub>			2	10	
Drain-Source Capacitance	C <sub>ds</sub>			30		
<b>Switching<sup>c</sup></b>						
Turn-On Time	t <sub>ON</sub>	V <sub>DD</sub> = 25 V, R <sub>L</sub> = 23 Ω I <sub>D</sub> ≅ 1 A, V <sub>GEN</sub> = 10 V, R <sub>G</sub> = 25 Ω		6	10	ns
Turn-Off Time	t <sub>OFF</sub>			8	10	

**Notes**

- For DESIGN AID ONLY, not subject to production testing.
- Pulse test: PW ≤ 300 μs duty cycle ≤ 2%.
- Switching time is essentially independent of operating temperature.
- For typical characteristics curves see the 2N6661/VN88AFD data sheet.

VNDQ09



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