

N-Channel Enhancement-Mode MOS Transistors

Product Summary

$V_{(BR)DSS}$ Min (V)	$r_{DS(on)}$ Max (Ω)	$V_{GS(th)}$ (V)	I_D (A)
60	3 @ $V_{GS} = 10$ V	0.8 to 2	0.99

Features

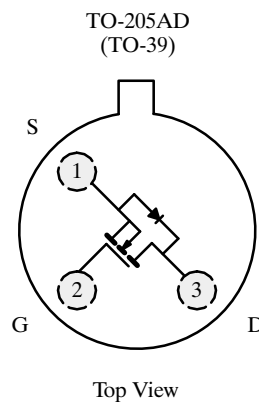
- Military Qualified
- Low On-Resistance: 1.3 Ω
- Low Threshold: 1.7 V
- Low Input Capacitance: 35 pF
- Fast Switching Speed: 8 ns
- Low Input and Output Leakage

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



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

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V_{DS}	60	V
Gate-Source Voltage	V_{GS}	± 20	
Continuous Drain Current ($T_J = 150^\circ\text{C}$)	I_D	$T_C = 25^\circ\text{C}$	0.99
		$T_C = 10^\circ\text{C}$	0.62
Pulsed Drain Current	I_{DM}	3	A
Power Dissipation	P_D	$T_C = 25^\circ\text{C}$	6.25
		$T_A = 25^\circ\text{C}$	0.725
Maximum Junction-to-Ambient ^b	R_{thJA}	170	$^\circ\text{C}/\text{W}$
Maximum Junction-to-Case	R_{thJC}	20	
Operating Junction and Storage Temperature Range	T_J, T_{stg}	-55 to 150	$^\circ\text{C}$

Notes

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

2N6660JAN/JANTX/JANTXV

Specifications^a

Parameter	Symbol	Test Conditions	Limits			Unit	
			Min	Typ ^b	Max		
Static							
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS} = 0\text{ V}, I_D = 10\ \mu\text{A}$	60	75		V	
Gate-Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 1\ \text{mA}$		1.7	2		
			$T_C = -55^\circ\text{C}$				2.5
			0.3				
Gate-Body Leakage	I_{GSS}	$V_{DS} = 0\ \text{V}, V_{GS} = \pm 20\ \text{V}$			± 100	nA	
			$T_C = 125^\circ\text{C}$				± 500
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 48\ \text{V}, V_{GS} = 0\ \text{V}$			1	μA	
			$T_C = 125^\circ\text{C}$				100
On-State Drain Current ^c	$I_{D(on)}$	$V_{DS} = 10\ \text{V}, V_{GS} = 10\ \text{V}$		2		A	
Drain-Source On-Resistance ^c	$r_{DS(on)}$	$V_{GS} = 5\ \text{V}, I_D = 0.3\ \text{A}$		2	5	Ω	
			$V_{GS} = 10\ \text{V}, I_D = 1\ \text{A}$		1.3		3
			$T_C = 125^\circ\text{C}$		2.4		5.6
Forward Transconductance ^c	g_{fs}	$V_{DS} = 7.5\ \text{V}, I_D = 0.525\ \text{A}$	170	350		mS	
Diode Forward Voltage	V_{SD}	$I_S = 0.99\ \text{A}, V_{GS} = 0\ \text{V}$	0.7	0.8	1.6	V	
Dynamic							
Input Capacitance	C_{iss}	$V_{DS} = 25\ \text{V}, V_{GS} = 0\ \text{V}$ $f = 1\ \text{MHz}$		35	50	pF	
Output Capacitance	C_{oss}			25	40		
Reverse Transfer Capacitance	C_{rss}			7	10		
Drain-Source Capacitance	C_{ds}			30			
Switching^d							
Turn-On Time	t_{ON}	$V_{DD} = 25\ \text{V}, R_L = 23\ \Omega$ $I_D \cong 1\ \text{A}, V_{GEN} = 10\ \text{V}$ $R_G = 25\ \Omega$		8	10	ns	
Turn-Off Time	t_{OFF}			8.5	10		

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.
- For typical characteristics curves see the 2N6659/2N6660, VQ1004J/P data sheet.

VNDQ06