

N-Channel Enhancement-Mode MOSFET Transistors

Product Summary

Part Number	V _{(BR)DSS} Min (V)	r _{DS(on)} Max (Ω)	V _{GS(th)} (V)	I _D (A)
VN0808L	80	4 @ V _{GS} = 10 V	0.8 to 2	0.3
VN0808M		4 @ V _{GS} = 10 V	0.8 to 2	0.33
VQ1006P	90	4 @ V _{GS} = 10 V	0.8 to 2.5	0.4

Features

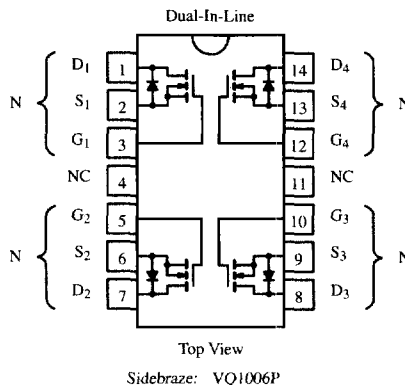
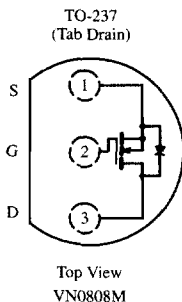
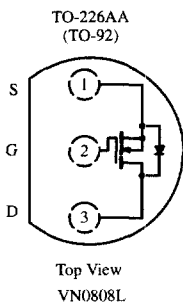
- Low On-Resistance: 3.6 Ω
- Low Threshold: 1.6 V
- Low Input Capacitance: 35 pF
- Fast Switching Speed: 6 ns
- Low Input and Output Leakage

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_A = 25°C Unless Otherwise Noted)

Parameter	Symbol	VN0808L	VN0808M	VQ1006P		Unit	
				Single	Total Quad		
Drain-Source Voltage	V _{DS}	80	80	90		V	
Gate-Source Voltage	V _{GS}	± 30	± 30	± 20		V	
Continuous Drain Current (T _J = 150°C)	I _D	T _A = 25°C	0.3	0.33	0.4	A	
		T _A = 100°C	0.19	0.21	0.23		
Pulsed Drain Current ^a	I _{DM}	1.9	1.9	2		A	
Power Dissipation	P _D	T _A = 25°C	0.8	1	1.3	2	W
		T _A = 100°C	0.32	0.4	0.52	0.8	
Maximum Junction-to-Ambient	R _{thJA}	156	125	96	62.5	°C/W	
Operating Junction and Storage Temperature Range	T _J , T _{stg}	-55 to 150					°C

Notes

a. Pulse width limited by maximum junction temperature.

Updates to this data sheet may be obtained via facsimile by calling Siliconix FaxBack, 1-408-970-5600. Please request FaxBack document #70214.

Specifications^a

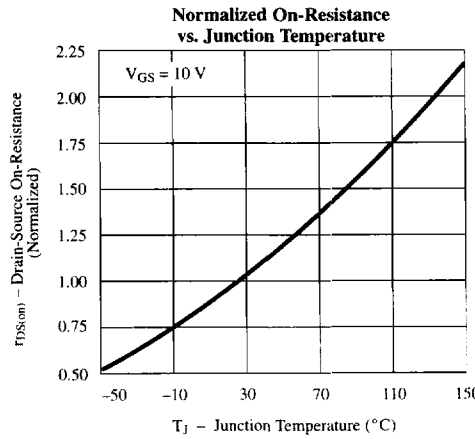
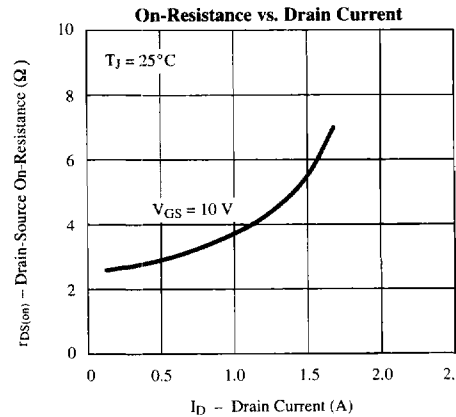
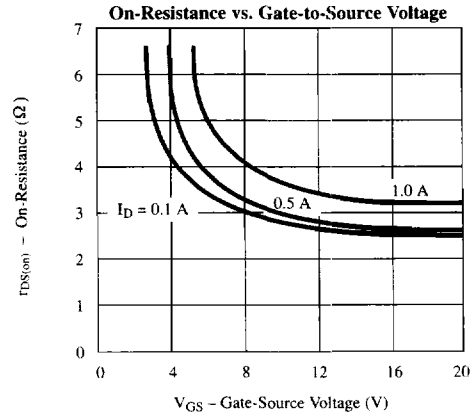
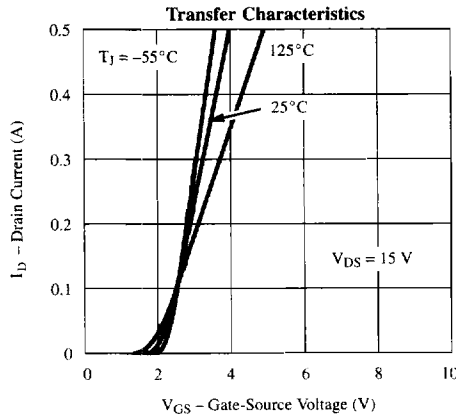
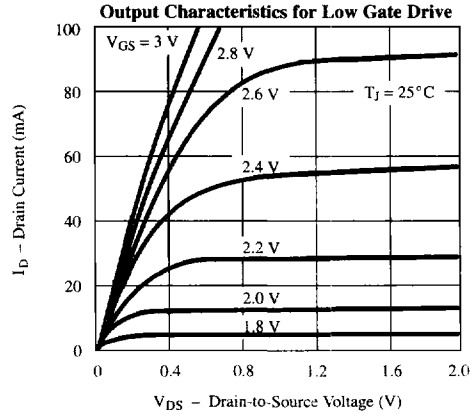
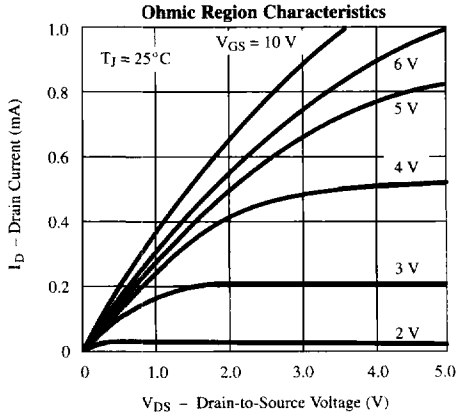
Parameter	Symbol	Test Conditions	Typ ^b	Limits				Unit
				VN0808L/M		VQ1006P		
				Min	Max	Min	Max	
Static								
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS} = 0\text{ V}, I_D = 10\text{ }\mu\text{A}$	125	80		90		V
Gate-Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 1\text{ mA}$	1.6	0.8	2	0.8	2.5	
Gate-Body Leakage	I_{GSS}	$V_{DS} = 0\text{ V}, V_{GS} = \pm 15\text{ V}$ $T_J = 125^\circ\text{C}$			± 100		± 100	nA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 80\text{ V}, V_{GS} = 0\text{ V}$ $T_J = 125^\circ\text{C}$			10			μA
		$V_{DS} = 72\text{ V}, V_{GS} = 0\text{ V}$ $T_J = 125^\circ\text{C}$			500			
		$V_{DS} = 72\text{ V}, V_{GS} = 0\text{ V}$ $T_J = 125^\circ\text{C}$					1	
On-State Drain Current ^c	$I_{D(on)}$	$V_{DS} = 10\text{ V}, V_{GS} = 10\text{ V}$	1.8	1.5		1.5		A
Drain-Source On-Resistance ^c	$r_{DS(on)}$	$V_{GS} = 5\text{ V}, I_D = 0.3\text{ A}$	3.8				5	Ω
		$V_{GS} = 10\text{ V}, I_D = 1\text{ A}$	3.6		4		4.5	
		$T_J = 125^\circ\text{C}$	6.7		8		8.6	
Forward Transconductance ^c	g_{fs}	$V_{DS} = 10\text{ V}, I_D = 0.5\text{ A}$	350	170		170		mS
Common Source Output Conductance ^c	g_{ov}	$V_{DS} = 10\text{ V}, I_D = 0.1\text{ A}$	0.23					
Dynamic								
Input Capacitance	C_{iss}	$V_{DS} = 25\text{ V}, V_{GS} = 0\text{ V}, f = 1\text{ MHz}$	35		50		60	pF
Output Capacitance	C_{oss}		15		40		50	
Reverse Transfer Capacitance	C_{rss}		2		10		10	
Switching^d								
Turn-On Time	t_{ON}	$V_{DD} = 25\text{ V}, R_L = 23\text{ }\Omega$ $I_D \cong 1\text{ A}, V_{GEN} = 10\text{ V}$ $R_G = 25\text{ }\Omega$	6		10		10	ns
Turn-Off Time	t_{OFF}		8		10		10	

Notes

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

VNDQ09

Typical Characteristics (25°C Unless Otherwise Noted)



Low Power MOSFETs

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

