



N-Channel 80- and 90-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)
VN0808L	80	4 @ $V_{GS} = 10$ V	0.8 to 2	0.3
VN0808LS		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

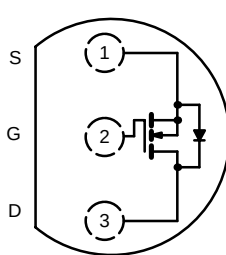
- Low On-Resistance: 3.6 Ω
- Low Threshold: 1.6 V
- Low Input Capacitance: 35 pF
- Fast Switching Speed: 6 ns
- Low Input and Output Leakage

BENEFITS

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

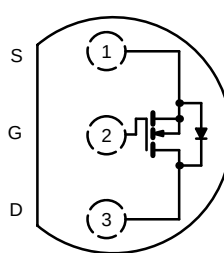
APPLICATIONS

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

TO-226AA
(TO-92)Top View
VN0808LFront View:
VN0808L

"S" VN
0808L
xxyy

TO-92S

Top View
VN0808LS

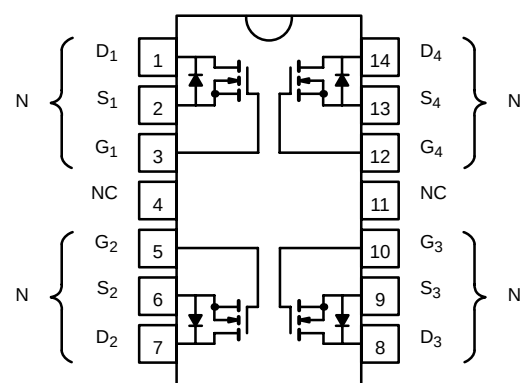
Front View:

VN0808LS

"S" VN
0808LS
xxyy

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

Dual-In-Line

Top View
Sidebrazed: VQ1006P

Top View:

VQ1006P

VQ1006P
"S" f // xxyy

ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ UNLESS OTHERWISE NOTED)

Parameter	Symbol	VN0808L	VN0808LS	VQ1006P		Unit
				Single	Total Quad	
Drain-Source Voltage	V_{DS}	80	80	90		V
Gate-Source Voltage	V_{GS}	± 30	± 30	± 20		
Continuous Drain Current ($T_J = 150^\circ\text{C}$)	I_D	0.3	0.33	0.4		A
		0.19	0.21	0.23		
Pulsed Drain Current ^a	I_{DM}	1.9	1.9	2		
Power Dissipation	P_D	0.8	0.9	1.3	2	W
		0.32	0.4	0.52	0.8	
Thermal Resistance, Junction-to-Ambient	R_{thJA}	156	139	96	62.5	$^\circ\text{C/W}$
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.

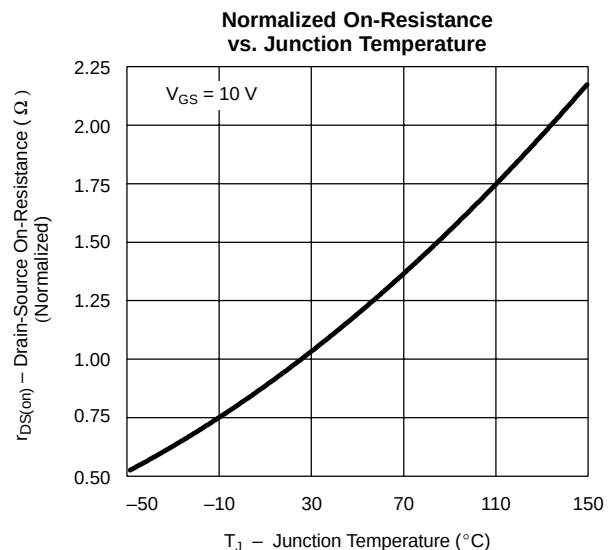
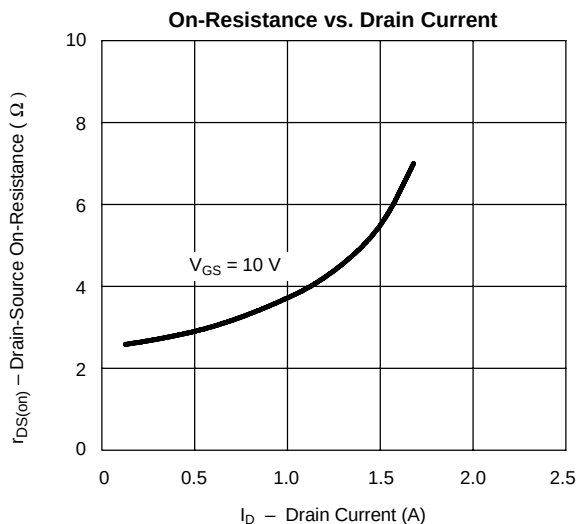
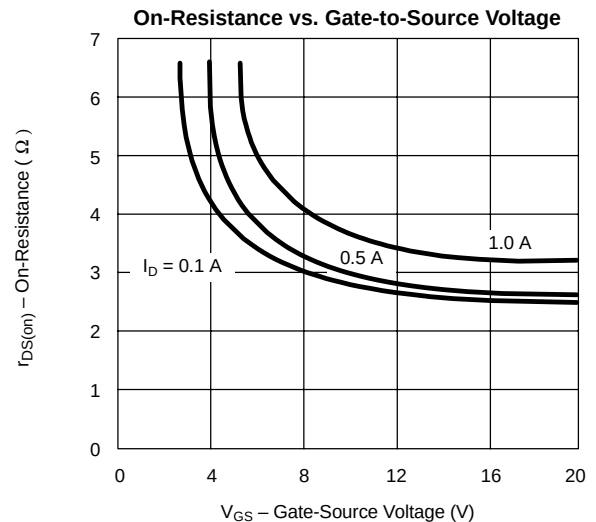
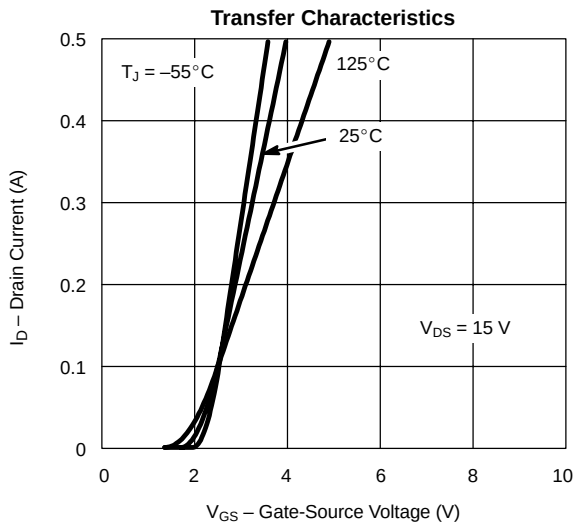
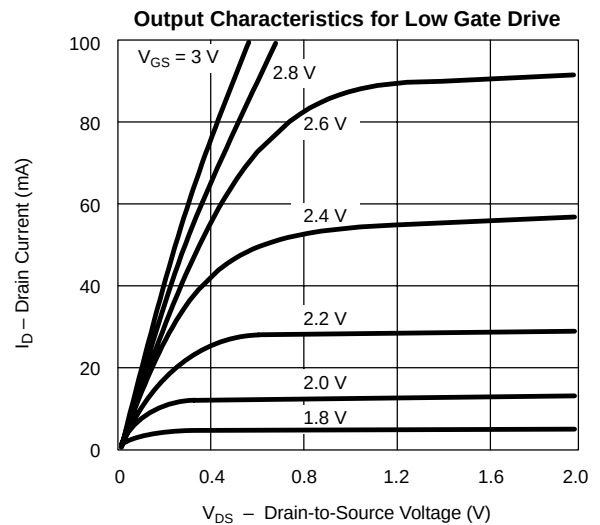
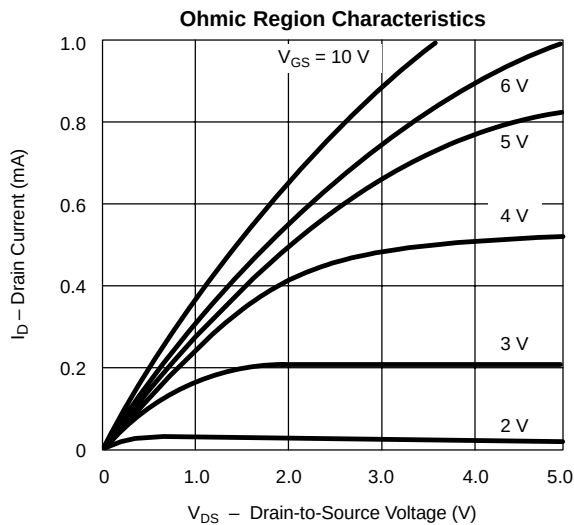
SPECIFICATIONS ($T_A = 25^\circ\text{C}$ UNLESS OTHERWISE NOTED)

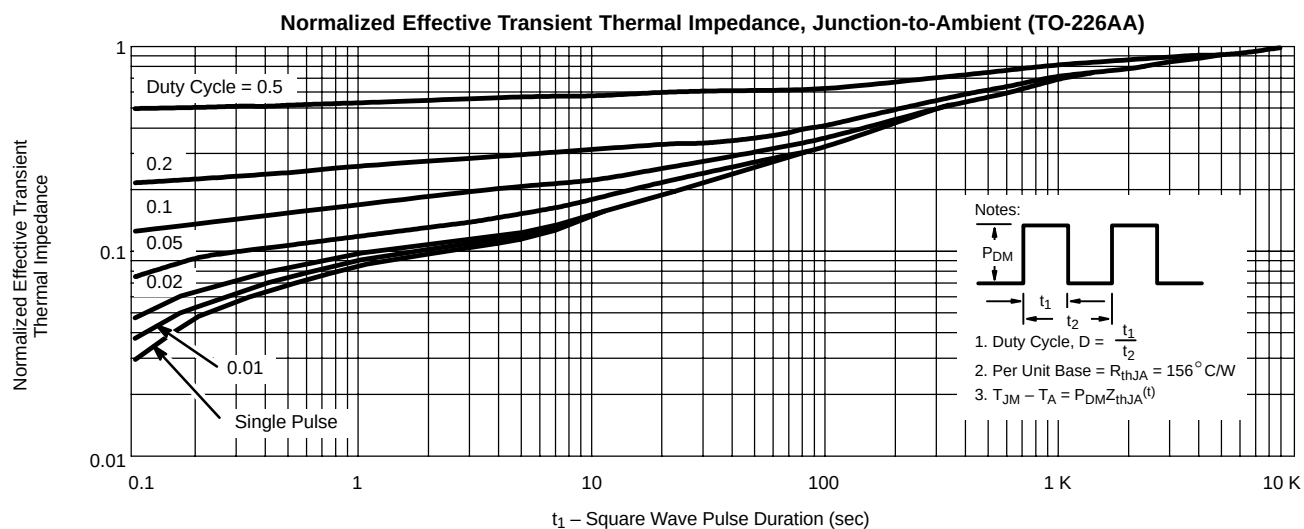
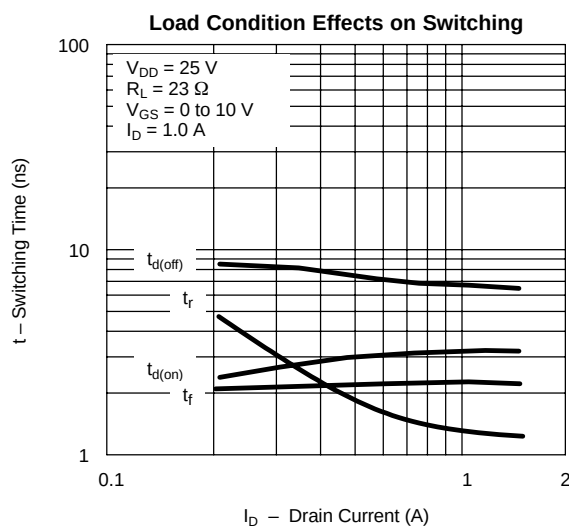
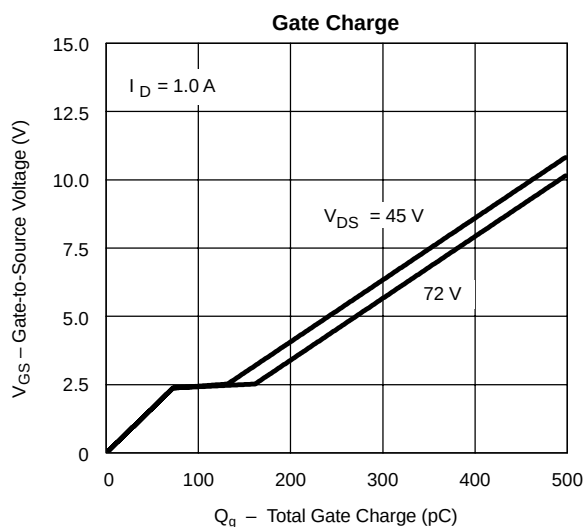
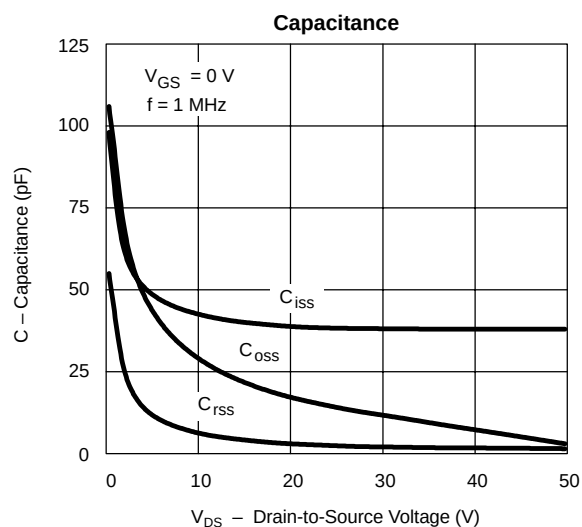
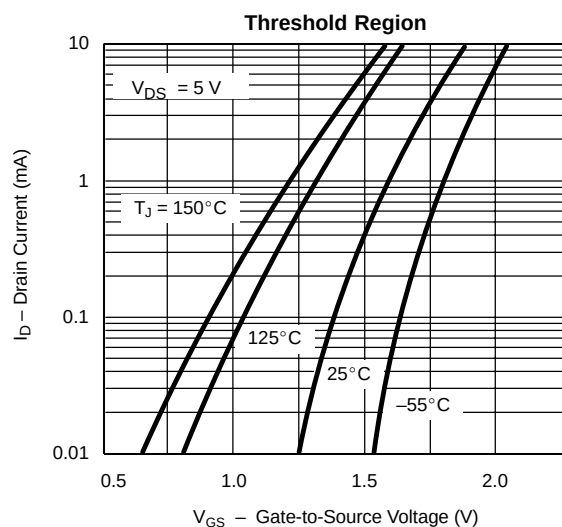
Parameter	Symbol	Test Conditions	Typ ^a	Limits				Unit
				VN0808L/LS		VQ1006P		
				Min	Max	Min	Max	
Static								
Drain-Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} = 0 V, I _D = 10 μA	125	80		90		V
Gate-Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 1 mA	1.6	0.8	2	0.8	2.5	
Gate-Body Leakage	I _{GSS}	V _{DS} = 0 V, V _{GS} = ± 15 V T _J = 125°C			± 100		± 100 ± 500	nA
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 80 V, V _{GS} = 0 V T _J = 125°C			10 500			μA
		V _{DS} = 72 V, V _{GS} = 0 V T _J = 125°C				1 500		
On-State Drain Current ^b	I _{D(on)}	V _{DS} = 10 V, V _{GS} = 10 V	1.8	1.5		1.5		A
Drain-Source On-Resistance ^b	r _{DS(on)}	V _{GS} = 5 V, I _D = 0.3 A	3.8				5	Ω
		V _{GS} = 10 V, I _D = 1 A	3.6		4		4.5	
		T _J = 125°C	6.7		8		8.6	
Forward Transconductance ^b	g _{fs}	V _{DS} = 10 V, I _D = 0.5 A	350	170		170		mS
Common Source Output Conductance ^b	g _{os}	V _{DS} = 10 V, I _D = 0.1 A	0.23					
Dynamic								
Input Capacitance	C _{iSS}	V _{DS} = 25 V, V _{GS} = 0 V, f = 1 MHz	35		50		60	pF
Output Capacitance	C _{oSS}		15		40		50	
Reverse Transfer Capacitance	C _{rSS}		2		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	6		10		10	ns
Turn-Off Time	t _{OFF}		8		10		10	

Notes

- a. For DESIGN AID ONLY, not subject to production testing..
b. Pulse test: $PW \leq 300\text{ }\mu\text{s}$ duty cycle $\leq 2\%$.
c. Switching time is essentially independent of operating temperature.

VNDQ09

**TYPICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ UNLESS OTHERWISE NOTED)**

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