



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

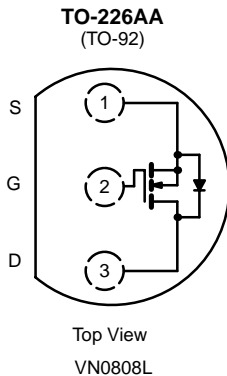
- Low On-Resistance: 3.6 Ω
- Low Threshold: 1.6 V
- Low Input Capacitance: 35 pF
- Fast Switching Speed: 6 ns
- Low Input and Output Leakage

BENEFITS

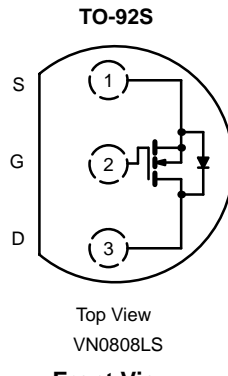
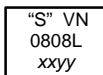
- Low Offset Voltage
- Low-Voltage Operation
- Easily Driven Without Buffer
- High-Speed Circuits
- Low Error Voltage

APPLICATIONS

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

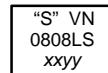


Front View:
VN0808L

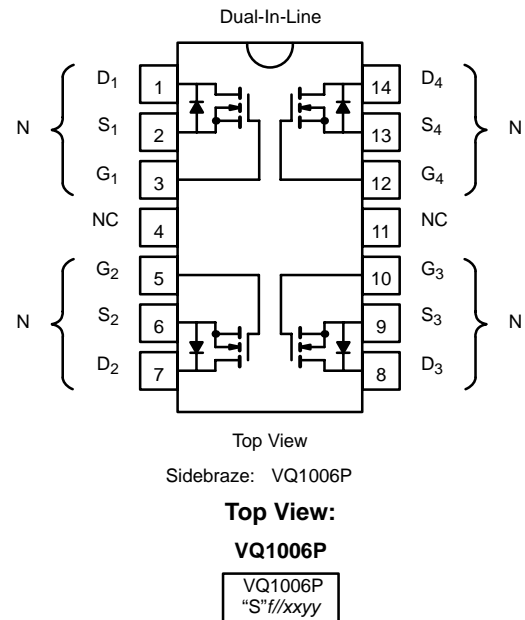


Front View:

VN0808LS



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



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	$T_A = 25^\circ\text{C}$	0.3	0.33	0.4	A	
		$T_A = 100^\circ\text{C}$	0.19	0.21	0.23		
Pulsed Drain Current ^a	I_{DM}	1.9	1.9	2			
Power Dissipation	P_D	$T_A = 25^\circ\text{C}$	0.8	0.9	1.3	2	W
		$T_A = 100^\circ\text{C}$	0.32	0.4	0.52	0.8	
Thermal Resistance, Junction-to-Ambient	R_{thJA}	156	139	96	62.5	$^\circ\text{C}/\text{W}$	
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 °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			±100		±100	nA
							±500	
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 80 V, V _{GS} = 0 V			10			μA
					500			
							1	
		V _{DS} = 72 V, V _{GS} = 0 V					500	
		T _J = 125 °C						
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
					4		4.5	
					8		8.6	
		T _J = 125 °C	6.7					
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

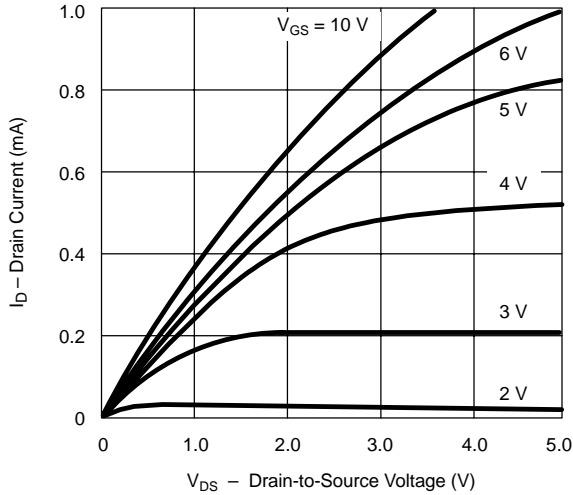
- a. For DESIGN AID ONLY, not subject to production testing..
- b. Pulse test: PW ≤ 300 μs duty cycle ≤ 2%.
- c. Switching time is essentially independent of operating temperature.

VNDQ09

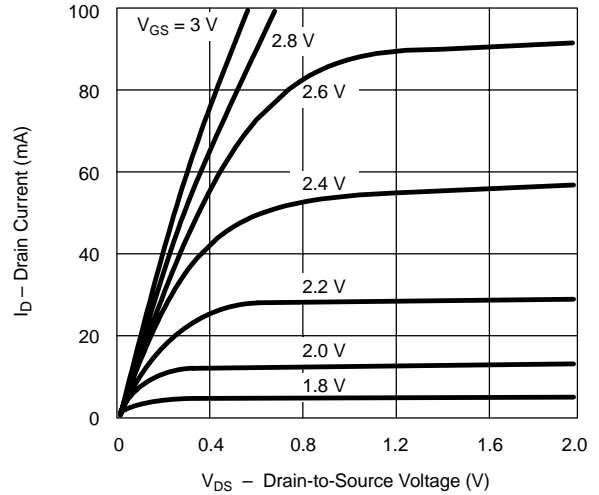


TYPICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ UNLESS OTHERWISE NOTED)

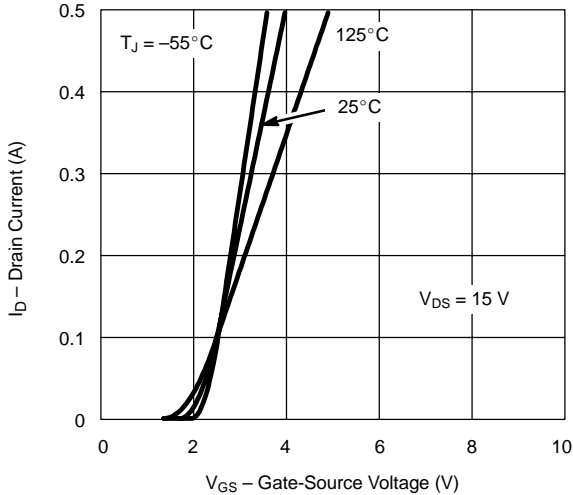
Ohmic Region Characteristics



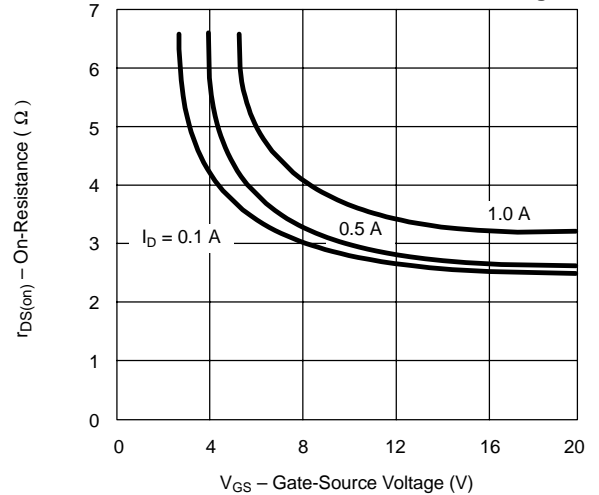
Output Characteristics for Low Gate Drive



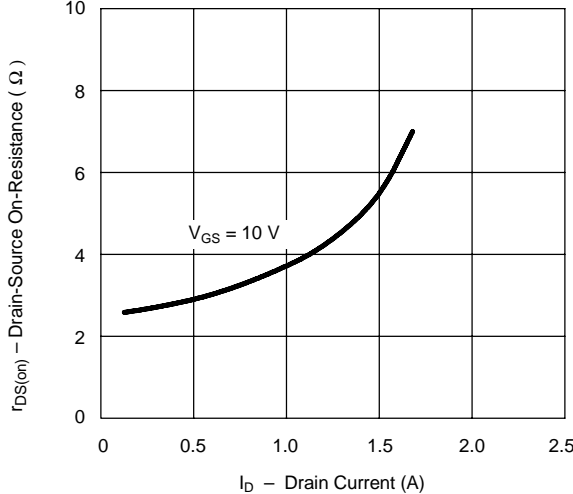
Transfer Characteristics



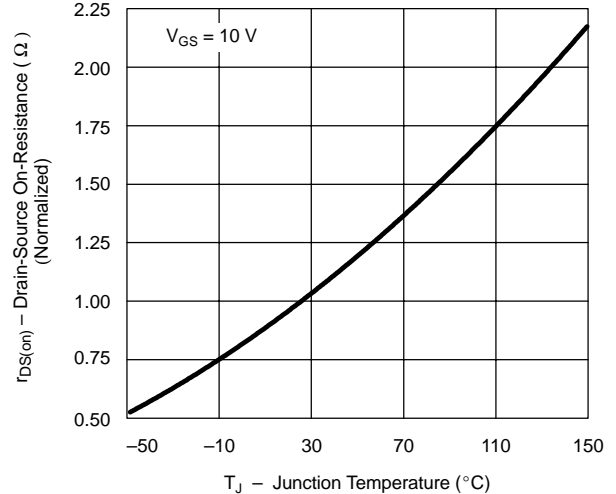
On-Resistance vs. Gate-to-Source Voltage



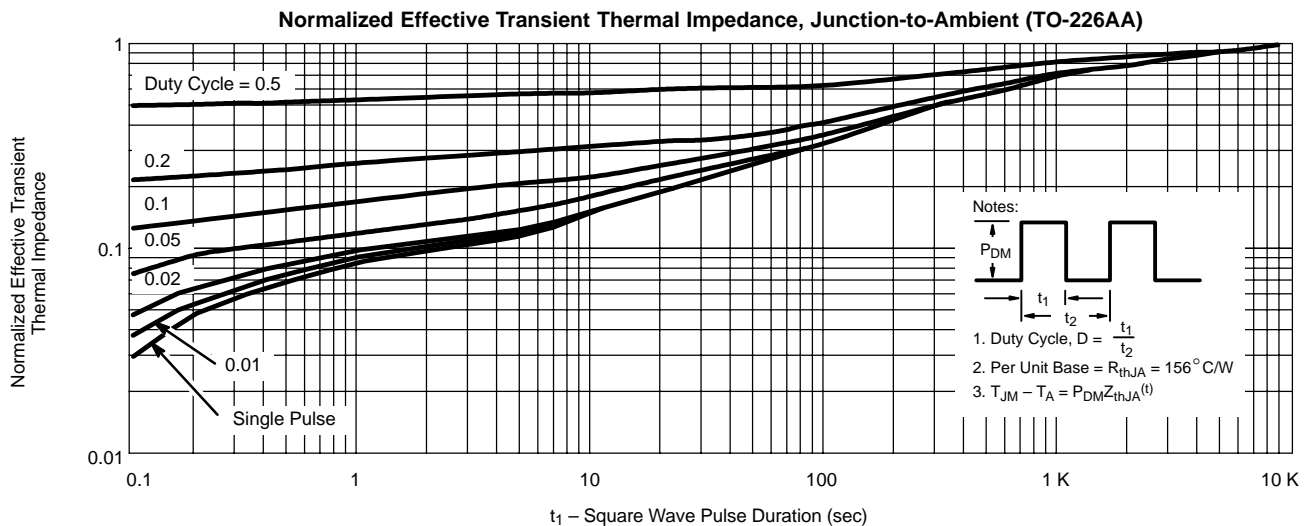
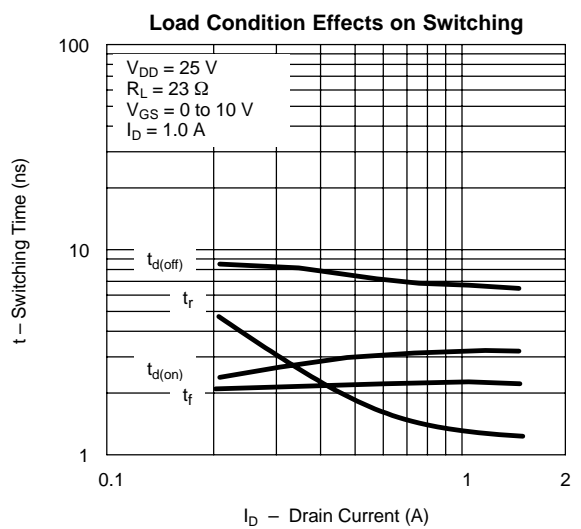
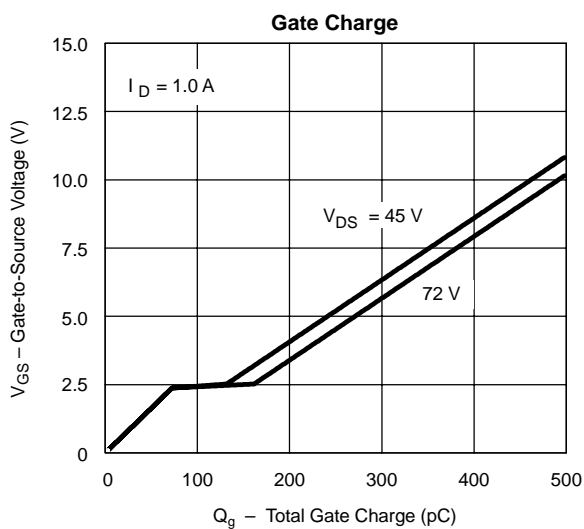
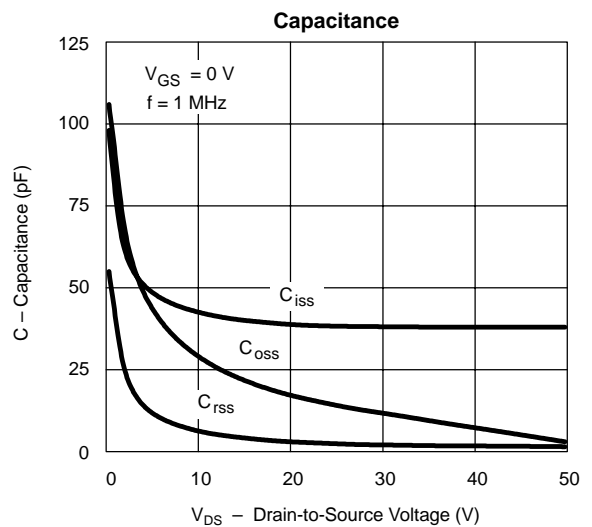
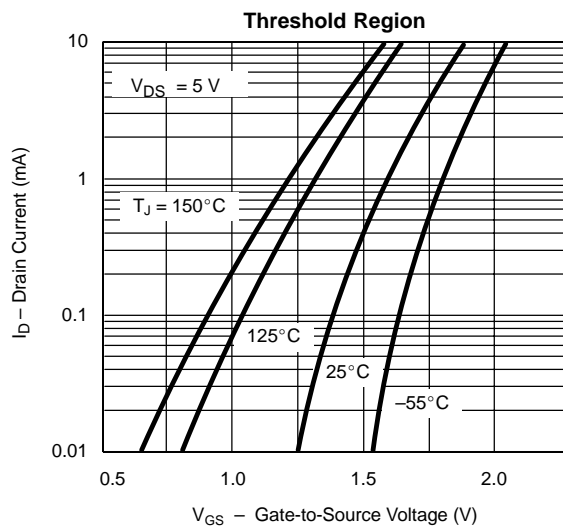
On-Resistance vs. Drain Current



Normalized On-Resistance vs. Junction Temperature



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





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