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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

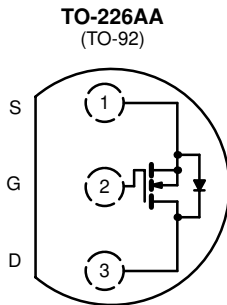
- Low On-Resistance: 3.6 Ω
- Low Threshold: 1.6 V
- Low Input Capacitance: 35 pF
- Fast Switching Speed: 6 ns
- Low Input and Output Leakage

BENEFITS

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

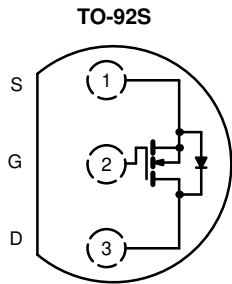
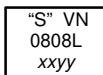
APPLICATIONS

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



Top View
VN0808L

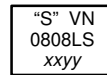
Front View:
VN0808L



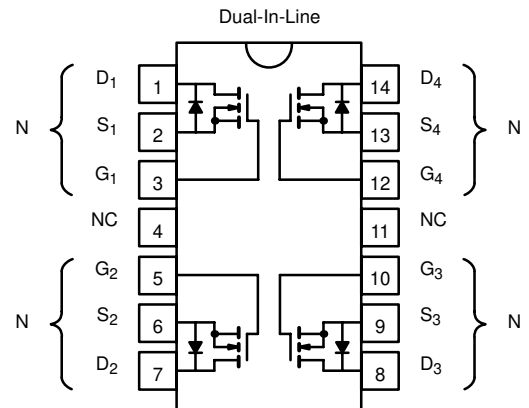
Top View
VN0808LS

Front View:

VN0808LS



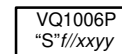
"S" = Siliconix Logo
f = Factory Code
ll = Lot Traceability
xxyy = Date Code



Top View
Sidebrazed: VQ1006P

Top View:

VQ1006P



ABSOLUTE MAXIMUM RATINGS (T _A = 25°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°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			
Power Dissipation	P _D	T _A = 25°C	0.8	0.9	1.3	2	W
		T _A = 100°C	0.32	0.4	0.52	0.8	
Thermal Resistance, Junction-to-Ambient	R _{thJA}	156	139	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.

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	$V_{(BR)DSS}$	$V_{GS} = 0\text{ V}, I_D = 10\ \mu\text{A}$	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}	$V_{DS} = 0\ \text{V}, V_{GS} = \pm 15\ \text{V}$			± 100		± 100	nA
							± 500	
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 80\ \text{V}, V_{GS} = 0\ \text{V}$			10			μA
					500			
							1	
		$V_{DS} = 72\ \text{V}, V_{GS} = 0\ \text{V}$					500	
		$T_J = 125^\circ\text{C}$						
On-State Drain Current ^b	$I_{D(on)}$	$V_{DS} = 10\ \text{V}, V_{GS} = 10\ \text{V}$	1.8	1.5		1.5		A
Drain-Source On-Resistance ^b	$r_{DS(on)}$	$V_{GS} = 5\ \text{V}, I_D = 0.3\ \text{A}$	3.8				5	Ω
					4		4.5	
					8		8.6	
		$T_J = 125^\circ\text{C}$	6.7					
Forward Transconductance ^b	g_{fs}	$V_{DS} = 10\ \text{V}, I_D = 0.5\ \text{A}$	350	170		170		mS
Common Source Output Conductance ^b	g_{os}	$V_{DS} = 10\ \text{V}, I_D = 0.1\ \text{A}$	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^c								
Turn-On Time	t_{ON}	$V_{DD} = 25\ \text{V}, R_L = 23\ \Omega$ $I_D \cong 1\ \text{A}, V_{GEN} = 10\ \text{V}$ $R_G = 25\ \Omega$	6		10		10	ns
Turn-Off Time	t_{OFF}		8		10		10	

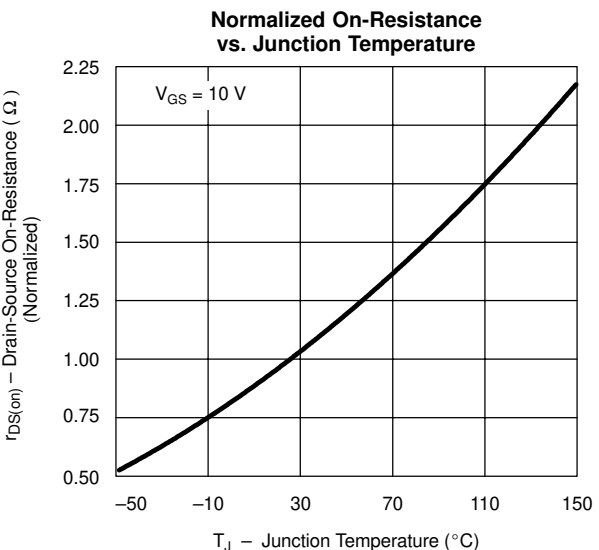
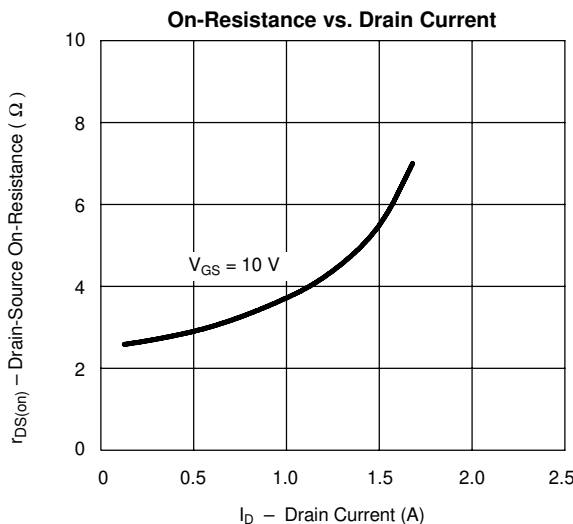
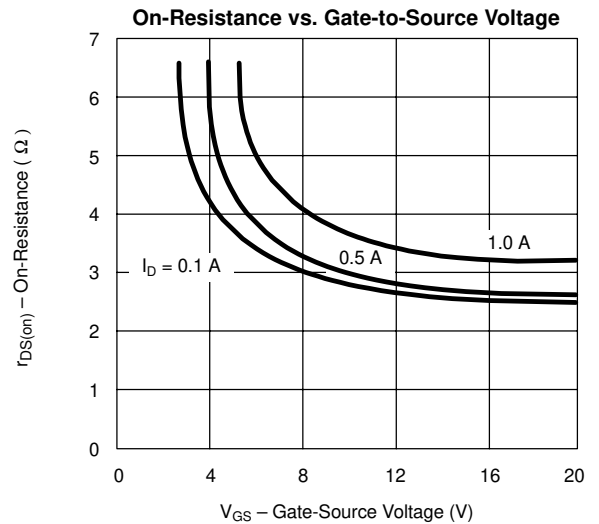
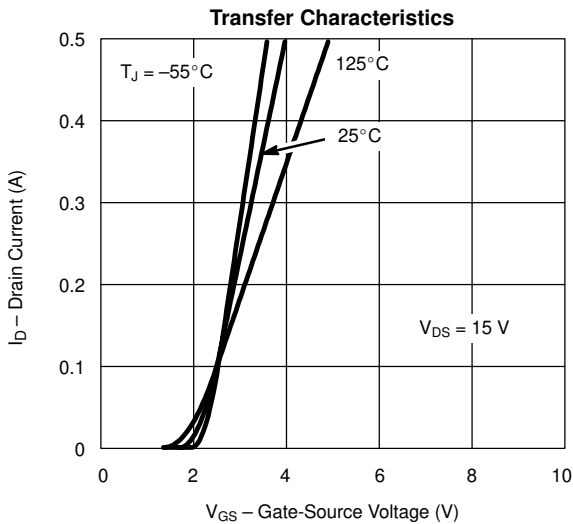
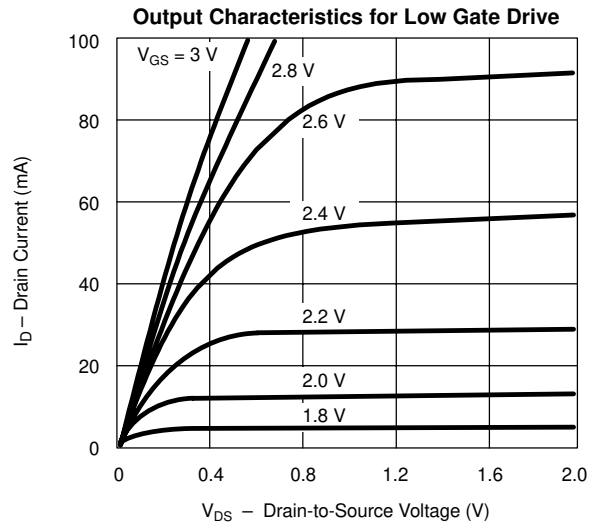
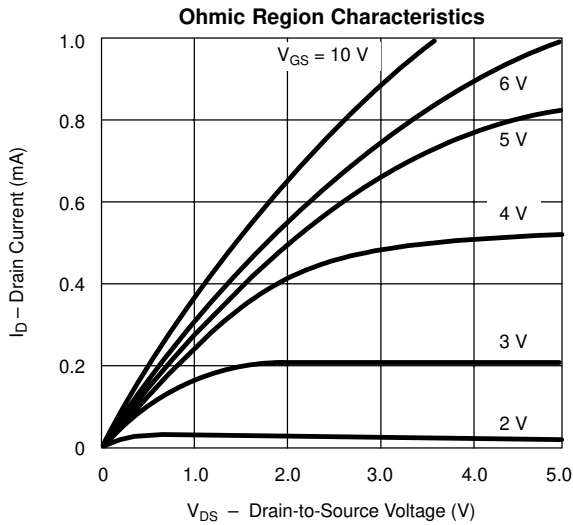
Notes

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

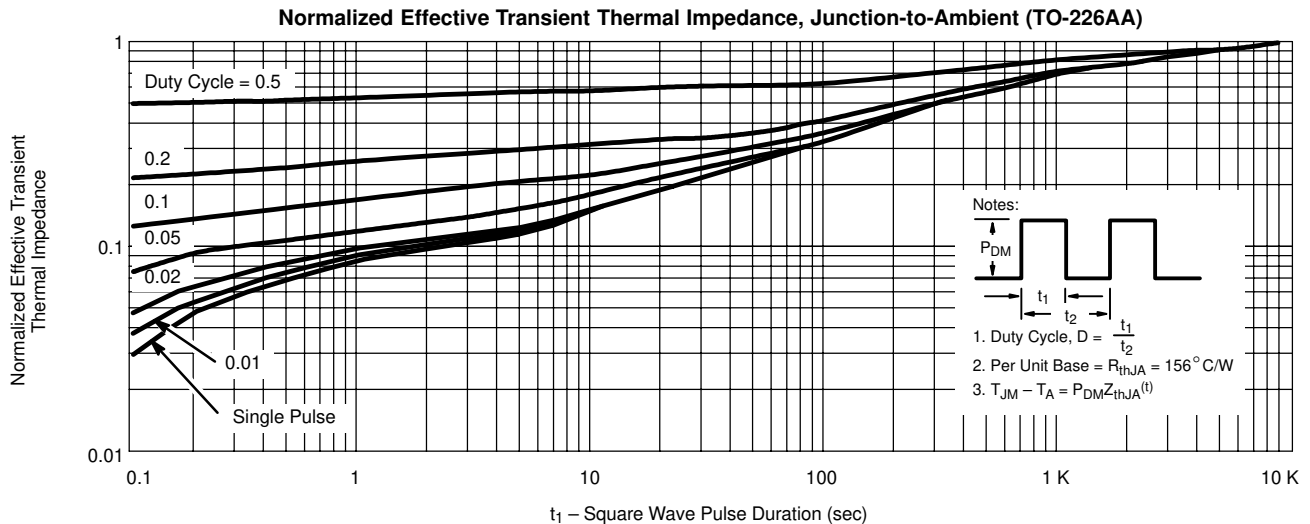
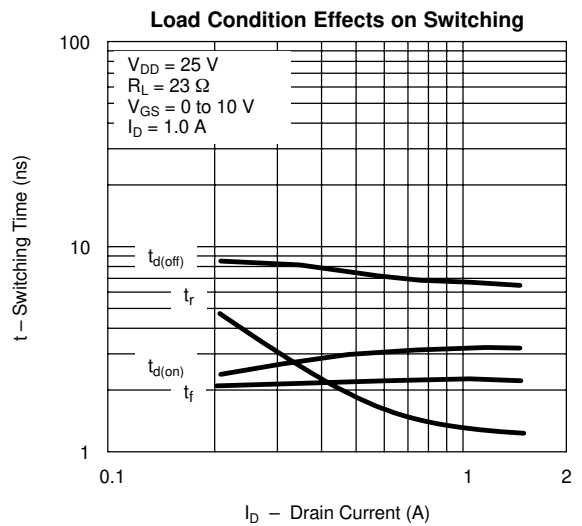
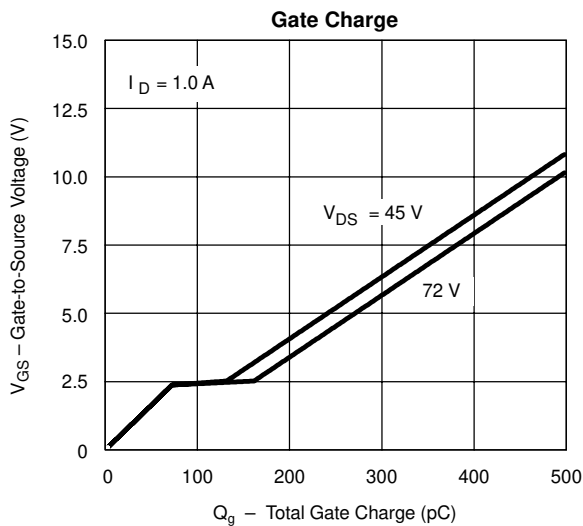
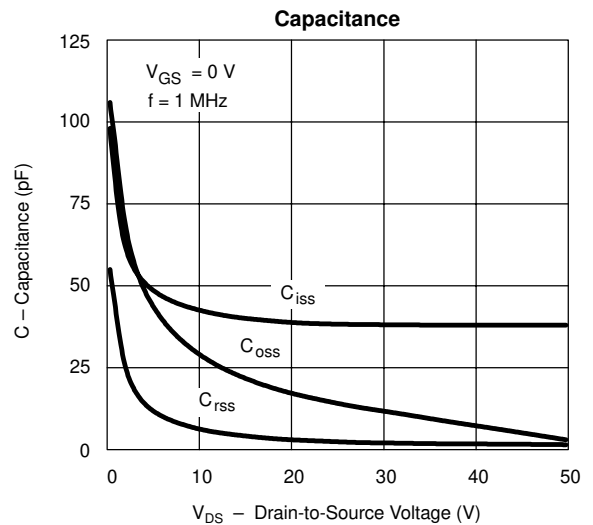
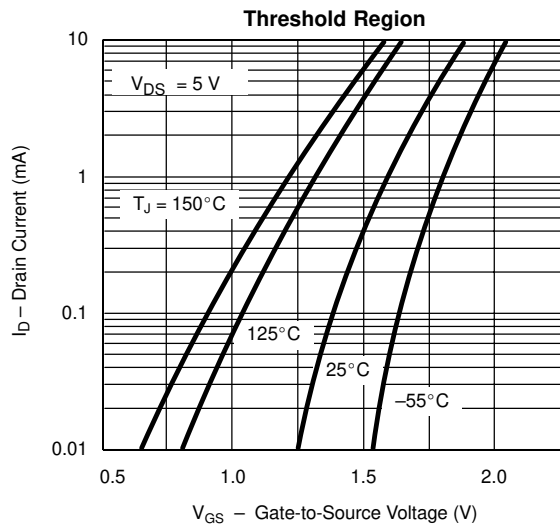
VNDQ09



TYPICAL CHARACTERISTICS (T_A = 25°C UNLESS OTHERWISE NOTED)



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





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