



Quad N-Channel 30-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)
VQ1001J	30	1 @ $V_{GS} = 12$ V	0.8 to 2.5	0.83
VQ1001P		1 @ $V_{GS} = 12$ V	0.8 to 2.5	0.53

FEATURES

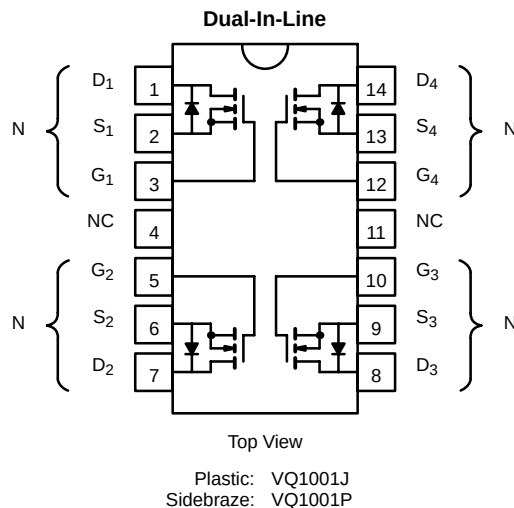
- Low On-Resistance: 0.85 Ω
- Low Threshold: 1.4 V
- Low Input Capacitance: 38 pF
- Fast Switching Speed: 9 ns
- Low Input and Output Leakage

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



Device Marking
Top View

VQ1001J
"S" flxxxy

VQ1001P
"S" flxxxy

"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	Single	Total Quad
Drain-Source Voltage		V_{DS}	30	
Gate-Source Voltage	VQ1001J	V_{GS}	± 30	
	VQ1001P		± 20	
Continuous Drain Current ($T_J = 150^\circ\text{C}$)	$T_A = 25^\circ\text{C}$	I_D	0.83	
	$T_A = 100^\circ\text{C}$		0.53	
Pulsed Drain Current ^a		I_{DM}	3	
Power Dissipation (Single)	$T_A = 25^\circ\text{C}$	P_D	1.3	2
	$T_A = 100^\circ\text{C}$		0.52	0.8
Thermal Resistance, Junction-to-Ambient (Single)		R_{thJA}	96	62.5
Operating Junction and Storage Temperature Range		T_J, T_{stg}	-55 to 150	

Notes

a. Pulse width limited by maximum junction temperature.

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

Parameter	Symbol	Test Conditions	Limits			Unit
			Min	Typ ^a	Max	
Static						
Drain-Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} = 0 V, I _D = 10 μA	30	45		V
Gate-Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 1 mA	0.8	1.5	2.5	
Gate-Body Leakage	I _{GSS}	V _{DS} = 0 V, V _{GS} = ±16 V			±100	nA
		T _J = 125°C			±500	
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 30 V, V _{GS} = 0 V			10	μA
		V _{DS} = 24 V, V _{GS} = 0 V, T _J = 125°C			500	
On-State Drain Current ^b	I _{D(on)}	V _{DS} = 10 V, V _{GS} = 12 V	2	3.5		A
Drain-Source On-Resistance ^b	r _{DS(on)}	V _{GS} = 5 V, I _D = 0.2 A		1.2	1.75	Ω
		V _{GS} = 12 V, I _D = 1 A		0.8	1	
		T _J = 125°C		1.5	2	
Forward Transconductance ^b	g _{fs}	V _{DS} = 10 V, I _D = 0.5 A	200	500		mS
Dynamic						
Input Capacitance	C _{iss}	V _{DS} = 15 V, V _{GS} = 0 V, f = 1 MHz		38	110	pF
Output Capacitance	C _{oss}			33	110	
Reverse Transfer Capacitance	C _{rss}			8	35	
Switching ^c						
Turn-On Time	t _{ON}	V _{DD} = 15 V, R _L = 23 Ω, I _D ≅ 0.6 A V _{GEN} = 10 V, R _G = 25 Ω		9	30	ns
Turn-Off Time	t _{OFF}			14	30	

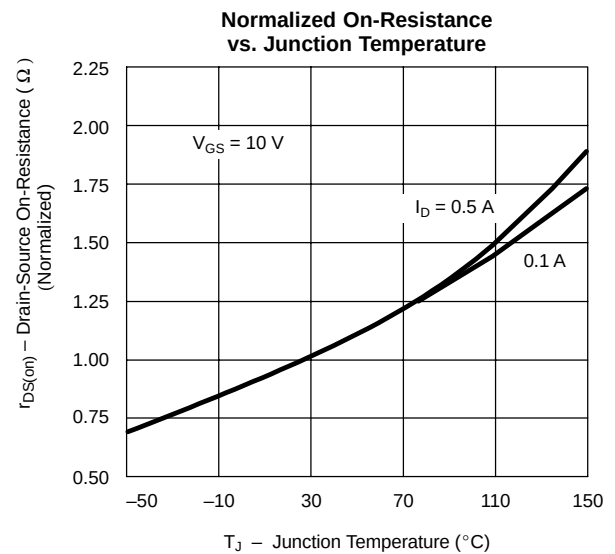
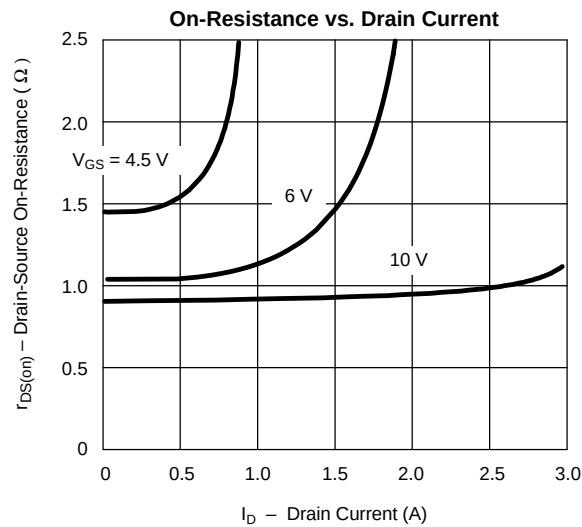
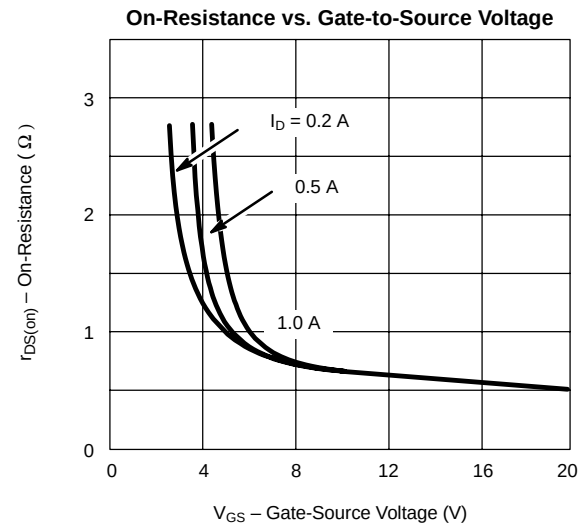
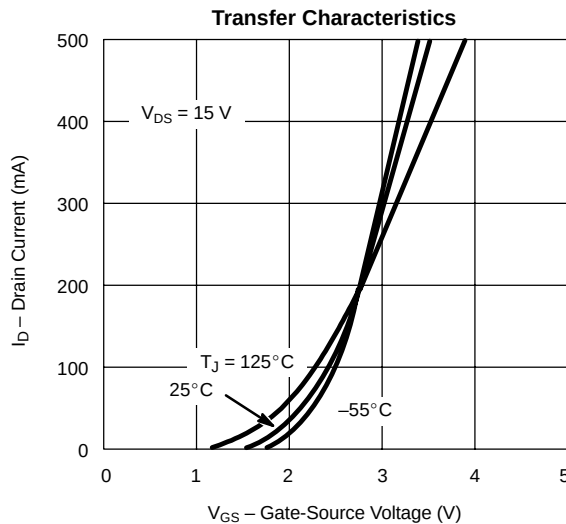
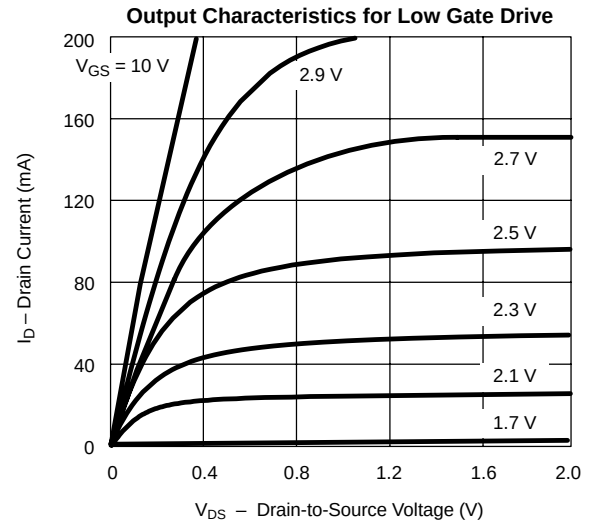
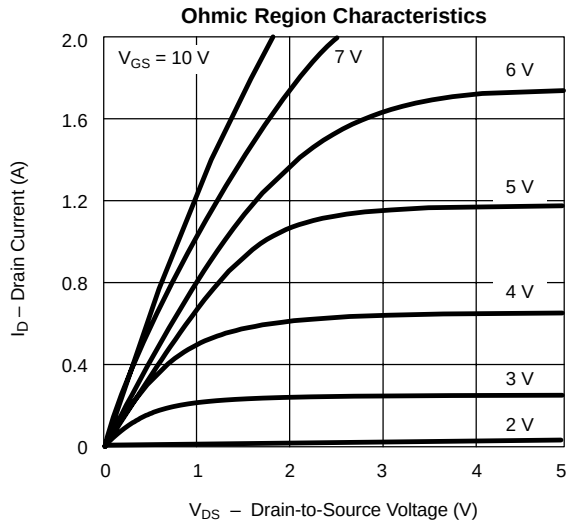
Notes

- 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.

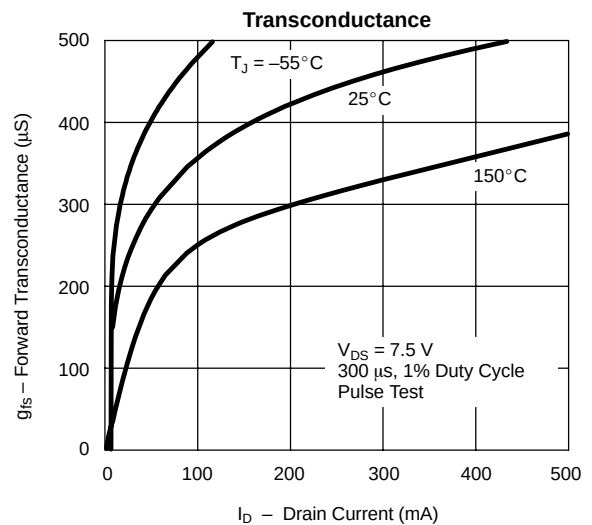
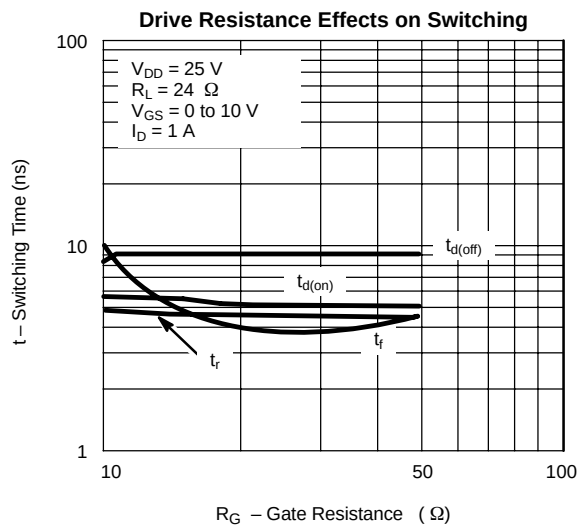
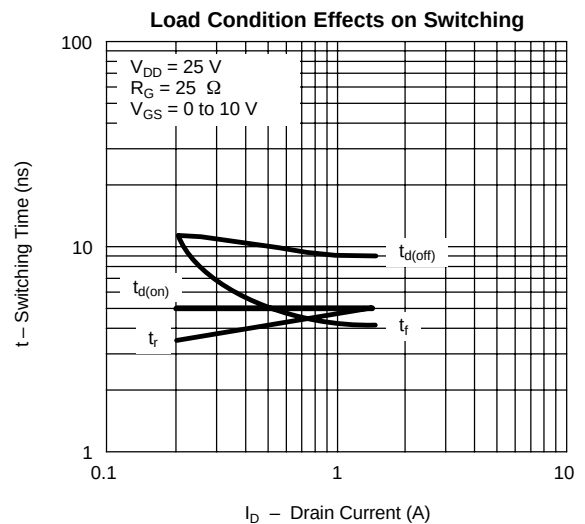
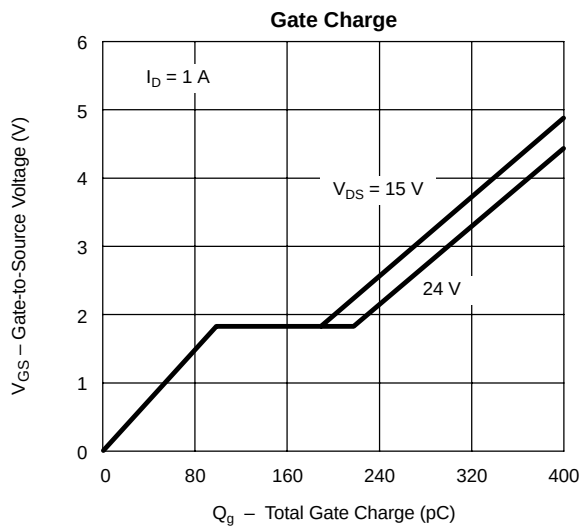
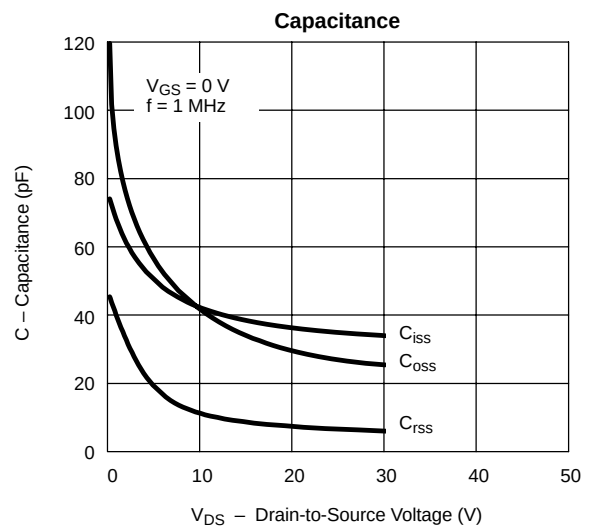
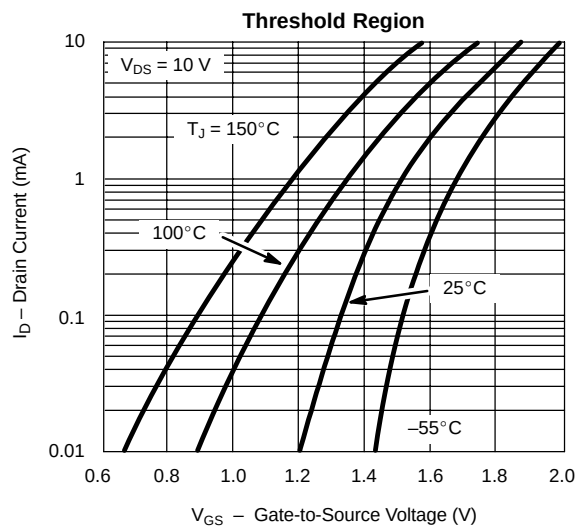
VNDQ03



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



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