



VQ1001J/P
Vishay Siliconix

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

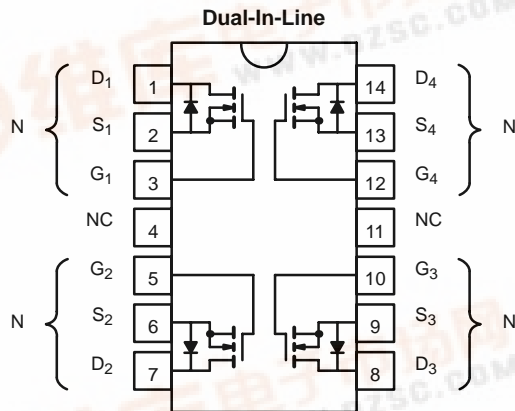
- Low On-Resistance: 0.85 Ω
- Low Threshold: 1.4 V
- Low Input Capacitance: 38 pF
- Fast Switching Speed: 9 ns
- Low Input and Output Leakage

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



Top View
Plastic: VQ1001J
Sidebraze: VQ1001P

Device Marking
Top View

VQ1001J
"S" flbxxy

VQ1001P
"S" flbxxy

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

| ABSOLUTE MAXIMUM RATINGS (T _A = 25 °C UNLESS OTHERWISE NOTED) | | | | |
|--|-----------------------------------|-------------------------|------------|------|
| Parameter | Symbol | Single | Total Quad | Unit |
| Drain-Source Voltage | V _{DS} | 30 | | V |
| Gate-Source Voltage | V _{GS} | ±30 | | |
| | | | ±20 | |
| Continuous Drain Current (T _J = 150 °C) | I _D | T _A = 25 °C | 0.83 | A |
| | | T _A = 100 °C | 0.53 | |
| Pulsed Drain Current ^a | I _{DM} | 3 | | |
| Power Dissipation (Single) | P _D | T _A = 25 °C | 1.3 | 2 |
| | | T _A = 100 °C | 0.52 | 0.8 |
| Thermal Resistance, Junction-to-Ambient (Single) | R _{thJA} | 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 °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 T _J = 125 °C | | | ± 100 | nA |
| | | | | | ± 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 | |

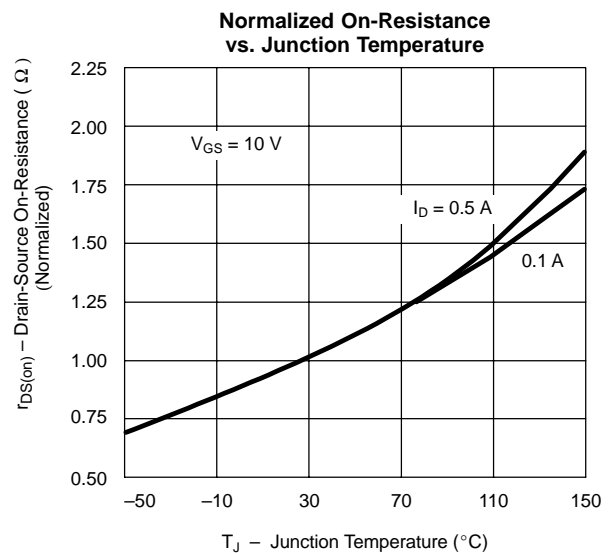
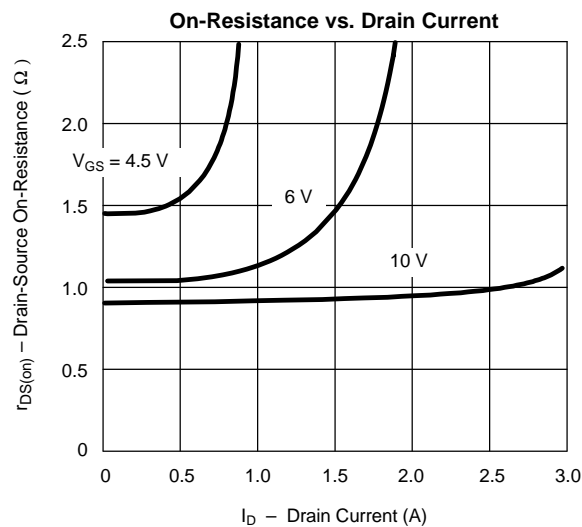
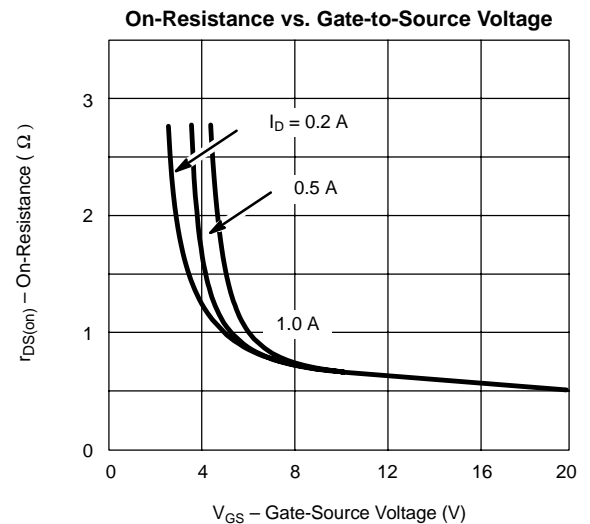
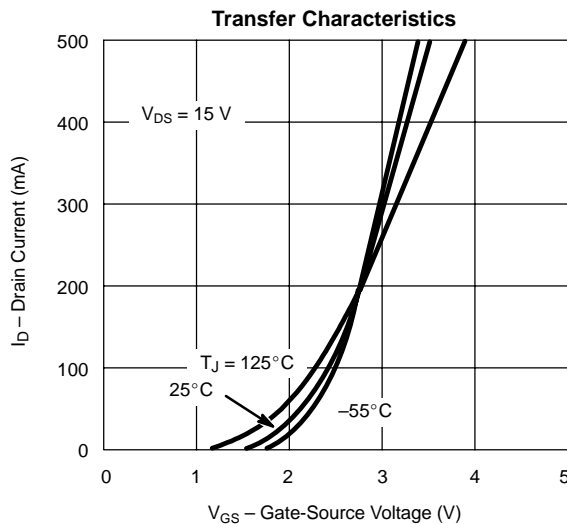
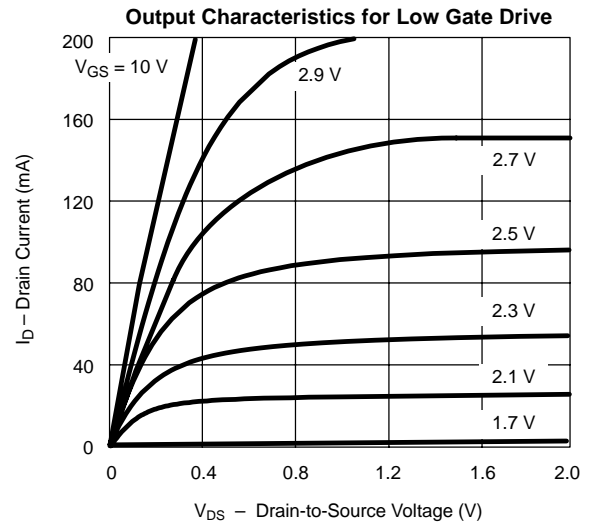
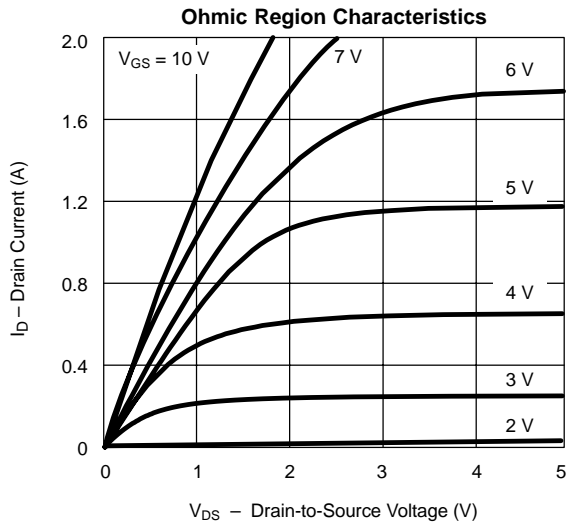
Notes

- a. For DESIGN AID ONLY, not subject to production testing.
- b. Pulse test: PW ≤ 300 μs duty cycle ≤ 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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