

Features

- Epoxy Meets UL 94 V-0 Flammability Rating
- Moisture Sensitivity Level 1
- Halogen Free. "Green" Device (Note 1)
- Lead Free Finish/RoHS Compliant ("P" Suffix Designates RoHS Compliant. See Ordering Information)

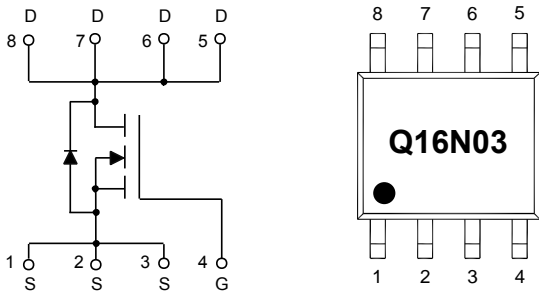
Maximum Ratings

- Operating Junction Temperature Range: -55°C to +150°C
- Storage Temperature Range: -55°C to +150°C
- Thermal Resistance: 50°C/W Junction to Case (Note 3)

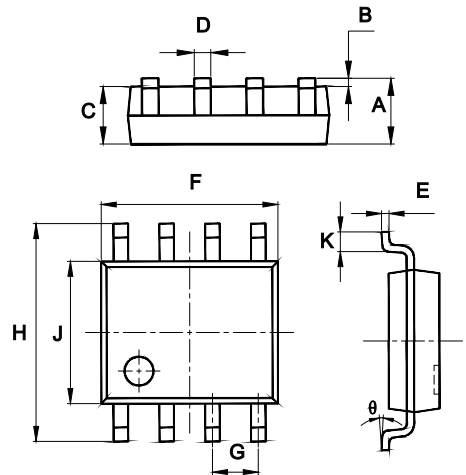
| Parameter | Symbol | Rating | Unit |
|---|----------|--------|------|
| Drain -Source Voltage | V_{DS} | 30 | V |
| Gate -Source Voltage | V_{GS} | ±20 | V |
| Drain Current-Continuous | I_D | 16 | A |
| Drain Current-Continuous($T_C=100^\circ\text{C}$) | I_D | 6 | A |
| Pulsed Drain Current (Note 2) | I_{DM} | 50 | A |
| Maximum Power Dissipation | P_D | 2.5 | W |

**N-Channel
Enhancement Mode
Field Effect
Transistor**

Internal Structure and Marking Code

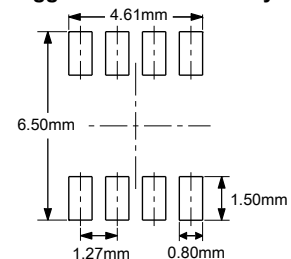


SOP-8



| DIM | DIMENSIONS | | | | NOTE |
|-----|------------|-------|-------|------|------|
| | INCHES | | MM | | |
| | MIN | MAX | MIN | MAX | |
| A | 0.053 | 0.069 | 1.35 | 1.75 | |
| B | 0.004 | 0.010 | 0.10 | 0.25 | |
| C | 0.053 | 0.061 | 1.35 | 1.55 | |
| D | 0.013 | 0.020 | 0.33 | 0.51 | |
| E | 0.007 | 0.010 | 0.17 | 0.25 | |
| F | 0.185 | 0.200 | 4.70 | 5.10 | |
| G | 0.050 | | 1.270 | | TYP. |
| H | 0.228 | 0.244 | 5.80 | 6.20 | |
| J | 0.150 | 0.157 | 3.80 | 4.00 | |
| K | 0.016 | 0.050 | 0.40 | 1.27 | |
| θ | 0° | 8° | 0° | 8° | |

Suggested Solder Pad Layout



ELECTRICAL CHARACTERISTICS (Ta=25°C unless otherwise specified)

| Parameter | Symbol | Test conditions | Min | Typ | Max | Unit |
|--|---------------|---|-----|------|-----------|------------|
| Static Characteristics | | | | | | |
| Drain-Source Breakdown Voltage | $V_{(BR)DSS}$ | $V_{GS}=0V, I_D=250\mu A$ | 30 | 33 | | V |
| Gate-Threshold Voltage ^(Note 4) | $V_{GS(th)}$ | $V_{DS}=V_{GS}, I_D=250\mu A$ | 1.0 | 1.6 | 3.0 | V |
| Gate-Body Leakage Current | I_{GSS} | $V_{GS}=\pm 20V, V_{DS}=0V$ | | | ± 100 | nA |
| Zero Gate Voltage Drain Current | I_{DSS} | $V_{DS}=30V, V_{GS}=0V$ | | | 1 | μA |
| Drain-Source On-Resistance ^(Note 4) | $R_{DS(on)}$ | $V_{GS}=10V, I_D=10A$ | | 8.0 | 12 | m Ω |
| | | $V_{GS}=4.5V, I_D=5.0A$ | | 11 | 16 | |
| Forward Transconductance | g_{FS} | $V_{DS}=5V, I_D=10A$ | 15 | | | S |
| Dynamic Characteristics | | | | | | |
| Input Capacitance | C_{iss} | $V_{DS}=15V, V_{GS}=0V, f=1MHz$ | | 1550 | | pF |
| Output Capacitance | C_{oss} | | | 300 | | |
| Reverse Transfer Capacitance | C_{rss} | | | 180 | | |
| Switching Characteristics | | | | | | |
| Turn-On Delay Time | $t_{d(on)}$ | $V_{DD}=25V, V_{GS}=10V, I_D=1A, R_{GEN}=6\Omega$ | | 30 | | ns |
| Turn-On Rise Time | t_r | | | 20 | | |
| Turn-Off Delay Time | $t_{d(off)}$ | | | 100 | | |
| Turn-Off Fall Time | t_f | | | 80 | | |
| Total Gate Charge | Q_g | $V_{DS}=15V, I_D=10A, V_{GS}=5.0V$ | | 13 | | nC |
| Gate-Source Charge | Q_{gs} | | | 5.5 | | |
| Gate-Drain Charge | Q_{gd} | | | 3.5 | | |
| Source-Drain Diode characteristics | | | | | | |
| Drain-Source Diode Forward Current ^(Note 3) | I_S | | | | 16 | A |
| Diode Forward voltage ^(Note 4) | V_{SD} | $V_{GS}=0V, I_S=10A$ | | | 1.2 | V |

Notes:

1. Halogen free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
2. Repetitive Rating: Pulse width limited by maximum junction temperature.
3. Surface Mounted on FR4 Board, $t \leq 10$ sec.
4. Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$.

Curve Characteristics

Fig. 1 - Output Characteristics

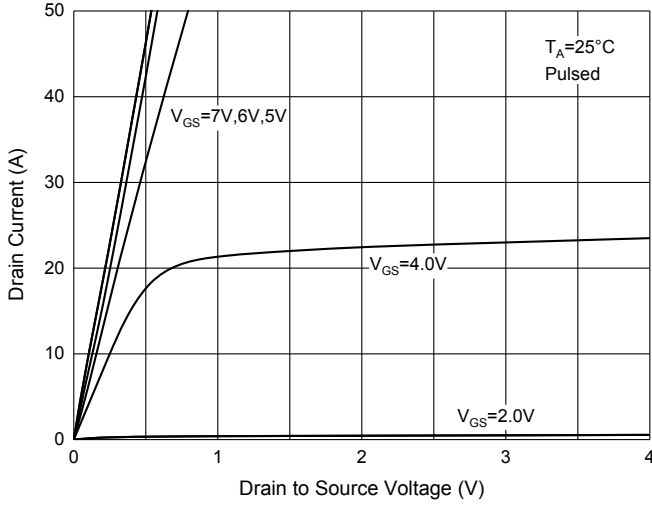


Fig. 2 - Transfer Characteristics

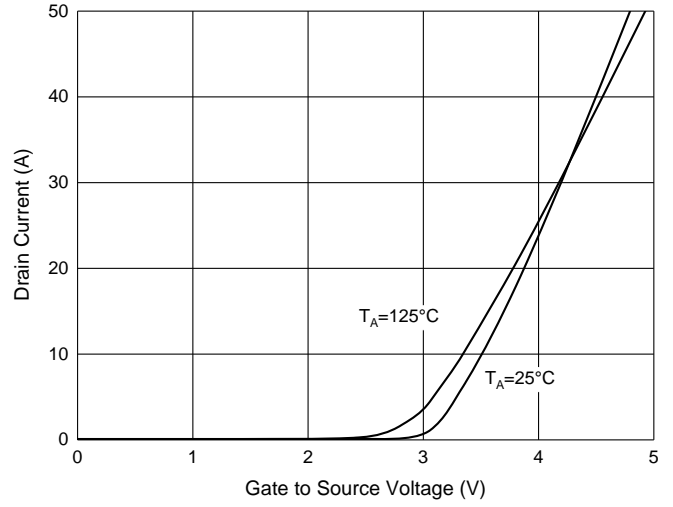


Fig. 3 - $R_{DS(ON)} - I_D$

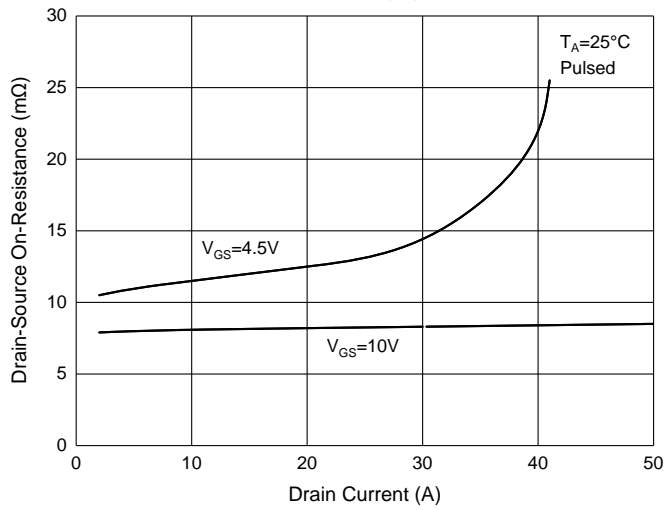


Fig. 4 - $I_S - V_{SD}$

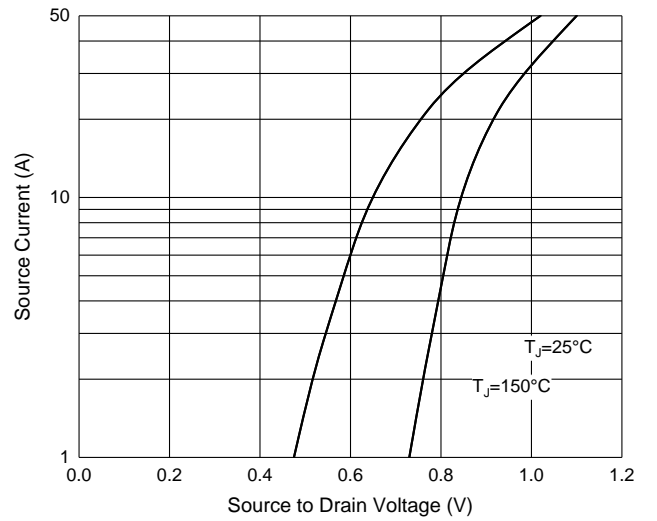


Fig. 5 - Threshold Voltage

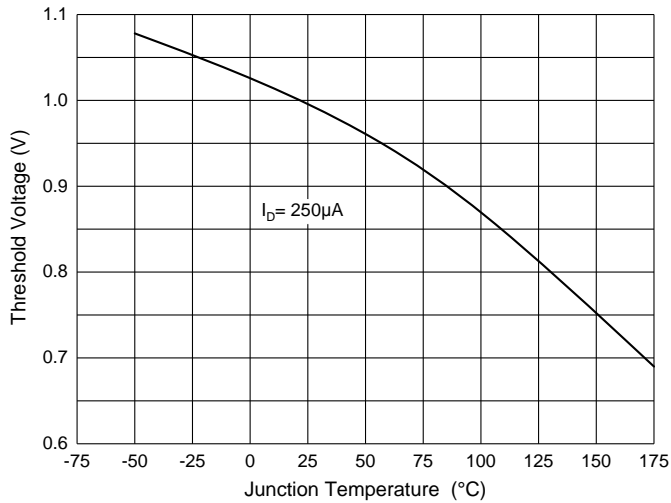
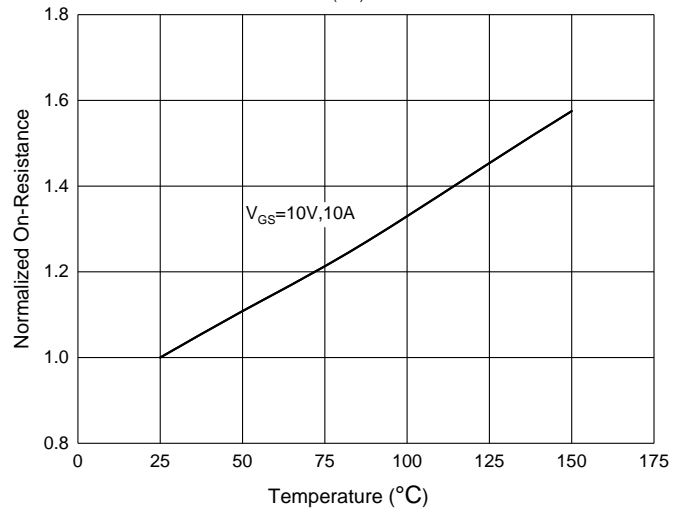


Fig. 6 - $R_{DS(ON)} - \text{Temperature}$



Ordering Information

| Device | Packing |
|----------------|----------------------|
| Part Number-TP | Tape&Reel:4Kpcs/Reel |

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