



ZXM66P02N8

20V P-CHANNEL ENHANCEMENT MODE MOSFET

Product Summary

| $V_{(BR)DSS}$ | $R_{DS(on)}$ | I_D |
|---------------|--------------|-------|
| -20V | 0.025Ω | -8.0A |

Description and Applications

This high density MOSFET utilizes a unique structure that combines the benefits of a low on-resistance with fast switching speed. This makes it ideal for high efficiency, low voltage power management applications. Compared to trenchFET technology, this MOSFET structure has an intrinsically higher pulse current handling capability in linear mode.

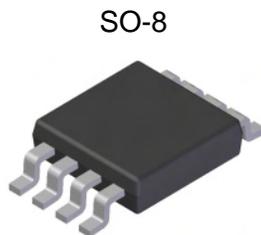
- Inrush protection circuits
- DC-DC Converters
- Power management functions
- Disconnect switches
- Motor control

Features and Benefits

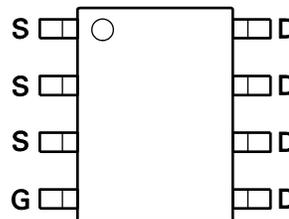
- High pulse current handling in linear mode
- Low on-resistance
- Fast switching speed
- Low gate drive
- Low profile SOIC package

Mechanical Data

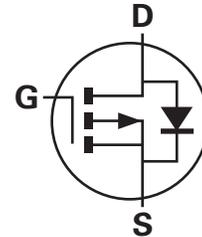
- Case: SO-8
- Case Material: Molded Plastic. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals Connections: See diagram below
- Terminals: Finish - Matte Tin annealed over Copper lead frame. Solderable per MIL-STD-202, Method 208
- Weight: 0.074 grams (approximate)



Top View



Top View



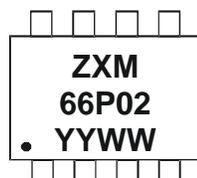
Equivalent Circuit

Ordering Information (Note 1)

| Product | Marking | Reel size (inches) | Tape width (mm) | Quantity per reel |
|--------------|-----------|--------------------|-----------------|-------------------|
| ZXM66P02N8TA | See below | 7 | 12 | 500 |

Notes: 1. For packaging details, go to our website.

Marking Information



ZXM = Product Type Marking Code, Line 1
 66P02 = Product Type Marking Code, Line 2
 YYWW = Date Code Marking
 YY = Year (ex: 09 = 2009)
 WW = Week (01-52)

Maximum Ratings @T_A = 25°C unless otherwise specified

| Characteristic | | Symbol | Value | Unit | |
|--|------------------------|--------------------------------|-----------------|-------|---|
| Drain-Source voltage | | V _{DSS} | -20 | V | |
| Gate-Source voltage | | V _{GS} | ±12 | V | |
| Continuous Drain current | V _{GS} = 4.5V | (Note 3) | -8.0 | A | |
| | | T _A = 70°C (Note 3) | -6.5 | | |
| | | (Note 2) | -6.4 | | |
| Pulsed Drain current | | (Note 4) | I _{DM} | -28 | A |
| Continuous Source current (Body diode) | | (Note 3) | I _S | -4.15 | A |
| Pulsed Source current (Body diode) | | (Note 4) | I _{SM} | -28 | A |

Thermal Characteristics @T_A = 25°C unless otherwise specified

| Characteristic | | Symbol | Value | Unit |
|---|----------|-----------------------------------|------------|------|
| Power dissipation Linear derating factor | (Note 2) | P _D | 1.56 | W |
| | | | 12.5 | |
| | | | 2.5 | |
| Thermal Resistance, Junction to Ambient | (Note 3) | R _{θJA} | 20 | °C/W |
| | (Note 2) | | 80 | |
| Operating and storage temperature range | (Note 3) | T _J , T _{STG} | 50 | °C |
| | (Note 2) | | -55 to 150 | |

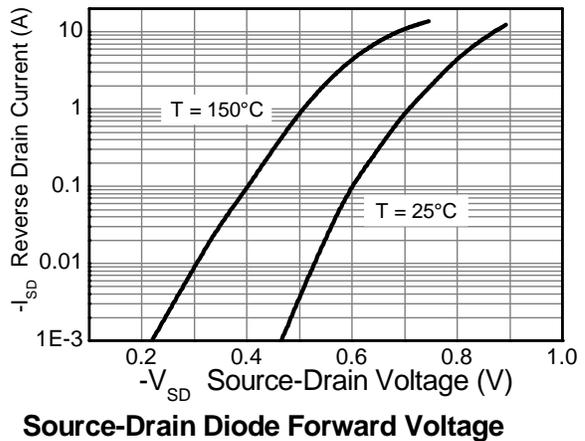
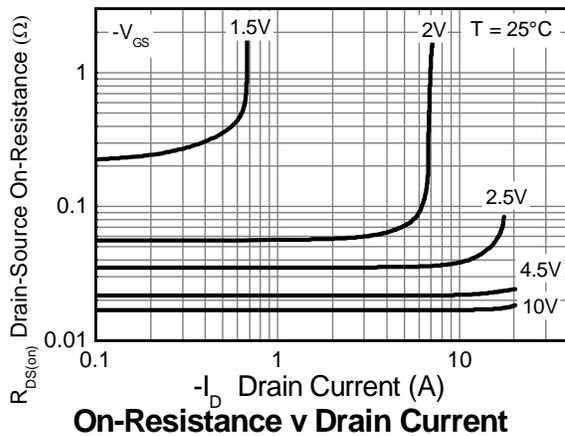
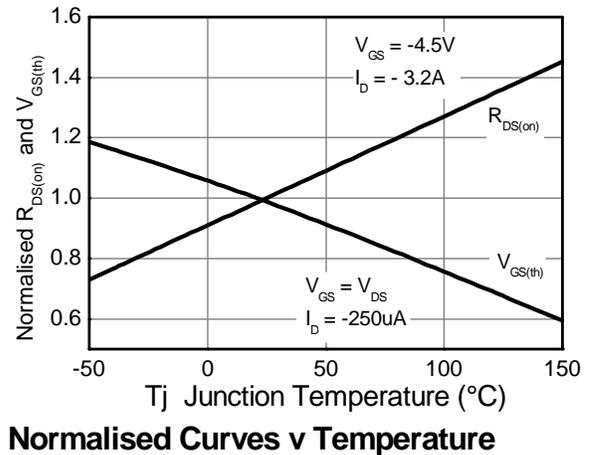
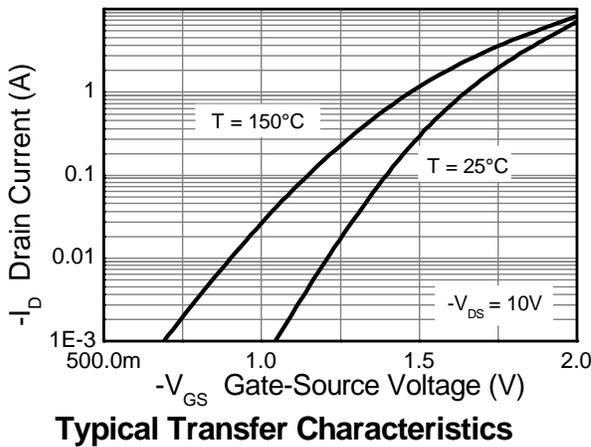
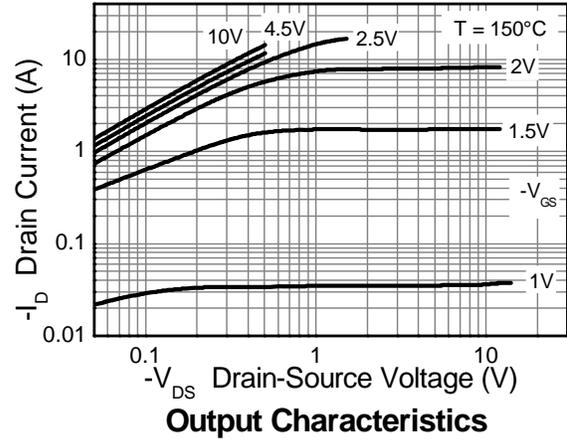
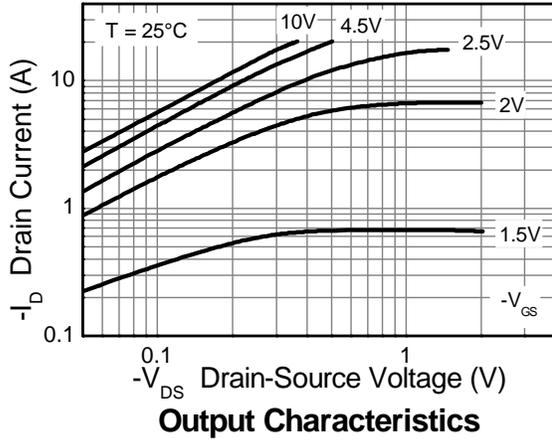
- Notes:
- For a device surface mounted on 25mm x 25mm FR4 PCB with high coverage of single sided 1oz copper, in still air conditions.
 - Same as note (3), except the device is measured at t ≤ 10 sec.
 - Repetitive rating 25mm x 25mm FR4 PCB, D = 0.05, pulse width 10μs – pulse width limited by maximum junction temperature.

Electrical Characteristics @T_A = 25°C unless otherwise specified

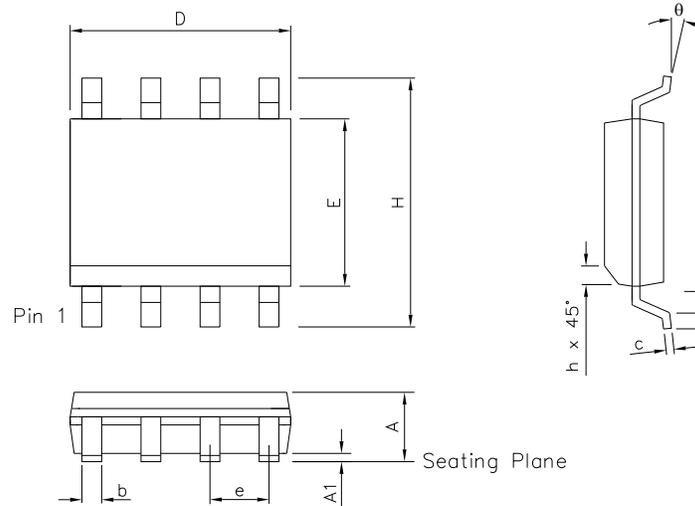
| Characteristic | Symbol | Min | Typ | Max | Unit | Test Condition |
|--|---------------------|------|-------|-------|------|--|
| OFF CHARACTERISTICS | | | | | | |
| Drain-Source Breakdown Voltage | BV _{DSS} | -20 | — | — | V | I _D = -250μA, V _{GS} = 0V |
| Zero Gate Voltage Drain Current | I _{DSS} | — | — | -1 | μA | V _{DS} = -16V, V _{GS} = 0V |
| Gate-Source Leakage | I _{GSS} | — | — | -100 | nA | V _{GS} = ±12V, V _{DS} = 0V |
| ON CHARACTERISTICS | | | | | | |
| Gate Threshold Voltage | V _{GS(th)} | -0.7 | — | — | V | I _D = -250μA, V _{DS} = V _{GS} |
| Static Drain-Source On-Resistance (Note 5) | R _{DS(ON)} | — | — | 0.025 | Ω | V _{GS} = -4.5V, I _D = -3.2A |
| | | | | 0.045 | | V _{GS} = -2.5V, I _D = -2.7A |
| Forward Transconductance (Notes 5 & 6) | g _{fs} | — | 13.3 | — | S | V _{DS} = -10V, I _D = -3.2A |
| Diode Forward Voltage (Note 5) | V _{SD} | — | — | 0.95 | V | I _S = -3.2A, V _{GS} = 0V |
| Reverse recovery time (Note 6) | t _{rr} | — | 23.1 | — | ns | I _F = -3.2A, di/dt = 100A/μs |
| Reverse recovery charge (Note 6) | Q _{rr} | — | 12.2 | — | nC | |
| DYNAMIC CHARACTERISTICS (Note 6) | | | | | | |
| Input Capacitance | C _{iss} | — | 2068 | — | pF | V _{DS} = -15V, V _{GS} = 0V F = 1MHz |
| Output Capacitance | C _{oss} | — | 1038 | — | pF | |
| Reverse Transfer Capacitance | C _{rss} | — | 506 | — | pF | |
| Total Gate Charge (Note 7) | Q _g | — | 43.3 | — | nC | V _{GS} = -4.5V, V _{DS} = -10V, I _D = -3.2A |
| Gate-Source Charge (Note 7) | Q _{gs} | — | 3.5 | — | nC | |
| Gate-Drain Charge (Note 7) | Q _{gd} | — | 21.3 | — | nC | |
| Turn-On Delay Time (Note 7) | t _{D(on)} | — | 14.0 | — | ns | V _{DD} = -10V, V _{GS} = -5V I _D = -3.2A, R _G = 6.0Ω |
| Turn-On Rise Time (Note 7) | t _r | — | 44.3 | — | ns | |
| Turn-Off Delay Time (Note 7) | t _{D(off)} | — | 118.4 | — | ns | |
| Turn-Off Fall Time (Note 7) | t _f | — | 98.4 | — | ns | |

- Notes:
- Measured under pulsed conditions. Pulse width ≤ 300μs; duty cycle ≤ 2%
 - For design aid only, not subject to production testing.
 - Switching characteristics are independent of operating junction temperatures.

Typical Characteristics

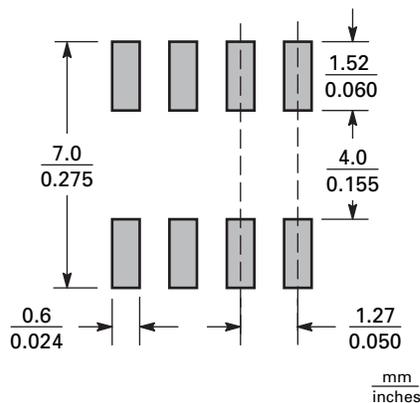


Package Outline Dimensions



| DIM | Inches | | Millimeters | | DIM | Inches | | Millimeters | |
|-----|--------|-------|-------------|------|-------|-----------|-------|-------------|------|
| | Min. | Max. | Min. | Max. | | Min. | Max. | Min. | Max. |
| A | 0.053 | 0.069 | 1.35 | 1.75 | e | 0.050 BSC | | 1.27 BSC | |
| A1 | 0.004 | 0.010 | 0.10 | 0.25 | b | 0.013 | 0.020 | 0.33 | 0.51 |
| D | 0.189 | 0.197 | 4.80 | 5.00 | c | 0.008 | 0.010 | 0.19 | 0.25 |
| H | 0.228 | 0.244 | 5.80 | 6.20 | theta | 0° | 8° | 0° | 8° |
| E | 0.150 | 0.157 | 3.80 | 4.00 | h | 0.010 | 0.020 | 0.25 | 0.50 |
| L | 0.016 | 0.050 | 0.40 | 1.27 | - | - | - | - | - |

Suggested Pad Layout



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