



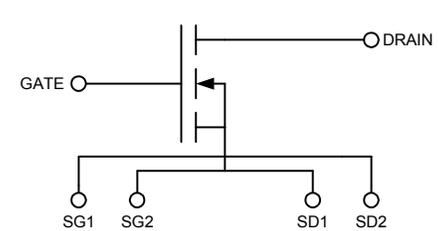
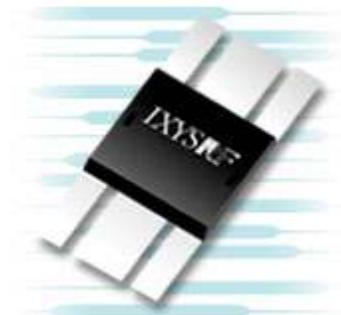
IXZ318N50 Z-MOS RF Power MOSFET

N-Channel Enhancement Mode Switch Mode RF MOSFET
 Low Capacitance Z-MOS™ MOSFET Process
 Optimized for RF Operation
 Ideal for Class C, D, & E Applications

V_{DSS} = **500 V**
I_{D25} = **19 A**
R_{DS(on)} ≤ **0.34 Ω**
P_{DC} = **880 W**

| Symbol | Test Conditions | Maximum Ratings | |
|--------------------|---|-----------------|------|
| V _{DSS} | T _J = 25°C to 150°C | 500 | V |
| V _{DGR} | T _J = 25°C to 150°C; R _{GS} = 1 MΩ | 500 | V |
| V _{GS} | Continuous | ±20 | V |
| V _{GSM} | Transient | ±30 | V |
| I _{D25} | T _c = 25°C | 19 | A |
| I _{DM} | T _c = 25°C, pulse width limited by T _{JM} | 95 | A |
| I _{AR} | T _c = 25°C | 19 | A |
| E _{AR} | T _c = 25°C | TBD | mJ |
| dv/dt | I _S ≤ I _{DM} , di/dt ≤ 100A/μs, V _{DD} ≤ V _{DSS} , T _J ≤ 150°C, R _G = 0.2Ω | 5 | V/ns |
| | I _S = 0 | >200 | V/ns |
| P _{DC} | | 880 | W |
| P _{DHS} | T _c = 25°C | 440 | W |
| P _{DAMB} | T _{amb} = 25°C | 3.0 | W |
| R _{thJC} | | 0.17 | C/W |
| R _{thJHS} | | 0.34 | C/W |

| Symbol | Test Conditions | Characteristic Values | | |
|---------------------|--|--|------|----------|
| | | (T _J = 25°C unless otherwise specified) | | |
| | | min. | typ. | max. |
| V _{DSS} | V _{GS} = 0 V, I _D = 4 ma | 500 | | |
| V _{GS(th)} | V _{DS} = V _{GS} , I _D = 250μA | 3.5 | 4.9 | 6.5 |
| I _{GSS} | V _{GS} = ±20 V _{DC} , V _{DS} = 0 | | | ±100 |
| I _{DSS} | V _{DS} = 0.8V _{DSS} V _{GS} =0 | | | 50 1 |
| | | | | μA mA |
| R _{DS(on)} | V _{GS} = 20 V, I _D = 0.5I _{D25} Pulse test, t ≤ 300μs, duty cycle d ≤ 2% | | .32 | .34 |
| | | | | Ω |
| g _{fs} | V _{DS} = 50 V, I _D = 0.5I _{D25} , pulse test | 5.0 | 5.4 | 6.0 |
| | | | | S |
| T _J | | -55 | | +175 |
| | | | | °C |
| T _{JM} | | | 175 | |
| | | | | °C |
| T _{stg} | | -55 | | + 175 |
| | | | | °C |
| T _L | 1.6mm(0.063 in) from case for 10 s | | 300 | |
| | | | | °C |
| Weight | | | 3.5 | |
| | | | | g |



Features

- Isolated Substrate
 - high isolation voltage (>2500V)
 - excellent thermal transfer
 - Increased temperature and power cycling capability
- IXYS advanced Z-MOS process
- Low gate charge and capacitances
 - easier to drive
 - faster switching
- Low R_{DS(on)}
- Very low insertion inductance (<2nH)
- No beryllium oxide (BeO) or other hazardous materials

Advantages

- Optimized for RF and high speed
- Easy to mount—no insulators needed
- High power density



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Z-MOS RF Power MOSFET

| Symbol | Test Conditions | Characteristic Values | | |
|---------------------|--|--|------|------|
| | | (T _J = 25°C unless otherwise specified) | | |
| | | min. | typ. | max. |
| R _G | | | | 1 Ω |
| C _{iss} | | | 1950 | pF |
| C _{oss} | V _{GS} = 0 V, V _{DS} = 0.8 V _{DSS(max)} , f = 1 MHz | | 175 | pF |
| C _{rss} | | | 17 | pF |
| C _{stray} | Back Metal to any Pin | | 33 | pF |
| T _{d(on)} | | | 4 | ns |
| T _{on} | V _{GS} = 15 V, V _{DS} = 0.8 V _{DSS} I _D = 0.5 I _{DM} | | 4 | ns |
| T _{d(off)} | R _G = 1 Ω (External) | | 5 | ns |
| T _{off} | | | 6 | ns |

| Symbol | Test Conditions | Characteristic Values | | |
|-----------------|--|--|------|-------|
| | | (T _J = 25°C unless otherwise specified) | | |
| | | min. | typ. | max. |
| I _S | V _{GS} = 0 V | | | 19 A |
| I _{SM} | Repetitive; pulse width limited by T _{JM} | | | 114 A |
| V _{SD} | I _F = I _S , V _{GS} = 0 V, Pulse test, t ≤ 300 μs, duty cycle ≤ 2% | | | 1.5 V |
| T _{rr} | | | 200 | ns |

CAUTION: Operation at or above the Maximum Ratings values may impact device reliability or cause permanent damage to the device.

Information in this document is believed to be accurate and reliable. IXYSRF reserves the right to make changes to information published in this document at any time and without notice.

For detailed device mounting and installation instructions, see the “*Device Installation & Mounting Instructions*” technical note on the IXYSRF web site at;

http://www.ixysrf.com/pdf/switch_mode/appnotes/7de_series_mosfet_installation_instructions.pdf

IXYS RF reserves the right to change limits, test conditions and dimensions.

IXYS RF MOSFETS are covered by one or more of the following U.S. patents:

| | | | | | |
|-----------|-----------|-----------|-----------|-----------|-----------|
| 4,835,592 | 4,860,072 | 4,881,106 | 4,891,686 | 4,931,844 | 5,017,508 |
| 5,034,796 | 5,049,961 | 5,063,307 | 5,187,117 | 5,237,481 | 5,486,715 |
| 5,381,025 | 5,640,045 | | | | |

Fig. 1

Typical Transfer Characteristics
 $V_{DS} = 50V, P.W. = 20\mu S$

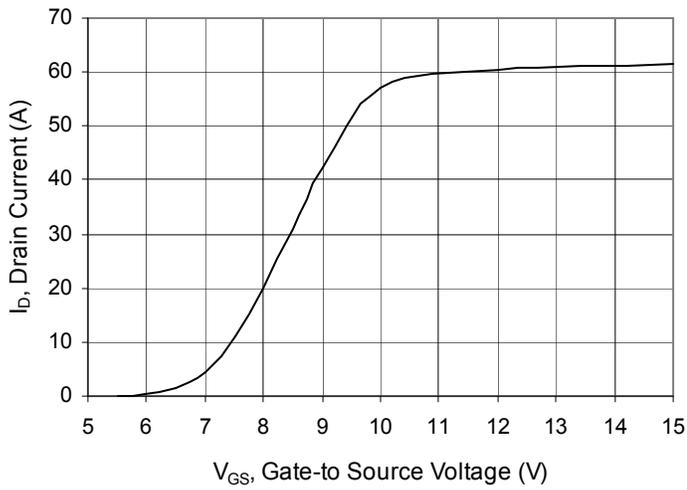


Fig. 2

Typical Output Characteristics

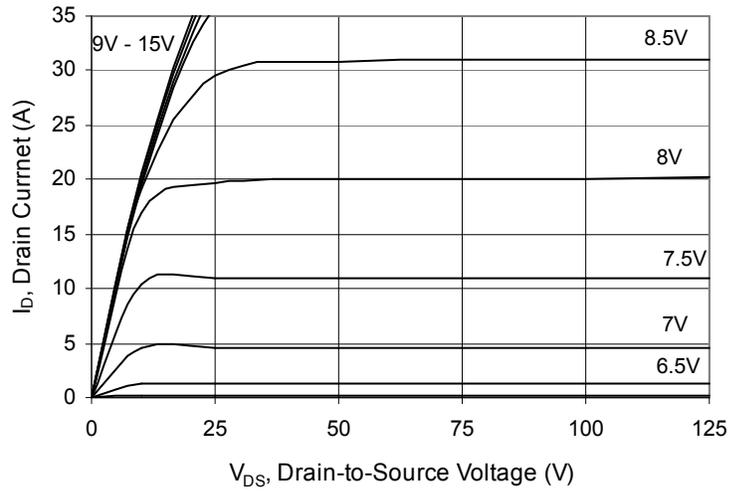


Fig. 3

Gate Charge vs. Gate-to-Source Voltage
 $V_{DS} = 250V, I_D = 9.5A, I_G = 3mA$

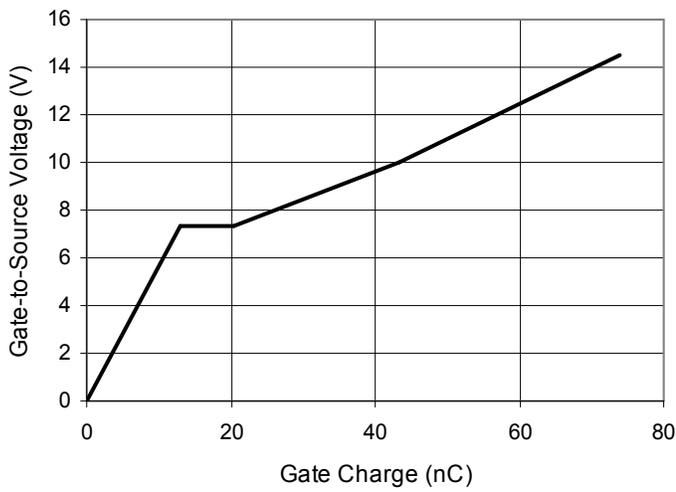


Fig. 4

Extended Typical Output Characteristics

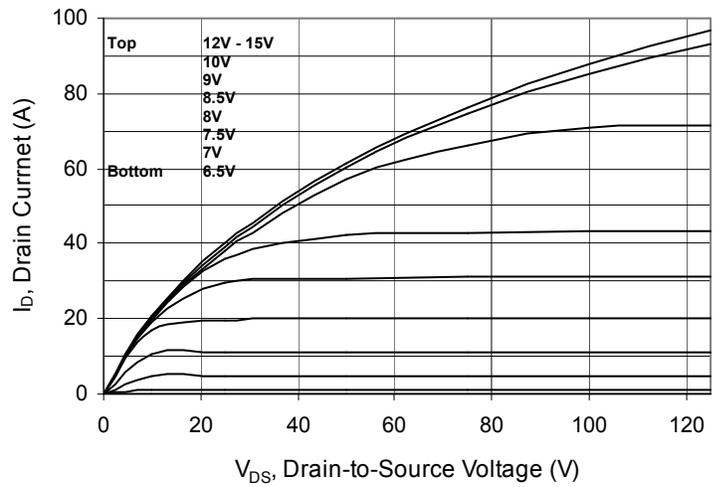


Fig. 5

V_{DS} vs. Capacitance

