

## IF4500 N-Channel JFET

### Features

- InterFET [N0450L Geometry](#)
- Low Noise: 0.9 nV/√Hz Typical
- High Gain: 70mS Typical
- Replacement for IF4510,11
- RoHS Compliant
- SMT, TH, and Bare Die Package options.

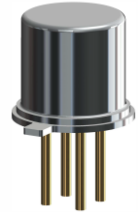
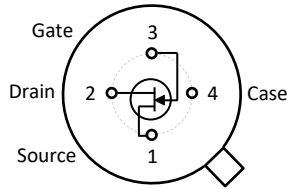
### Applications

- Low-Noise, High Gain Amplifiers

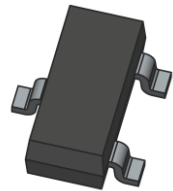
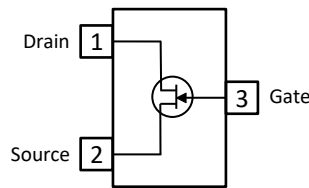
### Description

The -20V InterFET IF4500 JFET is targeted for low noise high gain amplifier designs. The IF4500 has a cutoff voltage of less than 1.5V ideal for low voltage applications. The TO-72 package is hermetically sealed and suitable for military applications.

TO-72 Bottom View



SOT23 Top View



### Product Summary

| Parameters    |                                    | IF4500 Min | Unit |
|---------------|------------------------------------|------------|------|
| $BV_{GSS}$    | Gate to Source Breakdown Voltage   | -20        | V    |
| $I_{DSS}$     | Drain to Source Saturation Current | 5          | mA   |
| $V_{GS(off)}$ | Gate to Source Cutoff Voltage      | -0.35      | V    |
| $G_{FS}$      | Forward Transconductance           | 15         | mS   |

### Ordering Information Custom Part and Binning Options Available

| Part Number | Description   | Case  | Packaging                             |
|-------------|---|-------|---------------------------------------|
| IF4500T72   | Through-Hole  | TO-72 | Bulk                                  |
| IF4500ST3   | Surface Mount   | SOT23 | Bulk                                  |
| IF4500ST3TR | 7" Tape and Reel: Max 3,000 Pieces<br>13" Tape and Reel: Max 9,000 Pieces | SOT23 | Minimum 1,000 Pieces<br>Tape and Reel |
| IF4500COT   | Chip Orientated Tray (COT Waffle Pack)                                    | COT   | 400/Waffle Pack                       |
| IF4500CFT   | Chip Face-up Tray (CFT Waffle Pack)                                       | CFT   | 400/Waffle Pack                       |



**Disclaimer:** It is the Buyers responsibility for designing, validating and testing the end application under all field use cases and extreme use conditions. Guaranteeing the application meets required standards, regulatory compliance, and all safety and security requirements is the responsibility of the Buyer. These resources are subject to change without notice.

## Electrical Characteristics

### Maximum Ratings (@ $T_A = 25^\circ\text{C}$ , Unless otherwise specified)

| Parameters   | Value      | Unit                 |
|--|------------|----------------------|
| $V_{RGS}$ Reverse Gate Source and Gate Drain Voltage | -20        | V                    |
| $I_{FG}$ Continuous Forward Gate Current             | 10         | mA                   |
| $P_D$ Continuous Device Power Dissipation            | 225        | mW                   |
| $P$ Power Derating                                   | 1.8        | mW/ $^\circ\text{C}$ |
| $T_J$ Operating Junction Temperature                 | -55 to 125 | $^\circ\text{C}$     |
| $T_{STG}$ Storage Temperature                        | -65 to 200 | $^\circ\text{C}$     |

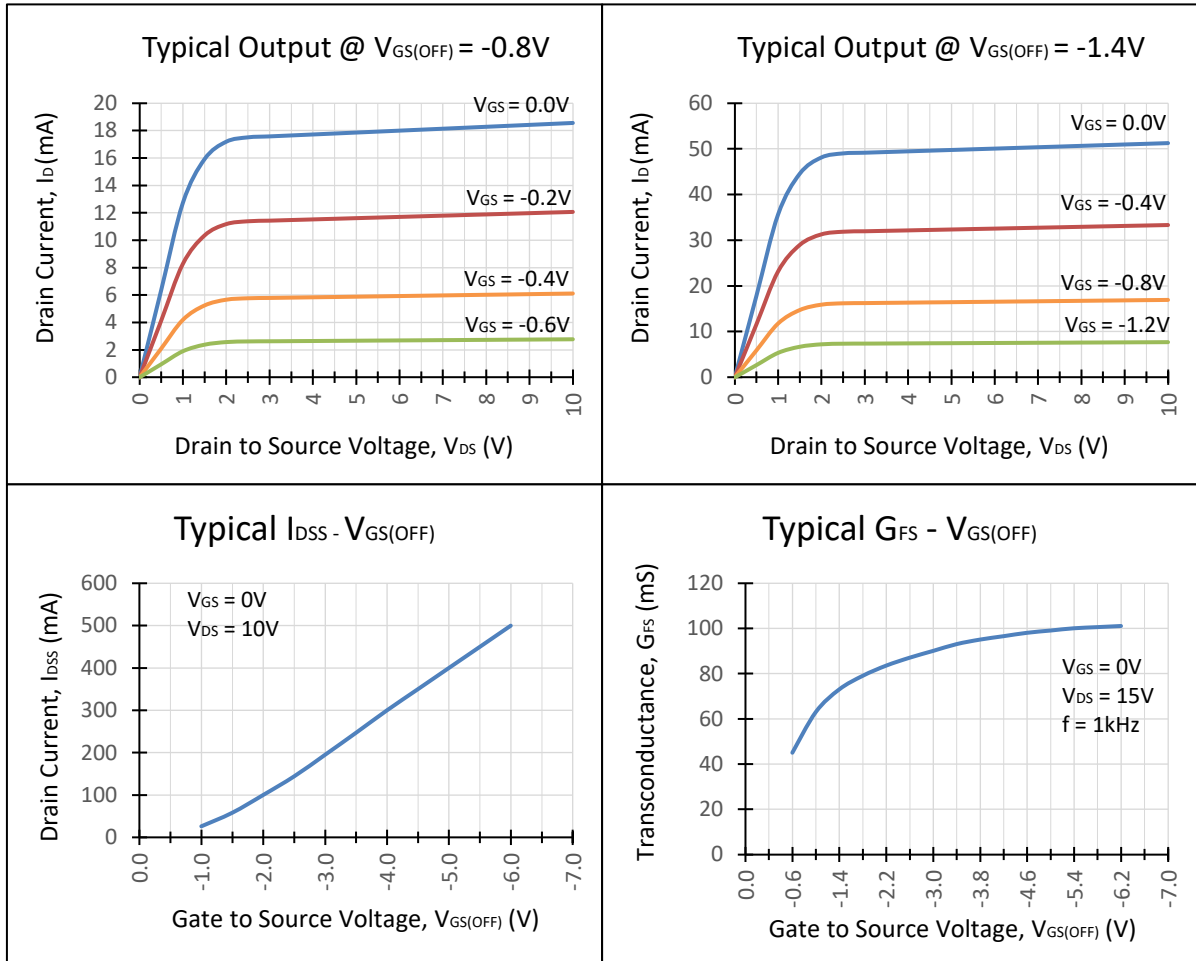
### Static Characteristics (@ $T_A = 25^\circ\text{C}$ , Unless otherwise specified)

| Parameters                                     | Conditions                              | Min   | Typ | Max  | Unit |
|--|---|-------|-----|------|------|
| $V_{(BR)GSS}$ Gate to Source Breakdown Voltage | $V_{DS} = 0V, I_G = -1\mu\text{A}$      | -20   |     |      | V    |
| $I_{GSS}$ Gate to Source Reverse Current       | $V_{GS} = -20V, V_{DS} = 0V$            |       |     | -0.1 | nA   |
| $V_{GS(OFF)}$ Gate to Source Cutoff Voltage    | $V_{DS} = 15V, I_D = 0.5n\text{A}$      | -0.35 |     | -1.5 | V    |
| $I_{DSS}$ Drain to Source Saturation Current   | $V_{GS} = 0V, V_{DS} = 15V$<br>(Pulsed) | 5     | 30  |      | mA   |

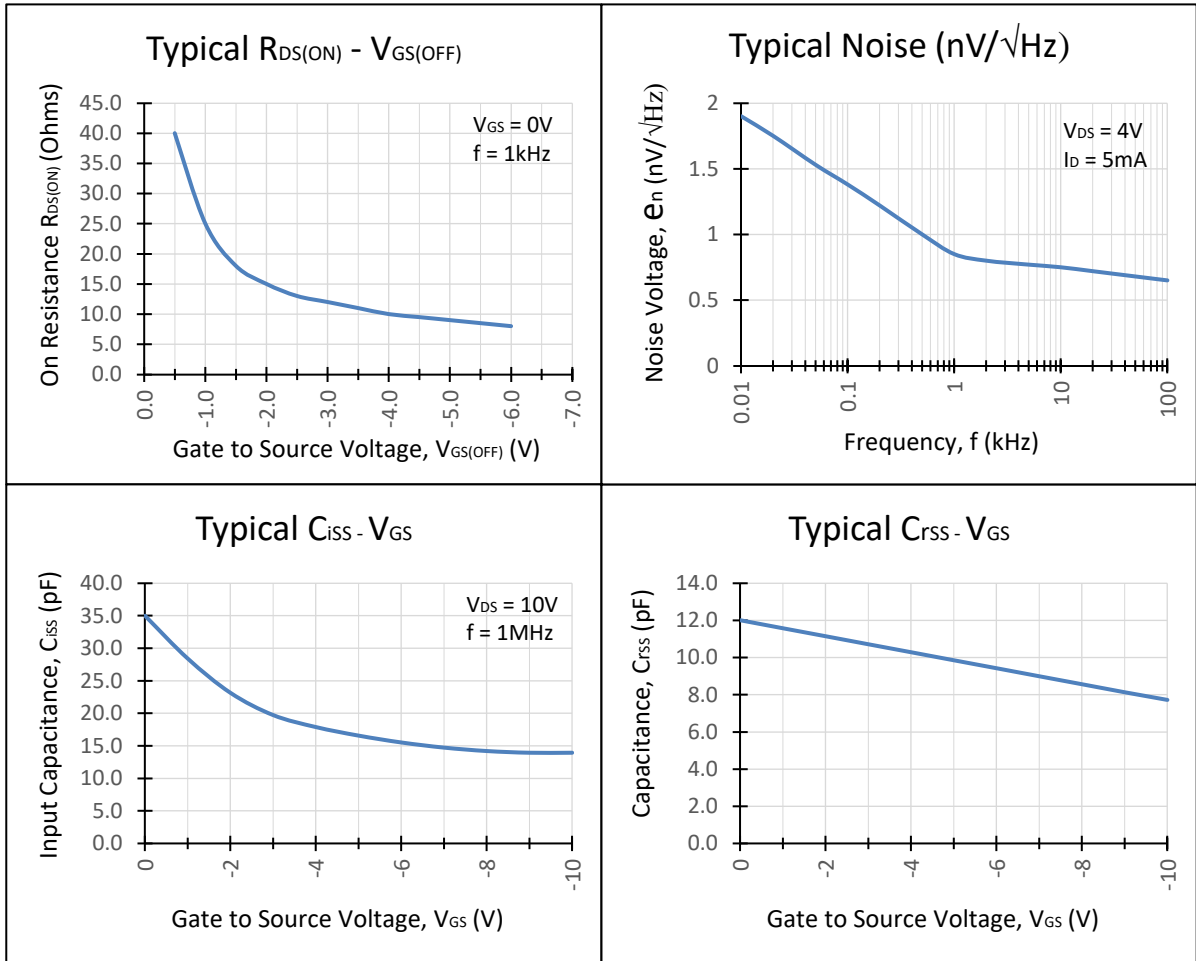
### Dynamic Characteristics (@ $T_A = 25^\circ\text{C}$ , Unless otherwise specified)

| Parameters                                   | Conditions  | Min | Typ | Max | Unit                   |
|--|---|-----|-----|-----|------------------------|
| $G_{FS}$ Forward Transconductance            | $V_{DS} = 15V, I_D = 5\text{mA}, f = 1\text{kHz}$ | 15  | 70  |     | mS                     |
| $C_{iss}$ Input Capacitance                  | $V_{DS} = 15V, V_{GS} = 0V, f = 1\text{MHz}$      |     |     | 35  | pF                     |
| $C_{rss}$ Reverse Transfer Capacitance       | $V_{DS} = 15V, V_{GS} = 0V, f = 1\text{MHz}$      |     |     | 8   | pF                     |
| $e_n$ Equivalent Circuit Input Noise Voltage | $V_{DS} = 4V, I_D = 5\text{mA}, f = 1\text{kHz}$  |     | 0.9 |     | nV/ $\sqrt{\text{Hz}}$ |

## Typical IF4500 Characteristics



**Typical IF4500 Characteristics (Continued)**



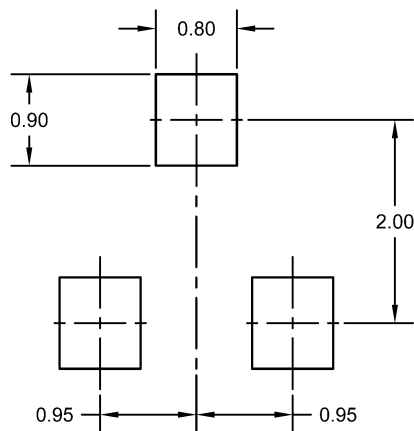
## SOT23 (TO-236AB) Mechanical and Layout Data

### Package Outline Data



1. All linear dimensions are in millimeters.
2. Package weight approximately 0.12 grams
3. Molded plastic case UL 94V-0 rated
4. For Tape and Reel specifications refer to InterFET CTC-021 Tape and Reel Specification, Document number: IF39002
5. Bulk product is shipped in standard ESD shipping material
6. Refer to JEDEC standards for additional information.

### Suggested Pad Layout



1. All linear dimensions are in millimeters.
2. The suggested land pattern dimensions have been provided for reference only. A more robust pattern may be desired for wave soldering.