

U430, U431 N-Channel JFET

Features

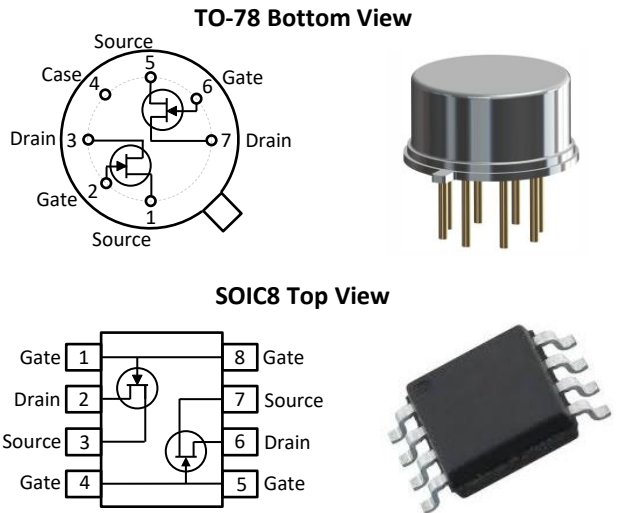
- InterFET [N0072L Geometry](#)
- Low Noise: 2 nV/VHz Typical
- Low Ciss: 4pF Typical
- RoHS Compliant
- SMT, TH, and Bare Die Package options.

Applications

- Balanced Mixers
- Differential Amplifiers

Description

The -25V InterFET U430 and U431 are targeted for balanced mixers and differential amplifier applications. Gate leakages are typically less than 10pA at room temperatures. Custom specifications, matching, and packaging options are available.



Product Summary

| Parameters | U430 Min | U431 Min | Unit |
|--|----------|----------|------|
| BV_{GS} Gate to Source Breakdown Voltage | -25 | -25 | V |
| I_{DSS} Drain to Source Saturation Current | 12 | 24 | mA |
| $V_{GS(off)}$ Gate to Source Cutoff Voltage | -1 | -2 | V |
| G_{FS} Forward Transconductance | 10 | 10 | mS |

Ordering Information Custom Part and Binning Options Available

| Part Number | Description | Case | Packaging |
|----------------------|---|-------|-------------------------------------|
| U430; U431 | Through-Hole | TO-78 | Bulk |
| SMPU430; SMPU431 | Surface Mount | SOIC8 | Bulk |
| SMPU430TR; SMPU431TR | 7" Tape and Reel: Max 500 Pieces 13" Tape and Reel: Max 2,500 Pieces | SOIC8 | Minimum 500 Pieces Tape and Reel |
| U430COT; U431COT * | Chip Orientated Tray (COT Waffle Pack) | COT | 70/Waffle Pack |
| U430CFT; U431CFT * | Chip Face-up Tray (CFT Waffle Pack) | CFT | 70/Waffle Pack |

* Bare die packaged options are designed for matched specifications but not 100% tested



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 | -25 | V |
| I_{FG} Continuous Forward Gate Current | 20 | mA |
| P_D Continuous Device Power Dissipation | 500 | mW |
| P Power Derating | 4 | mW/ $^\circ\text{C}$ |
| T_J Operating Junction Temperature | -55 to 125 | $^\circ\text{C}$ |
| T_{STG} Storage Temperature | -65 to 150 | $^\circ\text{C}$ |

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

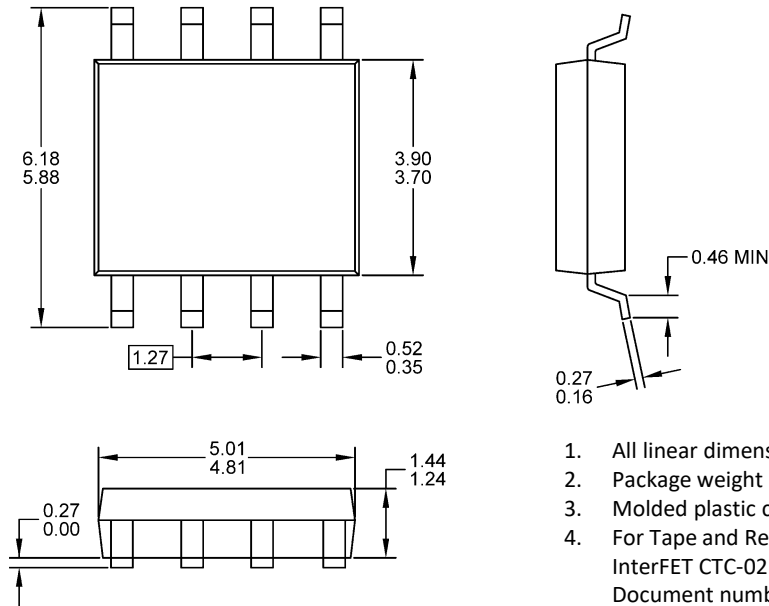
| Parameters | Conditions | U430 | | | U431 | | | Unit |
|--|---|------|-----|--------------|------|-----|--------------|----------|
| | | Min | Typ | Max | Min | Typ | Max | |
| $V_{(BR)GSS}$ Gate to Source Breakdown Voltage | $V_{DS} = 0V, I_G = -1\mu\text{A}$ | -25 | | | -25 | | | V |
| I_{GSS} Gate to Source Reverse Current | $V_{GS} = -15V, V_{DS} = 0V, T_A = 25^\circ\text{C}$ $V_{GS} = -15V, V_{DS} = 0V, T_A = 150^\circ\text{C}$ | | | -150 -150 | | | -150 -150 | pA nA |
| $V_{GS(OFF)}$ Gate to Source Cutoff Voltage | $V_{DS} = 10V, I_D = 1nA$ | -1 | | -4 | -2 | | -6 | V |
| $V_{GS(F)}$ Gate to Source Forward Voltage | $V_{DS} = 0V, I_G = 10mA$ | | | 1 | | | 1 | V |
| I_{DSS} Drain to Source Saturation Current | $V_{GS} = 0V, V_{DS} = 10V$ (Pulsed) | 12 | | 30 | 24 | | 60 | mA |

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

| Parameters | Conditions | U430 | | | U431 | | | Unit |
|---|--|------|------|-----|------|------|-----|-----------------------|
| | | Min | Typ | Max | Min | Typ | Max | |
| G_{FS} Forward Transconductance | $V_{DS} = 10V, I_D = 10mA, f = 1kHz$ $V_{DS} = 10V, I_D = 10mA, f = 100MHz$ | 10 | 17 | | 10 | 17 | | mS |
| G_{OS} Output Conductance | $V_{DS} = 10V, I_D = 10mA, f = 1kHz$ $V_{DS} = 10V, I_D = 10mA, f = 100MHz$ | | 0.15 | 250 | | 0.15 | 250 | μS |
| C_{dg} Drain Gate Capacitance | $V_{DS} = 0V, V_{GS} = -10V, f = 1MHz$ | | | 5 | | | 5 | pF |
| C_{gs} Source Gate Capacitance | $V_{DS} = 0V, V_{GS} = -10V, f = 1MHz$ | | | 2.5 | | | 2.5 | pF |
| e_n Noise Voltage | $V_{DS} = 10V, I_D = 10mA, f = 100kHz$ | | | 10 | | | 10 | $nV/\sqrt{\text{Hz}}$ |
| G_{ig} Power Match Source Admittance | $V_{DS} = 10V, I_D = 10mA, f = 100MHz$ | | 12 | | | 12 | | - |
| G_c Conversion Gain | $V_{DS} = 20V, V_{GS} = \frac{1}{2} V_{GS(OFF)}$, $R_L = 2k\Omega, f = 100MHz$ | | 3 | | | 3 | | dB |
| I_{DSS1}/I_{DSS2} Saturation Drain Current Ratio | $V_{DS} = 10V, V_G = 0V$ | 0.9 | | 1 | 0.9 | | 1 | - |
| $\frac{V_{GS(OFF)1}}{V_{GS(OFF)2}}$ Gate to Source Cutoff Voltage Ratio | $V_{DS} = 10V, I_D = 1nA$ | 0.9 | | 1 | 0.9 | | 1 | - |
| g_{fs1}/g_{fs2} Transconductance Ratio | $V_{DS} = 10V, I_D = 10mA$ | 0.9 | | 1 | 0.9 | | 1 | - |

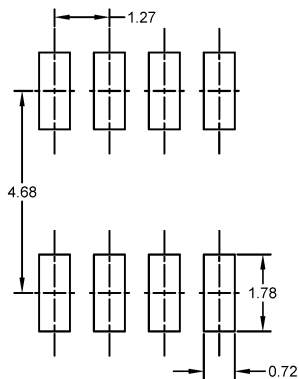
SOIC8 Mechanical and Layout Data

Package Outline Data



1. All linear dimensions are in millimeters.
2. Package weight approximately 0.21 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.

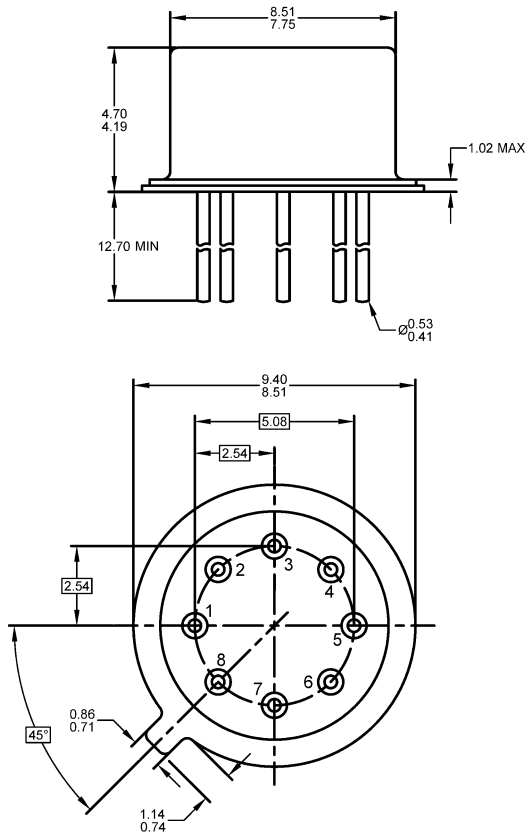
Suggested Pad Layout



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.

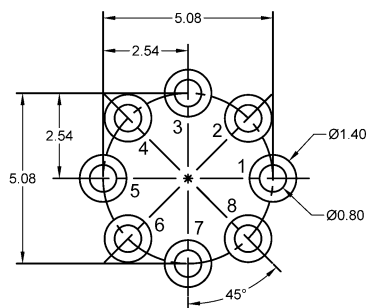
TO-78 Mechanical and Layout Data

Package Outline Data



1. All linear dimensions are in millimeters.
2. Eight leaded device. Not all leads are shown in drawing views.
3. Some package configurations will not populate pin 8 and/or pin 7.
4. Package weight approximately 0.44 grams
5. Bulk product is shipped in standard ESD shipping material
6. Refer to JEDEC standards for additional information.

Suggested Through-Hole Layout



1. All linear dimensions are in millimeters.
2. The suggested land pattern dimensions have been provided as a straight lead reference only. A more robust pattern may be desired for wave soldering and/or bent lead configurations.

Mouser Electronics

Authorized Distributor

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[U430](#) [U431](#) [SMPU430](#)