

## U430, U431 N-Channel JFET

### Features

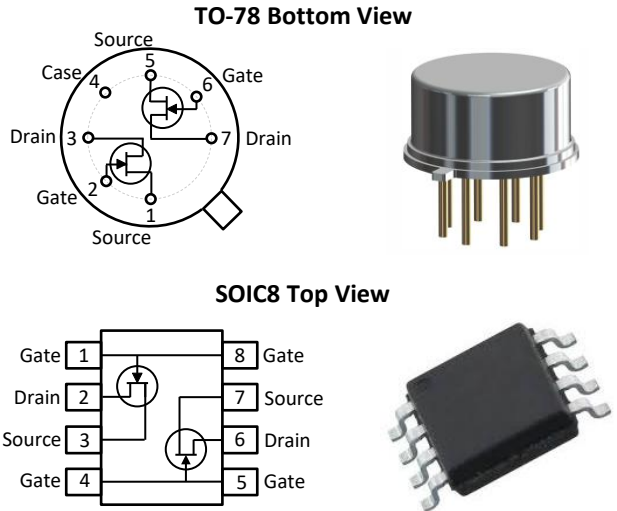
- InterFET [N0072L Geometry](#)
- Low Noise: 2 nV/VHz Typical
- Low Ciss: 4pF Typical
- RoHS Compliant
- SMT, TH, and Bare Die Package options.

### 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)

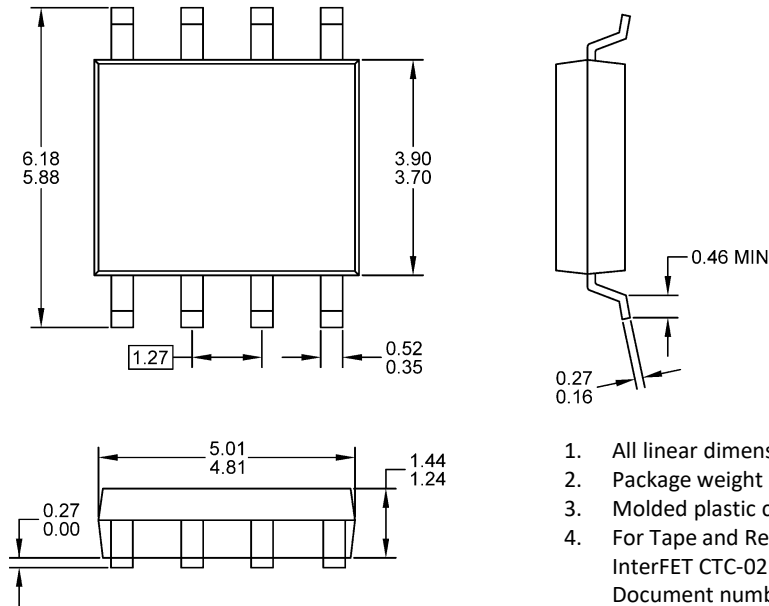
Parameters	Conditions	U430			U431			Unit
		Min	Typ	Max	Min	Typ	Max	
$V_{(BR)GSS}$ Gate to Source Breakdown Voltage	$V_{DS} = 0V, I_G = -1\mu\text{A}$	-25			-25			V
$I_{GSS}$ Gate to Source Reverse Current	$V_{GS} = -15V, V_{DS} = 0V, T_A = 25^\circ\text{C}$ $V_{GS} = -15V, V_{DS} = 0V, T_A = 150^\circ\text{C}$			-150 -150			-150 -150	pA nA
$V_{GS(OFF)}$ Gate to Source Cutoff Voltage	$V_{DS} = 10V, I_D = 1\text{nA}$	-1		-4	-2		-6	V
$V_{GS(F)}$ Gate to Source Forward Voltage	$V_{DS} = 0V, I_G = 10\text{mA}$			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	$V_{DS} = 10V, I_D = 10\text{mA}, f = 1\text{kHz}$ $V_{DS} = 10V, I_D = 10\text{mA}, f = 100\text{MHz}$	10	17		10	17		mS
$G_{OS}$ Output Conductance	$V_{DS} = 10V, I_D = 10\text{mA}, f = 1\text{kHz}$ $V_{DS} = 10V, I_D = 10\text{mA}, f = 100\text{MHz}$		0.15	250		0.15	250	$\mu\text{S}$
$C_{dg}$ Drain Gate Capacitance	$V_{DS} = 0V, V_{GS} = -10V, f = 1\text{MHz}$			5			5	pF
$C_{gs}$ Source Gate Capacitance	$V_{DS} = 0V, V_{GS} = -10V, f = 1\text{MHz}$			2.5			2.5	pF
$e_n$ Noise Voltage	$V_{DS} = 10V, I_D = 10\text{mA}, f = 100\text{kHz}$			10			10	nV/ $\sqrt{\text{Hz}}$
$G_{ig}$ Power Match Source Admittance	$V_{DS} = 10V, I_D = 10\text{mA}, f = 100\text{MHz}$		12			12		-
$G_c$ Conversion Gain	$V_{DS} = 20V, V_{GS} = \frac{1}{2} V_{GS(OFF)}$ , $R_L = 2\text{k}\Omega, f = 100\text{MHz}$		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	$V_{DS} = 10V, I_D = 1\text{nA}$	0.9		1	0.9		1	-
$g_{fs1}/g_{fs2}$ Transconductance Ratio	$V_{DS} = 10V, I_D = 10\text{mA}$	0.9		1	0.9		1	-

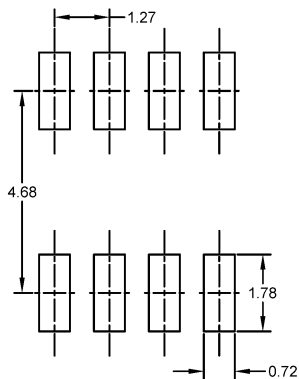
## SOIC8 Mechanical and Layout Data

### 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.

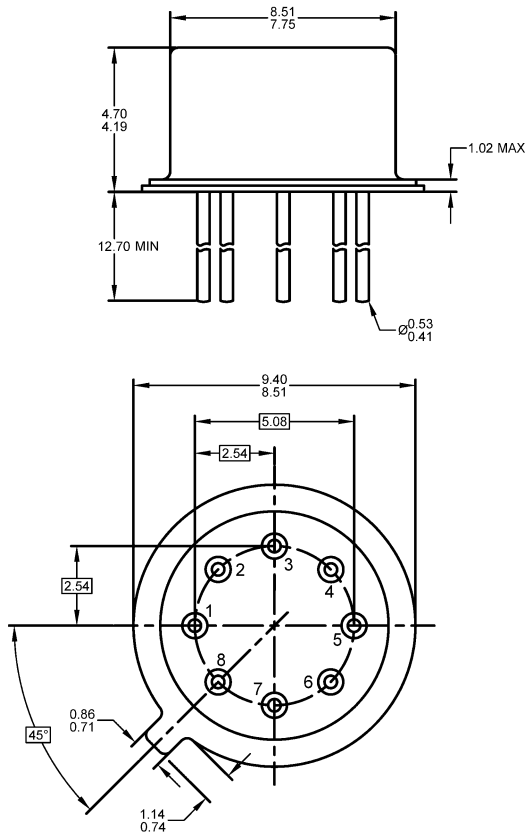
### Suggested Pad Layout



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.

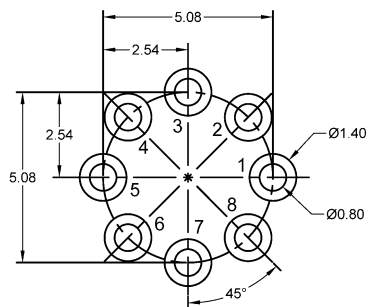
## TO-78 Mechanical and Layout Data

### 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.