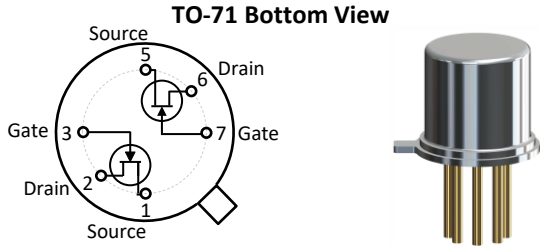


IFNU231, IFNU232, IFNU233 Dual Matched N-Channel JFET

Features

- InterFET [N0016H Geometry](#)
- Low Leakage: 10 pA Typical
- Low Input Capacitance: 3.5 pF Typical
- High Input Impedance
- Replacement for U231, U232, U233
- RoHS Compliant
- SMT, TH, and Bare Die Package options.

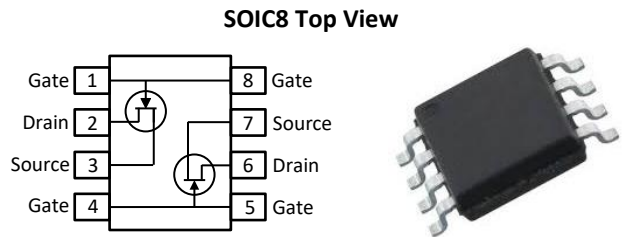


Applications

- Low Noise Differential Amplifier
- Differential Amplifier
- Wide-Band Amplifier

Description

The -50V InterFET IFNU231, IFNU232, and IFNU233 JFET's are targeted for low noise differential amplifier designs. Gate leakages are less than 10pA at room temperatures. The TO-71 package is hermetically sealed and suitable for military applications. Custom specifications, matching, and packaging options are available.



Product Summary

Parameters	IFNU231 Min	IFNU232 Min	IFNU233 Min	Unit
BV_{GSS} Gate to Source Breakdown Voltage	-50	-50	-50	V
I_{DSS} Drain to Source Saturation Current	0.5	0.5	0.5	mA
$V_{GS(off)}$ Gate to Source Cutoff Voltage	-0.5	-0.5	-0.5	V
G_{FS} Forward Transconductance	0.6	0.6	0.6	mS

Ordering Information

Part Number	Description	Case	Packaging
IFNU231; IFNU232; IFNU233	Through-Hole	TO-71	Bulk
SMPU231; SMPU232; SMPU233	Surface Mount	SOIC8	Bulk
SMPU231TR; SMPU232TR; SMPU233TR	7" Tape and Reel: Max 500 Pieces 13" Tape and Reel: Max 2,500 Pieces	SOIC8	Minimum 500 Pieces Tape and Reel
IFNU231COT; IFNU232COT; IFNU233COT *	Chip Orientated Tray (COT Waffle Pack)	COT	70/Waffle Pack
IFNU231CFT; IFNU232CFT; IFNU233CFT *	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	-50	V
I_{FG} Continuous Forward Gate Current	50	mA
P_D Continuous Device Power Dissipation	300	mW
P Power Derating	4.3	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)

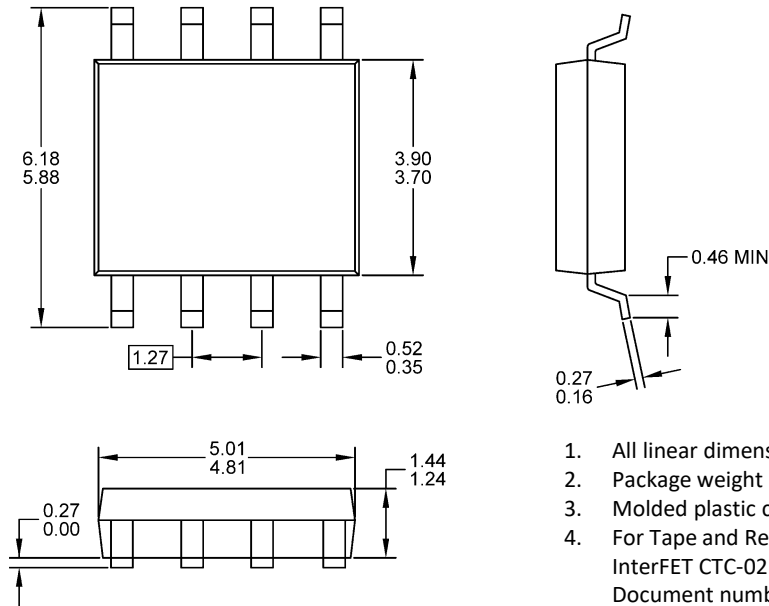
Parameters	Conditions	IFNU231, IFNU232, IFNU233		Unit
		Min	Max	
$V_{(BR)GS}$ Gate to Source Breakdown Voltage	$V_{DS} = 0V, I_G = -1\mu\text{A}$	-50		V
I_{GSS} Gate to Source Reverse Current	$V_{GS} = -30V, V_{DS} = 0V, T_A = 25^\circ\text{C}$		-100	pA
	$V_{GS} = -30V, V_{DS} = 0V, T_A = 150^\circ\text{C}$		-500	nA
$V_{GS(OFF)}$ Gate to Source Cutoff Voltage	$V_{DS} = 20V, I_D = 1\text{nA}$	-0.5	-4.5	V
V_{GS} Gate to Source Voltage	$V_{DS} = 20V, I_D = 200\mu\text{A}$	-0.3	-4	V
I_{DSS} Drain to Source Saturation Current	$V_{DS} = 20V, V_{GS} = 0V$ (Pulsed)	0.5	5	mA
I_G Gate Current	$V_{DS} = 20V, I_D = 200\mu\text{A}, T_A = 25^\circ\text{C}$		-50	pA
	$V_{DS} = 20V, I_D = 200\mu\text{A}, T_A = 125^\circ\text{C}$		-250	nA

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

Parameters	Conditions	IFNU231, IFNU232, IFNU233		Unit
		Min	Max	
G_{FS} Forward Transconductance	$V_{DS} = 20V, I_D = 200\mu\text{A}, f = 1\text{kHz}$	0.6	1.6	mS
G_{OS} Output Conductance	$V_{DS} = 20V, I_D = 200\mu\text{A}, f = 1\text{kHz}$		10	μS
C_{iss} Input Capacitance	$V_{DS} = 20V, V_{GS} = 0V, f = 1\text{MHz}$		6	pF
C_{rss} Reverse Transfer Capacitance	$V_{DS} = 20V, V_{GS} = 0V, f = 1\text{MHz}$		2	pF
e_n Equivalent Circuit Input Noise Voltage	$V_{DS} = 20V, V_{GS} = 0V, f = 100\text{Hz}$		80	nV/ $\sqrt{\text{Hz}}$
$ V_{GS1} - V_{GS2} $ Differential Gate Source Voltage	$V_{DS} = 20V, I_D = 200\mu\text{A}$	IFNU231	5	mV
		IFNU232	10	
		IFNU233	15	
$\frac{V_{GS1} - V_{GS2}}{\Delta T}$ Differential Gate Source Voltage with Temperature	$V_{DS} = 20V, I_D = 200\mu\text{A},$ $T_A = -55^\circ\text{C}, T_B = 25^\circ\text{C},$ $T_C = 125^\circ\text{C}$	IFNU231	1	mV/ $^\circ\text{C}$
		IFNU232	2.5	
		IFNU233	4	

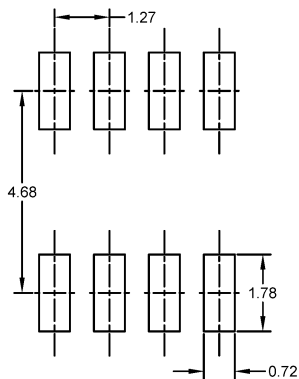
SOIC8 Mechanical and Layout Data

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.