

## IFN5911, IFN5912 Dual Matched N-Channel JFET

### Features

- InterFET [N0030L Geometry](#)
- Low Noise: 4.0 nV/√Hz Typical
- Low Leakage: 10pA Typical
- Low Input Capacitance: 5.0 pF Typical
- RoHS Compliant
- SMT, TH, and Bare Die Package options.

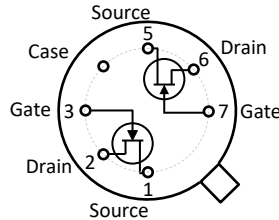
### Applications

- VHF Amplifiers
- Wideband Differential Amplifiers

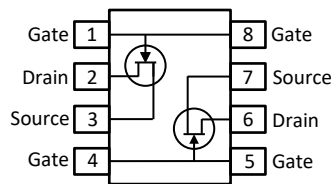
### Description

The -25V InterFET IFN5911 and IFN 5912 JFET's are targeted for wideband differential amplifiers. Gate leakages are less than 10pA at room temperatures. The TO-78 package is hermetically sealed and suitable for military applications. Custom specifications, matching, and packaging options are available.

TO-78 Bottom View



SOIC8 Top View



### Product Summary

Parameters	IFN5911 Min	IFN5912 Min	Unit
BV <sub>GSS</sub> Gate to Source Breakdown Voltage	-25	-25	V
I <sub>DSS</sub> Drain to Source Saturation Current	7	7	mA
V <sub>GS(off)</sub> Gate to Source Cutoff Voltage	-1	-1	V
G <sub>FS</sub> Forward Transconductance	3000	3000	μS

### Ordering Information

Part Number	Description	Case	Packaging
IFN5911; IFN5912	Through-Hole	TO-78	Bulk
SMP5911; SMP5912	Surface Mount	SOIC8	Bulk
SMP5911; SMP5912	7" Tape and Reel: Max 500 Pieces 13" Tape and Reel: Max 2,500 Pieces	SOIC8	Minimum 500 Pieces Tape and Reel
IFN5911COT; IFN5912COT *	Chip Orientated Tray (COT Waffle Pack)	COT	70/Waffle Pack
IFN5911CFT; IFN5912CFT *	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	250	mW
$P$ Power Derating	4.3	mW/ $^\circ\text{C}$
$T_J$ Operating Junction Temperature	-55 to 150	$^\circ\text{C}$
$T_{STG}$ Storage Temperature	-65 to 200	$^\circ\text{C}$

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

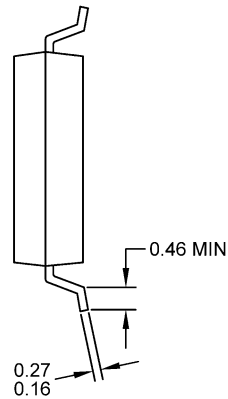
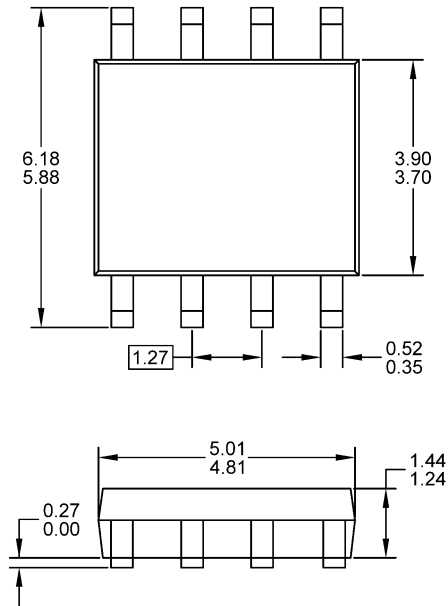
Parameters	Conditions	IFN5911		IFN5912		Unit
		Min	Max	Min	Max	
$V_{(BR)GSS}$ Gate to Source Breakdown Voltage	$I_G = -1\mu\text{A}, V_{DS} = 0\text{V}$	-25		-25		V
$I_{GSS}$ Gate to Source Reverse Current	$V_{GS} = -15\text{V}, V_{DS} = 0\text{V}, T_A = 25^\circ\text{C}$		-100		-100	pA
	$V_{GS} = -15\text{V}, V_{DS} = 0\text{V}, T_A = 150^\circ\text{C}$		-250		-250	nA
$I_G$ Gate Operating Current	$V_{DG} = 10\text{V}, I_D = 5\text{mA}, T_A = 25^\circ\text{C}$		-100		-100	pA
	$V_{DG} = 10\text{V}, I_D = 5\text{mA}, T_A = 125^\circ\text{C}$		-100		-100	nA
$V_{GS(OFF)}$ Gate to Source Cutoff Voltage	$V_{DS} = 10\text{V}, I_D = 1\text{nA}$	-1	-5	-1	-5	V
$V_{GS}$ Gate Source Voltage	$V_{DS} = 10\text{V}, I_D = 5\text{mA}$	-0.3	-4	-0.3	-4	V
$I_{DSS}$ Drain to Source Saturation Current	$V_{DS} = 10\text{V}, V_{GS} = 0\text{V}$ (Pulsed)	7	40	7	40	mA

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

Parameters	Conditions	IFN5911		IFN5912		Unit
		Min	Max	Min	Max	
$G_{FS}$ Forward Transconductance	$V_{DS} = 10\text{V}, I_D = 5\text{mA}, f = 1\text{kHz}$	3000	10000	3000	10000	$\mu\text{S}$
	$V_{DS} = 10\text{V}, I_D = 5\text{mA}, f = 100\text{MHz}$	3000	10000	3000	10000	$\mu\text{S}$
$G_{OS}$ Output Conductance	$V_{DS} = 10\text{V}, I_D = 5\text{mA}, f = 1\text{kHz}$		100		100	$\mu\text{S}$
	$V_{DS} = 10\text{V}, I_D = 5\text{mA}, f = 100\text{MHz}$		150		150	$\mu\text{S}$
$C_{iss}$ Input Capacitance	$V_{DS} = 10\text{V}, I_D = 5\text{mA}, f = 1\text{MHz}$		5		5	pF
$C_{rss}$ Reverse Capacitance	$V_{DS} = 10\text{V}, I_D = 5\text{mA}, f = 1\text{MHz}$		1.2		1.2	pF
NF Noise Figure	$V_{DS} = 10\text{V}, I_D = 5\text{mA}, f = 10\text{Hz},$ $R_G = 100\text{K}\Omega$		1		1	dB
$e_n$ Equivalent Circuit Input Noise Voltage	$V_{DS} = 10\text{V}, I_D = 5\text{mA}, f = 10\text{kHz}$		20		20	$\text{nV}/\sqrt{\text{Hz}}$
$ I_{G1} - I_{G2} $ Differential Gate Current	$V_{DS} = 10\text{V}, I_D = 5\text{mA}, T_A = 125^\circ\text{C}$		20		20	nA
$I_{DSS1}/I_{DSS2}$ Saturation Drain Current Ratio	$V_{DS} = 10\text{V}, V_{GS} = 0\text{V}$	0.95	1	0.95	1	-
$ V_{GS1} - V_{GS2} $ Differential Gate Source Voltage	$V_{DS} = 10\text{V}, I_D = 5\text{mA}$		10		15	mV
$\frac{ V_{GS1} - V_{GS2} }{\Delta T}$ Differential Gate Source Voltage with Temperature	$V_{DS} = 10\text{V}, I_D = 5\text{mA},$ $T_A = -55^\circ\text{C}, T_B = 25^\circ\text{C}$		2.5		5	$\text{mV}/^\circ\text{C}$
	$T_A = 25^\circ\text{C}, T_B = 125^\circ\text{C}$		2		4	$\text{mV}/^\circ\text{C}$
$g_{fs1}/g_{fs2}$ Transconductance Ratio	$V_{DS} = 10\text{V}, I_D = 5\text{mA}$	0.95	1	0.95	1	-

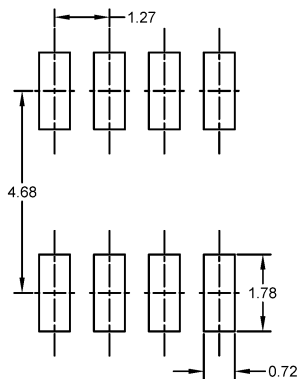
## SOIC8 Mechanical and Layout Data

### 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.

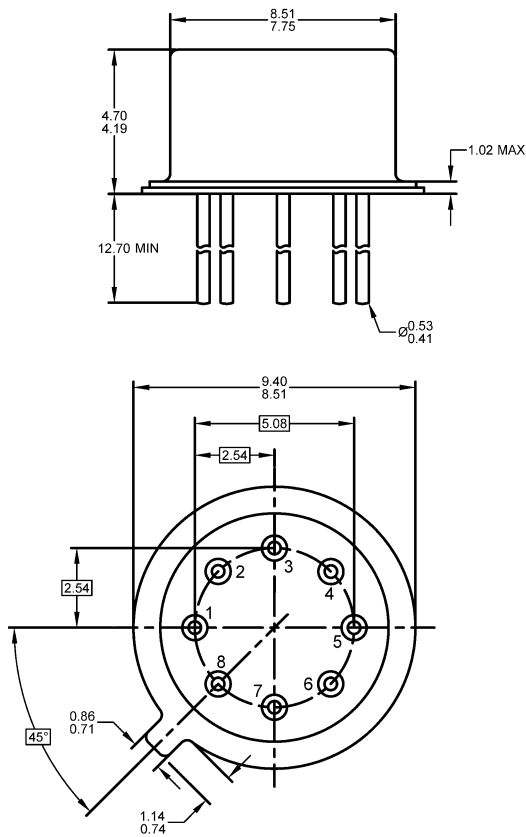
### Suggested Pad Layout



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.

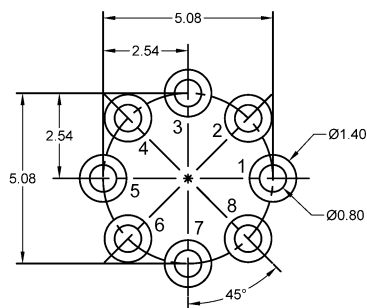
## TO-78 Mechanical and Layout Data

### 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.

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