IFN421, IFN422, IFN423

Dual N-Channel Silicon Junction Field-Effect Transistor

- Very High Input Impedance Differential Amplifiers
- Electrometers

Absolute maximum ratings at T_A = 25°C

Device Dissipation (Derate 3.2 mW/°C to 50°C)	400 mW
Total Device Dissipation (Derate 6 mW/°C to 150°C)	750 mW
Storage Temperature Range	– 65°C to 200°C

At 25°C free air temperature:		IFN421, IFN422, IFN423			Process NJ01		
Static Electrical Characteristics		**Min**	**Typ**	**Max**	**Unit**	**Test Conditions**	
Gate Source Breakdown Voltage	$V_{(BR)GSS}$	– 40	– 60		V	I_G = – 1 µA, V_{DS} = ØV	
Gate to Gate Breakdown Voltage	BV_{G1G2}	±40			V	I_G = – 1 µA, I_D = ØA, I_S = ØA	
Gate Reverse Current	I_{GSS}			– 1	pA	V_{GS} = – 20V, V_{DS} = ØV	
				– 1	nA	V_{GS} = – 20V, V_{DS} = ØV	T_A = +125°C
Gate Operating Current	I_G			– 0.25	pA	V_{DS} = 10V, I_D = 30 µA	
				– 250	pA	V_{DS} = 10V, I_D = 30 µA	T_A = +125°C
Gate Source Cutoff Voltage	$V_{GS(OFF)}$	– 0.4		– 2	V	V_{DS} = 10V, I_D = 1 nA	
Gate Source Voltage	V_{GS}			– 1.8	V	V_{DS} = 10V, I_D = 30 µA	
Drain Saturation Current (Pulsed)	I_{DSS}	60		1000	µA	V_{DS} = 10V, V_{GS} = Ø V	
Dynamic Electrical Characteristics							
Common Source Forward Transconductance	g_{fs}	100		1500	µS	V_{DS} = 10V, V_{GS} = Ø V	f = 1 kHz
Common Source Output Conductance	g_{os}			3	µS	V_{DS} = 10V, I_D = 30 µA	f = 1 kHz
Common Source Input Capacitance	C_{iss}			3	pF	V_{DS} = 10V, V_{GS} = Ø V	f = 1 MHz
Common Source Reverse Transfer Capacitance	C_{rss}			1.5	pF	V_{DS} = 10V, V_{GS} = Ø V	f = 1 MHz
Equivalent Circuit Input Noise Voltage	$\bar{e}_N$		20	70	nV/√Hz	V_{DS} = 10V, I_D = 30 µA	f = 10 Hz
Noise Figure	NF			1	dB	V_{DS} = 10V, I_D = 30 µA R_G = 10 MΩ	f = 10 Hz
		Max -	**IFN421**	**IFN422**	**IFN423**		
Differential Gate Source Voltage	$\lvert V_{GS1} - V_{GS2} \rvert$	10	15	25	mV	V_{DG} = 10V, I_D = 30 µA	
Differential Gate Source Voltage With Temperature	$\frac{\lvert V_{GS1} - V_{GS2} \rvert}{\Delta T}$	10	25	40	µV/°C	V_{DG} = 10V, I_D = 30 µA	T_A = – 55°C T_B = 25°C T_C = 125°C
		Min -	**IFN421**	**IFN422**	**IFN423**		
Common Mode Rejection Ratio	CMRR	90	80	80	dB	V_{DG} = 10V to 20V, I_D = 30 µA	

TO-78 Package

See Section G for Outline Dimensions

Pin Configuration

1 Source 1, 2 Drain 1, 3 Gate 1, 4 Case,
5 Source 2, 6 Drain 2, 7 Gate 2,
8 Omitted

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