

U430, U431

Dual N-Channel Silicon Junction Field-Effect Transistor

- Balanced Mixers
- Differential Amplifiers

Absolute maximum ratings at $T_A = 25^\circ\text{C}$.

Total Device Dissipation (Derate 4 mW/°C to 150°C)

500 mW

Storage Temperature Range

– 65°C to +150°C

Lead Temperature

300°C

At 25°C free air temperature:
Static Electrical Characteristics

		U430			U431			Process NJ72	
		Min	Typ	Max	Min	Typ	Max	Unit	Test Conditions
Gate Source Breakdown Voltage	$V_{(BR)GSS}$	– 25			– 25			V	$I_G = -1\mu\text{A}$, $V_{DS} = \emptyset\text{V}$
Gate Reverse Current	I_{GSS}			– 150			– 150	pA	$V_{GS} = -15\text{V}$, $V_{DS} = \emptyset\text{V}$
				– 150			– 150	nA	$V_{GS} = -15\text{V}$, $V_{DS} = \emptyset\text{V}$, $T_A = 150^\circ\text{C}$
Gate Source Cutoff Voltage	$V_{GS(OFF)}$	– 1		– 4	– 2		– 6	V	$V_{DS} = 10\text{V}$, $I_D = 1\text{nA}$
Gate Source Forward Voltage	$V_{GS(F)}$			1			1	V	$V_{DS} = \emptyset\text{V}$, $I_G = 10\text{mA}$
Drain Saturation Current (Pulsed)	I_{DSS}	12		30	24		60	mA	$V_{DS} = 10\text{V}$, $V_{GS} = \emptyset\text{V}$

Dynamic Electrical Characteristics

Common Source Forward Transconductance	G_{fs}	10	17		10	17		mS	$V_{DS} = 10\text{V}$, $I_D = 10\text{mA}$	f = 1 kHz
			12			12		mS	$V_{DS} = 10\text{V}$, $I_D = 10\text{mA}$	f = 100 MHz
Common Source Output Conductance	G_{os}			250			250	μS	$V_{DS} = 10\text{V}$, $I_D = 10\text{mA}$	f = 1 kHz
			0.15			0.15		μS	$V_{DS} = 10\text{V}$, $I_D = 10\text{mA}$	f = 100 MHz
Drain Gate Capacitance	C_{dg}			5			5	pF	$V_{DS} = \emptyset\text{V}$, $V_{GS} = -10\text{V}$	f = 1 MHz
Source Gate Capacitance	C_{gs}			2.5			2.5	pF	$V_{DS} = \emptyset\text{V}$, $V_{GS} = -10\text{V}$	f = 1 MHz
Equivalent Short Circuit Input Noise Voltage	$\bar{e}_N$		10			10		nV/√Hz	$V_{DS} = 10\text{V}$, $I_D = 10\text{mA}$	f = 100 kHz
Power Match Source Admittance	g_{ig}		12			12			$V_{DS} = 10\text{V}$, $I_D = 10\text{mA}$	f = 100 MHz
Conversion Gain	G_c		3			3		dB	$V_{DS} = 20\text{V}$, $R_L = 2\text{k}\Omega$, $V_{GS} = 1/2 V_{GS(OFF)}$	f = 100 MHz
Saturation Drain Current Ratio	I_{DSS1}/I_{DSS2}	0.9		1	0.9		1		$V_{DS} = 10\text{V}$, $V_G = \emptyset\text{V}$	
Gate Source Cutoff Voltage Ratio	$\frac{V_{GS(OFF)1}}{V_{GS(OFF)2}}$	0.9		1	0.9		1		$V_{DS} = 10\text{V}$, $I_D = 1\text{nA}$	
Transconductance Ratio	g_{fs1}/g_{fs2}	0.9		1	0.9		1		$V_{DS} = 10\text{V}$, $I_D = 10\text{mA}$	

TO-78 Package

Dimensions in Inches (mm)

Pin Configuration

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