



NDF9401-10 N-Channel Monolithic Cascode Dual JFETs

General Description

The NDF9401 thru NDF9410 series of N-channel monolithic cascode duals is designed for broadband low noise differential amplifier applications requiring tight match, low capacitance, and very high common-mode rejection.

Absolute Maximum Ratings (25°C)

Gate-Drain or Gate-Source Voltage	-50V
Gate Current	10 mA
Device Dissipation (Each Side), $T_A = 85^\circ\text{C}$ (Derate 2 mW/°C)	250 mW
Total Device Dissipation, $T_A = 85^\circ\text{C}$ (Derate 3 mW/°C)	375 mW
Storage Temperature Range	-65°C to +200°C
Lead Temperature (1/16" from case for 10 seconds)	300°C

Electrical Characteristics (25°C unless otherwise noted)

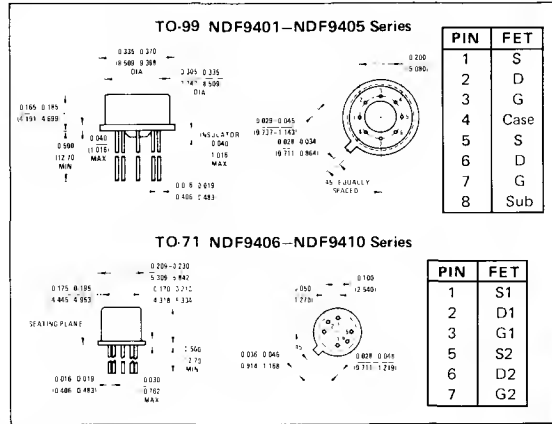
PARAMETER		CONDITIONS		MIN	MAX	UNITS
IGSS	Gate Reverse Current	$V_{GS} = -30V$, $V_{DS} = 0$			10	pA
			150°C		25	nA
BVGS	Gate-Source Breakdown Voltage	$I_G = -1\mu A$, $V_{DS} = 0$		50		V
VGS(off)	Gate-Source Cutoff Voltage	$V_{DS} = 20V$, $I_D = 1\mu A$		0.5	4.0	
IG	Gate Operating Current	$V_{DG} = 35V$, $I_D = 200\mu A$			5	pA
			125°C		10	nA
IDSS	Saturation Drain Current	$V_{DS} = 20V$, $V_{GS} = 0$, (Note 1)		0.5	10	mA
gfs	Common-Source Forward Transconductance	$V_{DG} = 20V$, $I_D = 200\mu A$, (Note 1)	* = 1 kHz	900	2000	μmho
gos	Common-Source Output Conductance	$V_{DG} = 20V$, $I_D = 200\mu A$			1	
Ciss	Common-Source Input Capacitance	$V_{DS} = 20V$, $V_{GS} = 0$	* = 1 MHz		6	pF
Crss	Common-Source Reverse Transfer Capacitance				0.1	
en	Equivalent Input Noise Voltage	$V_{DG} = 20V$, $I_D = 200\mu A$	* = 10 Hz		30	$\frac{mV}{\sqrt{Hz}}$

Matching Characteristics

PARAMETER		CONDITIONS		NDF9401, NDF9406		NDF9402, NDF9407		NDF9403, NDF9408		NDF9404, NDF9409		NDF9405, NDF9410		UNITS
				MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	
$ I_{G1}-I_{G2} $	Differential Gate Current	$V_{DG}=20V$ $I_D=200\mu A$	125°C		1		1		1		1		1	nA
$\frac{I_{DSS1}}{I_{DSS2}}$	Saturation Drain Current Ratio	$V_{DS}=20V$ $V_{GS}=0$, (Note 1)		0.95	1	0.95	1	0.95	1	0.95	1	0.90	1	
$ V_{GS1}-V_{GS2} $	Differential Gate Source Voltage	$V_{DG}=20V$, $I_D=200\mu A$			5		5		10		15		25	mV
$\frac{\Delta(V_{GS1}-V_{GS2})}{\Delta T}$	Gate-Source Voltage Differential Drift, (Note 1)		$T_A=25^\circ C$, $T_B=125^\circ C$		5		10		10		10		25	$\mu V/^\circ C$
			$T_A=-55^\circ C$, $T_B=25^\circ C$		5		10		10		10		25	
$ g_{os1}-g_{os2} $	Differential Output Conductance	f = 1 kHz		0.1		0.1		0.1		0.1		0.1	μmho	
$\frac{g_{fs1}}{g_{fs2}}$	Transconductance Ratio, (Note 1)		0.97	1	0.97	1	0.95	1	0.95	1	0.90	1		
CMRR	Common Mode Rejection Ratio	$V_{DD}=10-20V$, $I_D=200\mu A$, (Note 2)		120		120		110		110		100		dB

Note 1: Pulse test required, pulse width = 300 μs , duty cycle $\leq 3\%$.

Note 2: CMRR = 20 $\log_{10} \Delta V_{DD} / \Delta(V_{GS1} - V_{GS2})$, ($\Delta V_{DD} = 10V$).



NDF9401, NDF9402, NDF9403, NDF9404, NDF9405,
NDF9406, NDF9407, NDF9408, NDF9409, NDF9410