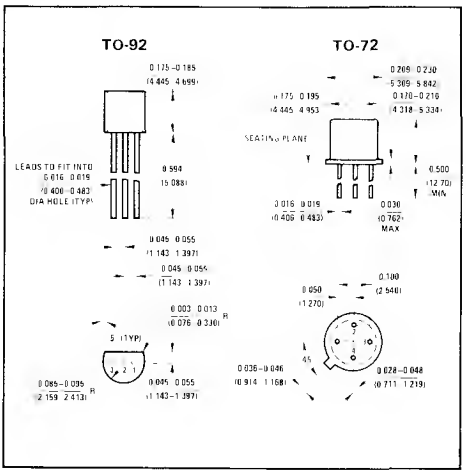
NF5101-03/PF5101-03 N-Channel JFETs

General Description

The NF5101-3 (TO-72) and PF5101-3 (TO-92) are N-channel silicon Junction Field-Effect Transistors designed for ultra-low noise preamplifier applications, particularly hydrophones, particle detectors, high quality mic/phono/tape, video, vidicon and I-R sensor preamplifiers.



Absolute Maximum Ratings

Drain-Gate Voltage	40V
Reverse Gate-Source Voltage	40V
Forward Gate Current	10 mA
Device Dissipation @ 25°C	310 mW
Derate Above 25°C	2.82 mW/°C
Operating Temperature Range	−65 to +150°C
Lead Temperature (1/16" from case for 10 seconds)	300°C

Electrical Characteristics

PARAMETER		CONDITIONS		PF/NF5101			PF/NF5102			PF/NF5103			UNITS
				MIN	TYP	MAX	MIN	TYP	MAX	MIN	TYP	MAX	
BV_{GSS}	Gate-Source Breakdown Voltage	$I_G = 1\mu A$, $V_{DS} = 0V$		40			40			40			V
I_{GSS}	Gate Reverse Current	$V_{GS} = -15V$, $T_A = 25°C$				0.2			0.2			0.2	nA
		$V_{DS} = 0V$ $T_A = 125°C$				0.5			0.5			0.5	μA
$V_{GS(OFF)}$	Gate Source Cutoff Voltage	$V_{DS} = 15V$, $I_D = 1$ nA		0.5		1.1	0.7		1.6	1.2		2.7	V
I_{DSS}	Saturation Drain Current	$V_{DS} = 15V$, $V_{GS} = 0V$, Pulsed 300μs ≤ 2%		1.0		12	4.0		20	10		40	mA
g_{fs}	Common-Source Transconductance	$V_{DG} = 15V$	$I_D = 0.5$ mA	3.5	5		3.5	5		3.5	4.5		mmho
			$I_D = 2$ mA				7.5	9		7.5	9		mmho
g_{os}	Common-Source Output Conductance	$V_{DG} = 15V$, $I_D = 0.5$ mA			5	25		5	25		5	25	μmho
C_{iss}	Common-Source Input Capacitance	$V_{DG} = 15V$, $V_{GS} = 0V$			12	16		12	16		12	16	pF
C_{rss}	Common-Source Reverse Transfer Capacitance	$V_{DG} = 15V$, $V_{GS} = 0V$			4	6		4	6		4	6	pF
NF	Common-Source Spot Noise Figure	$V_{DG} = 15V$, $I_D = 0.5$ mA, $R_G = 20$ kΩ, f = 10 Hz			1.5			1.5			1.5		dB
e_n	Equivalent Short Circuit Input Noise Voltage	$V_{DG} = 10V$, f = 10 Hz	$I_D = 0.5$ mA		7	20		8	20		10	25	$nV/\sqrt{Hz}$
			$I_D = 2$ mA						15			20	$nV/\sqrt{Hz}$
		$V_{DG} = 10V$, f = 1 kHz	$I_D = 0.5$ mA			3.5			3.5			3.5	$nV/\sqrt{Hz}$
			$I_D = 2$ mA						3			3	$nV/\sqrt{Hz}$