

The 2N5909 is a high-performance monolithic dual JFET featuring tight matching and low drift over temperature specifications, and is targeted for use in a wide range of precision instrumentation applications where tight tracking is required.

The hermetically sealed TO-78 package is well suited for hi-reliability and harsh environment applications.

(See Packaging Information).

**2N5909 Benefits:**

- Tight Tracking
- Good matching
- Ultra Low Leakage
- Low Drift

FEATURES				
LOW DRIFT	$ V_{GS1-2}/T  = 5\mu V/^{\circ}C$ TYP.			
ULTRA LOW LEAKAGE	$I_G = 150fA$ TYP.			
LOW PINCHOFF	$V_p = 2V$ TYP.			
ABSOLUTE MAXIMUM RATINGS @ 25°C (unless otherwise noted)				
Maximum Temperatures				
Storage Temperature	-65°C to +150°C			
Operating Junction Temperature	+150°C			
Maximum Voltage and Current for Each Transistor – Note 1				
$-V_{GSS}$	Gate Voltage to Drain or Source	40V		
$-V_{DSO}$	Drain to Source Voltage	40V		
$-I_{G(f)}$	Gate Forward Current	10mA		
$-I_G$	Gate Reverse Current	10µA		
Maximum Power Dissipation				
Device Dissipation @ Free Air – Total	40mW @ +125°C			
MATCHING CHARACTERISTICS @ 25°C UNLESS OTHERWISE NOTED				
SYMBOL	CHARACTERISTICS	VALUE	UNITS	CONDITIONS
$ V_{GS1-2}/T $ max.	DRIFT VS. TEMPERATURE	40	µV/°C	$V_{DG}=10V, I_D=30\mu A$ $T_A=-55^{\circ}C$ to $+125^{\circ}C$
$ V_{GS1-2} $ max.	OFFSET VOLTAGE	15	mV	$V_{DG}=10V, I_D=30\mu A$

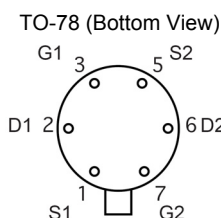
**ELECTRICAL CHARACTERISTICS @ 25°C (unless otherwise noted)**

SYMBOL	CHARACTERISTICS	MIN.	TYP.	MAX.	UNITS	CONDITIONS
$BV_{GSS}$	Breakdown Voltage	40	60	--	V	$V_{DS} = 0$ $I_D=1nA$
$BV_{GGO}$	Gate-To-Gate Breakdown	40	--	--	V	$I_G = 1nA$ $I_D = 0$ $I_S = 0$
<b>TRANSCONDUCTANCE</b>						
$Y_{fSS}$	Full Conduction	70	300	500	µmho	$V_{DG}=10V$ $V_{GS}=0V$ $f=1kHz$
$Y_{fS}$	Typical Operation	50	100	200	µmho	$V_{DG}=10V$ $I_D=30\mu A$ $f=1kHz$
$ Y_{fS1-2}/Y_{fS} $	Mismatch	--	1	5	%	
<b>DRAIN CURRENT</b>						
$I_{DSS}$	Full Conduction	60	400	1000	µA	$V_{DG}=10V$ $V_{GS}=0V$
$ I_{DSS1-2}/I_{DSS} $	Mismatch at Full Conduction	--	2	5	%	
<b>GATE VOLTAGE</b>						
$V_{GS(off)}$ or $V_p$	Pinchoff voltage	0.6	2	4.5	V	$V_{DS}=10V$ $I_D=1nA$
$V_{GS(on)}$	Operating Range	--	--	4	V	$V_{DS}=10V$ $I_D=30\mu A$
<b>GATE CURRENT</b>						
$-I_{Gmax.}$	Operating	--	--	1	pA	$V_{DG}=10V$ $I_D=30\mu A$
$-I_{Gmax.}$	High Temperature	--	--	1	nA	$T_A=+125^{\circ}C$
$-I_{GSSmax.}$	At Full Conduction	--	--	2	pA	$V_{DS}=0V$ $V_{GS}=20V$
$-I_{GSSmax.}$	High Temperature	--	--	5	nA	$T_A=+125^{\circ}C$
$I_{GGO}$	Gate-to-Gate Leakage	--	1	--	pA	$V_{GG}=20V$
<b>OUTPUT CONDUCTANCE</b>						
$Y_{OSS}$	Full Conduction	--	--	5	µmho	$V_{DG}=10V$ $V_{GS}=0V$
$Y_{OS}$	Operating	--	0.1	0.1	µmho	$V_{DG}=10V$ $I_D=30\mu A$
$ Y_{OS1-2} $	Differential	--	0.01	0.1	µmho	
<b>COMMON MODE REJECTION</b>						
CMR	$-20 \log  \Delta V_{GS1-2}/\Delta V_{DS} $	--	90	--	dB	$\Delta V_{DS} = 10$ to $20V$ $I_D=30\mu A$
CMR	$-20 \log  \Delta V_{GS1-2}/\Delta V_{DS} $	--	90	--	dB	$\Delta V_{DS} = 5$ to $10V$ $I_D=30\mu A$
<b>NOISE</b>						
NF	Figure	--	--	1	dB	$V_{DS}=10V$ $V_{GS}=0V$ $R_G=10M\Omega$ $f=100Hz$ $NBW=6Hz$
$e_n$	Voltage	--	20	70	nV/√Hz	$V_{DG}=10V$ $I_D=30\mu A$ $f=10Hz$ $NBW=1Hz$
<b>CAPACITANCE</b>						
$C_{ISS}$	Input	--	--	3	pF	$V_{DS}=10V$ $V_{GS}=0V$ $f=1MHz$
$C_{RSS}$	Reverse Transfer	--	--	1.5	pF	
$C_{DD}$	Drain-to-Drain	--	--	0.1	pF	$V_{DG}=20V$ $I_D=30\mu A$

Note 1 – These ratings are limiting values above which the serviceability of any semiconductor may be impaired

Available Packages:

2N5909 in TO-78  
2N5909 available as bare die  
Please contact [Micross](http://www.micross.com) for full package and die dimensions



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