



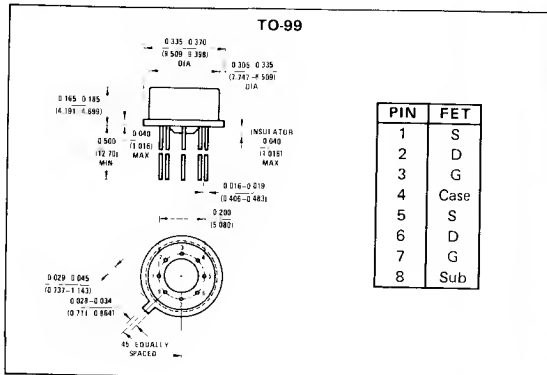
## 2N5902-09 N-Channel Monolithic Dual JFETs

### General Description

The 2N5902 thru 2N5909 N-channel monolithic dual JFETs is designed for ultra-low leakage ( $I_G < 1 \text{ pA}$ ) differential amplifier applications.

### Absolute Maximum Ratings (25°C)

Gate-to-Gate Voltage	±40V
Gate-Drain or Gate-Source Voltage	-40V
Gate Current	10 mA
Device Dissipation (Each Side), $T_A = 25^\circ\text{C}$ (Derate 3 mW/°C)	367 mW
Total Device Dissipation, $T_A = 25^\circ\text{C}$ (Derate 4 mW/°C)	500 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	2N5902-5		2N5906-9		UNITS		
		MIN	MAX	MIN	MAX			
$I_{GSS}$ Gate Reverse Current	$V_{GS} = -20V, V_{DS} = 0$	125°C				-5	-2	µA
						-10	-5	nA
$BV_{GSS}$ Gate-Source Breakdown Voltage	$I_G = -1 \mu A, V_{DS} = 0$	-40		-40				
$V_{GS(off)}$ Gate-Source Cutoff Voltage	$V_{DS} = 10V, I_D = 1 \text{ nA}$	0.6	-4.5	-0.6	-4.5		V	
$V_{GS}$ Gate-Source Voltage								
$I_G$ Gate Operating Current	$V_{DG} = 10V, I_D = 30 \mu A$	125°C				-3	-1	µA
						-3	-1	nA
$I_{DSS}$ Saturation Drain Current		30	500	30	500		µA	
$g_{fs}$ Common-Source Forward Transconductance	$V_{DS} = 10V, V_{GS} = 0$	f = 1 kHz		70	250	70	250	µmho
$g_{os}$ Common-Source Output Conductance				5	5			
$C_{iss}$ Common Source Input Capacitance	$V_{DG} = 10V, I_D = 30 \mu A$	f = 1 MHz		3	3			
$C_{rss}$ Common Source Reverse Transfer Capacitance				1.5	1.5			
$g_{fs}$ Common-Source Forward Transconductance	$V_{DG} = 10V, I_D = 30 \mu A$	f = 1 kHz		50	150	50	150	µmho
$g_{os}$ Common Source Output Conductance				1	1			
$e_n$ Equivalent Short Circuit Input Noise Voltage	$V_{DS} = 10V, V_{GS} = 0$			0.2	0.1		µV/√Hz	
$NF$ Spot Noise Figure	f = 100 Hz, $R_G = 10M$			3	1		dB	

### Matching Characteristics

PARAMETER	CONDITIONS	2N5902, 2N5906		2N5903, 2N5907		2N5904, 2N5908		2N5905, 2N5909		UNITS
		MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	
$ I_{G1} - I_{G2} $ Differential Gate Current	$V_{DG} = 10V, I_D = 30 \mu A, T_A = 125^\circ\text{C}$	2N5902-5 2N5906-9		2.0	2.0	2.0	2.0	2.0	2.0	nA
$I_{DSS1} / I_{DSS2}$ Saturation Drain Current Ratio	$V_{DS} = 10V, V_{GS} = 0$	0.95	1	0.95	1	0.95	1	0.95	1	
$g_{fs1} / g_{fs2}$ Transconductance Ratio	$V_{DG} = 10V, I_D = 30 \mu A$	f = 1 kHz		0.97	1	0.97	1	0.95	1	
$ V_{GS1} - V_{GS2} $ Differential Gate Source Voltage				5	5	10	15			mV
$\frac{\Delta(V_{GS1} - V_{GS2})}{\Delta T}$ Gate-Source Voltage Differential Drift (Measured at End Points $T_A$ and $T_B$ )	$V_{DG} = 10V, I_D = 30 \mu A$	$T_A = 25^\circ\text{C}, T_B = 125^\circ\text{C}$		5	10	20	40			µV/°C
$I_{9os1} - I_{9os2}$ Differential Output Conductance	$f = 1 \text{ kHz}$	$T_A = -55^\circ\text{C}, T_B = 25^\circ\text{C}$		5	10	20	40			µmho
				0.2	0.2	0.2	0.2			