2N5196-99 N-Channel Monolithic Dual JFETs

General Description

The 2N5196 thru 2N5199 series of N-channel monolithic dual JFETs is designed for low to medium frequency differential amplifiers requiring low leakage and tight match.

Absolute Maximum Ratings (25°C)

Gate-Drain or Gate-Source Voltage	−50V
Gate Current	50 mA
Device Dissipation (Each Side). T_A = 85°C (Derate 2.56 mW/°C)	250 mW
Total Device Dissipation, T_A = 85°C (Derate 4.3 mW/°C)	500 mW
Storage Temperature Range	−65°C to +200°C
Lead Temperature (1/16" from case for 10 seconds)	300°C

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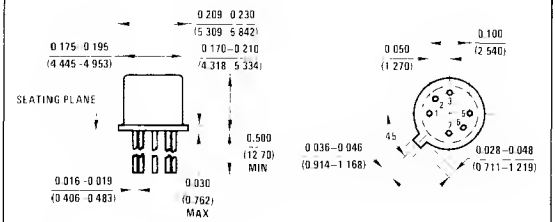

PIN	FET (12)
1	S1
2	D1
3	G1
5	S2
6	D2
7	G2

Electrical Characteristics (25°C unless otherwise noted)

	PARAMETER	CONDITIONS		MIN	MAX	UNITS
I_{GSS}	Gate Reverse Current	V_{GS} = −30V, V_{DS} = 0			−25	pA
			150°C		−50	nA
BV_{GSS}	Gate-Source Breakdown Voltage	I_G = −1 μA, V_{DS} = 0		−50		
$V_{GS(off)}$	Gate-Source Cutoff Voltage	V_{DS} = 20V, I_D = 1 nA		−0.7	−4	V
V_{GS}	Gate-Source Voltage	V_{DG} = 20V, I_D = 200 μA		−0.2	−3.8	
I_G	Gate Operating Current				−15	pA
			125°C		−15	nA
I_{DSS}	Saturation Drain Current	V_{DS} = 20V, V_{GS} = 0, (Note 1)		0.7	7	mA
g_{fs}	Common Source Forward Transconductance	V_{DS} = 20V, V_{GS} = 0, (Note 1)	f = 1 kHz	1000	4000	μmho
g_{fs}	Common-Source Forward Transconductance	V_{DG} = 20V, I_D = 200 μA, (Note 1)		700	1600	
g_{os}	Common-Source Output Conductance	V_{DS} = 20V, V_{GS} = 0			50	
g_{os}	Common-Source Output Conductance	V_{DG} = 20V, I_D = 200 μA			4	
C_{iss}	Common Source Input Capacitance	V_{DS} = 20V, V_{GS} = 0	f = 1 MHz		6	pF
C_{rss}	Common-Source Reverse Transfer Capacitance				2	
NF	Spot Noise Figure		f = 100 Hz, R_G = 10 MΩ		0.5	dB
e_n	Equivalent Input Noise Voltage		f = 1 kHz		0.020	$\frac{\mu V}{\sqrt{Hz}}$

Matching Characteristics

	PARAMETER	CONDITIONS		2N5196 MIN	2N5196 MAX	2N5197 MIN	2N5197 MAX	2N5198 MIN	2N5198 MAX	2N5199 MIN	2N5199 MAX	UNITS
$\lvert I_{G1}-I_{G2}\rvert$	Differential Gate Current	V_{DG} = 20V, I_D = 200 μA	125°C		5		5		5		5	nA
$\frac{I_{DSS1}}{I_{DSS2}}$	Saturation Drain Current Ratio	V_{DS} = 20V, V_{GS} = 0V, (Note 1)		0.95	1	0.95	1	0.95	1	0.95	1	
$\frac{g_{fs1}}{g_{fs2}}$	Transconductance Ratio, (Note 1)	V_{DG} = 20V, I_D = 200 μA	f = 1 kHz	0.97	1	0.97	1	0.95	1	0.95	1	
$\lvert V_{GS1}-V_{GS2}\rvert$	Differential Gate-Source Voltage				5		5		10		15	mV
$\frac{\Delta\lvert V_{GS1}-V_{GS2}\rvert}{\Delta T}$	Gate-Source Differential Voltage Change with Temperature, (Note 2)		T_A = 25°C, T_B = 125°C		5		10		20		40	μV/°C
			T_A = −55°C, T_B = 25°C		5		10		20		40	
$\lvert g_{os1}-g_{os2}\rvert$	Differential Output Conductance		f = 1 kHz		1		1		1		1	μmho

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

Note 2: Measured at end points, T_A and T_B.