2N3954, 2N3955, 2N3956

N-Channel Dual Silicon Junction Field-Effect Transistor

- Low and Medium Frequency Differential Amplifiers
- High Input Impedance Amplifiers

Absolute maximum ratings at T_A = 25°C

Reverse Gate Source & Reverse Gate Drain Voltage	– 50 V
Gate Current	50 mA
Total Device Power Dissipation (each side)	250 mW
@ 85°C Case Temperature (both sides)	500 mW
Power Derating (both sides)	4.3 mW/°C

At 25°C free air temperature: Static Electrical Characteristics		2N3954		2N3955		2N3956		Process NJ16		
		Min	Max	Min	Max	Min	Max	Unit	Test Conditions	
Gate Source Breakdown Voltage	$V_{(BR)GSS}$	– 50		– 50		– 50		V	I_G = – 1µA, V_{DS} = ØV	
Gate Reverse Current	I_{GSS}		– 100		– 100		– 100	pA	V_{GS} = – 30V, V_{DS} = ØV	
			– 500		– 500		– 500	nA	V_{GS} = – 30V, V_{DS} = ØV	T_A = 125°C
Gate Operating Current	I_G		– 50		– 50		– 50	pA	V_{DS} = 20V, I_D = 200 µA	
			– 250		– 250		– 250	nA	V_{DS} = 20V, I_D = 200 µA	T_A = 125°C
Gate Source Voltage	V_{GS}		– 4.2		– 4.2		– 4.2	V	V_{DS} = 20V, I_D = 50 µA	
		– 0.5	– 4	– 0.5	– 4	– 0.5	– 4	V	V_{DS} = 20V, I_D = 200 µA	
Gate Source Cutoff Voltage	$V_{GS(OFF)}$	– 1	– 4.5	– 1	– 4.5	– 1	– 4.5	V	V_{DS} = – 20V, I_G = 1 nA	
Gate Source Forward Voltage	$V_{GS(F)}$		2		2		2	V	V_{DS} = ØV, I_G = 1 mA	
Drain Saturation Current (Pulsed)	I_{DSS}	0.5	5	0.5	5	0.5	5	mA	V_{DS} = 20V, V_{GS} = ØV	
Dynamic Electrical Characteristics										
Common Source Forward Transconductance	g_{fs}	1000	3000	1000	3000	1000	3000	µS	V_{DS} = 20V, V_{GS} = ØV	f = 1 kHz
		1000		1000		1000		µS	V_{DS} = 20V, V_{GS} = ØV	f = 200 MHz
Common Source Output Capacitance	g_{os}		35		35		35	µS	V_{DS} = 20V, V_{GS} = ØV	f = 1 kHz
Common Source Input Capacitance	C_{iss}		4		4		4	pF	V_{DS} = 20V, V_{GS} = ØV	f = 1 MHz
Drain Gate Capacitance	C_{dgo}		1.5		1.5		1.5	pF	V_{dg} = 10V, I_S = ØA	f = 1 MHz
Common Source Reverse Transfer Capacitance	C_{rss}		1.2		1.2		1.2	pF	V_{DS} = 20V, V_{GS} = ØV	f = 1 MHz
Noise Figure	NF		0.5		0.5		0.5	dB	V_{DS} = 20V, V_{GS} = ØV, R_g = 10 MΩ	f = 100 Hz
Differential Gate Current	$\lvert I_{G1} - I_{G2} \rvert$		10		10		10	nA	V_{DS} = 20V, I_D = 200µA	T_A = 125°C
Saturation Drain Current Ratio	I_{DSS1}/I_{DSS2}	0.95	1	0.95	1	0.95	1		V_{DS} = 20V, V_{GS} = ØV	
Differential Gate Source Voltage	$\lvert V_{GS1} - V_{GS2} \rvert$		5		10		15	mV	V_{DS} = 20V, I_D = 200µA	
Differential Gate Source Voltage with Temperature	$\frac{\Delta V_{GS1} - V_{GS2}}{\Delta T}$		0.8		2		4	mV/°C	V_{DS} = 20V, I_D = 200µA	T_A = 25°C to = – 55°C
			1		2.5		5	mV/°C	V_{DS} = 20V, I_D = 200µA	T_A = 25°C to = +125°C
Transconductance Ratio	g_{fs1}/g_{fs2}	0.97	1	0.97	1	0.97	1		V_{DS} = 20V, I_D = 200µA	f = 1 kHz

TO-71 Package

See Section G for Outline Dimensions

Pin Configuration

1 Source, 2 Drain, 3 Gate,
5 Source, 6 Drain, 7 Gate

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