

2N3823, 2N3824

N-Channel Silicon Junction Field-Effect Transistor

- VHF Amplifiers
- Small Signal Amplifiers

Absolute maximum ratings at $T_A = 25^\circ\text{C}$

Reverse Gate Source & Reverse Gate Drain Voltage
 Continuous Forward Gate Current
 Continuous Device Power Dissipation
 Power Derating

– 50 V
 10 mA
 300 mW
 2 mW/°C

At 25°C free air temperature:

Static Electrical Characteristics

		2N3823		2N3824		Process NJ32		
		Min	Max	Min	Max	Unit	Test Conditions	
Gate Source Breakdown Voltage	$V_{(BR)GSS}$	– 30		– 50		V	$I_G = -1\ \mu\text{A}$, $V_{DS} = 0\text{V}$	
Gate Reverse Current	I_{GSS}		– 0.5		– 0.1	nA	$V_{GS} = -30\text{V}$, $V_{DS} = 0\text{V}$	
			– 0.5		– 0.1	μA	$V_{GS} = -30\text{V}$, $V_{DS} = 0\text{V}$	$T_A = 150^\circ\text{C}$
Gate Source Voltage	V_{GS}	– 1	– 7.5			V	$V_{DS} = 15\text{V}$, $I_D = 400\ \mu\text{A}$	
Gate Source Cutoff Voltage	$V_{GS(OFF)}$		– 8			V	$V_{DS} = 15\text{V}$, $I_D = 0.5\ \text{nA}$	
Drain Saturation Current (Pulsed)	I_{DSS}	4	20			mA	$V_{DS} = 15\text{V}$, $V_{GS} = 0\text{V}$	
Drain Cutoff Current	$I_{D(OFF)}$				0.1	nA	$V_{DS} = 15\text{V}$, $V_{GS} = -8\text{V}$	
					0.1	μA	$V_{DS} = 15\text{V}$, $V_{GS} = -8\text{V}$	$T_A = 150^\circ\text{C}$

Dynamic Electrical Characteristics

Drain Source ON Resistance	$r_{ds(on)}$				250	Ω	$V_{GS} = 0\text{V}$, $I_D = 0\text{V}$	$f = 1\ \text{kHz}$
Common Source Forward Transconductance	g_{fs}	3500	6500			μS	$V_{DS} = 15\text{V}$, $V_{GS} = 0\text{V}$	$f = 1\ \text{kHz}$
Common Source Forward Transmittance	$ Y_{fs} $	3200				μS	$V_{DS} = 15\text{V}$, $V_{GS} = 0\text{V}$	$f = 100\ \text{MHz}$
Common Source Output Conductance	g_{os}		35			μS	$V_{DS} = 15\text{V}$, $V_{GS} = 0\text{V}$	$f = 1\ \text{kHz}$
Common Source Input Capacitance	C_{iss}		6		6	pF	$V_{DS} = 15\text{V}$, $V_{GS} = 0\text{V}$	$f = 1\ \text{MHz}$
Common Source Reverse Transfer Capacitance	C_{rss}		2		3	pF	$V_{DS} = 15\text{V}$, $V_{GS} = 0\text{V}$	$f = 1\ \text{MHz}$
Equivalent Short Circuit Input Noise Voltage	$\bar{e}_N$		200			nV/ $\sqrt{\text{Hz}}$	$V_{DS} = 15\text{V}$, $V_{GS} = 0\text{V}$	$f = 10\ \text{Hz}$
Noise Figure	NF		6			dB	$V_{DS} = 15\text{V}$, $V_{GS} = 0\text{V}$ $R_G = 1\ \text{M}\Omega$	$f = 10\ \text{Hz}$

TO-72 Package

Dimensions in Inches (mm)

Pin Configuration

1 Source, 2 Drain, 3 Gate, 4 Case