

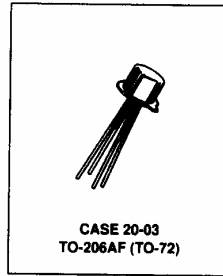
**SEMICONDUCTOR
TECHNICAL DATA**

**2N3821,
2N3822
2N3823**

**N-Channel, Depletion Mode
Junction Field-Effect Transistors (JFETs)**

... designed for small-signal, low-noise amplifier applications.

MAXIMUM RATINGS				
Rating	Symbol	2N3821 2N3822	2N3823	Unit
Drain-Gate Voltage	V _{DG}	50	30	V _{dc}
Drain-Source Voltage	V _{DS}	50	30	V _{dc}
Reverse Gate-Source Voltage	V _{GSR}	-50	-30	V _{dc}
Gate Current	I _{GF}	10		mAdc
Device Dissipation Derate above 25°C	P _T	300 1.7		mW mW/°C
Storage Temperature Range	T _{stg}	-65 to 200		°C



ELECTRICAL CHARACTERISTICS (T _A = 25°C unless otherwise noted.)					
Characteristic	Symbol	Min	Max	Unit	
OFF CHARACTERISTICS					
Gate-Source Breakdown Voltage (I _G = -1.0 μAdc, V _{DS} = 0)	2N3821, 2N3822 2N3823	V _{(BR)GSSR}	-50 -30	— —	V _{dc}
Gate Reverse Current (V _{GS} = -30 Vdc, V _{DS} = 0) (V _{GS} = -20 Vdc, V _{DS} = 0) (V _{GS} = -30 Vdc, V _{DS} = 0, T _A = 150°C) (V _{GS} = -20 Vdc, V _{DS} = 0, T _A = 150°C)	2N3821, 2N3822 2N3823 2N3821, 2N3822 2N3823	I _{GSSR}	— — — —	-0.1 -0.5 -0.1 -0.5	nAdc nAdc μAdc μAdc
Gate-Source Cutoff Voltage (V _{DS} = 15 Vdc, I _D = 0.5 nAdc)	2N3821 2N3822 2N3823	V _{GS(off)}	— — —	-4.0 -6.0 -8.0	V _{dc}
Gate-Source Voltage (V _{DS} = 15 Vdc, I _D = 50 μAdc) (V _{DS} = 15 Vdc, I _D = 200 μAdc) (V _{DS} = 15 Vdc, I _D = 400 μAdc)	2N3821 2N3822 2N3823	V _{GS}	-0.5 -1.0 -1.0	-2.0 -4.0 -7.5	V _{dc}
Insulation Resistance Case-to-Gate	R _{iso}	10 ¹⁰	—	—	ohms

(continued)

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ELECTRICAL CHARACTERISTICS — continued (T _A = 25°C unless otherwise noted.)					
Characteristic		Symbol	Min	Max	Unit
ON CHARACTERISTICS					
Zero-Gate-Voltage Drain Current ⁽¹⁾ (V _{DS} = 15 Vdc, V _{GS} = 0)	2N3821 2N3822 2N3823	I _{DSS}	0.5 2.0 4.0	2.5 10 20	mAdc
SMALL-SIGNAL CHARACTERISTICS					
Forward Transfer Admittance ⁽¹⁾ (V _{DS} = 15 Vdc, V _{GS} = 0, f = 1.0 kHz)	2N3821 2N3822 2N3823	Y _{fs}	1500 3000 3500	4500 6500 6500	μmhos
(V _{DS} = 15 Vdc, V _{GS} = 0) (f = 100 MHz)	2N3821		1500	—	
(f = 100 MHz)	2N3822		3000	—	
(f = 200 MHz)	2N3823		3200	—	
(V _{DS} = 15 Vdc, V _{GS} = 0, f = 1.0 kHz, T _A = -65°C) ⁽¹⁾	2N3821 2N3822, 2N3823		—	6750 9750	
Output Admittance (V _{DS} = 15 Vdc, V _{GS} = 0, f = 1.0 kHz)	2N3821 2N3822 2N3823	Y _{os}	— — —	10 20 35	μmhos
Input Capacitance (V _{DS} = 15 Vdc, V _{GS} = 0, f = 0.1 to 1.0 MHz)		C _{iss}	—	6.0	PF
Reverse Transfer Capacitance (V _{DS} = 15 Vdc, V _{GS} = 0, f = 0.1 to 1.0 MHz)	2N3821, 2N3822 2N3823	C _{rss}	— —	3.0 2.0	PF
Noise Figure (V _{DS} = 15 Vdc, V _{GS} = 0) (f = 10 Hz, R _G = 1.0 MΩ) (f = 1.0 kHz, R _G = 1.0 MΩ) (See Figure 7)	2N3821, 2N3822 All Types	NF	— —	5.0 2.5	dB
Input Conductance (V _{DS} = 15 Vdc, V _{GS} = 0, f = 200 MHz)	2N3823 Only	g _{is}	—	800	μs
Output Conductance (V _{DS} = 15 Vdc, V _{GS} = 0, f = 200 MHz)	2N3823 Only	g _{os}	—	200	μs

ASSURANCE TESTING (Pre/Post Burn-In)					
Burn-In Conditions: T _A = 175°C, V _{DS} = 0, V _{GS} = -40 Vdc 2N3821, 2N3822, -24 Vdc 2N3823					
Characteristics Tested	Symbol	Initial and End Point Limits		Unit	
		Min	Max		
Gate Reverse Current (V _{GS} = 30 Vdc, V _{DS} = 0)	I _{GSSR}	—	-0.1	nAdc	
Zero-Gate Voltage Drain Current ⁽¹⁾ (V _{DS} = -15 Vdc, V _{GS} = 0)	2N3821 2N3822	I _{DSS}	0.5 2.0	2.5 10	mAdc
Forward Transfer Admittance (V _{DS} = 15 Vdc, V _{GS} = 0, f = 1.0 kHz)	2N3821 2N3822	Y _{fs}	1500 3000	4500 6500	μmhos

Delta from Pre-Burn-In Measured Values		Min	Max	
Delta Zero-Gate-Voltage Drain Current ⁽¹⁾	ΔI _{DSS}	—	±10	% of Initial Value
Delta Forward Transfer Admittance	Δ Y _{fs}	—	±20	% of Initial Value

(1) Pulsed Pulse Width 250 to 350 μs, Duty Cycle 10 to 20%

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