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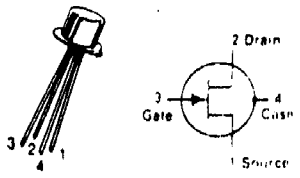
2N3821
2N3822
2N3824

TO-72



JFETs
LOW FREQUENCY, LOW NOISE

N-CHANNEL — DEPLETION

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	50	Vdc
Drain-Gate Voltage	V_{DG}	50	Vdc
Gate-Source Voltage	V_{GS}	-50	Vdc
Drain Current	I_D	10	mAdc
Total Device Dissipation @ T_A = 25°C Derate above 25°C	P_D	300 2.0	mW mW/°C
Junction Temperature Range	T_J	175	°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)		$V_{(BR)GSS}$	-50	—	Vdc
Gate Reverse Current (V_{GS} = -30 Vdc, V_{DS} = 0) (V_{GS} = -30 Vdc, V_{DS} = 0, T_A = 150°C)		I_{GSS}	— —	0.1 -100	nAdc
Gate Source Cutoff Voltage (I_D = 0.5 nAdc, V_{DS} = 15 Vdc)	2N3821 2N3822	$V_{GS(off)}$	— —	-4.0 -6.0	Vdc
Gate Source Voltage (I_D = 50 μAdc, V_{DS} = 15 Vdc) (I_D = 200 μAdc, V_{DS} = 15 Vdc)	2N3821 2N3822	V_{GS}	-0.5 -1.0	-2.0 -4.0	Vdc
Drain Cutoff Current (V_{DS} = 15 Vdc, V_{GS} = -8.0 Vdc) (V_{DS} = 15 Vdc, V_{GS} = -8.0 Vdc, T_A = 150°C)	2N3824 2N3824	$I_{D(off)}$	— —	0.1 100	nAdc
ON CHARACTERISTICS					
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
Static Drain-Source On Resistance (V_{GS} = 0, I_D = 0, f = 1.0 kHz)	2N3824	$r_{DS(on)}$	—	250	Ohms

SMALL-SIGNAL CHARACTERISTICS

Characteristic		Symbol	Min	Max	Unit
Forward Transfer Admittance (V_{DS} = 15 Vdc, V_{GS} = 0, f = 1.0 kHz)(1)	2N3821	$\|Y_{fs}\|$	1500	4500	µmhos
	2N3822		3000	6500	
(V_{DS} = 15 Vdc, V_{GS} = 0, f = 100 MHz)	2N3821		1500	—	
	2N3822		3000	—	
Output Admittance(1) (V_{DS} = 15 Vdc, V_{GS} = 0, f = 1.0 kHz)	2N3821	$\|Y_{os}\|$	—	10	µmhos
	2N3822		—	20	
Input Capacitance (V_{DS} = 15 Vdc, V_{GS} = 0, f = 1.0 MHz)		C_{iss}	—	6.0	pF
Reverse Transfer Capacitance (V_{DS} = 15 Vdc, V_{GS} = 0, f = 1.0 MHz)	2N3821	C_{rss}	—	3.0	pF
	2N3822		—	3.0	
(V_{GS} = −8.0 Vdc, V_{DS} = 0, f = 1.0 MHz)	2N3824		—	3.0	

FUNCTIONAL CHARACTERISTICS

Noise Figure (V_{DS} = 15 Vdc, V_{GS} = 0, R_S = 1.0 megohm, f = 10 Hz, Noise Bandwidth = 5.0 Hz)	2N3821, 2N3822	NF	—	5.0	dB
Equivalent Input Noise Voltage (V_{DS} = 15 Vdc, V_{GS} = 0, f = 10 Hz, Noise Bandwidth = 5.0 Hz)	2N3821, 2N3822	e_n	—	200	$nv/Hz^{1/2}$

(1) Pulse Test: Pulse Width ≤ 100 ms, Duty Cycle ≤ 10%.