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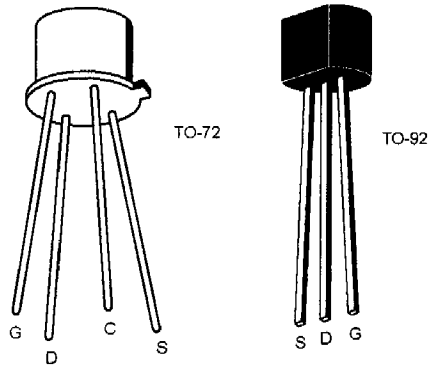
N-Channel JFET
High Frequency Amplifier

2N4416 / 2N4416A / PN4416

FEATURES

- **Low Noise**
- **Low Feedback Capacitance**
- **Low Output Capacitance**
- **High Transconductance**
- **High Power Gain**

PIN CONFIGURATION



CJ1

ABSOLUTE MAXIMUM RATINGS
(T_A = 25°C unless otherwise noted)

Gate-Source or Gate-Drain Voltage
- 2N4416, PN4416 ..... -30V
- 2N4416A ..... -35V

Gate Current 10mA

Storage Temperature Range
- 2N4416/2N4416A ..... -65°C to +200°C
- PN4416 ..... -55°C +150°C

Operating Temperature Range
- 2N4416/2N4416A ..... -65°C to +200°C
- PN4416 ..... -55°C to +135°C

Lead Temperature (Soldering, 10sec) ..... +300°C

Power Dissipation 300mW

Derate above 25°C
- 2N4416/2N4416A ..... 1.7mW/°C
- PN4416 ..... 2.7mW/°C

NOTE: Stresses above those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. These are stress ratings only and functional operation of the device at these or any other conditions above those indicated in the operational sections of the specifications is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

ORDERING INFORMATION

Part	Package	Temperature Range
2N4416	Hermetic TO-72	-55°C to +135°C
2N4416A	Hermetic TO-72	-55°C to +135°C
PN4416	Plastic TO-92	-55°C to +135°C
X2N4416	Sorted Chips in Carriers	-55°C to +135°C

ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise specified)

SYMBOL	PARAMETER		MIN	MAX	UNITS	TEST CONDITIONS	
I_{GSS}	Gate Reverse Current			-0.1	nA	V_{GS} = -20V, V_{DS} = 0	
				-0.1	µA		T_A = 150°C
BV_{GSS}	Gate-Source Breakdown Voltage	2N4416/PN4416	-30		V	I_G = -1µA, V_{DS} = 0	
		2N4416A	-35				
$V_{GS(off)}$	Gate-Source Cutoff Voltage	2N4416/PN4416		-6		V_{DS} = 15V, I_D = 1nA	
		2N4416A	-2.5	-6			
$V_{GS(f)}$	Gate-Source Forward Voltage			1	V	I_G = 1mA, V_{DS} = 0	
I_{DSS}	Drain Current at Zero Gate Voltage		5	15	mA	V_{DS} = 15V, V_{GS} = 0	f = 1kHz
g_{fs}	Common-Source Forward Transconductance		4500	7500	µS		
g_{os}	Common-Source Output Conductance			50	µs		
C_{rss}	Common-Source Reverse Transfer Capacitance (Note 1)			0.8	pF		f = 1MHz
C_{iss}	Common-Source Input Capacitance (Note 1)			4	pF		
C_{oss}	Common-Source Input Capacitance (Note 1)			2			

ELECTRICAL CHARACTERISTICS (Continued) (T_A = 25°C unless otherwise specified)

SYMBOL	PARAMETER	100MHz		400MHz		UNITS	TEST CONDITIONS
		MIN	MAX	MIN	MAX		
g_{iss}	Common-Source Input Conductance		100		1000	µS	V_{DS} = 15V, V_{GS} = 0 (Note 1)
b_{iss}	Common-Source Input Susceptance		2500		10,000		
g_{oss}	Common-Source Output Conductance		75		100		
b_{oss}	Common-Source Output Susceptance		1000		4000		
g_{fs}	Common-Source Forward Transconductance			4000			
G_{ps}	Common-Source Power Gain	18		10		dB	V_{DS} = 15V, I_D = 5mA (Note 1)
NF	Noise Figure (Note 1)		2		4		V_{DS} = 15V, I_D = 5mA, R_G = 1kΩ

NOTE 1: For design reference only, not 100% tested.