

N-Channel JFET Low Noise Amplifier



T-27-25

2N3684 - 2N3687

FEATURES

- Low Noise
- High Input Impedance
- Low Capacitance

APPLICATIONS

- Low Level Choppers
- Data Switches
- Multiplexers
- Low Noise Amplifiers

ABSOLUTE MAXIMUM RATINGS

(T_A = 25°C unless otherwise noted)

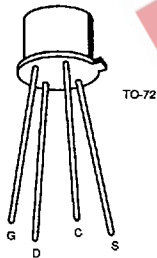
| | |
|-------------------------------------|-----------------------|
| Gate-Source or Gate-Drain Voltage | -50V |
| Gate Current | 50mA |
| Storage Temperature Range | -65°C to +200°C |
| Operating Temperature Range | -55°C to +175°C |
| Lead Temperature (Soldering, 10sec) | +300°C |
| Power Dissipation | 300mW |
| Derate above 25°C | 2.0mW/°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 |
|---------|--------------------------|-------------------|
| 2N3684 | Hermetic TO-72 | -55°C to +175°C |
| X2N3684 | Sorted Chips in Carriers | -55°C to +175°C |
| 2N3685 | Hermetic TO-72 | -55°C to +175°C |
| X2N3685 | Sorted Chips in Carriers | -55°C to +175°C |
| 2N3686 | Hermetic TO-72 | -55°C to +175°C |
| X2N3686 | Sorted Chips in Carriers | -55°C to +175°C |
| 2N3687 | Hermetic TO-72 | -55°C to +175°C |
| X2N3687 | Sorted Chips in Carriers | -55°C to +175°C |

PIN CONFIGURATION



5010

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

| SYMBOL | PARAMETER | 2N3684 | | 2N3685 | | 2N3686 | | 2N3687 | | UNITS | TEST CONDITIONS |
|---------------------|--|--------|------|--------|------|--------|------|--------|------|-------|--|
| | | MIN | MAX | MIN | MAX | MIN | MAX | MIN | MAX | | |
| BV _{GSS} | Gate to Source Breakdown Voltage | -50 | | -50 | | -50 | | -50 | | V | V _{DS} = 0, I _G = 1.0μA |
| V _P | Pinch-Off Voltage | -2.0 | -5.0 | -1.0 | -3.5 | -0.6 | -2.0 | -0.3 | -1.2 | | V _{DS} = 20V, I _D = 0.001μA |
| I _{GSS} | Gate Leakage Current | | -0.1 | | -0.1 | | -0.1 | | -0.1 | nA | V _{GS} = -30V, V _{DS} = 0 |
| | | | -0.5 | | -0.5 | | -0.5 | | -0.5 | μA | T _A = 150°C |
| I _{DSS} | Saturation Current, Drain-to-Source | 2.5 | 7.5 | 1.0 | 3.0 | -0.4 | 1.2 | 0.1 | 0.5 | mA | V _{GS} = 0, V _{DS} = 20V |
| Y _{fs} | Forward Transadmittance | 2000 | 3000 | 1500 | 2500 | 1000 | 2000 | 500 | 1500 | μS | V _{DS} = 20V, V _{GS} = 0 |
| G _{CS} | Common Source Output Conductance | | 50 | | 25 | | 10 | | 5 | μS | f = 1kHz |
| C _{ISS} | Common Source Input Capacitance | | 4.0 | | 4.0 | | 4.0 | | 4.0 | pF | V _{DS} = 20V, V _{GS} = 0 |
| C _{RSS} | Common Source Short Circuit Reverse Transfer Capacitance | | 1.2 | | 1.2 | | 1.2 | | 1.2 | pF | f = 1MHz (Note 1) |
| r _{DS(on)} | On Resistance | | 600 | | 800 | | 1200 | | 2400 | ohms | V _{DS} = 0, V _{GS} = 0 |
| NF | Noise Figure (Note 1) | | 0.5 | | 0.5 | | 0.5 | | 0.5 | dB | f = 100Hz, R _G = 10MΩ, NBW = 6Hz, V _{DS} = 10V, V _{GS} = 0V |

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