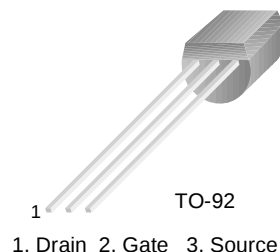


# 2N3820

2N3820

## P-Channel General Purpose Amplifier

- This device is designed primarily for low level audio and general purpose applications with high impedance signal sources.
- Sourced from process 89.



## Epitaxial Silicon Transistor

### Absolute Maximum Ratings\* $T_C=25^\circ\text{C}$ unless otherwise noted

| Symbol    | Parameter                 | Ratings   | Units            |
|-----------|---------------------------|-----------|------------------|
| $V_{DG}$  | Drain-Gate Voltage        | -20       | V                |
| $V_{GS}$  | Gate-Source Voltage       | 20        | V                |
| $I_{GF}$  | Forward Gate Current      | 10        | mA               |
| $T_{STG}$ | Storage Temperature Range | -55 ~ 150 | $^\circ\text{C}$ |

\* This ratings are limiting values above which the serviceability of any semiconductor device may be impaired.

#### NOTES:

- 1) These rating are based on a maximum junction temperature of 150 degrees C.
- 2) These are steady limits. The factory should be consulted on applications involving pulsed or low duty cycle operations.

### Electrical Characteristics $T_C=25^\circ\text{C}$ unless otherwise noted

| Symbol                              | Parameter                         | Test Condition                                        | Min. | Typ. | Max. | Units            |
|-------------------------------------|-----------------------------------|-------------------------------------------------------|------|------|------|------------------|
| <b>Off Characteristics</b>          |                                   |                                                       |      |      |      |                  |
| $V_{(BR)GSS}$                       | Gate-Source Breakdwon Voltage     | $I_G = 10\mu\text{A}, V_{DS} = 0$                     | 20   |      |      | V                |
| $I_{GSS}$                           | Gate Reverse Current              | $V_{GS} = 10\text{V}, V_{DS} = 0$                     |      |      | 20   | nA               |
| $V_{GS(off)}$                       | Gate-Source Cutoff Voltage        | $V_{DS} = -10\text{V}, I_D = -10\mu\text{A}$          |      |      | 8.0  | V                |
| <b>On Characteristics</b>           |                                   |                                                       |      |      |      |                  |
| $I_{DSS}$                           | Zero-Gate Voltage Drain Current * | $V_{DS} = -10\text{V}, V_{GS} = 0$                    | -0.3 |      | -15  | mA               |
| <b>Small Signal Characteristics</b> |                                   |                                                       |      |      |      |                  |
| $g_{fs}$                            | Forward Transfer Conductance      | $V_{DS} = -10\text{V}, V_{GS} = 0, f = 1.0\text{KHz}$ | 800  |      | 5000 | $\mu\text{mhos}$ |
| $C_{iss}$                           | Input Capacitance                 | $V_{DS} = -10\text{V}, V_{GS} = 0, f = 1.0\text{KHz}$ |      |      | 32   | pF               |
| $C_{rss}$                           | Reverse Transfer Capacitance      | $V_{DS} = -10\text{V}, V_{GS} = 0, f = 1.0\text{KHz}$ |      |      | 16   | pF               |

\* Pulse Test: Pulse Width  $\leq 300\text{ms}$ , Duty Cycle  $\leq 2\%$

### Thermal Characteristics $T_A=25^\circ\text{C}$ unless otherwise noted

| Symbol          | Parameter                                                   | Max.       | Units                      |
|-----------------|-------------------------------------------------------------|------------|----------------------------|
| $P_D$           | Total Device Dissipation<br>Derate above $25^\circ\text{C}$ | 350<br>2.8 | mW<br>mW/ $^\circ\text{C}$ |
| $R_{\theta JC}$ | Thermal Resistance, Junction to Case                        | 125        | $^\circ\text{C/W}$         |
| $R_{\theta JA}$ | Thermal Resistance, Junction to Ambient                     | 357        | $^\circ\text{C/W}$         |

\* Device mounted on FR-4 PCB  $1.6'' \times 1.6'' \times 0.06''$

# Package Dimensions

TO-92



Dimensions in Millimeters

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|--------------------------|------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
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