

Type 2N2219AL

Geometry 0400

Polarity NPN

Qual Level: JAN - JANS

**Generic Part Number:
2N2219A**

REF: MIL-PRF-19500/251

Features:

[Request Quotation](#)

- General-purpose transistor for switching and amplifier applications.
- Housed in TO-5 case.
- Also available in chip form using the 0400 chip geometry.
- The Min and Max limits shown are per MIL-PRF-19500/251 which Semicoa meets in all cases.
- The **Typ** values are actual batch averages for Semicoa.
- Radiation Graphs available.



TO-5

Maximum Ratings

$T_C = 25^{\circ}\text{C}$ unless otherwise specified

| Rating | Symbol | Rating | Unit |
|--------------------------------|-----------|-------------|--------------------|
| Collector-Emitter Voltage | V_{CEO} | 50 | V |
| Collector-Base Voltage | V_{CBO} | 75 | V |
| Emitter-Base Voltage | V_{EBO} | 6.0 | V |
| Collector Current, Continuous | I_C | 800 | mA |
| Operating Junction Temperature | T_J | -65 to +200 | $^{\circ}\text{C}$ |
| Storage Temperature | T_{STG} | -65 to +200 | $^{\circ}\text{C}$ |

Electrical Characteristics

$T_C = 25^\circ\text{C}$ unless otherwise specified

| OFF Characteristics | Symbol | Min | Typ | Max | Unit |
|---|---------------|-----|-----|-----|------|
| Collector-Base Breakdown Voltage $I_C = 10 \mu\text{A}$ | $V_{(BR)CBO}$ | 75 | 120 | --- | V |
| Collector-Emitter Breakdown Voltage $I_C = 10 \text{mA}$ | $V_{(BR)CEO}$ | 50 | 65 | --- | V |
| Emitter-Base Breakdown Voltage $I_C = 10 \mu\text{A}$ | $V_{(BR)EBO}$ | 6.0 | 7.0 | --- | V |
| Collector-Emitter Cutoff Current $V_{CE} = 50 \text{V}$ | I_{CES} | --- | 3.0 | 50 | nA |
| Collector-Base Cutoff Current $V_{CB} = 60 \text{V}$ | I_{CBO1} | --- | 2.0 | 10 | nA |
| Emitter-Base Cutoff Current $V_{EB} = 4 \text{V}$ | I_{EBO} | --- | 0.5 | 10 | nA |

| ON Characteristics | Symbol | Min | Typ | Max | Unit |
|--|----------------|-----|------|-----|------|
| DC Current Gain | | | | | |
| $I_C = 100 \mu\text{A}, V_{CE} = 10 \text{V}$ | h_{FE1} | 50 | 180 | --- | --- |
| $I_C = 1.0 \text{mA}, V_{CE} = 10 \text{V}$ | h_{FE2} | 75 | 200 | 325 | --- |
| $I_C = 10 \text{mA}, V_{CE} = 10 \text{V}$ | h_{FE3} | 100 | 200 | --- | --- |
| $I_C = 150 \text{mA}, V_{CE} = 10 \text{V}$ (pulse test) | h_{FE4} | 100 | 200 | 300 | --- |
| $I_C = 500 \text{mA}, V_{CE} = 10 \text{V}$ (pulse test) | h_{FE5} | 30 | 75 | --- | --- |
| Collector-Emitter Saturation Voltage | | | | | |
| $I_C = 150 \text{mA}, I_B = 15 \text{mA}$ (pulse test) | $V_{CE(sat)1}$ | --- | 0.1 | 0.3 | V dc |
| $I_C = 500 \text{mA}, I_B = 50 \text{mA}$ (pulse test) | $V_{CE(sat)2}$ | --- | 0.3 | 1.0 | V dc |
| Base-Emitter Saturation Voltage | | | | | |
| $I_C = 150 \text{mA}, I_B = 15 \text{mA}$ (pulse test) | $V_{BE(sat)1}$ | 0.6 | 0.85 | 1.2 | V dc |
| $I_C = 500 \text{mA}, I_B = 50 \text{mA}$ (pulse test) | $V_{BE(sat)2}$ | --- | 1.0 | 2.0 | V dc |

| Small Signal Characteristics | Symbol | Min | Typ | Max | Unit |
|---|-------------|-----|------|-----|------|
| Short Circuit Forward Current Transfer Ratio $I_C = 1 \text{mA}, V_{CE} = 10 \text{V}, f = 1 \text{kHz}$ | AC h_{FE} | 50 | 240 | --- | --- |
| Open Circuit Output Capacitance $V_{CB} = 10 \text{V}, I_E = 0 \text{V}, 100 \text{kHz} < f < 1 \text{MHz}$ | C_{OBO} | --- | 4.5 | 8 | pF |
| Input Capacitance, Output Open Circuited $V_{EB} = 0.5 \text{V}, I_C = 0, 100 \text{kHz} < f < 1 \text{MHz}$ | C_{IBO} | --- | 17.5 | 25 | pF |

| Switching Characteristics | Symbol | Min | Typ | Max | Unit |
|---|-----------|-----|-----|-----|------|
| Saturated Turn On Switching Time to 90% 16V, 50 ohm input pulse | t_{ON} | --- | 14 | 35 | ns |
| Saturated Turn Off Switching Time to 10% 16V, 50 ohm input pulse | t_{OFF} | --- | 175 | 300 | ns |