

**Type 2N3507L**

**Geometry 1506**

**Polarity NPN**

**Qual Level: JAN - JANTXV**

**Generic Part Number:  
2N3507L**

**REF: MIL-PRF-19500/349**

#### Features:

[Request Quotation](#)

- General-purpose silicon transistor for switching and amplifier applications.
- Housed in **TO-5** case.
- Also available in chip form using the **1506** chip geometry.
- The Min and Max limits shown are per **MIL-PRF-19500/349** which Semicoa meets in all cases.



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                        | $V_{CBO}$ | 80          | V                      |
| Emitter-Base Voltage                          | $V_{EBO}$ | 5.0         | V                      |
| Collector Current, Continuous                 | $I_C$     | 3.0         | A                      |
| Power Dissipation, $T_A = 25^{\circ}\text{C}$ | $P_T$     | 1.0         | W                      |
| Derate above $25^{\circ}\text{C}$             |           | 5.71        | mW/ $^{\circ}\text{C}$ |
| 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 | Max | Unit          |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|-----|-----|---------------|
| Collector-Base Breakdown Voltage<br>$I_C = 10\ \mu\text{A}$                                                                                                          | $V_{(BR)CBO}$  | 80  | --- | V             |
| Collector-Emitter Breakdown Voltage<br>$I_C = 10\ \text{mA}$                                                                                                         | $V_{(BR)CEO}$  | 50  | --- | V             |
| Emitter-Base Breakdown Voltage<br>$I_E = 10\ \mu\text{A}$                                                                                                            | $V_{(BR)EBO}$  | 5.0 | --- | V             |
| Collector-Emitter Cutoff Current<br>$V_{CE} = 60\ \text{V}$ , $V_{EB} = 4\ \text{V}$                                                                                 | $I_{CEX1}$     | --- | 1.0 | $\mu\text{A}$ |
| Collector-Emitter Cutoff Current<br>$V_{CE} = 60\ \text{V}$ , $V_{EB} = 4\ \text{V}$ , $T_A = +150^\circ\text{C}$                                                    | $I_{CEX2}$     | --- | 1.0 | $\mu\text{A}$ |
| Collector Current Continuous<br>$V_{CB} = 50\ \text{V}$                                                                                                              | $I_C$          | 3.0 | --- | A             |
| ON Characteristics                                                                                                                                                   | Symbol         | Min | Max | Unit          |
| <b>DC Current Gain</b>                                                                                                                                               |                |     |     |               |
| $I_C = 500\ \text{mA}$ , $V_{CE} = 1\ \text{V}$ (pulsed)                                                                                                             | $h_{FE1}$      | 35  | 175 | ---           |
| $I_C = 1.5\ \text{A}$ , $V_{CE} = 2\ \text{V}$ (pulsed)                                                                                                              | $h_{FE2}$      | 30  | 150 | ---           |
| $I_C = 2.5\ \text{A}$ , $V_{CE} = 3\ \text{V}$ (pulsed)                                                                                                              | $h_{FE3}$      | 25  | --- | ---           |
| $I_C = 3.0\ \text{A}$ , $V_{CE} = 5\ \text{V}$ (pulsed)                                                                                                              | $h_{FE4}$      | 20  | --- | ---           |
| $I_C = 500\ \text{mA}$ , $V_{CE} = 1\ \text{V}$ (pulsed), $T_A = -55^\circ\text{C}$                                                                                  | $h_{FE5}$      | 17  | --- | ---           |
| <b>Base-Emitter Saturation Voltage</b>                                                                                                                               |                |     |     |               |
| $I_C = 500\ \text{mA}$ , $I_B = 50\ \text{mA}$ (pulsed)                                                                                                              | $V_{BE(sat)1}$ | --- | 1.0 | V dc          |
| $I_C = 1.5\ \text{A}$ , $I_B = 150\ \text{mA}$ (pulsed)                                                                                                              | $V_{BE(sat)2}$ | 0.9 | 1.4 | V dc          |
| $I_C = 2.5\ \text{A}$ , $I_B = 250\ \text{mA}$ (pulsed)                                                                                                              | $V_{BE(sat)3}$ | --- | 2.0 | V dc          |
| <b>Collector-Emitter Saturation Voltage</b>                                                                                                                          |                |     |     |               |
| $I_C = 500\ \text{mA}$ , $I_B = 50\ \text{mA}$ (pulsed)                                                                                                              | $V_{CE(sat)1}$ | --- | 0.5 | V dc          |
| $I_C = 1.5\ \text{A}$ , $I_B = 150\ \text{mA}$ (pulsed)                                                                                                              | $V_{CE(sat)2}$ | --- | 1.0 | V dc          |
| $I_C = 2.5\ \text{A}$ , $I_B = 250\ \text{mA}$ (pulsed)                                                                                                              | $V_{CE(sat)3}$ | --- | 1.5 | V dc          |
| Small Signal Characteristics                                                                                                                                         | Symbol         | Min | Max | Unit          |
| Magnitude of Common Emitter, Small Signal, Short Circuit<br>Forward Current Transfer Ratio<br>$V_{CE} = 5\ \text{V}$ , $I_C = 100\ \text{mA}$ , $f = 20\ \text{MHz}$ | $ h_{FE} $     | 3.0 | 15  | ---           |
| Open Circuit Output Capacitance<br>$V_{CB} = 10\ \text{V}$ , $I_E = 0$ , $100\ \text{kHz} < f < 1\ \text{MHz}$                                                       | $C_{OBO}$      | --- | 40  | pF            |
| Input Capacitance, Output Open Circuited<br>$V_{EB} = 3\ \text{V}$ , $I_C = 0$ , $100\ \text{kHz} < f < 1\ \text{MHz}$                                               | $C_{IBO}$      | --- | 300 | pF            |
| Pulse Response Characteristics                                                                                                                                       | Symbol         | Min | Max | Unit          |
| Delay Time<br>$I_C = 1.5\ \text{A}$ , $I_{B1} = 150\ \text{mA}$                                                                                                      | $t_d$          | --- | 15  | ns            |
| Rise Time<br>$I_C = 1.5\ \text{A}$ , $I_{B1} = 150\ \text{mA}$                                                                                                       | $t_r$          | --- | 30  | ns            |
| Storage Time<br>$I_C = 1.5\ \text{mA}$ , $I_{B2} = I_{B1} = 150\ \text{mA}$                                                                                          | $t_s$          | --- | 55  | ns            |
| Fall Time<br>$I_C = 1.5\ \text{mA}$ , $I_{B2} = I_{B1} = 150\ \text{mA}$                                                                                             | $t_f$          | --- | 35  | ns            |