



# 2N2907AUB

Silicon PNP Transistor

Data Sheet

## Description

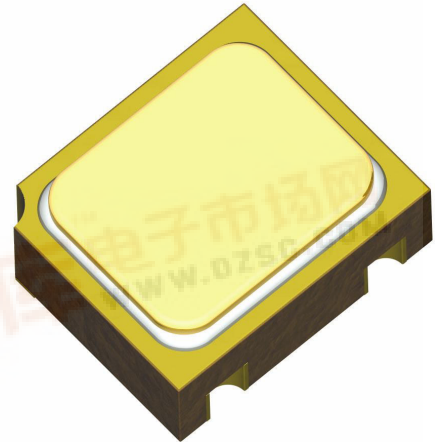
Semicoa Semiconductors offers:

- Screening and processing per MIL-PRF-19500 Appendix E
- JAN level (2N2907AUBJ)
- JANTX level (2N2907AUBJX)
- JANTXV level (2N2907AUBJV)
- JANS level (2N2907AUBJS)
- QCI to the applicable level
- 100% die visual inspection per MIL-STD-750 method 2072 for JANTXV and JANS
- Radiation testing (total dose) upon request

Please contact Semicoa for special configurations  
www.SEMICOA.com or (714) 979-1900

## Applications

- General purpose
- Low power
- PNP silicon transistor



## Features

- Hermetically sealed Cersot ceramic
- Also available in chip configuration
- Chip geometry 0600
- Reference document: MIL-PRF-19500/291

## Benefits

- Qualification Levels: JAN, JANTX, JANTXV and JANS
- Radiation testing available

| Absolute Maximum Ratings                                                                      |                 | $T_c = 25^{\circ}\text{C}$ unless otherwise specified |                             |
|-----------------------------------------------------------------------------------------------|-----------------|-------------------------------------------------------|-----------------------------|
| Parameter                                                                                     | Symbol          | Rating                                                | Unit                        |
| Collector-Emitter Voltage                                                                     | $V_{CEO}$       | 60                                                    | Volts                       |
| Collector-Base Voltage                                                                        | $V_{CBO}$       | 60                                                    | Volts                       |
| Emitter-Base Voltage                                                                          | $V_{EBO}$       | 5                                                     | Volts                       |
| Collector Current, Continuous                                                                 | $I_C$           | 600                                                   | mA                          |
| Power Dissipation, $T_A = 25^{\circ}\text{C}$<br>Derate linearly above $37.5^{\circ}\text{C}$ | $P_T$           | 0.5<br>3.08                                           | W<br>mW/ $^{\circ}\text{C}$ |
| Thermal Resistance                                                                            | $R_{\theta JA}$ | 325                                                   | $^{\circ}\text{C}/\text{W}$ |
| Operating Junction Temperature                                                                | $T_J$           | -65 to +200                                           | $^{\circ}\text{C}$          |
| Storage Temperature                                                                           | $T_{STG}$       | -65 to +200                                           | $^{\circ}\text{C}$          |



## ELECTRICAL CHARACTERISTICS

characteristics specified at  $T_A = 25^\circ\text{C}$

### Off Characteristics

| Parameter                           | Symbol        | Test Conditions                                     | Min | Typ | Max | Units         |
|-------------------------------------|---------------|-----------------------------------------------------|-----|-----|-----|---------------|
| Collector-Emitter Breakdown Voltage | $V_{(BR)CEO}$ | $I_C = 10\text{ mA}$                                | 60  |     |     | Volts         |
| Collector-Base Cutoff Current       | $I_{CBO1}$    | $V_{CB} = 60\text{ Volts}$                          |     |     | 10  | $\mu\text{A}$ |
| Collector-Base Cutoff Current       | $I_{CBO2}$    | $V_{CB} = 50\text{ Volts}$                          |     |     | 10  | nA            |
| Collector-Base Cutoff Current       | $I_{CBO3}$    | $V_{CB} = 50\text{ Volts}, T_A = 150^\circ\text{C}$ |     |     | 10  | $\mu\text{A}$ |
| Collector-Emitter Cutoff Current    | $I_{CES}$     | $V_{CE} = 50\text{ Volts}$                          |     |     | 50  | nA            |
| Emitter-Base Cutoff Current         | $I_{EBO1}$    | $V_{EB} = 5\text{ Volts}$                           |     |     | 10  | $\mu\text{A}$ |
| Emitter-Base Cutoff Current         | $I_{EBO2}$    | $V_{EB} = 4\text{ Volts}$                           |     |     | 50  | nA            |

### On Characteristics

Pulse Test: Pulse Width = 300  $\mu\text{s}$ , Duty Cycle  $\leq 2.0\%$

| Parameter                            | Symbol       | Test Conditions                                                             | Min | Typ | Max | Units |
|--------------------------------------|--------------|-----------------------------------------------------------------------------|-----|-----|-----|-------|
| DC Current Gain                      | $h_{FE1}$    | $I_C = 0.1\text{ mA}, V_{CE} = 10\text{ Volts}$                             | 75  |     |     |       |
|                                      | $h_{FE2}$    | $I_C = 1.0\text{ mA}, V_{CE} = 10\text{ Volts}$                             | 100 |     | 450 |       |
|                                      | $h_{FE3}$    | $I_C = 10\text{ mA}, V_{CE} = 10\text{ Volts}$                              | 100 |     |     |       |
|                                      | $h_{FE4}$    | $I_C = 150\text{ mA}, V_{CE} = 10\text{ Volts}$                             | 100 |     | 300 |       |
|                                      | $h_{FE5}$    | $I_C = 500\text{ mA}, V_{CE} = 10\text{ Volts}$                             | 50  |     |     |       |
|                                      | $h_{FE6}$    | $I_C = 10\text{ mA}, V_{CE} = 10\text{ Volts}$<br>$T_A = -55^\circ\text{C}$ | 50  |     |     |       |
| Base-Emitter Saturation Voltage      | $V_{BEsat1}$ | $I_C = 150\text{ mA}, I_B = 15\text{ mA}$                                   | 0.6 |     | 1.3 | Volts |
|                                      | $V_{BEsat2}$ | $I_C = 500\text{ mA}, I_B = 50\text{ mA}$                                   |     |     | 2.6 |       |
| Collector-Emitter Saturation Voltage | $V_{CEsat1}$ | $I_C = 150\text{ mA}, I_B = 15\text{ mA}$                                   |     |     | 0.4 | Volts |
|                                      | $V_{CEsat2}$ | $I_C = 500\text{ mA}, I_B = 50\text{ mA}$                                   |     |     | 1.6 |       |

### Dynamic Characteristics

| Parameter                                                                | Symbol     | Test Conditions                                                                   | Min | Typ | Max | Units |
|--------------------------------------------------------------------------|------------|-----------------------------------------------------------------------------------|-----|-----|-----|-------|
| Magnitude – Common Emitter, Short Circuit Forward Current Transfer Ratio | $ h_{FE} $ | $V_{CE} = 20\text{ Volts}, I_C = 20\text{ mA}, f = 100\text{ MHz}$                | 2.0 |     |     |       |
| Small Signal Short Circuit Forward Current Transfer Ratio                | $h_{FE}$   | $V_{CE} = 10\text{ Volts}, I_C = 1\text{ mA}, f = 1\text{ kHz}$                   | 100 |     |     |       |
| Open Circuit Output Capacitance                                          | $C_{OBO}$  | $V_{CB} = 10\text{ Volts}, I_E = 0\text{ mA}, 100\text{ kHz} < f < 1\text{ MHz}$  |     |     | 8   | pF    |
| Open Circuit Input Capacitance                                           | $C_{IBO}$  | $V_{EB} = 0.5\text{ Volts}, I_C = 0\text{ mA}, 100\text{ kHz} < f < 1\text{ MHz}$ |     |     | 30  | pF    |

### Switching Characteristics

|                         |           |  |  |  |     |    |
|-------------------------|-----------|--|--|--|-----|----|
| Saturated Turn-On Time  | $t_{on}$  |  |  |  | 45  | ns |
| Saturated Turn-Off Time | $t_{off}$ |  |  |  | 300 | ns |