

Description

Semicoa Semiconductors offers:

- Screening and processing per MIL-PRF-19500 Appendix E
- JAN level (2N1893SJ)
- JANTX level (2N1893SJX)
- JANTXV level (2N1893SJV)
- QCI to the applicable level
- 100% die visual inspection per MIL-STD-750 method 2072 for JANTXV
- Radiation testing (total dose) upon request

Applications

- General purpose
- Low power
- NPN silicon transistor



Features

- Hermetically sealed TO-39 metal can
- Also available in chip configuration
- Chip geometry 4500
- Reference document:
MIL-PRF-19500/182

Benefits

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

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

| Absolute Maximum Ratings | | $T_C = 25^\circ\text{C}$ unless otherwise specified | |
|---|-----------------|---|---------------------------|
| Parameter | Symbol | Rating | Unit |
| Collector-Emitter Voltage | V_{CEO} | 80 | Volts |
| Collector-Base Voltage | V_{CBO} | 120 | Volts |
| Emitter-Base Voltage | V_{EBO} | 7 | Volts |
| Collector Current, Continuous | I_C | 500 | mA |
| Power Dissipation, $T_A = 25^\circ\text{C}$ Derate linearly above 60°C | P_T | 0.8 5.7 | W mW/ $^\circ\text{C}$ |
| Power Dissipation, $T_C = 25^\circ\text{C}$ Derate linearly above 25°C | P_T | 3.0 17.2 | W mW/ $^\circ\text{C}$ |
| Thermal Resistance | $R_{\theta JA}$ | 175 | $^\circ\text{C}/\text{W}$ |
| Operating Junction Temperature | T_J | -65 to +200 | $^\circ\text{C}$ |
| Storage Temperature | T_{STG} | | |

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 | $V_{(BR)CEO}$ | $I_C = 30 \text{ mA}$ | 80 | | | Volts |
| Collector-Emitter Breakdown Voltage | $V_{(BR)CER}$ | $I_C = 10 \text{ mA}, R_{BE} = 10 \Omega$ | 100 | | | Volts |
| Collector-Base Cutoff Current | I_{CBO1} | $V_{CB} = 120 \text{ Volts}$ | | | 100 | μA |
| | I_{CBO2} | $V_{CB} = 90 \text{ Volts}$ | | | 10 | nA |
| | I_{CBO3} | $V_{CE} = 90 \text{ Volts}, T_A = 150^\circ\text{C}$ | | | 15 | μA |
| Emitter-Base Cutoff Current | I_{EBO1} | $V_{EB} = 7 \text{ Volts}$ | | | 100 | μA |
| | I_{EBO2} | $V_{EB} = 5 \text{ Volts}$ | | | 10 | nA |

On Characteristics

Pulse Test: Pulse Width = 300 μs , Duty Cycle $\leq 2.0\%$

| Parameter | Symbol | Test Conditions | Min | Typ | Max | Units |
|--------------------------------------|-------------|---|-----|-----|-----|-------|
| DC Current Gain | h_{FE1} | $I_C = 0.1 \text{ mA}, V_{CE} = 10 \text{ Volts}$ | 20 | | | |
| | h_{FE2} | $I_C = 10 \text{ mA}, V_{CE} = 10 \text{ Volts}$ | 35 | | | |
| | h_{FE3} | $I_C = 150 \text{ mA}, V_{CE} = 10 \text{ Volts}$ | 40 | | 120 | |
| | h_{FE4} | $I_C = 10 \text{ mA}, V_{CE} = 10 \text{ Volts}, T_A = -55^\circ\text{C}$ | 20 | | | |
| Base-Emitter Saturation Voltage | V_{BEsat} | $I_C = 150 \text{ mA}, I_B = 15 \text{ mA}$ | | | 1.3 | Volts |
| Collector-Emitter Saturation Voltage | V_{CEsat} | $I_C = 150 \text{ mA}, I_B = 15 \text{ mA}$ | | | 5.0 | Volts |

Dynamic Characteristics

| Parameter | Symbol | Test Conditions | Min | Typ | Max | Units |
|--|------------|--|-----|-----|----------------------|-------------|
| Magnitude – Common Emitter, Short Circuit Forward Current Transfer Ratio | $ h_{FE} $ | $V_{CE} = 10 \text{ Volts}, I_C = 50 \text{ mA}, f = 20 \text{ MHz}$ | 3 | | 10 | |
| Short Circuit Forward Current Transfer Ratio | h_{FE1} | $f = 1 \text{ kHz}, V_{CE} = 5 \text{ Volts}, I_C = 1 \text{ mA}$ | 35 | | 100 | |
| | h_{FE2} | $V_{CE} = 10 \text{ Volts}, I_C = 5 \text{ mA}$ | 45 | | 150 | |
| Short Circuit Input Impedance | h_{ie} | $V_{CB} = 10\text{V}, I_C = 5\text{mA}$ | 4 | | 8 | Ω |
| Open Circuit Output Admittance | h_{oe} | $V_{CB} = 10\text{V}, I_C = 5\text{mA}$ | | | 0.5 | $\mu\Omega$ |
| Open Circuit reverse Voltage Transfer Ratio | h_{re} | $V_{CB} = 10\text{V}, I_C = 5\text{mA}$ | | | 1.5×10^{-4} | |
| Open Circuit Output Capacitance | C_{OBO} | $V_{CB} = 10 \text{ Volts}, I_C = 0 \text{ mA}, 100 \text{ kHz} < f < 1 \text{ MHz}$ | 2 | | 15 | pF |

Switching Characteristics

| | | | | | | |
|----------------|--------------------|--|--|--|----|----|
| Pulse Response | $t_{on} + t_{off}$ | | | | 30 | ns |
|----------------|--------------------|--|--|--|----|----|