

Description

Semicoa Semiconductors offers:

- Screening and processing per MIL-PRF-19500 Appendix E
- JAN level (2N3019SJ)
- JANTX level (2N3019SJX)
- JANTXV level (2N3019SJV)
- JANS level (2N3019SJS)
- 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
- NPN silicon transistor



Features

- Hermetically sealed TO-39 metal can
- Also available in chip configuration
- Chip geometry 4500
- Reference document: MIL-PRF-19500/391

Benefits

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

| Absolute Maximum Ratings | | T _C = 25°C unless otherwise specified | |
|--|------------------------------------|--|------------|
| Parameter | Symbol | Rating | Unit |
| Collector-Emitter Voltage | V _{CEO} | 80 | Volts |
| Collector-Base Voltage | V _{CBO} | 140 | Volts |
| Emitter-Base Voltage | V _{EBO} | 7 | Volts |
| Collector Current, Continuous | I _C | 1 | A |
| Power Dissipation, T _A = 25°C Derate linearly above 60°C | P _T | 0.8 5.7 | W mW/°C |
| Power Dissipation, T _C = 25°C Derate linearly above 25°C | P _T | 5.0 28.6 | W mW/°C |
| Thermal Resistance | R _{θJA} | 175 | °C/W |
| Operating Junction Temperature Storage Temperature | T _J T _{STG} | -65 to +200 | °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 | $V_{(BR)CEO}$ | $I_C = 30 \text{ mA}$ | 80 | | | Volts |
| Collector-Base Cutoff Current | I_{CBO1} | $V_{CB} = 140 \text{ Volts}$ | | | 10 | μA |
| Collector-Emitter Cutoff Current | I_{CES1} | $V_{CE} = 90 \text{ Volts}$ | | | 10 | nA |
| Collector-Emitter Cutoff Current | I_{CES2} | $V_{CE} = 90 \text{ Volts}, T_A = 150^\circ\text{C}$ | | | 10 | μA |
| Emitter-Base Cutoff Current | I_{EBO1} | $V_{EB} = 7 \text{ Volts}$ | | | 10 | μA |
| Emitter-Base Cutoff Current | 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} | $I_C = 150 \text{ mA}, V_{CE} = 10 \text{ Volts}$ | 100 | | 300 | |
| | h_{FE2} | $I_C = 0.1 \text{ mA}, V_{CE} = 10 \text{ Volts}$ | 50 | | 200 | |
| | h_{FE3} | $I_C = 10 \text{ mA}, V_{CE} = 10 \text{ Volts}$ | 90 | | | |
| | h_{FE4} | $I_C = 500 \text{ mA}, V_{CE} = 10 \text{ Volts}$ | 50 | | 200 | |
| | h_{FE5} | $I_C = 1 \text{ A}, V_{CE} = 10 \text{ Volts}$ | 15 | | | |
| | h_{FE6} | $I_C = 150 \text{ mA}, V_{CE} = 10 \text{ Volts}$ $T_A = -55^\circ\text{C}$ | 40 | | | |
| Base-Emitter Saturation Voltage | V_{BEsat} | $I_C = 150 \text{ mA}, I_B = 15 \text{ mA}$ | | | 1.1 | Volts |
| Collector-Emitter Saturation Voltage | V_{CEsat1} | $I_C = 150 \text{ mA}, I_B = 15 \text{ mA}$ | | | 0.2 | Volts |
| | V_{CEsat2} | $I_C = 500 \text{ mA}, I_B = 50 \text{ mA}$ | | | 0.5 | Volts |

Small Signal Characteristics

| Parameter | Symbol | Test Conditions | Min | Typ | Max | Units |
|--|---------------|---|-----|-----|-----|-------|
| Magnitude – Common Emitter, Short Circuit Forward Current Transfer Ratio | $ h_{FE} $ | $V_{CE} = 10 \text{ Volts}, I_C = 50 \text{ mA}, f = 20 \text{ MHz}$ | 5 | | 20 | |
| Small Signal Short Circuit Forward Current Transfer Ratio | h_{FE} | $V_{CE} = 5 \text{ Volts}, I_C = 1 \text{ mA}, f = 1 \text{ kHz}$ | 80 | | 400 | |
| Open Circuit Output Capacitance | C_{OBO} | $V_{CB} = 10 \text{ Volts}, I_E = 0 \text{ mA}, 100 \text{ kHz} < f < 1 \text{ MHz}$ | | | 12 | pF |
| Open Circuit Input Capacitance | C_{IBO} | $V_{EB} = 0.5 \text{ Volts}, I_C = 0 \text{ mA}, 100 \text{ kHz} < f < 1 \text{ MHz}$ | | | 60 | pF |
| Collector Base time constant | $\tau_b' C_C$ | $V_{CB} = 10 \text{ Volts}, I_E = 10 \text{ mA}, f = 79.8 \text{ MHz}$ | | | 400 | ps |
| Noise Figure | NF | $V_{CE} = 10 \text{ Volts}, I_C = 100 \mu\text{A}, f = 200 \text{ Hz}, R_g = 1 \text{ k}\Omega$ | | | 4 | dB |

Switching Characteristics

| | | | | | | |
|------------------------|--------------------|--|--|--|----|----|
| Saturated Turn-On Time | $t_{ON} + t_{OFF}$ | | | | 30 | ns |
|------------------------|--------------------|--|--|--|----|----|

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