

Description

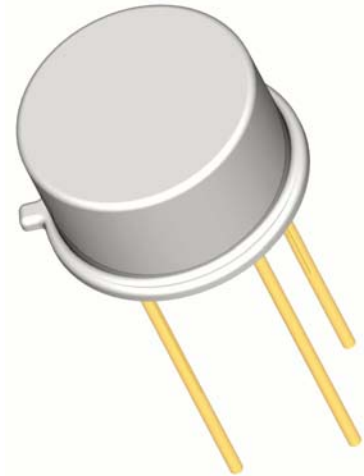
Semicoa Semiconductors offers:

- Screening and processing per MIL-PRF-19500 Appendix E
- JAN level (2N3499LJ)
- JANTX level (2N3499LJX)
- JANTXV level (2N3499LJV)
- QCI to the applicable level
- 100% die visual inspection per MIL-STD-750 method 2072 for JANTXV
- 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-5 metal can
- Also available in chip configuration
- Chip geometry 5620
- Reference document: MIL-PRF-19500/366

Benefits

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

| Absolute Maximum Ratings | | $T_C = 25^\circ\text{C}$ unless otherwise specified | |
|---|-----------------|---|---------------------------|
| Parameter | Symbol | Rating | Unit |
| Collector-Emitter Voltage | V_{CEO} | 100 | Volts |
| Collector-Base Voltage | V_{CBO} | 100 | Volts |
| Emitter-Base Voltage | V_{EBO} | 6 | Volts |
| Collector Current, Continuous | I_C | 500 | mA |
| Power Dissipation, $T_A = 25^\circ\text{C}$ Derate linearly above 25°C | P_T | 1 5.71 | 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} | -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 | $V_{(BR)CEO}$ | $I_C = 10 \text{ mA}$ | 100 | | | Volts |
| Collector-Base Cutoff Current | I_{CBO1} | $V_{CB} = 100 \text{ Volts}$ | | | 10 | μA |
| | I_{CBO2} | $V_{CB} = 50 \text{ Volts}$ | | | 50 | nA |
| | I_{CBO3} | $V_{CB} = 50 \text{ Volts}, T_A = 150^\circ\text{C}$ | | | 50 | μA |
| Collector-Emitter Cutoff Current | I_{CEO} | $V_{CE} = 80 \text{ Volts}$ | | | 1 | μA |
| Emitter-Base Cutoff Current | I_{EBO1} | $V_{EB} = 6 \text{ Volts}$ | | | 10 | μA |
| | I_{EBO2} | $V_{EB} = 4 \text{ Volts}$ | | | 25 | 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} | $I_C = 0.1 \text{ mA}, V_{CE} = 10 \text{ Volts}$ | 35 | | | |
| | h_{FE2} | $I_C = 1.0 \text{ mA}, V_{CE} = 10 \text{ Volts}$ | 50 | | | |
| | h_{FE3} | $I_C = 10 \text{ mA}, V_{CE} = 10 \text{ Volts}$ | 75 | | | |
| | h_{FE4} | $I_C = 150 \text{ mA}, V_{CE} = 10 \text{ Volts}$ | 100 | | 300 | |
| | h_{FE6} | $I_C = 500 \text{ mA}, V_{CE} = 10 \text{ Volts}$ | 20 | | | |
| | h_{FE7} | $I_C = 150 \text{ mA}, V_{CE} = 10 \text{ Volts}$ | 45 | | | |
| | | | $T_A = -55^\circ\text{C}$ | | | |
| Base-Emitter Saturation Voltage | V_{BEsat1} | $I_C = 10 \text{ mA}, I_B = 1 \text{ mA}$ | | | 0.8 | Volts |
| | V_{BEsat3} | $I_C = 300 \text{ mA}, I_B = 30 \text{ mA}$ | | | 1.4 | |
| Collector-Emitter Saturation Voltage | V_{CEsat1} | $I_C = 10 \text{ mA}, I_B = 1 \text{ mA}$ | | | 0.2 | Volts |
| | V_{CEsat3} | $I_C = 300 \text{ mA}, I_B = 30 \text{ mA}$ | | | 0.6 | |

| Dynamic Characteristics | | | | | | |
|--|------------|--|-----|-----|-----|-------|
| Parameter | Symbol | Test Conditions | Min | Typ | Max | Units |
| Magnitude – Common Emitter, Short Circuit Forward Current Transfer Ratio | $ h_{FE} $ | $V_{CE} = 20 \text{ Volts}, I_C = 20 \text{ mA}, f = 100 \text{ MHz}$ | 1.5 | | 8 | |
| Small Signal Short Circuit Forward Current Transfer Ratio | h_{FE} | $V_{CE} = 10 \text{ Volts}, I_C = 10 \text{ mA}, f = 1 \text{ kHz}$ | 75 | | 375 | |
| Open Circuit Output Capacitance | C_{OBO} | $V_{CB} = 10 \text{ Volts}, I_E = 0 \text{ mA}, 100 \text{ kHz} < f < 1 \text{ MHz}$ | | | 10 | pF |
| Open Circuit Input Capacitance | C_{IBO} | $V_{EB} = 0.5 \text{ Volts}, I_C = 0 \text{ mA}, 100 \text{ kHz} < f < 1 \text{ MHz}$ | | | 80 | pF |
| Noise Figure | NF_1 | $V_{CE} = 10 \text{ Volts}, I_C = 0.5 \text{ mA}, f = 1 \text{ kHz}, R_g = 1 \text{ k}\Omega$ | | | 16 | dB |
| | NF_2 | $V_{CE} = 10 \text{ Volts}, I_C = 0.5 \text{ mA}, f = 10 \text{ kHz}, R_g = 1 \text{ k}\Omega$ | | | 6 | |

| Switching Characteristics | | | | | | |
|---------------------------|-----------|--|-----|-----|-------|-------|
| Parameter | Symbol | Test Conditions | Min | Typ | Max | Units |
| Saturated Turn-On Time | t_{ON} | $V_{EB} = 5 \text{ Volts}, I_C = 150 \text{ mA}, I_{B1} = 15 \text{ mA}$ | | | 115 | ns |
| Saturated Turn-Off Time | t_{OFF} | $I_C = 150 \text{ mA}, I_{B1}=I_{B2}=15 \text{ mA}$ | | | 1,150 | ns |