

Description

SEMICOA offers:

- Screening and processing per MIL-PRF-19500 Appendix E
- JAN level (2N3507AJ)
- JANTX level (2N3507AJX)
- JANTXV level (2N3507AJV)
- JANS level (2N3507AJS)
- 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 switching transistor
- Low power
- NPN silicon transistor



Features

- Hermetically sealed TO-39 metal can
- Also available in chip configuration
- Chip geometry 1506
- Reference document: MIL-PRF-19500/349

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} | 50 | Volts |
| Collector-Base Voltage | V_{CBO} | 80 | Volts |
| Emitter-Base Voltage | V_{EBO} | 5 | Volts |
| Collector Current, Continuous | I_C | 3 | A |
| Power Dissipation, $T_A = 25^\circ\text{C}$ Derate linearly above 25°C | P_T | 1 5.71 | W mW/°C |
| Power Dissipation, $T_C = 25^\circ\text{C}$ Derate linearly above 25°C | P_T | 5 28.6 | W mW/°C |
| Thermal Resistance | $R_{\theta JA}$ | 175 | °C/W |
| Operating Junction Temperature | T_J | -65 to +200 | °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-Base Breakdown Voltage | $V_{(BR)CBO}$ | $I_C = 100 \mu\text{A}$ | 80 | | | Volts |
| Collector-Emitter Breakdown Voltage | $V_{(BR)CEO}$ | $I_C = 10 \text{ mA}$ | 50 | | | Volts |
| Emitter-Base Breakdown Voltage | $V_{(BR)EBO}$ | $I_E = 10 \mu\text{A}$ | 5 | | | Volts |
| Collector-Emitter Cutoff Current | I_{CEX1} | $V_{CE} = 60 \text{ Volts}, V_{EB} = 4 \text{ Volts}$ | | | 1 | μA |
| Collector-Emitter Cutoff Current | I_{CEX2} | $V_{CE} = 60 \text{ Volts}, V_{EB} = 4 \text{ Volts}, T_A = 150^\circ\text{C}$ | | | 1.5 | mA |

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} | $I_C = 500 \text{ mA}, V_{CE} = 1 \text{ Volts}$ | 35 | | 175 | |
| | h_{FE2} | $I_C = 1.5 \text{ A}, V_{CE} = 2 \text{ Volts}$ | 30 | | 150 | |
| | h_{FE3} | $I_C = 2.5 \text{ A}, V_{CE} = 3 \text{ Volts}$ | 25 | | | |
| | h_{FE4} | $I_C = 3.0 \text{ A}, V_{CE} = 5 \text{ Volts}$ | 20 | | | |
| | h_{FE5} | $I_C = 500 \text{ mA}, V_{CE} = 2 \text{ Volts}, T_A = -55^\circ\text{C}$ | 17 | | | |
| Base-Emitter Saturation Voltage | V_{BEsat1} | $I_C = 500 \text{ mA}, I_B = 50 \text{ mA}$ | 0.8 | | 1.0 | Volts |
| | V_{BEsat2} | $I_C = 1.5 \text{ A}, I_B = 150 \text{ mA}$ | | 1.3 | | |
| | V_{BEsat3} | $I_C = 2.5 \text{ A}, I_B = 250 \text{ mA}$ | | 2.0 | | |
| Collector-Emitter Saturation Voltage | V_{CEsat1} | $I_C = 500 \text{ mA}, I_B = 50 \text{ mA}$ | | | 0.5 | Volts |
| | V_{CEsat2} | $I_C = 1.5 \text{ A}, I_B = 150 \text{ mA}$ | | | 1.0 | |
| | V_{CEsat3} | $I_C = 2.5 \text{ A}, I_B = 250 \text{ mA}$ | | | 1.5 | |

Dynamic Characteristics

| Parameter | Symbol | Test Conditions | Min | Typ | Max | Units |
|--|------------|--|-----|-----|-----|-------|
| Magnitude – Common Emitter, Short Circuit Forward Current Transfer Ratio | $ h_{FE} $ | $V_{CE} = 5 \text{ Volts}, I_C = 100 \text{ mA}, f = 20 \text{ MHz}$ | 3 | | 15 | |
| Open Circuit Output Capacitance | C_{OBO} | $V_{CB} = 10 \text{ Volts}, I_E = 0 \text{ mA}, 100 \text{ kHz} < f < 1 \text{ MHz}$ | | | 40 | pF |
| Open Circuit Input Capacitance | C_{IBO} | $V_{EB} = 3 \text{ Volts}, I_C = 0 \text{ mA}, 100 \text{ kHz} < f < 1 \text{ MHz}$ | | | 300 | pF |
| Delay Time | t_d | $I_C = 1.5 \text{ A}, I_{B1} = 150 \text{ mA}$ | | | 15 | ns |
| Rise Time | t_r | $I_C = 1.5 \text{ A}, I_{B1} = 150 \text{ mA}$ | | | 30 | ns |

Switching Characteristics

| | | | | | | |
|--------------|-------|---|--|--|----|----|
| Storage Time | t_s | $I_C = 1.5 \text{ A}, I_{B1}=I_{B2} = 150 \text{ mA}$ | | | 55 | ns |
| Fall Time | t_f | $I_C = 1.5 \text{ A}, I_{B1}=I_{B2} = 150 \text{ mA}$ | | | 35 | ns |