

Description

Semicoa Semiconductors offers:

- Screening and processing per MIL-PRF-19500 Appendix E
- JAN level (2N5666SJ)
- JANTX level (2N5666SJX)
- JANTXV level (2N5666SJV)
- 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 high power switching
- Power Transistor
- NPN silicon transistor



Features

- Hermetically sealed TO-39 metal can
- Also available in chip configuration
- Chip geometry 9221
- Reference document: MIL-PRF-19500/455

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} | 200 | Volts |
| Collector-Base Voltage | V_{CBO} | 250 | Volts |
| Emitter-Base Voltage | V_{EBO} | 6 | Volts |
| Collector Current, Continuous | I_C | 5 | A |
| Power Dissipation, $T_A = 25^\circ\text{C}$ Derate linearly above 25°C | P_T | 1.2 6.9 | W mW/ $^\circ\text{C}$ |
| Power Dissipation, $T_C = 25^\circ\text{C}$ Derate linearly above 100°C | P_T | 15 150 | W mW/ $^\circ\text{C}$ |
| Thermal Resistance | $R_{\theta JA}$ | 3.3 | $^\circ\text{C}/\text{W}$ |
| 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 | $V_{(BR)CER}$ | $I_C = 10 \mu\text{A}, R_{BE} = 100 \Omega$ | 250 | | | Volts |
| Emitter-Base Breakdown Voltage | $V_{(BR)EBO}$ | $I_E = 10 \mu\text{A}$ | 6 | | | Volts |
| Collector-Base Cutoff Current | I_{CBO1} | $V_{CB} = 200 \text{ Volts}$ | | | 100 | nA |
| Collector-Emitter Cutoff Current | I_{CES1} | $V_{CE} = 200 \text{ Volts}$ | | | 200 | nA |
| | I_{CES1} | $V_{CE} = 200 \text{ Volts}, T_A = 150^\circ\text{C}$ | | | 100 | μA |

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} | $I_C = 0.5 \text{ A}, V_{CE} = 2 \text{ Volts}$ | 40 | | | |
| | h_{FE2} | $I_C = 1 \text{ A}, V_{CE} = 5 \text{ Volts}$ | 40 | | 120 | |
| | h_{FE3} | $I_C = 3 \text{ A}, V_{CE} = 5 \text{ Volts}$ | 15 | | | |
| | h_{FE4} | $I_C = 5 \text{ A}, V_{CE} = 5 \text{ Volts}$ | 5 | | | |
| | h_{FE5} | $I_C = 1 \text{ A}, V_{CE} = 5 \text{ Volts}$ $T_A = -55^\circ\text{C}$ | 15 | | | |
| Base-Emitter Saturation Voltage | V_{BEsat1} | $I_C = 3 \text{ A}, I_B = 300 \text{ mA}$ | | | 1.2 | Volts |
| | V_{BEsat2} | $I_C = 5 \text{ A}, I_B = 1 \text{ A}$ | | | 1.5 | Volts |
| Collector-Emitter Saturation Voltage | V_{CEsat1} | $I_C = 3 \text{ A}, I_B = 300 \text{ mA}$ | | | 0.4 | Volts |
| | V_{CEsat2} | $I_C = 5 \text{ A}, I_B = 1 \text{ A}$ | | | 1.0 | Volts |

Dynamic Characteristics

| Parameter | Symbol | Test Conditions | Min | Typ | Max | Units |
|--|------------|--|-----|-----|-----|-------|
| Magnitude – Common Emitter, Short Circuit Forward Current Transfer Ratio | $ h_{FE} $ | $V_{CE} = 5 \text{ Volts}, I_C = 500 \text{ mA}, f = 10 \text{ MHz}$ | 2 | | 7 | |
| Open Circuit Output Capacitance | C_{OBO} | $V_{CB} = 10 \text{ Volts}, I_E = 0 \text{ mA}, 100 \text{ kHz} < f < 1 \text{ MHz}$ | | | 120 | pF |

Switching Characteristics

| Parameter | Symbol | Test Conditions | Min | Typ | Max | Units |
|---------------|-----------|---|-----|-----|------|---------------|
| Turn-On Time | t_{ON} | $I_C = 1 \text{ A}, V_{CC} = 100 \text{ Volts}$ | | | 0.25 | μs |
| Turn-Off Time | t_{OFF} | $I_C = 1 \text{ A}, V_{CC} = 100 \text{ Volts}$ | | | 1.5 | μs |