

## 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](http://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	$V_{CE0}$	200	Volts
Collector-Base Voltage	$V_{CB0}$	250	Volts
Emitter-Base Voltage	$V_{EB0}$	6	Volts
Collector Current, Continuous	$I_C$	5	A
Power Dissipation, $T_A = 25^\circ\text{C}$ Derate linearly above $25^\circ\text{C}$	$P_T$	1.2 6.9	W mW/ $^\circ\text{C}$
Power Dissipation, $T_C = 25^\circ\text{C}$ Derate linearly above $100^\circ\text{C}$	$P_T$	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	$\mu\text{A}$

### On Characteristics

Pulse Test: Pulse Width = 300  $\mu\text{s}$ , 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	$\mu\text{s}$
Turn-Off Time	$t_{OFF}$	$I_C = 1 \text{ A}$ , $V_{CC} = 100 \text{ Volts}$			1.5	$\mu\text{s}$