

## Description

Semicoa Semiconductors offers:

- Screening and processing per MIL-PRF-19500 Appendix E
- JAN level (2N4449J)
- JANTX level (2N4449JX)
- JANTXV level (2N4449JV)
- JANS level (2N4449JS)
- 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](http://www.SEMICOA.com) or (714) 979-1900

## Applications

- High-speed switching transistor
- Low power
- NPN silicon transistor



## Features

- Hermetically sealed TO-46 metal can
- Also available in chip configuration
- Chip geometry 0005
- Reference document: MIL-PRF-19500/317

## Benefits

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

Absolute Maximum Ratings		T <sub>c</sub> = 25°C unless otherwise specified	
Parameter	Symbol	Rating	Unit
Collector-Emitter Voltage	V <sub>CEO</sub>	15	Volts
Collector-Base Voltage	V <sub>CBO</sub>	40	Volts
Emitter-Base Voltage	V <sub>EBO</sub>	4.5	Volts
Power Dissipation, T <sub>A</sub> = 25°C Derate linearly above 25°C	P <sub>T</sub>	0.36 2.06	mW mW/°C
Thermal Resistance	R <sub>θJA</sub>	325	°C/W
Operating Junction Temperature	T <sub>J</sub>	-65 to +200	°C
Storage Temperature	T <sub>STG</sub>	-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	$V_{(BR)CEO}$	$I_C = 10\text{ mA}$	15			Volts
Collector-Base Cutoff Current	$I_{CBO1}$	$V_{CB} = 40\text{ Volts}$			10	$\mu\text{A}$
	$I_{CBO2}$	$V_{CB} = 32\text{ Volts}$			0.2	$\mu\text{A}$
	$I_{CBO3}$	$V_{CB} = 20\text{ Volts}, T_A = 150^\circ\text{C}$			30	$\mu\text{A}$
Collector-Emitter Cutoff Current	$I_{CEX}$	$V_{CE} = 10\text{ Volts}, V_{EB} = 0.25\text{ Volts}$ $T_A = 125^\circ\text{C}$			30	$\mu\text{A}$
Collector-Emitter Cutoff Current	$I_{CES}$	$V_{CE} = 20\text{ Volts}$			400	nA
Emitter-Base Cutoff Current	$I_{EBO1}$	$V_{EB} = 4.5\text{ Volts}$			10	$\mu\text{A}$
	$I_{EBO2}$	$V_{EB} = 4\text{ Volts}$			0.25	$\mu\text{A}$
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	$h_{FE1}$	$I_C = 10\text{ mA}, V_{CE} = 0.35\text{ Volts}$	40		120	
	$h_{FE2}$	$I_C = 30\text{ mA}, V_{CE} = 0.4\text{ Volts}$	30		120	
	$h_{FE3}$	$I_C = 10\text{ mA}, V_{CE} = 1\text{ Volts}$	40		120	
	$h_{FE4}$	$I_C = 100\text{ mA}, V_{CE} = 1\text{ Volts}$	20		120	
	$h_{FE5}$	$I_C = 10\text{ mA}, V_{CE} = 1\text{ Volts}$ $T_A = -55^\circ\text{C}$	20			
Base-Emitter Saturation Voltage	$V_{BEsat1}$	$I_C = 10\text{ mA}, I_B = 1\text{ mA}$	0.70		0.85	Volts
	$V_{BEsat2}$	$I_C = 30\text{ mA}, I_B = 3\text{ mA}$			0.90	
	$V_{BEsat3}$	$I_C = 100\text{ mA}, I_B = 10\text{ mA}$	0.80		1.20	
	$V_{BEsat4}$	$I_C = 10\text{ mA}, I_B = 1\text{ mA}, T_A = +125^\circ\text{C}$	0.59			
	$V_{BEsat5}$	$I_C = 10\text{ mA}, I_B = 1\text{ mA}, T_A = -55^\circ\text{C}$			1.02	
Collector-Emitter Saturation Voltage	$V_{CEsat1}$	$I_C = 10\text{ mA}, I_B = 1\text{ mA}$			0.20	Volts
	$V_{CEsat2}$	$I_C = 30\text{ mA}, I_B = 3\text{ mA}$			0.25	
	$V_{CEsat3}$	$I_C = 100\text{ mA}, I_B = 10\text{ mA}$			0.45	
	$V_{CEsat4}$	$I_C = 10\text{ mA}, I_B = 1\text{ mA}, T_A = +125^\circ\text{C}$			0.30	
Dynamic Characteristics						
Parameter	Symbol	Test Conditions	Min	Typ	Max	Units
Magnitude – Common Emitter, Short Circuit Forward Current Transfer Ratio	$ h_{FE} $	$V_{CE} = 10\text{ Volts}, I_C = 10\text{ mA},$ $f = 100\text{ MHz}$	5		10	
Open Circuit Output Capacitance	$C_{OBO}$	$V_{CB} = 5\text{ Volts}, I_E = 0\text{ mA},$ $100\text{ kHz} < f < 1\text{ MHz}$			4	pF
Open Circuit Input Capacitance	$C_{IBO}$	$V_{EB} = 0.5\text{ Volts}, I_C = 0\text{ mA},$ $100\text{ kHz} < f < 1\text{ MHz}$			5	pF
Storage Time	$t_s$	$I_C = 10\text{ mA}, I_{B1} = I_{B2} = 10\text{ mA}$			13	ns
Saturated Turn-On Time	$t_{ON}$	$I_C = 10\text{ mA}, I_{B1} = 3\text{ mA},$ $I_{B2} = 1.5\text{ mA}$			12	ns
Saturated Turn-Off Time	$t_{OFF}$	$I_C = 10\text{ mA}, I_{B1} = 3\text{ mA},$ $I_{B2} = 1.5\text{ mA}$			18	ns