

Description

Semicoa Semiconductors offers:

- Screening and processing per MIL-PRF-19500 Appendix E
- JAN level (2N3997J)
- JANTX level (2N3997JX)
- JANTXV level (2N3997JV)
- 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

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

Features

- Hermetically sealed TO-x metal can
- Also available in chip configuration
- Chip geometry 9201
- Reference document:
MIL-PRF-19500/374

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}	80	Volts
Collector-Base Voltage	V_{CBO}	100	Volts
Emitter-Base Voltage	V_{EBO}	8	Volts
Collector Current, Continuous	I_C	5	A
Power Dissipation, $T_A = 25^\circ\text{C}$ Derate linearly above 25°C	P_T	2 11.4	W mW/ $^\circ\text{C}$
Power Dissipation, $T_C = 25^\circ\text{C}$ Derate linearly above 25°C	P_T	30 300	W mW/ $^\circ\text{C}$
Thermal Resistance	$R_{\theta JC}$	3.33	$^\circ\text{C}/\text{W}$
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-Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C = 10 \mu\text{A}$	100			Volts
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C = 50 \text{ mA}$	80			Volts
Collector-Emitter Cutoff Current	I_{CEO}	$V_{CE} = 60 \text{ Volts}$			10	μA
Collector-Emitter Cutoff Current	I_{CES1}	$V_{CE} = 80 \text{ Volts}$			200	nA
	I_{CES1}	$V_{CE} = 80 \text{ Volts}, T_A = 150^\circ\text{C}$			50	μA
Emitter-Base Cutoff Current	I_{EBO1}	$V_{EB} = 5 \text{ Volts}$			200	nA
	I_{EBO2}	$V_{EB} = 8 \text{ Volts}$			10	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}	$I_C = 50 \text{ mA}, V_{CE} = 2 \text{ Volts}$	60			
	h_{FE2}	$I_C = 1 \text{ A}, V_{CE} = 2 \text{ Volts}$	80		240	
	h_{FE3}	$I_C = 5 \text{ A}, V_{CE} = 5 \text{ Volts}$	20			
	h_{FE4}	$I_C = 1 \text{ A}, V_{CE} = 2 \text{ Volts}$ $T_A = -55^\circ\text{C}$	20			
Base-Emitter Saturation Voltage	V_{BEsat1}	$I_C = 1 \text{ A}, I_B = 100 \text{ mA}$	0.6		1.2	Volts
	V_{BEsat2}	$I_C = 5 \text{ A}, I_B = 500 \text{ mA}$			1.6	
Collector-Emitter Saturation Voltage	V_{CEsat1}	$I_C = 1 \text{ A}, I_B = 100 \text{ mA}$			0.25	Volts
	V_{CEsat2}	$I_C = 5 \text{ A}, I_B = 500 \text{ mA}$			2	

Dynamic Characteristics

Parameter	Symbol	Test Conditions	Min	Typ	Max	Units
Magnitude – Common Emitter, Short Circuit Forward Current Transfer Ratio	$ h_{FE} $	$V_{CE} = 5 \text{ Volts}, I_C = 1 \text{ A}, f = 10 \text{ MHz}$	3		12	
Open Circuit Output Capacitance	C_{OBO}	$V_{CB} = 10 \text{ Volts}, I_E = 0 \text{ mA}, 100 \text{ kHz} < f < 1 \text{ MHz}$			150	pF

Switching Characteristics

Parameter	Symbol	Test Conditions	Min	Typ	Max	Units
Delay Time	t_d				100	ns
Rise Time	t_r				240	ns
Storage Time	t_s				1.75	μs
Fall Time	t_f				300	ns
Saturated Turn-On Time	t_{ON}				300	ns
Saturated Turn-Off Time	t_{OFF}				2.0	μs