

Description

Semicoa Semiconductors offers:

- Screening and processing per MIL-PRF-19500 Appendix E
- JAN level (2N2904J)
- JANTX level (2N2904JX)
- JANTXV level (2N2904JV)
- 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
- Low power
- PNP silicon transistor



Features

- Hermetically sealed TO-39 metal can
- Also available in chip configuration
- Chip geometry 0600
- Reference document: MIL-PRF-19500/290

Benefits

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

Absolute Maximum Ratings		T _C = 25°C unless otherwise specified	
Parameter	Symbol	Rating	Unit
Collector-Emitter Voltage	V _{CEO}	40	Volts
Collector-Base Voltage	V _{CB0}	60	Volts
Emitter-Base Voltage	V _{EBO}	5	Volts
Collector Current, Continuous	I _C	600	mA
Power Dissipation, T _A = 25 °C Derate above 60 °C	P _T	0.8 5.7	W mW/°C
Power Dissipation, T _C = 25 °C Derate above 25 °C	P _T	3.0 17.2	W mW/°C
Thermal Resistance	R _{θJA}	175	°C/W
Operating Junction Temperature	T _J	-65 to +200	°C
Storage Temperature	T _{STG}	-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	$V_{(BR)CEO}$	$I_C = 10\text{ mA}$	40			Volts
Collector-Base Cutoff Current	I_{CBO1}	$V_{CB} = 60\text{ Volts}$			10	μA
Collector-Base Cutoff Current	I_{CBO2}	$V_{CB} = 50\text{ Volts}$			20	nA
Collector-Base Cutoff Current	I_{CBO3}	$V_{CB} = 50\text{ Volts}, T_A = 150^\circ\text{C}$			20	μA
Collector-Emitter Cutoff Current	I_{CES}	$V_{CE} = 40\text{ Volts}$			1	μA
Emitter-Base Cutoff Current	I_{EBO1}	$V_{EB} = 5\text{ Volts}$			10	μA
Emitter-Base Cutoff Current	I_{EBO2}	$V_{EB} = 3.5\text{ Volts}$			50	nA
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}	$I_C = 0.1\text{ mA}, V_{CE} = 10\text{ Volts}$	20		175	
	h_{FE2}	$I_C = 1.0\text{ mA}, V_{CE} = 10\text{ Volts}$	25			
	h_{FE3}	$I_C = 10\text{ mA}, V_{CE} = 10\text{ Volts}$	35			
	h_{FE4}	$I_C = 150\text{ mA}, V_{CE} = 10\text{ Volts}$	40			
	h_{FE5}	$I_C = 500\text{ mA}, V_{CE} = 10\text{ Volts}$	20			
	h_{FE6}	$I_C = 10\text{ mA}, V_{CE} = 10\text{ Volts}$ $T_A = -55^\circ\text{C}$	15			
Base-Emitter Saturation Voltage	V_{BEsat1}	$I_C = 150\text{ mA}, I_B = 15\text{ mA}$			1.3	Volts
	V_{BEsat2}	$I_C = 500\text{ mA}, I_B = 50\text{ mA}$			2.6	
Collector-Emitter Saturation Voltage	V_{CEsat1}	$I_C = 150\text{ mA}, I_B = 15\text{ mA}$			0.4	Volts
	V_{CEsat2}	$I_C = 500\text{ mA}, I_B = 50\text{ mA}$			1.6	
Dynamic Characteristics						
Parameter	Symbol	Test Conditions	Min	Typ	Max	Units
Magnitude – Common Emitter, Short Circuit Forward Current Transfer Ratio	$ h_{FE} $	$V_{CE} = 20\text{ Volts}, I_C = 50\text{ mA}, f = 100\text{ MHz}$	2.0			
Small Signal Short Circuit Forward Current Transfer Ratio	h_{FE}	$V_{CE} = 10\text{ Volts}, I_C = 1\text{ mA}, f = 1\text{ kHz}$	25			
Open Circuit Output Capacitance	C_{OBO}	$V_{CB} = 10\text{ Volts}, I_C = 0\text{ mA}, 100\text{ kHz} < f < 1\text{ MHz}$			8	pF
Open Circuit Input Capacitance	C_{IBO}	$V_{EB} = 2.0\text{ Volts}, I_E = 0\text{ mA}, 100\text{ kHz} < f < 1\text{ MHz}$			30	pF
Switching Characteristics						
Saturated Turn-On Time	t_{on}				45	ns
Saturated Turn-Off Time	t_{off}				300	ns