2N930

Silicon NPN Transistor

Data Sheet

Description

Semicoa Semiconductors offers:

- Screening and processing per MIL-PRF-19500 Appendix E
- JAN level (2N930J)
- JANTX level (2N930JX)
- JANTXV level (2N930JV)
- 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
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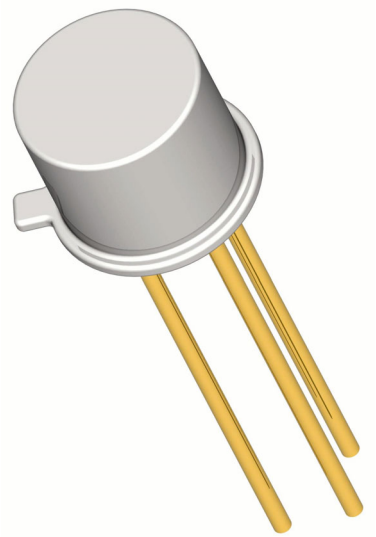
Applications

- General purpose
- Low power
- NPN silicon transistor



Features

- Hermetically sealed TO-18 metal can
- Also available in chip configuration
- Chip geometry 0307
- Reference document: MIL-PRF-19500/253

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}	45	Volts
Collector-Base Voltage	V_{CBO}	60	Volts
Emitter-Base Voltage	V_{EBO}	6	Volts
Collector Current, Continuous	I_C	30	mA
Power Dissipation, T_A = 25°C Derate linearly above 25°C	P_T	360 2.06	mW mW/°C
Thermal Resistance	$R_{\theta JA}$	485	°C/W
Operating Junction Temperature	T_J	-65 to +200	°C
Storage Temperature	T_{STG}	-65 to +200	°C

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ELECTRICAL CHARACTERISTICS

characteristics specified at T_A = 25°C

Off Characteristics

Parameter	Symbol	Test Conditions	Min	Typ	Max	Units
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	I_C = 10 mA	45			Volts
Collector-Base Cutoff Current	I_{CBO1} I_{CBO2}	V_{CB} = 60 Volts V_{CB} = 45 Volts			10 10	µA nA
Collector-Emitter Cutoff Current	I_{CEO}	V_{CE} = 5 Volts			2	nA
Collector-Emitter Cutoff Current	I_{CES1} I_{CES2}	V_{CE} = 45 Volts V_{CE} = 45 Volts, T_A = 150°C			2 10	nA µA
Emitter-Base Cutoff Current	I_{EBO1} I_{EBO2}	V_{EB} = 6 Volts V_{EB} = 5 Volts			10 5	µA nA

On Characteristics

Pulse Test: Pulse Width = 300 µs, Duty Cycle ≤ 2.0%

Parameter	Symbol	Test Conditions	Min	Typ	Max	Units
DC Current Gain	h_{FE1} h_{FE2} h_{FE3} h_{FE4}	I_C = 10 µA, V_{CE} = 5 Volts I_C = 500 µA, V_{CE} = 5 Volts I_C = 10 mA, V_{CE} = 5 Volts I_C = 10 µA, V_{CE} = 5 Volts T_A = -55°C	100 150 20		300 600	
Base-Emitter Saturation Voltage	V_{BEsat1}	I_C = 10 mA, I_B = 0.5 mA	0.6		1	Volts
Collector-Emitter Saturation Voltage	V_{CEsat1}	I_C = 10 mA, I_B = 0.5 mA			1	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 Volts, I_C = 500 µA, f = 30 MHz	1.5		6	
Small Signal Short Circuit Forward Current Transfer Ratio	h_{FE}	V_{CE} = 5 Volts, I_C = 1 mA, f = 1 kHz	150		600	
Open Circuit Output Capacitance	C_{OBO}	V_{CB} = 5 Volts, I_E = 0 mA, 100 kHZ < f < 1 MHz			8	pF
Noise Figure	 NF_1 NF_2 NF_3	V_{CE} = 5 Volts, I_C = 10 µA, R_g = 10 kΩ, f = 100 Hz f = 1 kHz f = 10 kHz			 5 3 3	dB
Short Circuit Input Impedance	h_{ie}	V_{CB} = 5V, I_C = 1mA, f = 1kHz	25		32	Ω
Open Circuit Output Admittance	h_{oe}	V_{CB} = 5V, I_C = 1mA, f = 1kHz			1	mho
Open Circuit reverse Voltage Transfer Ratio	h_{re}	V_{CB} = 5V, I_C = 1mA, f = 1kHz			$6x10^{-4}$	

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