2N1893

Silicon NPN Transistor

Data Sheet

Description

SEMICOA Corporation offers:

- Screening and processing per MIL-PRF-19500
- JAN level (2N1893J)
- JANTX level (2N1893JX)
- JANTXV level (2N1893JV)
- 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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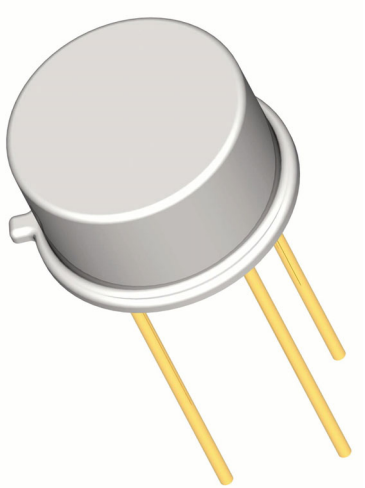
Applications

- General purpose
- Low power
- NPN silicon transistor



Features

- Hermetically sealed TO-5 metal can
- Also available in chip configuration
- Chip geometry 4500
- Reference document: MIL-PRF-19500/182

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}	80	Volts
Collector-Base Voltage	V_{CBO}	120	Volts
Emitter-Base Voltage	V_{EBO}	7	Volts
Collector Current, Continuous	I_C	500	mA
Power Dissipation, $T_A = 25^OC$ Derate above 60^OC	P_T	0.8 5.7	W mW/°C
Power Dissipation, $T_C = 25^OC$ Derate above 25^OC	P_T	3.0 17.2	W mW/°C
Operating Junction Temperature Storage Temperature	T_J T_{STG}	-65 to +200	°C
Thermal Resistance	$R_{\theta JA}$	175	°C/W

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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 = 30 mA	80			Volts
Collector-Emitter Breakdown Voltage	$V_{(BR)CER}$	I_C = 10 mA, R_{BE} = 10 Ω	100			Volts
Collector-Base Cutoff Current	I_{CBO1} I_{CBO2} I_{CBO3}	V_{CB} = 120 Volts V_{CB} = 90 Volts V_{CE} = 90 Volts, T_A = 150 °C			100 10 15	µA nA µA
Emitter-Base Cutoff Current	I_{EBO1} I_{EBO2}	V_{EB} = 7 Volts V_{EB} = 5 Volts			100 10	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 = 1 mA, V_{CE} = 10 Volts I_C = 10 mA, V_{CE} = 10 Volts I_C = 150 mA, V_{CE} = 10 Volts I_C = 10 mA, V_{CE} = 10 Volts, T_A = -55 °C	20 35 40 20		120	
Base-Emitter Saturation Voltage	V_{BEsat}	I_C = 150 mA, I_B = 15 mA			1.3	Volts
Collector-Emitter Saturation Voltage	V_{CEsat}	I_C = 150 mA, I_B = 15 mA			5.0	Volts

Dynamic Characteristics

Parameter	Symbol	Test Conditions	Min	Typ	Max	Units
Magnitude – Common Emitter, Short Circuit Forward Current Transfer Ratio	$\|h_{FE}\|$	V_{CE} = 10 Volts, I_C = 50 mA, f = 20 MHz	3		10	
Short Circuit Forward Current Transfer Ratio	 h_{FE1} h_{FE2}	f = 1 kHz V_{CE} = 5 Volts, I_C = 1 mA V_{CE} = 10 Volts, I_C = 5 mA	 35 45		 100 150	
Short Circuit Input Impedance	h_{ie}	V_{CB} = 10V, I_C = 5mA	4		8	Ω
Open Circuit Output Admittance	h_{oe}	V_{CB} = 10V, I_C = 5mA			0.5	µΩ
Open Circuit reverse Voltage Transfer Ratio	h_{re}	V_{CB} = 10V, I_C = 5mA			$1.5x10^{-4}$	
Open Circuit Output Capacitance	C_{OBO}	V_{CB} = 10 Volts, I_C = 0 mA, 100 kHZ < f < 1 MHz	2		15	pF

Switching Characteristics

Pulse Response	$t_{on} + t_{off}$				30	ns

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