2N3501L

Silicon NPN Transistor

Data Sheet

Description

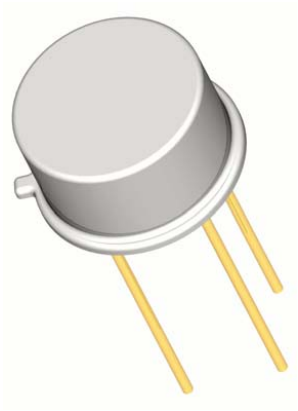
SEMICOA Corporation offers:

- Screening and processing per MIL-PRF-19500
- JAN level (2N3501LJ)
- JANTX level (2N3501LJX)
- JANTXV level (2N3501LJV)
- JANS level (2N3501LJS)
- 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 or (714) 979-1900

Applications

- General purpose
- Low power
- NPN silicon transistor



Features

- Hermetically sealed TO-5 metal can
- Also available in chip configuration
- Chip geometry 5620
- Reference document: MIL-PRF-19500/366

Benefits

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

Absolute Maximum Ratings

T_C = 25°C unless otherwise specified

Parameter	Symbol	Rating	Unit
Collector-Emitter Voltage	V_{CEO}	150	Volts
Collector-Base Voltage	V_{CBO}	150	Volts
Emitter-Base Voltage	V_{EBO}	6	Volts
Collector Current, Continuous	I_C	300	mA
Power Dissipation, T_A = 25°C Derate linearly above 25°C	P_T	1 5.71	W mW/°C
Thermal Resistance	$R_{\theta JA}$	175	°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	150			Volts
Collector-Base Cutoff Current	I_{CBO1} I_{CBO2} I_{CBO3}	V_{CB} = 150 Volts V_{CB} = 75 Volts V_{CB} = 75 Volts, T_A = 150°C			10 50 50	µA nA µA
Collector-Emitter Cutoff Current	I_{CEO}	V_{CE} = 120 Volts			1	µA
Emitter-Base Cutoff Current	I_{EBO1} I_{EBO2}	V_{EB} = 6 Volts V_{EB} = 4 Volts			10 25	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} h_{FE5} h_{FE7}	I_C = 0.1 mA, V_{CE} = 10 Volts I_C = 1.0 mA, V_{CE} = 10 Volts I_C = 10 mA, V_{CE} = 10 Volts I_C = 1500 mA, V_{CE} = 10 Volts I_C = 300 mA, V_{CE} = 10 Volts I_C = 150 mA, V_{CE} = 10 Volts T_A = -55°C	35 50 75 100 20 45		300	
Base-Emitter Saturation Voltage	V_{BEsat1} V_{BEsat2}	I_C = 10 mA, I_B = 1 mA I_C = 150 mA, I_B = 15 mA			0.8 1.2	Volts
Collector-Emitter Saturation Voltage	V_{CEsat1} V_{CEsat2}	I_C = 10 mA, I_B = 1 mA I_C = 150 mA, I_B = 15 mA			0.2 0.4	Volts

Dynamic Characteristics

Parameter	Symbol	Test Conditions	Min	Typ	Max	Units
Magnitude – Common Emitter, Short Circuit Forward Current Transfer Ratio	$\|h_{FE}\|$	V_{CE} = 20 Volts, I_C = 20 mA, f = 100 MHz	1.5		8	
Small Signal Short Circuit Forward Current Transfer Ratio	h_{FE}	V_{CE} = 10 Volts, I_C = 10 mA, f = 1 kHz	75		375	
Open Circuit Output Capacitance	C_{OBO}	V_{CB} = 10 Volts, I_E = 0 mA, 100 kHZ < f < 1 MHz			8	pF
Open Circuit Input Capacitance	C_{IBO}	V_{EB} = 0.5 Volts, I_C = 0 mA, 100 kHZ < f < 1 MHz			80	pF
Noise Figure	NF_1 NF_2	V_{CE} = 10 Volts, I_C = 0.5 mA, f = 1 kHz, R_g = 1 kΩ V_{CE} = 10 Volts, I_C = 0.5 mA, f = 10 kHz, R_g = 1 kΩ			16 6	dB

Switching Characteristics

Saturated Turn-On Time	t_{ON}	V_{EB} = 5 Volts, I_C = 150 mA, I_{B1} = 15 mA			115	ns
Saturated Turn-Off Time	t_{OFF}	I_C = 150 mA, I_{B1}=I_{B2}=15 mA			1,150	ns

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