2N3019

Silicon NPN Transistor

Data Sheet

Description

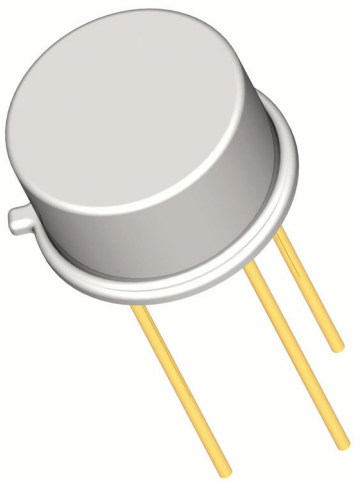
Semicoa Semiconductors offers:

- Screening and processing per MIL-PRF-19500 Appendix E
- JAN level (2N3019J)
- JANTX level (2N3019JX)
- JANTXV level (2N3019JV)
- JANS level (2N3019JS)
- 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 4500
- Reference document: MIL-PRF-19500/391

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}	80	Volts
Collector-Base Voltage	V_{CBO}	140	Volts
Emitter-Base Voltage	V_{EBO}	7	Volts
Collector Current, Continuous	I_C	1	A
Power Dissipation, T_A = 25°C Derate linearly above 60°C	P_T	0.8 5.7	W mW/°C
Power Dissipation, T_C = 25°C Derate linearly above 25°C	P_T	5.0 28.6	W mW/°C
Thermal Resistance	$R_{\theta JA}$	175	°C/W
Operating Junction Temperature Storage Temperature	T_J T_{STG}	-65 to +200	°C

Semicoa Semiconductors, Inc.
333 McCormick Avenue, Costa Mesa, California 92626 714.979.1900, FAX 714.557.4541
www.*SEMICOA*.com

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-Base Cutoff Current	I_{CBO1}	V_{CB} = 140 Volts			10	µA
Collector-Emitter Cutoff Current	I_{CES1}	V_{CE} = 90 Volts			10	nA
Collector-Emitter Cutoff Current	I_{CES2}	V_{CE} = 90 Volts, T_A = 150°C			10	µA
Emitter-Base Cutoff Current	I_{EBO1}	V_{EB} = 7 Volts			10	µA
Emitter-Base Cutoff Current	I_{EBO2}	V_{EB} = 5 Volts			10	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_{FE6}	I_C = 150 mA, V_{CE} = 10 Volts I_C = 0.1 mA, V_{CE} = 10 Volts I_C = 10 mA, V_{CE} = 10 Volts I_C = 500 mA, V_{CE} = 10 Volts I_C = 1 A, V_{CE} = 10 Volts I_C = 150 mA, V_{CE} = 10 Volts T_A = -55°C	100 50 90 50 15 40		300 200 200	
Base-Emitter Saturation Voltage	V_{BEsat}	I_C = 150 mA, I_B = 15 mA			1.1	Volts
Collector-Emitter Saturation Voltage	V_{CEsat1} V_{CEsat2}	I_C = 150 mA, I_B = 15 mA I_C = 500 mA, I_B = 50 mA			0.2 0.5	Volts

Small Signal 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	5		20	
Small Signal Short Circuit Forward Current Transfer Ratio	h_{FE}	V_{CE} = 5 Volts, I_C = 1 mA, f = 1 kHz	80		400	
Open Circuit Output Capacitance	C_{OBO}	V_{CB} = 10 Volts, I_E = 0 mA, 100 kHZ < f < 1 MHz			12	pF
Open Circuit Input Capacitance	C_{IBO}	V_{EB} = 0.5 Volts, I_C = 0 mA, 100 kHZ < f < 1 MHz			60	pF
Collector Base time constant	$r_b'C_C$	V_{CB} = 10 Volts, I_E = 10 mA, f = 79.8 MHz			400	ps
Noise Figure	NF	V_{CE} = 10 Volts, I_C = 100 µA, f = 200 Hz, R_g = 1 kΩ			4	dB

Switching Characteristics

Saturated Turn-On Time	t_{ON} +t_{OFF}				30	ns

Semicoa Semiconductors, Inc.
333 McCormick Avenue, Costa Mesa, California 92626 714.979.1900, FAX 714.557.4541
www.*SEMICOA*.com