SEMICOA SEMICONDUCTORS

Data Sheet No. 2N3019

Type 2N3019
Geometry 4500
Polarity NPN
Qual Level: JAN - JANS

Generic Part Number: 2N3019

REF: MIL-PRF-19500/391

Features:

Request Quotation

- General-purpose transistor for switching and amplifier applica-tons.
- Housed in a TO-5 case.
- Also available in chip form using the 4500 chip geometry.
- The Min and Max limits shown are per MIL-PRF-19500/391 which Semicoa meets in all cases.
- Radiation Graphs available.

TO-5

Maximum Ratings

T_C = 25°C unless otherwise specified

Rating	Symbol	Rating	Unit
Collector-Emitter Voltage	V_{CEO}	80	V
Collector-Base Voltage	V_{CBO}	140	V
Emitter-Base Voltage	V_{EBO}	7.0	V
Collector Current, Continuous	I_C	1.0	mA
Operating Junction Temperature	T_J	-55 to +175	°C
Storage Temperature	T_{STG}	-55 to +175	°C

Electrical Characteristics

T_C = 25°C unless otherwise specified

OFF Characteristics	Symbol	Min	Max	Unit
Collector-Base Breakdown Voltage I_C= 100 µA	$V_{(BR)CBO}$	140	---	V
Collector-Emitter Breakdown Voltage I_C = 10 mA	$V_{(BR)CEO}$	80	---	V
Emitter-Base Breakdown Voltage I_E = 100 µA	$V_{(BR)EBO}$	7.0	---	V
Collector-Emitter Cutoff Current V_{CE} = 90 V	I_{CES}	---	10	nA
Emitter-Base Cutoff Current V_{EB} = 5 V	I_{EBO}	---	10	nA

ON Characteristics	Symbol	Min	Max	Unit
DC Current Gain				
I_C = 150 mA, V_{CE} = 10 V	h_{FE1}	100	300	---
I_C = 0.1 mA, V_{CE} = 10 V	h_{FE2}	50	200	---
I_C = 10 mA, V_{CE} = 10 V (pulse test)	h_{FE3}	90	---	---
I_C = 500 mA, V_{CE} = 10 V (pulse test)	h_{FE4}	50	200	---
I_C = 1 A, V_{CE} = 10 V (pulse test)	h_{FE5}	15	---	---
Collector-Emitter Saturation Voltage				
I_C = 150 mA, I_B = 15 mA (pulse test)	$V_{CE(sat)1}$	---	0.2	V dc
I_C = 500 mA, I_B = 50 mA (pulse test)	$V_{CE(sat)2}$	---	0.5	V dc
Base-Emitter Saturation Voltage				
I_C = 150 mA, I_B = 15 mA (pulse test)	$V_{BE(sat)}$	---	1.1	V dc

Small Signal Characteristics	Symbol	Min	Max	Unit
Short Circuit Forward Current Transfer Ratio I_C = 1 mA, V_{CE} = 5 V, f = 1 kHz	AC h_{FE}	80	400	---
Magnitude of Common Emitter Short Circuit Forward Current Transfer Ratio V_{CE} = 10 V, I_C = 50 mA, f = 200 MHz	$\|h_{FE}\|$	5.0	20	---
Open Circuit Output Capacitance V_{CB} = 10 V, I_E = 0, 100 kHz < f < 1 MHz	C_{OBO}	---	12	pF
Input Capacitance, Output Open Circuited V_{EB} = 2.0 V, I_C = 0, 100 kHz < f < 1 MHz	C_{IBO}	---	60	pF
Collecor-Base Time Constant V_{CE} = 10 V, I_C = 10 mA, f = 79.8 MHz	$r_{b'}C_C$	---	400	ps
Noise Figure V_{CE} = 10 V, I_C = 100 µA, R_g = 1 kOhm	NF	---	4	dB

Switching Characteristics	Symbol	Min	Max	Unit
Pulse Response 15 ns, 50 mA input pulse	t_{ON+} t_{OFF}	--	30	ns