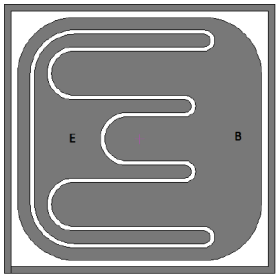
JANHCC2N3019, JANHCCR2N3019
JANKCC2N3019, JANKCCR2N3019

NPN Low Power Silicon Transistor Die

Rev. V1

Features

- Qualified to MIL-PRF-19500/391
- Lightweight & Low Power
- Ideal for Space, Military, & Other High Reliability Applications



Electrical Characteristics (T_A = +25°C unless otherwise specified)

Parameter	Test Conditions	Symbol	Units	Min.	Max.
Collector - Emitter Breakdown Voltage	I_C = 30 mA	$V_{(BR)CEO}$	V dc	80	—
Collector - Base Cutoff Current	V_{CB} = 140 V	I_{CBO1}	µA dc	—	10
Emitter - Base Cutoff Current	V_{EB} = 7 V	I_{EBO1}	µA dc	—	10
Collector - Emitter Cutoff Current	V_{CE} = 90 V	I_{CES1}	nA dc	—	10
Emitter - Base Cutoff Current	V_{EB} = 5 Vdc	I_{EBO2}	nA dc	—	10
Forward Current Transfer Ratio	V_{CE} = 10 V dc; I_C = 150 mA dc V_{CE} = 10 V dc; I_C = 0.1 mA dc V_{CE} = 10 V dc; I_C = 10 mA dc V_{CE} = 10 V dc; I_C = 500 mA dc V_{CE} = 10 V dc; I_C = 1 A dc	h_{FE1} h_{FE2} h_{FE3} h_{FE4} h_{FE5}	-	100 50 90 50 15	300 300 300
Collector - Emitter Saturation Voltage	I_C = 150 mA; I_B = 15 mA I_C = 500 mA; I_B = 50 mA	$V_{CE(SAT)1}$ $V_{CE(SAT)2}$	V dc	—	0.2 0.5
Base - Emitter Saturation Voltage	I_C = 150 mA; I_B = 15 mA	$V_{BE(SAT)}$	V dc	—	1.1
Collector - Emitter Cutoff Current	T_A = +150°C V_{CE} = 90 V	I_{CES2}	µA dc	—	5
Forward Current Transfer Ratio	T_A = -55°C V_{CE} = 10 V dc; I_C = 150 mA dc	h_{FE6}		40	

NPN Low Power Silicon Transistor Die

Rev. V1

Parameter	Test Conditions	Symbol	Units	Min.	Max.
Dynamic Characteristics					
Small-Signal Short-Circuit Forward -Current Transfer Ratio	V_{CE} = 5 V dc; I_C = 1 mA dc; f = 1 kHz	h_{FE}		80	400
Magnitude of Small-Signal Short-Circuit Forward Current Transfer Ratio	V_{CE} = 10 V dc; I_C = 50 mA dc; f = 20 MHz	$\lvert h_{FE} \rvert$		5	20
Input Capacitance (Output Open Circuited)	V_{EB} = 0.5 V dc; I_C = 0; 100 kHz ≤ f ≤ 1 MHz	C_{ibo}	pF	—	60
Open Circuit Output Capacitance	V_{CB} = 10 V dc; I_E = 0; 100 kHz ≤ f ≤ 1 MHz	C_{obo}	pF	—	12
Noise Figure	V_{CE} = 10 V dc; I_C = 100 µA dc; Rg = 1 kΩ; power bandwidth = 200 H_Z f = 1 kHz	NF	dB	—	4
Pulse Response	See Figure 21 of MIL-PRF-19500/391	t_{on}+t_{off}	ns		30

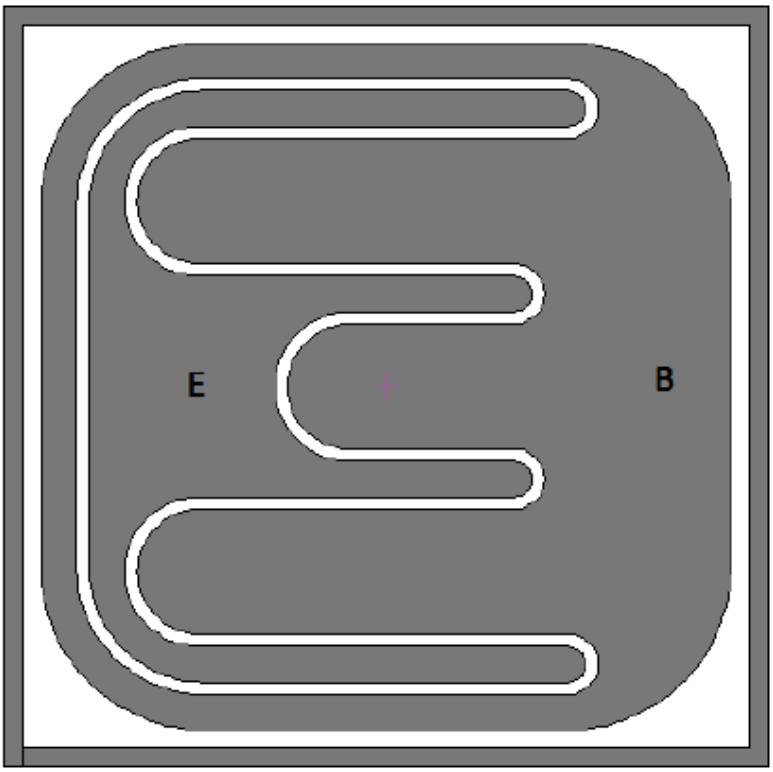
Absolute Maximum Ratings (T_A = +25°C unless otherwise specified)

Ratings	Symbol	Value
Collector - Emitter Voltage	V_{CEO}	80 V dc
Collector - Base Voltage	V_{CBO}	140 V dc
Emitter - Base Voltage	V_{EBO}	7 V dc
Collector Current	I_C	1 A dc
Operating & Storage Temperature Range	T_J, T_{STG}	-65°C to +200°C

NPN Low Power Silicon Transistor Die

Rev. V1

Outline Drawing (Die)



Physical characteristics (C-version):

1.	Die size:	.023 x .023 inch ±.002 inch (0.584 X 0.584 ±0.051 millimeter).
2.	Die thickness:	.010 inch ±.002 inch (0.254 ±0.508 millimeter).
3.	Base pad:	B = .004 inch x .010 inch (0.102 X 0.254 millimeter).
4.	Emitter pad:	E = .0039 inch x .0039 inch (0. 992 X 0.099 millimeter).
5.	Collector pad:	Backside.
6.	Top metal:	Aluminum 16,000Å minimum, 20,000Å nominal.
7.	Backside metal:	Gold: 5,000Å ±500Å.