Silicon NPN Planar RF Transistor

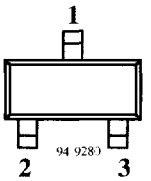
Electrostatic sensitive device.
Observe precautions for handling.

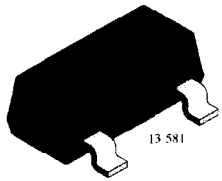
Applications

For low-noise and high-gain broadband amplifiers at collector currents from 0.2 mA to 8 mA.

Features

- Low power applications
- Low noise figure
- High transition frequency





Marking: RE
Plastic case (SOT 23)
1 = Collector; 2 = Base; 3 = Emitter

Absolute Maximum Ratings

Parameters	Symbol	Value	Unit
Collector-base voltage	V_{CBO}	15	V
Collector-emitter voltage	V_{CEO}	8	V
Emitter-base voltage	V_{EBO}	2	V
Collector current	I_C	10	mA
Total power dissipation $T_{amb} \leq 114°C$	P_{tot}	80	mW
Junction temperature	T_j	150	°C
Storage temperature range	T_{stg}	–65 to +150	°C

Maximum Thermal Resistance

Parameters	Symbol	Maximum	Unit
Junction ambient on glass fibre printed board (25 x 20 x 1.5) mm^3 plated with 35 µm Cu	R_{thJA}	450	K/W

Electrical DC Characteristics

T_{amb} = 25°C

Parameters / Test Conditions	Symbol	Min.	Typ.	Max.	Unit
Collector-emitter cut-off current V_{CE} = 15 V, V_{BE} = 0	I_{CES}			100	µA
Collector-base cut-off current V_{CB} = 10 V, I_E = 0	I_{CBO}			100	nA
Emitter-base cut-off current V_{EB} = 1 V, I_C = 0	I_{EBO}			1	µA
Collector-emitter breakdown voltage I_C = 1 mA, I_B = 0	$V_{(BR)CEO}$	8			V
Collector-emitter saturation voltage I_C = 5 mA, I_B = 0.5 mA	V_{CEsat}		0.1	0.4	V
DC forward current transfer ratio V_{CE} = 1 V, I_C = 0.25 mA V_{CE} = 1 V, I_C = 3 mA	 h_{FE} h_{FE}	 50 50	 90 100	 150	

Electrical AC Characteristics

T_{amb} = 25°C

Parameters / Test Conditions	Symbol	Min.	Typ.	Max.	Unit
Transition frequency V_{CE} = 1 V, I_C = 3 mA, f = 500 MHz V_{CE} = 5 V, I_C = 6 mA, f = 500 MHz	 f_T f_T		 5.5 7		 GHz GHz
Collector-base capacitance V_{CB} = 1 V, f = 1 MHz	C_{cb}		0.3		pF
Collector-emitter capacitance V_{CE} = 1 V, f = 1 MHz	C_{ce}		0.15		pF
Emitter-base capacitance V_{EB} = 0.5 V, f = 1 MHz	C_{eb}		0.3		pF
Noise figure I_C = 3 mA, Z_S = Z_{Sopt} V_{CE} = 1 V, f = 900 MHz V_{CE} = 5 V, f = 1.75 GHz	 F F		 1.6 2.4		 dB dB
Power gain Z_S = 50 Ω, Z_L = Z_{Lopt} V_{CE} = 1 V, I_C = 3 mA, f = 900 MHz V_{CE} = 5 V, I_C = 6 mA, f = 1.75 GHz	 G_{pe} G_{pe}		 13.5 12		 dB dB
Transducer gain I_C = 6 mA, V_{CE} = 5 V, Z_o = 50 Ω, f = 1 GHz	$\lvert S_{21e} \rvert^2$		13		dB

Dimensions in mm