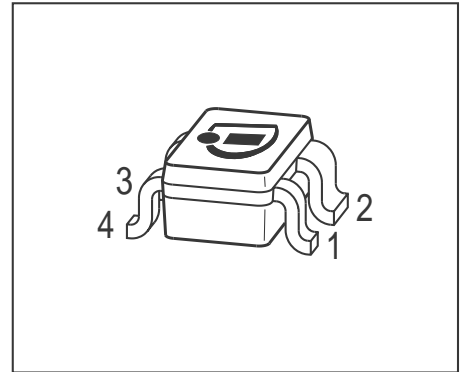


NPN Bipolar RF Transistor

- High transducer gain of typ. 24 dB @ 13 mA, 1.9 GHz
- Low minimum noise figure of typ. 0.5 dB @ 1.9 GHz
- Pb-free (RoHS compliant) package
- For a wide range of non-automotive applications
 - 2nd and 3rd LNA stage and mixer stage in LNB
 - 5.8 GHz analog/digital cordless phone



ESD (Electrostatic discharge) sensitive device, observe handling precaution!

Type	Marking	Pin Configuration						Package
BF886	RZs	1=B	2=E	3=C	4=E	-	-	SOT343

Maximum Ratings at $T_A = 25\text{ °C}$, unless otherwise specified

Parameter	Symbol	Value	Unit
Collector-emitter voltage	V_{CEO}	4.0	V
$T_A = 25\text{ °C}$		4.0	
$T_A = -55\text{ °C}$		3.5	
Collector-emitter voltage	V_{CES}	13	
Collector-base voltage	V_{CBO}	13	
Emitter-base voltage	V_{EBO}	1.2	
Collector current	I_C	25	mA
Base current	I_B	2	
Total power dissipation ¹⁾	P_{tot}	100	mW
$T_S \leq 108\text{ °C}$			
Junction temperature	T_J	150	°C
Storage temperature	T_{Stg}	-55 ... 150	

¹⁾ T_S is measured on the emitter lead at the soldering point to the pcb

Thermal Resistance

Parameter	Symbol	Value	Unit
Junction - soldering point ¹⁾	R_{thJS}	≤ 420	K/W

Electrical Characteristics at $T_A = 25^\circ\text{C}$, unless otherwise specified

Parameter	Symbol	Values			Unit
		min.	typ.	max.	
DC Characteristics					
Collector-emitter breakdown voltage $I_C = 1 \text{ mA}, I_B = 0$	$V_{(BR)CEO}$	4	4.7	-	V
Collector-emitter cutoff current $V_{CE} = 2 \text{ V}, V_{BE} = 0$	I_{CES}	-	1	-	nA
Collector-base cutoff current $V_{CB} = 2 \text{ V}, I_E = 0$	I_{CBO}	-	1	-	
Emitter-base cutoff current $V_{EB} = 0.5 \text{ V}, I_C = 0$	I_{EBO}	-	10	-	
DC current gain $I_C = 13 \text{ V}, V_{CE} = 3 \text{ V}$, pulse measured	h_{FE}	-	250	-	-

¹For calculation of R_{thJA} please refer to Application Note Thermal Resistance

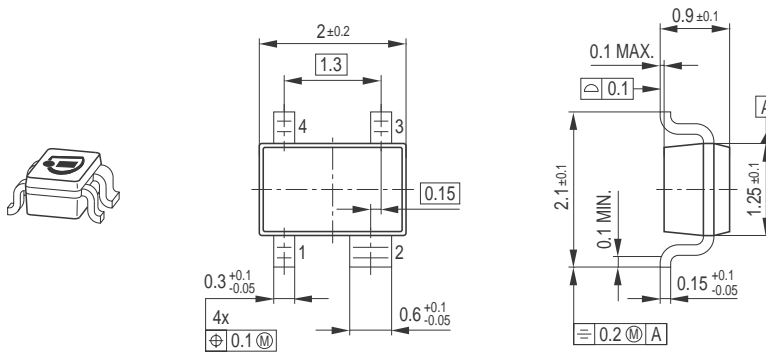
Electrical Characteristics at $T_A = 25^\circ\text{C}$, unless otherwise specified

Parameter	Symbol	Values			Unit
		min.	typ.	max.	
AC Characteristics (verified by random sampling)					
Transition frequency $I_C = 13 \text{ mA}$, $V_{CE} = 3 \text{ V}$, $f = 1 \text{ GHz}$	f_T	-	45	-	GHz
Collector-base capacitance $V_{CB} = 3 \text{ V}$, $f = 1 \text{ MHz}$, $V_{BE} = 0$, emitter grounded	C_{cb}	-	0.06	-	pF
Collector emitter capacitance $V_{CE} = 3 \text{ V}$, $f = 1 \text{ MHz}$, $V_{BE} = 0$, base grounded	C_{ce}	-	0.35	-	
Emitter-base capacitance $V_{EB} = 0.5 \text{ V}$, $f = 1 \text{ MHz}$, $V_{CB} = 0$, collector grounded	C_{eb}	-	0.35	-	
Noise figure $I_C = 5 \text{ mA}$, $V_{CE} = 3 \text{ V}$, $f = 1.9 \text{ GHz}$, $Z_S = Z_{Sopt}$ $I_C = 5 \text{ mA}$, $V_{CE} = 3 \text{ V}$, $f = 5.5 \text{ GHz}$, $Z_S = Z_{Sopt}$	F	-	0.5 0.7	-	dB
Power gain $I_C = 13 \text{ mA}$, $V_{CE} = 3 \text{ V}$, $Z_S = Z_{Sopt}$, $Z_L = Z_{Lopt}$, $f = 1.9 \text{ GHz}$	G_{ms}	-	26	-	dB
Power gain, maximum available ¹⁾ $I_C = 13 \text{ mA}$, $V_{CE} = 3 \text{ V}$, $Z_S = Z_{Sopt}$, $Z_L = Z_{Lopt}$, $f = 5.5 \text{ GHz}$	G_{ma}	-	19	-	dB
Transducer gain $I_C = 13 \text{ mA}$, $V_{CE} = 3 \text{ V}$, $Z_S = Z_L = 50 \Omega$, $f = 1.9 \text{ GHz}$ $f = 5.5 \text{ GHz}$	$ S_{21e} ^2$	-	24 16	-	dB
Third order intercept point at output ²⁾ $V_{CE} = 3 \text{ V}$, $I_C = 13 \text{ mA}$, $f = 5.5 \text{ GHz}$, $Z_S = Z_L = 50 \Omega$	IP_3	-	23	-	dBm
1dB Compression point $I_C = 13 \text{ mA}$, $V_{CE} = 3 \text{ V}$, $Z_S = Z_L = 50 \Omega$, $f = 5.5 \text{ GHz}$	P_{-1dB}	-	8	-	

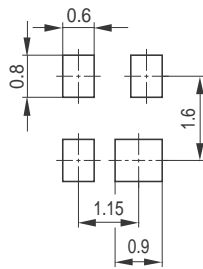
$$^1G_{ma} = |S_{21e} / S_{12e}| (k - (k^2 - 1)^{1/2})$$

²⁾IP3 value depends on termination of all intermodulation frequency components.
Termination used for this measurement is 50Ω from 0.1 MHz to 6 GHz

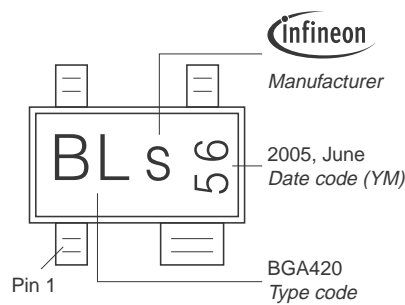
Package Outline



Foot Print

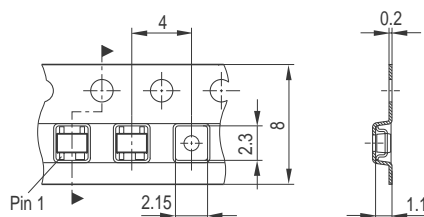


Marking Layout (Example)



Standard Packing

Reel \varnothing 180 mm = 3.000 Pieces/Reel
 Reel \varnothing 330 mm = 10.000 Pieces/Reel



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