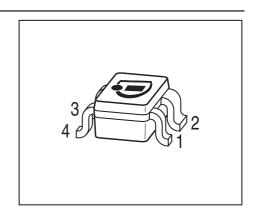


High Performance NPN Bipolar RF Transistor

- High performance low noise amplifier
- Low minimum noise figure of typ. 0.8 dB @ 1.8 GHz
- For a wide range of non automotive applications such as WLAN, WiMax, UWB, Bluetooth, GPS, SDARs, DAB, LNB, UMTS/LTE and ISM bands
- Easy to use standard package with visible leads
- Pb-free (RoHS compliant) package





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

Туре	Marking	Pin Configuration			Package			
BF776	R3s	1=B	2=E	3=C	4=E	-	-	SOT343

Maximum Ratings at T_A = 25 °C, unless otherwise specified

Parameter	Symbol	Value	Unit
Collector-emitter voltage	V_{CEO}		V
T _A = 25 °C		4.0	
<i>T</i> _A = -55 °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	50	mA
Base current	I_{B}	3	
Total power dissipation ¹⁾	P _{tot}	200	mW
<i>T</i> _S ≤ 90°C			
Junction temperature	T_{J}	150	°C
Ambient temperature	T_{A}	-55 150	
Storage temperature	T_{Stg}	-55 150	

Thermal Resistance

Parameter	Symbol	Value	Unit
Junction - soldering point ²⁾	R _{thJS}	≤ 300	K/W

 $^{{}^{1}}T_{S}$ is measured on the emitter lead at the soldering point to the pcb

 $^{^2}$ For calculation of R_{thJA} please refer to Application Note Thermal Resistance



Electrical Characteristics at $T_A = 25$ °C, unless otherwise specified

Parameter	Symbol	Values			Unit
		min.	typ.	max.	
DC Characteristics				•	
Collector-emitter breakdown voltage	V _{(BR)CEO}	4	4.7	-	V
$I_{\rm C}$ = 1 mA, $I_{\rm B}$ = 0					
Collector-emitter cutoff current	I _{CES}	-	1	-	nA
$V_{CE} = 5 \text{ V}, V_{BE} = 0$					
Collector-base cutoff current	I _{CBO}	-	1	-	
$V_{\rm CB} = 5 \text{V}, I_{\rm E} = 0$					
Emitter-base cutoff current	I _{EBO}	-	10	-	
$V_{\rm EB} = 0.5 \text{V}, I_{\rm C} = 0$					
DC current gain	h _{FE}	_	180	_	-
$I_{\rm C}$ = 30 mA, $V_{\rm CE}$ = 3 V, pulse measured					



Electrical Characteristics at $T_A = 25$ °C, unless otherwise specified

Parameter	Symbol		Values		Unit		
		min.	typ.	max.			
AC Characteristics (verified by random sampling)							
Transition frequency	f_{T}	-	46	-	GHz		
$I_{\rm C}$ = 30 mA, $V_{\rm CE}$ = 3 V, f = 1 GHz							
Collector-base capacitance	C _{cb}	-	0.09	-	pF		
$V_{CB} = 3 \text{ V}, f = 1 \text{ MHz}, V_{BE} = 0$,							
emitter grounded							
Collector emitter capacitance	C _{ce}	-	0.25	-			
$V_{CE} = 3 \text{ V}, f = 1 \text{ MHz}, V_{BE} = 0$,							
base grounded							
Emitter-base capacitance	C _{eb}	-	0.5	-			
$V_{\text{EB}} = 0.5 \text{ V}, f = 1 \text{ MHz}, V_{\text{CB}} = 0$,							
collector grounded							
Noise figure	F				dB		
$I_{C} = 5 \text{ mA}, V_{CE} = 3 \text{ V}, f = 1.8 \text{ GHz}, Z_{S} = Z_{Sopt}$		-	0.8	-			
$I_{\rm C}$ = 5 mA, $V_{\rm CE}$ = 3 V, f = 6 GHz, $Z_{\rm S}$ = $Z_{\rm Sopt}$		-	1.3	-			
Power gain, maximum stable ¹⁾	G _{ms}	-	24	-	dB		
$I_{\rm C}$ = 30 mA, $V_{\rm CE}$ = 3 V, $Z_{\rm S}$ = $Z_{\rm Sopt}$,							
$Z_{L} = Z_{Lopt}$, $f = 1.8 \text{ GHz}$							
Power gain, maximum available ¹⁾	G _{ma}	-	12.5	-	dB		
$I_{\rm C}$ = 30 mA, $V_{\rm CE}$ = 3 V, $Z_{\rm S}$ = $Z_{\rm Sopt}$,							
$Z_{L} = Z_{Lopt}, f = 6 \text{ GHz}$							
Transducer gain	$ S_{21e} ^2$				dB		
$I_{\rm C}$ = 30 mA, $V_{\rm CE}$ = 3 V, $Z_{\rm S}$ = $Z_{\rm L}$ = 50 Ω ,							
f = 1.8 GHz		-	21.5	-			
f = 6 GHz		-	11	-			
Third order intercept point at output ²⁾	IP ₃	-	28	-	dBm		
$V_{\rm CE}$ = 3 V, $I_{\rm C}$ = 30 mA, $Z_{\rm S}$ = $Z_{\rm L}$ =50 Ω , f = 1.8 GHz							
1dB Compression point at output	P _{-1dB}	-	13	-			
$I_{\rm C}$ = 30 mA, $V_{\rm CE}$ = 3 V, $Z_{\rm S}$ = $Z_{\rm L}$ =50 Ω , f = 1.8 GHz							

 $^{^{1}}G_{\mathsf{ma}} = |S_{21e} \, / \, S_{12e}| \; (k - (k^{2} - 1)^{1/2}), \; G_{\mathsf{ms}} = |S_{21e} \, / \, S_{12e}|$

²IP3 value depends on termination of all intermodulation frequency components.

Termination used for this measurement is 50Ω from 0.1 MHz to 6 GHz



SPICE Parameter

For the SPICE model as well as for S-parameters (including noise parameters) please refer to our internet website www.infineon.com/rf.models.

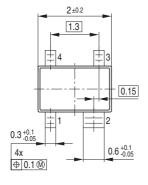
Please consult our website and download the latest versions before actually starting your design.

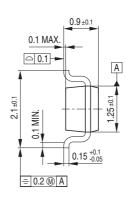
The simulation data have been generated and verified using typical devices. The BF776 SPICE model reflects the typical DC- and RF-performance with high accuracy.



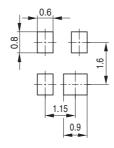
Package Outline



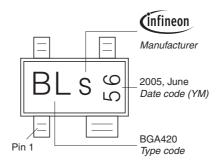




Foot Print

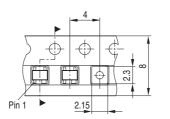


Marking Layout (Example)



Standard Packing

Reel ø180 mm = 3.000 Pieces/Reel Reel ø330 mm = 10.000 Pieces/Reel







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