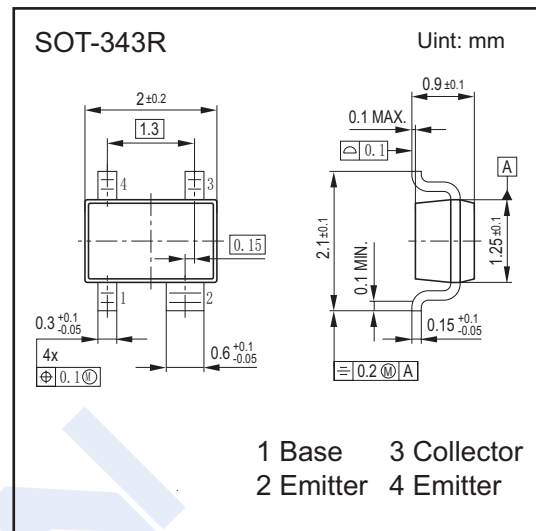


NPN Bipolar RF Transistor

BF776 (KF776)

■ Features

- 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

■ Absolute Maximum Ratings ($T_A = 25^\circ\text{C}$, unless otherwise specified)

Parameter	Symbol	Rating	Unit
Collector - Base Voltage	V_{CBO}	13	V
Collector - Emitter Voltage	$T_A = 25^\circ\text{C}$ V_{CEO}	4.0	
	$T_A = -55^\circ\text{C}$ V_{CEO}	3.5	
Collector - Emitter Voltage	V_{CES}	13	mA
Emitter - Base Voltage	V_{EBO}	1.2	
Collector Current	I_C	50	mW
Base Current	I_B	3	
Total Power Dissipation ¹⁾	$T_S \leq 90^\circ\text{C}$ P_{tot}	200	$^\circ\text{C}/\text{W}$
Thermal Resistance Junction to Soldering Point	R_{thJS}	300	$^\circ\text{C}$
Junction Temperature	T_J	150	
Ambient temperature	T_A	-55 to 150	
Storage Temperature Range	T_{stg}	-55 to 150	

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

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Collector-base breakdown voltage	V_{CB0}	$I_C = 100 \mu\text{A}$, $I_E = 0$	13			V
Collector-emitter breakdown voltage	V_{CEO}	$I_C = 1 \text{ mA}$, $I_B = 0$	4			
Emitter-base breakdown voltage	V_{EB0}	$I_E = 100 \mu\text{A}$, $I_C = 0$	1.2			
Collector-base cut-off current	I_{CBO}	$V_{CB} = 5 \text{ V}$, $I_E = 0$		1	100	nA
Collector-emitter cut-off current	I_{CES}	$V_{CE} = 5 \text{ V}$, $V_{BE} = 0$		1	100	
Emitter cut-off current	I_{EBO}	$V_{EB} = 0.5 \text{ V}$, $I_C = 0$		10	100	
DC current gain	h_{FE}	$V_{CE} = 3 \text{ V}$, $I_C = 30 \text{ mA}$, pulse measured		180		
Collector-base capacitance	C_{cb}	$V_{CB} = 3 \text{ V}$, $f = 1 \text{ MHz}$, $V_{BE} = 0$		0.09		pF
Collector-emitter capacitance	C_{ce}	$V_{CE} = 3 \text{ V}$, $f = 1 \text{ MHz}$, $V_{BE} = 0$		0.25		
Emitter-base capacitance	C_{eb}	$V_{EB} = 0.5 \text{ V}$, $f = 1 \text{ MHz}$, $V_{CB} = 0$		0.5		
Noise figure	F	$I_C = 5 \text{ mA}$, $V_{CE} = 3 \text{ V}$, $Z_S = Z_{Sopt}$, $f = 1.8 \text{ GHz}$ $f = 6 \text{ GHz}$		0.8 1.3		dB
Power gain, maximum stable ¹⁾	G_{ms}	$I_C = 30 \text{ mA}$, $V_{CE} = 3 \text{ V}$, $Z_S = Z_{Sopt}$, $Z_L = Z_{Lopt}$, $f = 1.8 \text{ GHz}$		24		
Power gain, maximum available ¹⁾	G_{ma}	$I_C = 30 \text{ mA}$, $V_{CE} = 3 \text{ V}$, $Z_S = Z_{Sopt}$, $Z_L = Z_{Lopt}$, $f = 6 \text{ GHz}$		12.5		
Transducer gain	$ S_{21e} ^2$	$I_C = 30 \text{ mA}$, $V_{CE} = 3 \text{ V}$, $Z_S = Z_L = 50 \Omega$, $f = 1.8 \text{ GHz}$ $f = 6 \text{ GHz}$		21.5 11		dBm
Third order intercept point at output ²⁾	IP_3	$V_{CE} = 3 \text{ V}$, $I_C = 30 \text{ mA}$, $Z_S = Z_L = 50 \Omega$, $f = 1.8 \text{ GHz}$		28		
1dB Compression point at output	P_{-1dB}	$I_C = 30 \text{ mA}$, $V_{CE} = 3 \text{ V}$, $Z_S = Z_L = 50 \Omega$, $f = 1.8 \text{ GHz}$		13		
Transition frequency	f_T	$V_{CE} = 3 \text{ V}$, $I_C = 30 \text{ mA}$, $f = 1 \text{ GHz}$		46		GHz

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

²⁾ IP_3 value depends on termination of all intermodulation frequency components.

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

■ Marking

Type	Marking
BF776	R3s