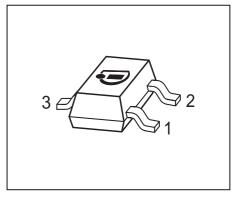


**BF770A** 

# **NPN Silicon RF Transistor**

- For IF amplifiers in TV-sat tuners and for VCR modulators
- Pb-free (RoHS compliant) package<sup>1)</sup>
- Qualified according AEC Q101





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

Туре	Marking	Pin Configuration			Package
BF770A	LSs	1 = B	2 = E	3 = C	SOT23

#### **Maximum Ratings**

Parameter	Symbol	Value	Unit
Collector-emitter voltage	V <sub>CEO</sub>	12	V
Collector-emitter voltage	V <sub>CES</sub>	20	
Collector-base voltage	V <sub>CBO</sub>	20	
Emitter-base voltage	V <sub>EBO</sub>	2	
Collector current	I <sub>C</sub>	90	mA
Base current	/ <sub>B</sub>	9	
Total power dissipation <sup>2)</sup>	P <sub>tot</sub>	300	mW
<i>T</i> <sub>S</sub> ≤ 63°C			
Junction temperature	Ti	150	°C
Ambient temperature	T <sub>A</sub>	-65 150	
Storage temperature	T <sub>stg</sub>	-65 150	

#### **Thermal Resistance**

Parameter	Symbol	Value	Unit
Junction - soldering point <sup>3)</sup>	R <sub>thJS</sub>	≤ 290	K/W

<sup>1</sup>Pb-containing package may be available upon special request

 $^2\mathcal{T}_S$  is measured on the collector lead at the soldering point to the pcb

<sup>3</sup>For calculation of  $R_{\rm thJA}$  please refer to Application Note Thermal Resistance



Parameter	Symbol	Values			Unit
		min.	typ.	max.	]
DC Characteristics	• • •				•
Collector-emitter breakdown voltage	V <sub>(BR)CEO</sub>	12	-	-	V
$I_{\rm C} = 1  {\rm mA},  I_{\rm B} = 0$					
Collector-emitter cutoff current	I <sub>CES</sub>	-	-	100	μA
$V_{\rm CE} = 20 \text{ V}, \ V_{\rm BE} = 0$					
Collector-base cutoff current	I <sub>CBO</sub>	-	-	100	nA
$V_{\rm CB} = 10 \text{ V}, I_{\rm E} = 0$					
Emitter-base cutoff current	I <sub>EBO</sub>	-	-	10	μA
$V_{\rm EB} = 2  \text{V},  I_{\rm C} = 0$					
DC current gain-	h <sub>FE</sub>	70	100	140	-
$I_{\rm C}$ = 30 mA, $V_{\rm CE}$ = 8 V, pulse measured					

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

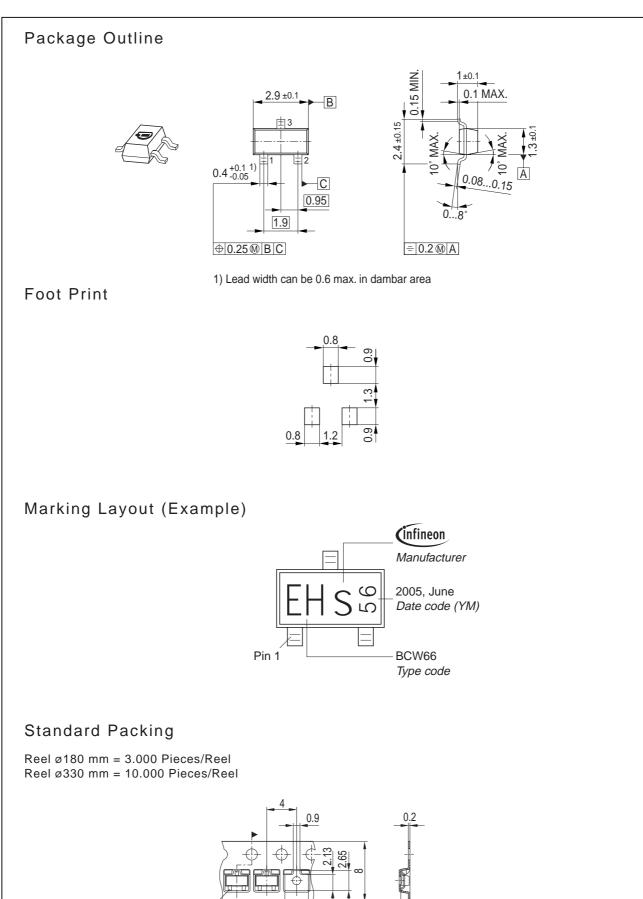


Parameter	Symbol	Values			Unit	
		min.	typ.	max.		
AC Characteristics (verified by random samplin	g)					
Transition frequency	f <sub>T</sub>	4.5	6	-	GHz	
$I_{\rm C}$ = 30 mA, $V_{\rm CE}$ = 8 V, $f$ = 500 MHz						
Collector-base capacitance	C <sub>cb</sub>	-	0.54	0.75	pF	
$V_{CB} = 10 \text{ V}, f = 1 \text{ MHz}, V_{BE} = 0$ ,						
emitter grounded						
Collector emitter capacitance	C <sub>ce</sub>	-	0.25	-		
$V_{CE} = 10 \text{ V}, f = 1 \text{ MHz}, V_{BE} = 0$ ,						
base grounded						
Emitter-base capacitance	C <sub>eb</sub>	-	1.9	-		
$V_{\text{EB}} = 0.5 \text{ V}, f = 1 \text{ MHz}, V_{\text{CB}} = 0$ ,						
collector grounded						
Noise figure	F				dB	
$I_{\rm C} = 5 \text{ mA}, V_{\rm CE} = 8 \text{ V}, Z_{\rm S} = Z_{\rm Sopt},$						
<i>f</i> = 900 MHz		-	1.5	-		
<i>f</i> = 1.8 GHz		-	2.6	-		
Power gain, maximum available <sup>1)</sup>	G <sub>ma</sub>				1	
$I_{\rm C} = 30 \text{ mA}, V_{\rm CE} = 8 \text{ V}, Z_{\rm S} = Z_{\rm Sopt}, Z_{\rm L} = Z_{\rm Lopt},$						
<i>f</i> = 900 MHz		-	14.5	-		
<i>f</i> = 1.8 GHz		-	9.5	-		
Transducer gain	S <sub>21e</sub>   <sup>2</sup>				dB	
$I_{\rm C} = 30 \text{ mA}, V_{\rm CE} = 8 \text{ V}, Z_{\rm S} = Z_{\rm L} = 50\Omega,$						
<i>f</i> = 900 MHz		-	12.5	-		
<i>f</i> = 1.8 GHz		-	7	-		

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

 ${}^{1}\mathrm{G}_{\mathrm{ma}} = |\mathrm{S}_{21}/\mathrm{S}_{12}| \; (\mathrm{k}\text{-}(\mathrm{k}^{2}\text{-}1)^{1/2})$ 





1.15

3.15

Pin 1



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