

## BFX89 – BFY90

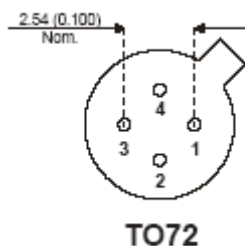
### WIDE BAND VHF/UHF AMPLIFIER

#### DESCRIPTION :

- SILICON PLANAR EPITAXIAL TRANSISTORS
- TO-72 METAL CASE
- VERY LOW NOISE

#### APPLICATIONS :

- TELECOMMUNICATIONS
- WIDE BAND UHF AMPLIFIER
- RADIO COMMUNICATIONS



The BFX89 and BFY90 are silicon planar epitaxial NPN transistors produced using interdigitated base emitter geometry. They are particularly designed for use in wide band common-emitter linear amplifiers up to 1 GHz. They feature very high  $f_T$ , low reverse capacitance, excellent cross modulation properties and very low noise performance. The BFY90 is complementary to the BFR99A. Typical applications include telecommunication and radio communication equipment.

#### ABSOLUTE MAXIMUM RATINGS

Symbol	Ratings	Value	Unit
$V_{CEO}$	Collector-Emitter Voltage ( $I_B = 0$ )	15	V
$V_{CER}$	Collector-Emitter Voltage ( $R_{BE} \leq 50\Omega$ )	30	V
$V_{CBO}$	Collector-Base Voltage ( $I_E = 0$ )	30	V
$V_{EBO}$	Collector-Base Voltage ( $I_C = 0$ )	2.5	V
$I_C$	Collector Current	25	mA
$I_{CM}$	Collector Peak Current	50	mA
$P_{tot}$	Total Power Dissipation at $T_{amb} \leq 25\text{ }^\circ\text{C}$	200	mW
$T_{stg}, T_j$	Storage and Junction Temperature	-65 to 200	$^\circ\text{C}$



## BFX89 – BFY90

### THERMAL CHARACTERISTICS

Symbol	Ratings	Value	Unit
$R_{thJ-C}$	Thermal Resistance, Junction – Case	Max	580 °C/W
$R_{thJ-}$	Thermal Resistance, Junction – ambient	Max	880 °C/W

### ELECTRICAL CHARACTERISTICS

Tamb = 25°C unless otherwise specified

Symbol	Ratings	Test Condition(s)	Min	Typ	Max	Unit	
$I_{CBO}$	Collector Cutoff Current ( $I_E=0$ )	$V_{CB} = 15V$	-	-	10	nA	
$V_{CEK}^*$	Collector-emitter Knee Voltage	$I_C = 20mA$	-	-	0.75	V	
$f_T$	Transition Frequency	$V_{CE} = 5V$ $f = 500MHZ$ $I_C = 2 mA$	BFX89	-	1	-	GHz
			BFY90	1	1.1	-	
		$V_{CE} = 5V$ $f = 500MHZ$ $I_C = 25 mA$	BFX89	-	1.2	-	
			BFY90	1.3	1.4	-	
$h_{FE}$	DC Current Gain	$I_C = 2mA$ $V_{CE} = 1 V$	BFX89	20	-	150	-
			BFY90	25	-	150	
		$I_C = 25mA$ $V_{CE} = 1 V$	BFX89	20	-	125	
			BFY90	25	-	125	
$C_{CBO}(1)$	Collector-base Capacitance	$I_E = 0$ $V_{CB} = 10V$ $f = 1MHZ$ $V_{CE} = 5$	BFX89	-	-	1.7	pF
			BFY90	-	-	1.5	
$C_{re}(2)$	Reverse Capacitance	$I_C = 2mA$ $f = 1MHZ$	BFX89	-	0.6	-	pF
			BFY90	-	0.6	0.8	



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### ELECTRICAL CHARACTERISTICS

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Symbol	Ratings	Test Condition(s)		Min	Typ	Mx	Unit
<b>NF(2)</b>	Noise Figure	$I_C = 2\text{mA}$ , $V_{CE} = 5\text{V}$ $f = 100\text{KHz}$ $R_g = \text{Optimized}$	BFY90 Only	-	-	4	dB
		$I_C = 2\text{mA}$ , $V_{CE} = 5\text{V}$ $f = 200\text{MHz}$ $R_g = \text{Optimized}$	BFX89	-	3.3	4	
			BFY90	-	2.5	3.5	
		$I_C = 2\text{mA}$ , $V_{CE} = 5\text{V}$ $f = 500\text{MHz}$ $R_g = 50\ \Omega$	BFX89	-	-	6.5	
			BFY90	-	-	5	
		$I_C = 2\text{mA}$ , $V_{CE} = 5\text{V}$ $f = 800\text{MHz}$ $R_g = \text{Optimized}$	BFX89	-	7	-	
		BFY90	-	5.5	-		
<b>Gpe (2)</b>	Power Gain ( not neutralized)	For BFX89 $I_C = 8\text{mA}$ $V_{CE} = 10\text{V}$	$f = 200\text{MHz}$	19	22	-	dB
			$f = 800\text{MHz}$	-	7	-	
		For BFY90 $I_C = 14\text{mA}$ $V_{CE} = 10\text{V}$	$f = 200\text{MHz}$	21	23	-	
			$f = 800\text{MHz}$	-	8	-	
<b>Po</b>	Output Power	For BFX89 $I_C = 8\text{mA}$ $V_{CE} = 10\text{V}$ $D_{im} = -30\text{dB}$	(3) Channel 9	-	6	-	mW
			(4) Channel 62	-	6	-	
		For BFY90 $I_C = 14\text{mA}$ $V_{CE} = 10\text{V}$ $D_{im} = -30\text{dB}$	(3) Channel 9	10	12	-	
			(4) Channel 62	-	12	-	

\*  $I_B =$  value for which  $I_C = 22\text{mA}$  at  $V_{CE} = 1\text{V}$

(1) Shield lead not grounded

(2) Shield lead grounded

(3)  $f_p = 202\text{MHz}$ ,  $f_q = 205\text{MHz}$ ,  $f(2q-p) = 208\text{MHz}$

(4)  $f_p = 798\text{MHz}$ ,  $f_q = 802\text{MHz}$ ,  $f(2q-p) = 806\text{MHz}$

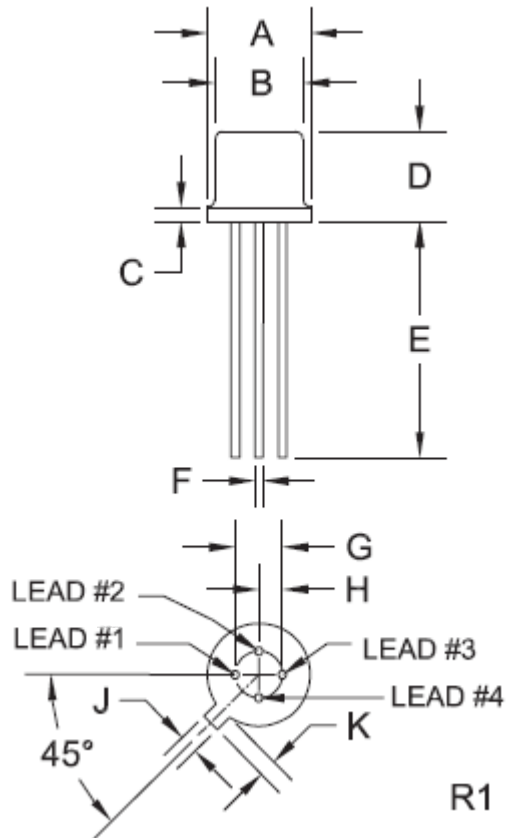


## BFX89 – BFY90

### MECHANICAL DATA CASE TO-72

DIMENSIONS		
	mm	
	min	max
A	5.31	5.84
B	4.45	4.95
C	-	0.76
D	4.32	5.33
E	12.7	-
F	0.41	0.48
G	2.54	
H	1.27	
J	0.91	1.17
K	0.71	1.22

Pin 1 :	Emitter
Pin 2 :	Base
Pin 3 :	Collector
Pin 4 :	Case



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[www.comsetsemi.com](http://www.comsetsemi.com)

[info@comsetsemi.com](mailto:info@comsetsemi.com)