

**BFX89  
BFY90**

**SILICON  
NPN RF TRANSISTORS**



**TO-72 CASE**

**DESCRIPTION:**

The CENTRAL SEMICONDUCTOR BFX89 and BFY90 are silicon NPN RF transistors designed for VHF/UHF amplifier, oscillator and converter applications.

**MARKING: FULL PART NUMBER**

**MAXIMUM RATINGS:** ( $T_A=25^\circ\text{C}$  unless otherwise noted)

	SYMBOL		UNITS
Collector-Base Voltage	$V_{CBO}$	30	V
Collector-Emitter Voltage	$V_{CER}$	30	V
Collector-Emitter Voltage	$V_{CEO}$	15	V
Emitter-Base Voltage	$V_{EBO}$	2.5	V
Continuous Collector Current	$I_C$	25	mA
Peak Collector Current ( $f \geq 1.0\text{MHz}$ )	$I_{CM}$	50	mA
Power Dissipation	$P_D$	200	mW
Power Dissipation ( $T_C=25^\circ\text{C}$ )	$P_D$	300	mW
Operating and Storage Junction Temperature	$T_J, T_{stg}$	-65 to +200	$^\circ\text{C}$
Thermal Resistance	$\theta_{JA}$	875	$^\circ\text{C/W}$
Thermal Resistance	$\theta_{JC}$	583	$^\circ\text{C/W}$

**ELECTRICAL CHARACTERISTICS:** ( $T_A=25^\circ\text{C}$  unless otherwise noted)

SYMBOL	TEST CONDITIONS	BFX89			BFY90			UNITS
		MIN	TYP	MAX	MIN	TYP	MAX	
$I_{CBO}$	$V_{CB}=15\text{V}$	-	-	10	-	-	10	nA
$BV_{CBO}$	$I_C=10\mu\text{A}$	30	-	-	30	-	-	V
$BV_{CER}$	$I_C=1.0\text{mA}, R_{BE}=50\Omega$	30	-	-	30	-	-	V
$BV_{CEO}$	$I_C=1.0\text{mA}$	15	-	-	15	-	-	V
$BV_{EBO}$	$I_E=10\mu\text{A}$	2.5	-	-	2.5	-	-	V
$h_{FE}$	$V_{CE}=1.0\text{V}, I_C=2.0\text{mA}$	20	-	150	25	-	150	
$h_{FE}$	$V_{CE}=1.0\text{V}, I_C=25\text{mA}$	20	-	125	20	-	125	
$f_T$	$V_{CE}=5.0\text{V}, I_C=2.0\text{mA}, f=500\text{MHz}$	-	1.0	-	1.0	1.1	-	GHz
$f_T$	$V_{CE}=5.0\text{V}, I_C=25\text{mA}, f=500\text{MHz}$	-	1.2	-	1.3	1.4	-	GHz
$C_{ob}$	$V_{CB}=10\text{V}, I_E=0, f=1.0\text{MHz}$	-	-	1.7	-	-	1.5	pF
$C_{re}$	$V_{CE}=5.0\text{V}, I_C=2.0\text{mA}, f=1.0\text{MHz}$	-	0.6	-	-	0.6	0.8	pF
$G_{pe}$	$V_{CE}=10\text{V}, I_C=8.0\text{mA}, f=200\text{MHz}$	-	19	22	-	-	-	dB
$G_{pe}$	$V_{CE}=10\text{V}, I_C=8.0\text{mA}, f=800\text{MHz}$	-	-	7.0	-	-	-	dB
$G_{pe}$	$V_{CE}=10\text{V}, I_C=14\text{mA}, f=200\text{MHz}$	-	-	-	21	23	-	dB
$G_{pe}$	$V_{CE}=10\text{V}, I_C=14\text{mA}, f=800\text{MHz}$	-	-	-	-	8.0	-	dB

**BFX89  
BFY90**

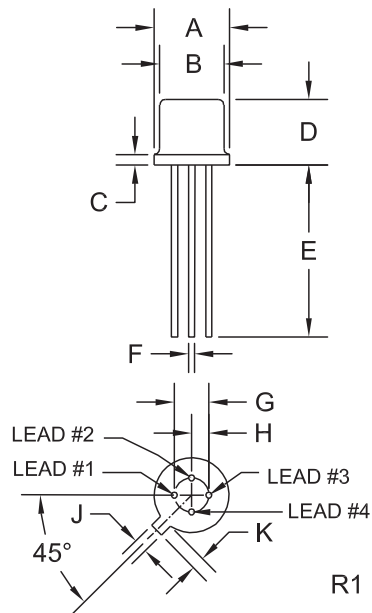
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**ELECTRICAL CHARACTERISTICS - Continued:** ( $T_A=25^{\circ}\text{C}$  unless otherwise noted)

SYMBOL	TEST CONDITIONS	BFX89			BFY90			UNITS
		MIN	TYP	MAX	MIN	TYP	MAX	
NF	$V_{CE}=5.0\text{V}$ , $I_C=2.0\text{mA}$ , $f=100\text{kHz}$	-	-	-	-	-	4.0	dB
NF	$V_{CE}=5.0\text{V}$ , $I_C=2.0\text{mA}$ , $f=200\text{MHz}$	-	3.3	4.0	-	2.5	3.5	dB
NF	$V_{CE}=5.0\text{V}$ , $I_C=2.0\text{mA}$ , $f=500\text{MHz}$ , $R_G=50\Omega$	-	-	6.5	-	-	5.0	dB
NF	$V_{CE}=5.0\text{V}$ , $I_C=2.0\text{mA}$ , $f=800\text{MHz}$	-	7.0	-	-	5.5	-	dB
$P_o$	$V_{CE}=10\text{V}$ , $I_C=8.0\text{mA}$ , $f=205\text{MHz}$	-	6.0	-	-	-	-	mW
$P_o$	$V_{CE}=10\text{V}$ , $I_C=14\text{mA}$ , $f=205\text{MHz}$	-	-	-	10	12	-	mW

**TO-72 CASE - MECHANICAL OUTLINE**



SYMBOL	DIMENSIONS			
	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A (DIA)	0.209	0.230	5.31	5.84
B (DIA)	0.175	0.195	4.45	4.95
C	-	0.030	-	0.76
D	0.170	0.210	4.32	5.33
E	0.500	-	12.70	-
F (DIA)	0.016	0.019	0.41	0.48
G (DIA)	0.100		2.54	
H	0.050		1.27	
J	0.036	0.046	0.91	1.17
K	0.028	0.048	0.71	1.22

TO-72 (REV: R1)

**LEAD CODE:**

- 1) Emitter
- 2) Base
- 3) Collector
- 4) Case

**MARKING:  
FULL PART NUMBER**

R4 (13-March 2014)