BIPOLARICS, INC. Part Number BRF610

NPN LOW NOISE SILICON MICROWAVE TRANSISTOR

PRODUCT DATA SHEET

FEATURES:

- High Gain Bandwidth Product
  f_t = 12 GHz typ @ I_C = 10 mA
- Low Noise Figure
  1.6 dB typ at 1 GHz
  2.0 dB typ at 2 GHz
- High Gain
  $|S_{21}|^2$ = 18.1 dB @ 1 GHz
  12.8 dB @ 2 GHz
- Dice, Plastic, Hermetic and Surface Mount packages available

DESCRIPTION AND APPLICATIONS:

Bipolarics' BRF610is a high performance silicon bipolar transistor intended for use in low noise application at VHF, UHF and microwave frequencies. High performance low noise performance can be realized at 2 mA or less making the BRF610an excellent choice for battery applications. From 10 mA to greater than 20mA, f_t is nominally 10 GHz. Maximum recommended continuous current is 20 mA. A broad range of packages are offered including SOT-23, SOT-143, plastic and ceramic 0.085" Micro-X, 0.070" Stripline and unencapsulated dice.

Absolute Maximum Ratings:

SYMBOL	PARAMETERS	RATING	UNITS
V_{CBO}	Collector-Base Voltage	9	V
V_{CEO}	Collector-Emitter Voltage	7	V
V_{EBO}	Emitter-Base Voltage	1.5	V
$I_{C\ CONT}$	Collector Current	20	mA
T_J	Junction Temperature	200	°C
T_{STG}	Storage Temperature	-65 to 150	°C

PERFORMANCE DATA:

- Electrical Characteristics (T_A = 25°C)

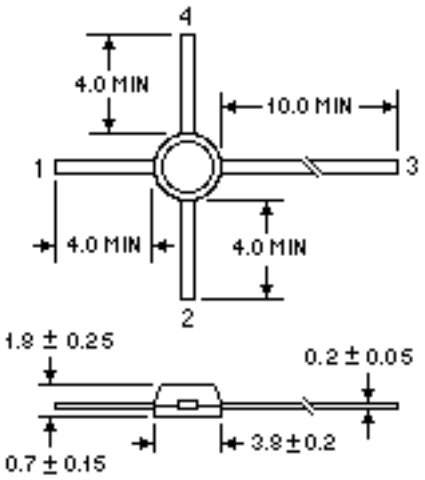
SYMBOL	PARAMETERS & CONDITIONS V_{CE} =8V, I_C = 10 mA unless stated	UNIT	MIN.	TYP.	MAX.
f_t	Gain Bandwidth Product	GHz		12	
$\|S_{21}\|^2$	Insertion Power Gain: f = 1.0 GHz f = 2.0 GHz			18.1 12.8	
P_{1dB}	Power output at 1dB compression: f = 1.0 GHz	dBm		12	
G_{1dB}	Gain at 1dB compression: f = 1.0 GHz	dBm		15	
NF	Noise Figure: V_{CE} =8V, I_C = 2mA f = 1.0 GHz Z_S = 50Ω	dB		1.6	
h_{FE}	Forward Current Transfer Ratio: f = 1MHz V_{CE} = 8V, I_C = 10 mA		50	100	250
I_{CBO}	Collector Cutoff Current : V_{CB} =8V	μA			
I_{EBO}	Emitter Cutoff Current : V_{EB} =1V	μA			1.0
C_{CB}	Collector Base Capacitance: V_{CB} = 8V f = 1MHz	pF		0.11	

0.2

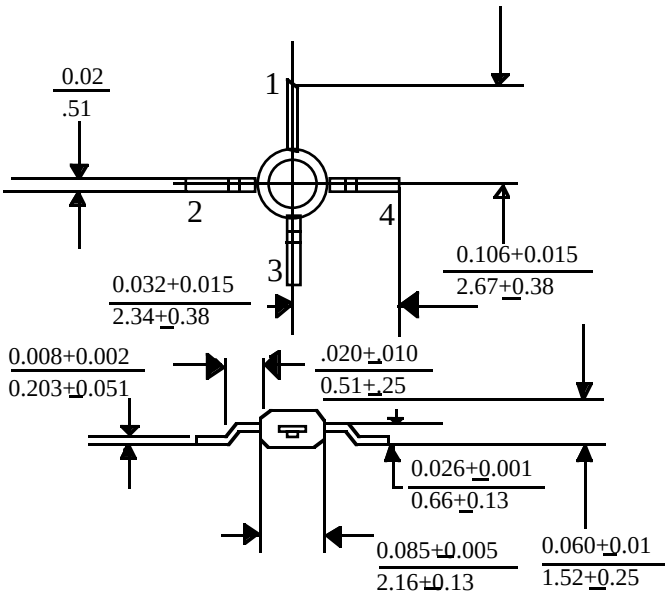
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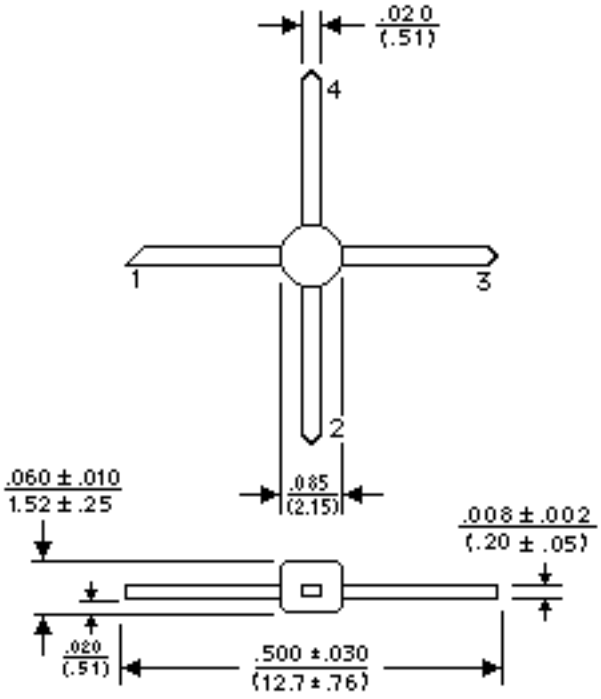
BRF61004
Package Style 04: 0.145" Plastic Macro-X



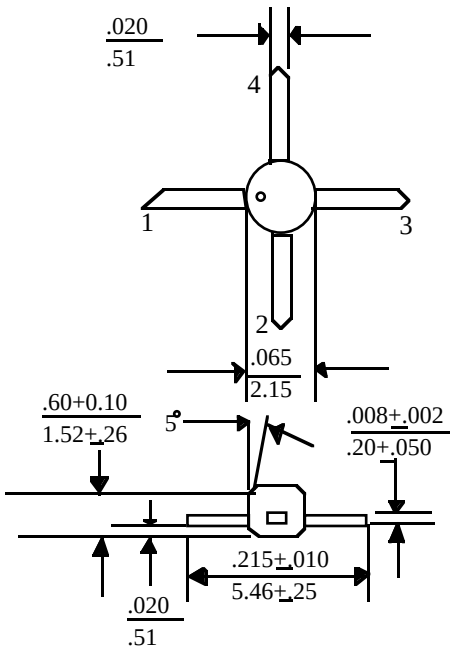
BRF61086
Package Style 86: 0.085" Plastic Micro-X, Surface Mount



BRF61085
PackageStyle 85: 0.085" Plastic Micro-X



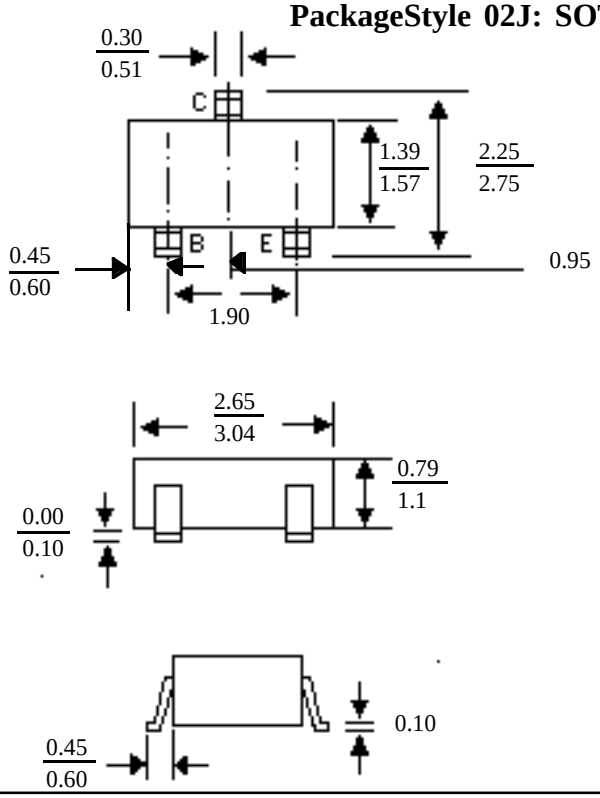
BRF61087
Package Style 87: 0.085" Plastic Micro-X, Short Lead



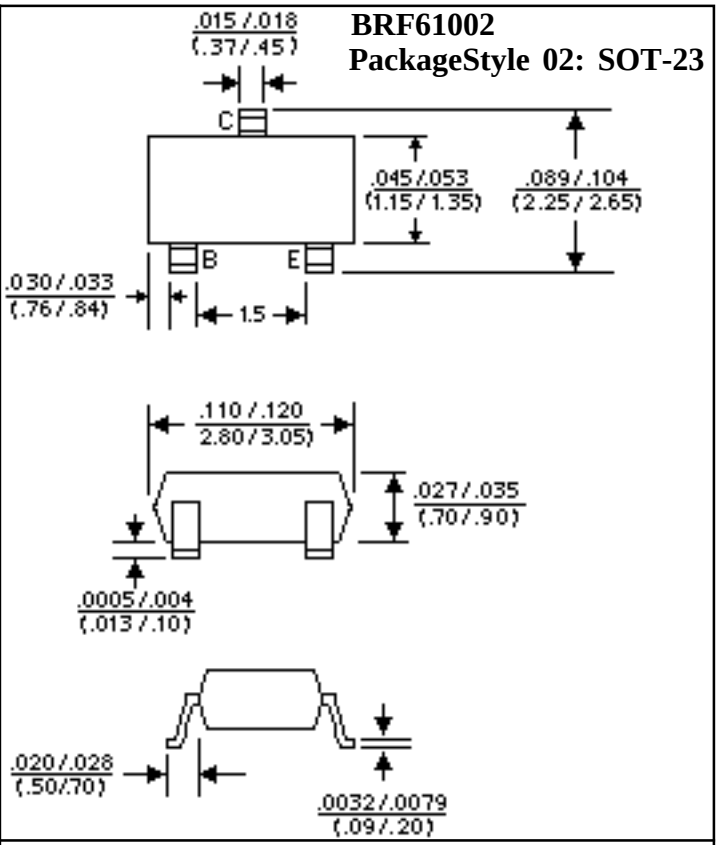
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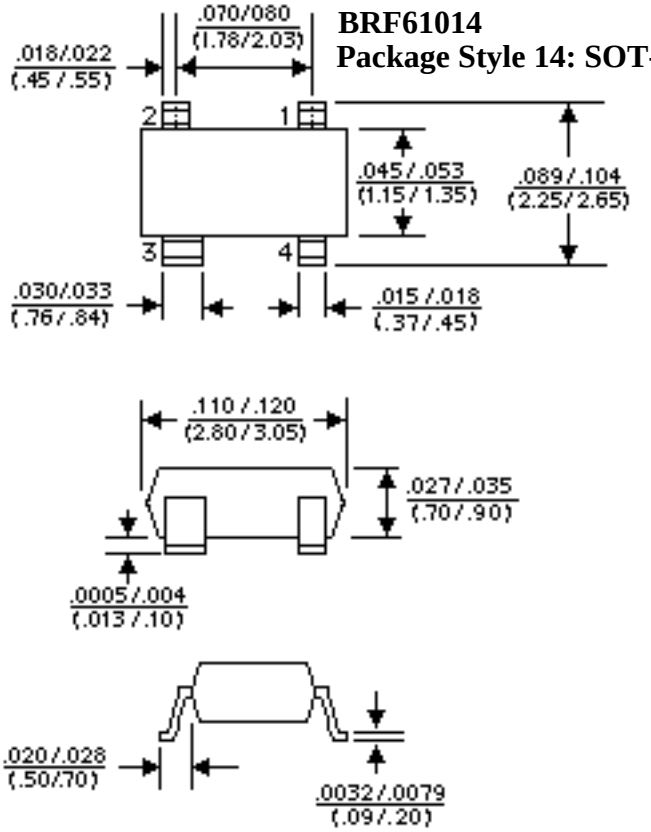
BRF61002J
PackageStyle 02J: SOT-23J



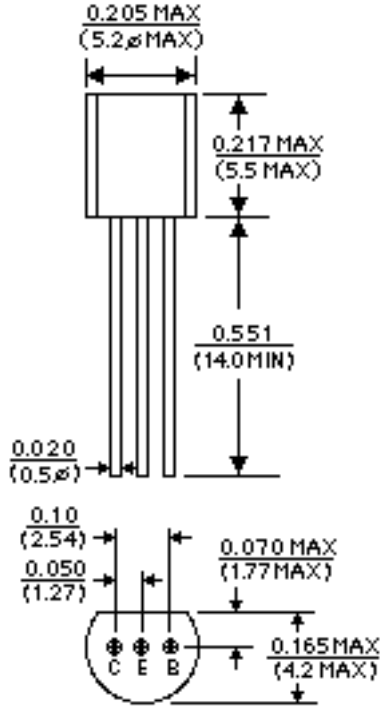
BRF61002
PackageStyle 02: SOT-23



BRF61014
Package Style 14: SOT-143



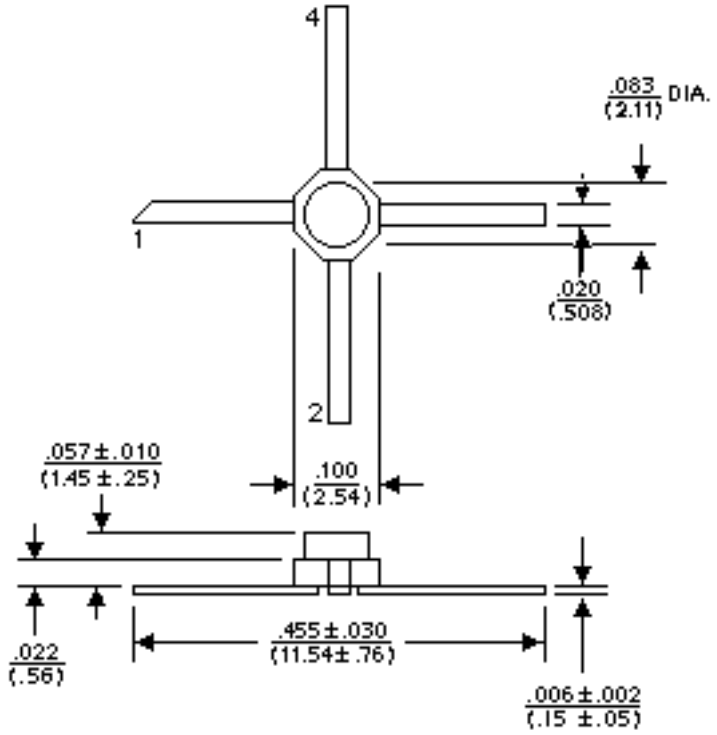
BRF61092
Package Style 92: TO-92



BIPOLARICS, INC. Part Number BRF610

NPN LOW NOISE SILICON MICROWAVE TRANSISTOR

BRF61035
Package Style 35: Micro-X 0.085" Ceramic



LEAD	1	2	3	4
Package Style 14, 85, 35 & 10	Base	Emitter	Collector	Emitter

NOTES: (unless otherwise specified)

1. Dimensions are $\frac{\text{in}}{(\text{mm})}$
2. Tolerances:
   in .xxx = ± .005
   mm .xx = ± .13
3. All dimensions nominal; subject to change without notice

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