

## F245

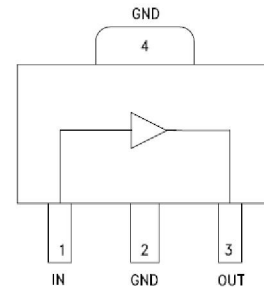
March 2011  
Rev 1

### Features

- ★ DC - 3.5 GHz
- ★ +21 dBm P<sub>1dB</sub> at 1 GHz
- ★ +37dBm OIP3 at 1 GHz
- ★ 20dB Gain at 1GHz
- ★ 3.6 dB Noise Figure at 2GHz
- ★ SOT – 89 Package Style

- ★ W-LAN / ISM
- ★ RFID
- ★ WiMAX/WiBro

### Functional Diagram



MARK N45

### Description

The *F245* is a general-purpose buffer amplifier that offers high dynamic range in a low-cost surface-mount package. at 1000MHz, the *F245* typically provides 20 dB of gain, +37 dBm Output IP3, and +21dBm P<sub>1dB</sub>. The *F245* consists of Darlington pair amplifiers using the high reliability InGaP/GaAs HBT process technology and only requires DC-blocking capacitors, a bias resistor, and an inductive RF choke for operation.

### Applications

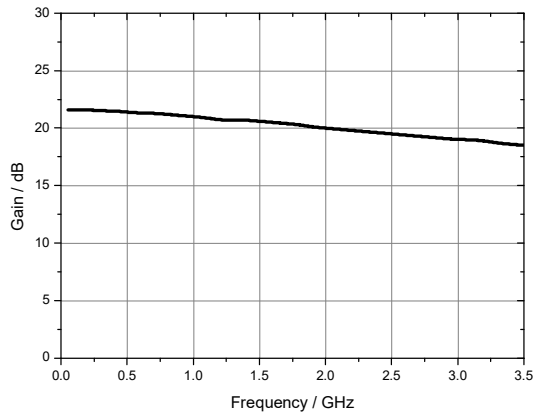
- ★ Mobile Infrastructure
- ★ CATV / FTTX

### Electrical Characteristics ( $V_{cc} = 8V$ , $R_{bias} = 30 \text{ Ohm}$ , $T_A = +25^\circ C$ )

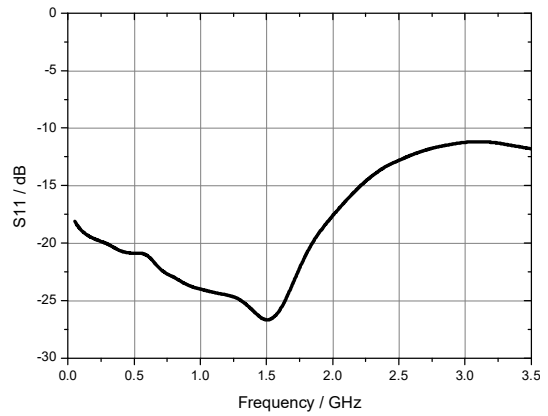
Parameter		Min.	Typ.	Max.	Units
Gain	DC~1.0GHz		21.0		dB
	1.0~2.0 GHz		20.0		
	2.0~3.5 GHz		18.5		
Input return Loss	DC ~3.5 GHz	11	18		dB
Output return Loss	DC ~3.5 GHz	13	15		dB
Reverse Isolation	DC ~3.5 GHz		24		dB
Output Power for 1 dB Compression (P <sub>1dB</sub> )	DC~1.0GHz		21		dBm
	1.0~2.0 GHz		20		
	2.0~3.5 GHz		18		
Output Third Order Intercept (IP3)	DC~1.0GHz		36		dBm

	1.0~2.0 GHz		33	
	2.0~3.5 GHz		29	
Noise Figure			3.6	dB
Device Voltage	4.9	5.1		V
Supply Current	92	100		mA

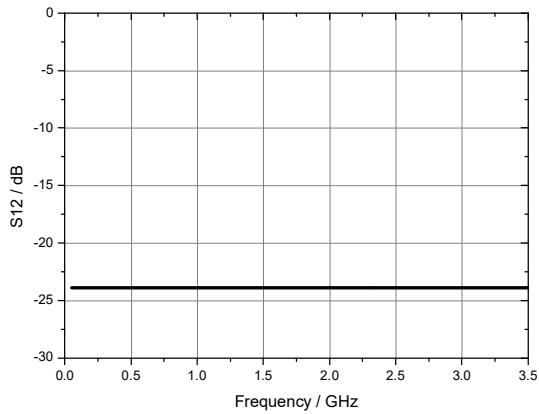
**Gain vs. Frequency @ T=+25C**



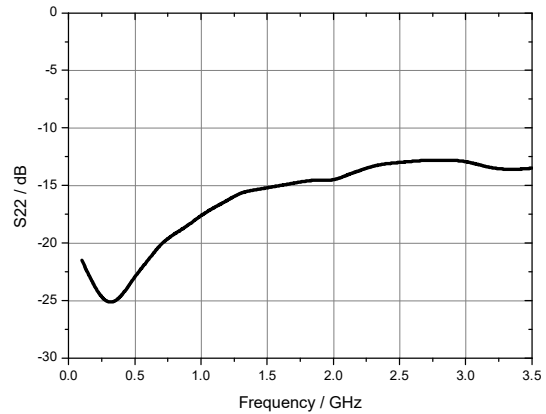
**S11 vs. Frequency @ T=+25C**

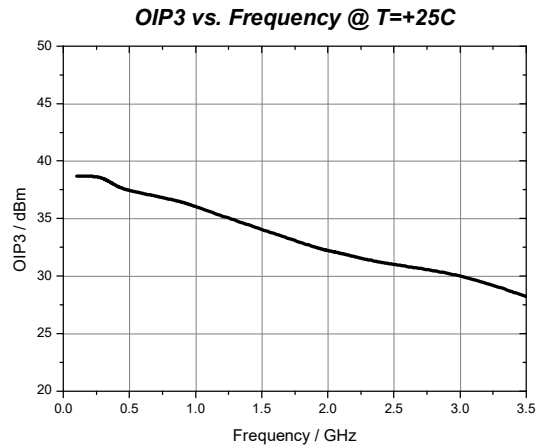
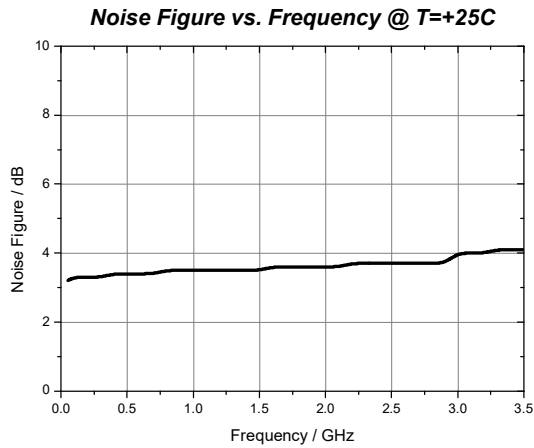


**S12 vs. Frequency @ T=+25C**



**S22 vs. Frequency @ T=+25C**





**Absolute Maximum Ratings**

Device Current	110mA
Storage Temperature	-65 to +150°C
Operating Temperature	-55 to +125°C
ESD Sensitivity (HBM)	Class 1A



**ELECTROSTATIC SENSITIVE DEVICE  
OBSERVE HANDLING PRECAUTIONS**

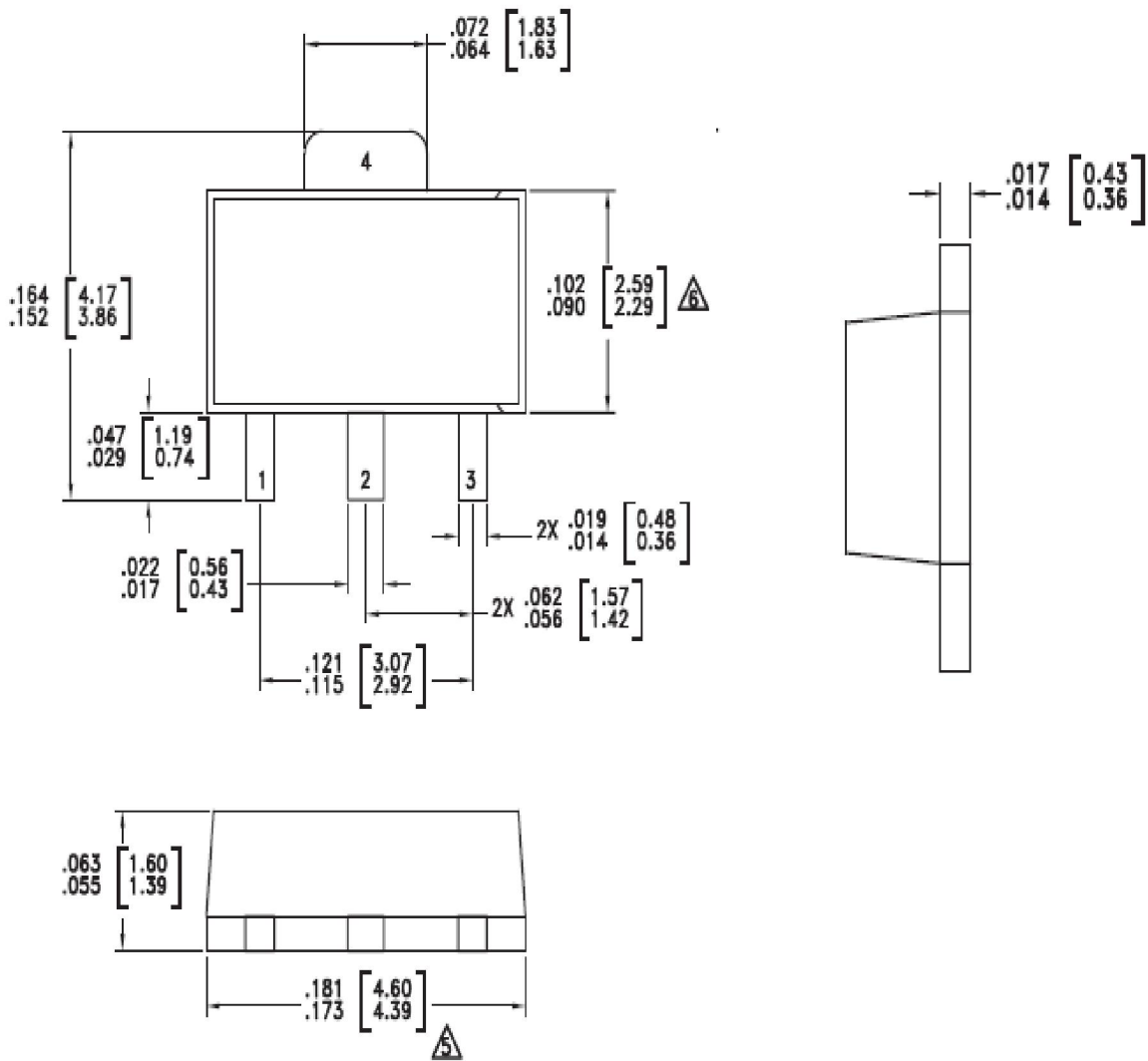
**ESD Rating: Class 1A**

**Value: Passes between 1500 and 2000V**

**Test: Human Body Model (HBM)**

**Standard: JEDEC Standard JESD22-A114**

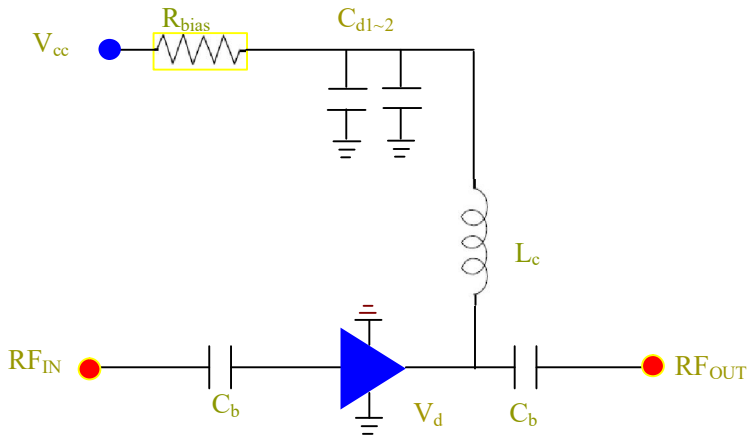
**Outline Drawing**



### Pin Descriptions

Pin number	Function	Description
1	RF <sub>IN</sub>	This pin is DC coupled; An off chip DC blocking capacitor is required.
2, 4	GND	These pins and package bottom must be connected to RF/ DC ground.
3	RF <sub>OUT</sub>	RF output and DC Bias for the output stage.

### Application Circuit



External blocking capacitors are required on RF<sub>IN</sub> and RF<sub>OUT</sub>.

### Recommended Component Values

Component	Frequency		Unit
	0.05GHz~1.5GHz	1.5GHz~3.5GHz	
C <sub>b</sub>	1000	39	pF
L <sub>c</sub>	1000	18	nH
C <sub>d1</sub>	0.1	0.1	uF
C <sub>d2</sub>	1000	1000	pF

### Evaluation Board Layout

