

## Features

- DC to 2500 MHz
- 35 dBm Typical OIP3 at 2400 MHz
- Highly Reliable InGaP HBT
- 20.0 dBm Typical P1dB at 2400 MHz
- 5.1 dB Typical Noise Figure at 900 MHz
- Excellent Stability
- +3 Volt Operation

## Package Available

(-B) SOT-89

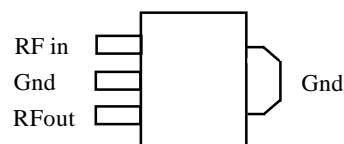
## Description

The ECG012 is a high reliability, high OIP3 amplifier in a low cost SOT-89 package, optimized for the commercial communications market. The device is manufactured using advanced Indium Gallium Phosphide Heterojunction Bipolar Transistor (InGaP HBT) technology. The amplifier can be matched to achieve low VSWR and high OIP3 over the DC to 2500 MHz range. Typical OIP3 at 1900 MHz is +35 dBm. The ECG012 operates from a single 3 volt power supply.

## Applications

- Multi-carrier Systems
- High Linearity Amplifiers
- Bluetooth, Wireless LAN
- 2400 MHz, ISM Band

## Package



**SOT-89 (Top View)**

## Electrical Specifications

Test Conditions:  $T_a = 25^\circ\text{C}$ ,  $V = 3.0\text{ V}$

SYMBOL	PARAMETER		LIMITS			UNIT	TEST CONDITION
			MIN.	TYP.	MAX.		
F	Frequency		DC		2500	MHz	
G	Gain (Small Signal)	$f = 900\text{ MHz}$ $f = 1900\text{ MHz}$ $f = 2400\text{ MHz}$		14.0 12.5 10.0		dB	
$P_{1dB}$	Output Power @ 1 dB Compression	$f = 900\text{ MHz}$ $f = 1900\text{ MHz}$ $f = 2400\text{ MHz}$		20.0		dBm	
OIP3	Output Third Order Intercept	$f = 900\text{ MHz}$ $f = 1900\text{ MHz}$ $f = 2400\text{ MHz}$		35 36 35		dBm	Note 1
$RL_{IN}$	Input Return Loss, 50 Ohm	900 to 2400 MHz		15.0		dB	
$RL_{OUT}$	Output Return Loss, 50 Ohm	900 to 2400 MHz		10.0		dB	
NF	Noise Figure	$f = 900\text{ MHz}$ $f = 1900\text{ MHz}$		5.1 5.9		dB	
$I_c$	Supply Current			100		mA	
	Output Mismatch without Spurs			10:1			

Note 1:  $OIP3 = P_{out} \text{ (by power meter, total 2-tone power)} + (IM3 \text{ (dBc)}) / 2 - 3 \text{ dB}$

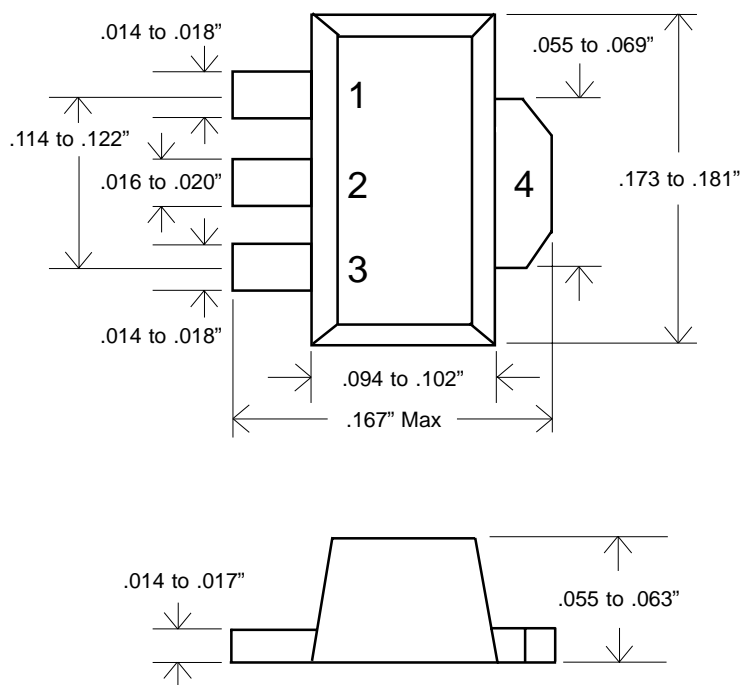


**CAUTION!**  
**SENSITIVE ELECTRONIC DEVICE**

### Absolute Maximum Ratings

Device Current	220	mA
RF Power Input	12	dBm
Operating Temperature	-40 to +85	°C
Storage Temperature	-65 to +150	°C
Junction Temperature	200	°C

### Package Outline



### Pin Definitions

Pin #	Pin	Definition
1	RFin	This pin has a non-zero DC potential, requiring a DC blocking capacitor. Input matching is required to achieve a low VSWR.
2, 4	Gnd	The two ground connections should be directly connected together to the ground plane on the PCB. The ground connection also serves as a heatsink.
3	RFout	DC bias is applied to this pin through a RF choke. A bypass capacitor (1.0 micro farad) on the DC side of the choke is recommended for low frequency modulation signal.