EiC Corp.
Excellence in Communications

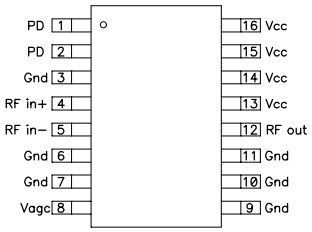
EC-0037
VARIABLE GAIN AMPLIFIER
500–3000 MHz

Features
- Low Power Consumption
- Power-down Capability Range
- 50 Ohm Matched
- Wide Gain Control
- High Linearity for Digital Systems
- Single 3.0 to 5.0 V Operation
- Open-collector Design Allows Reactive Matching to Specific Frequency Band

Applications
- Cellular
- GSM
- ISM Band
- PCS
- Spread Spectrum
- TDMA
- Portable Battery-powered Equipment

Description
The EC-0037 is a broadband variable gain amplifier optimized for commercial mobile communications. Utilizing advanced Gallium Arsenide heterojunction bipolar transistor technology (GaAs HBT), the amplifier features excellent linearity. The EC-0037 operates from a single 3.0 to 5.0 volt supply, and is available in a low-cost, surface-mountable plastic QSOP-16 package.

Package



QSOP-16 (Top View)

Electrical Specifications
Test Conditions: Ta = 25°C, V_{CC} = +3.0 V, V_{AGC} = +3.0 V, V_{PD} (power-down voltage) = +3.0 V, F = 1900 MHz

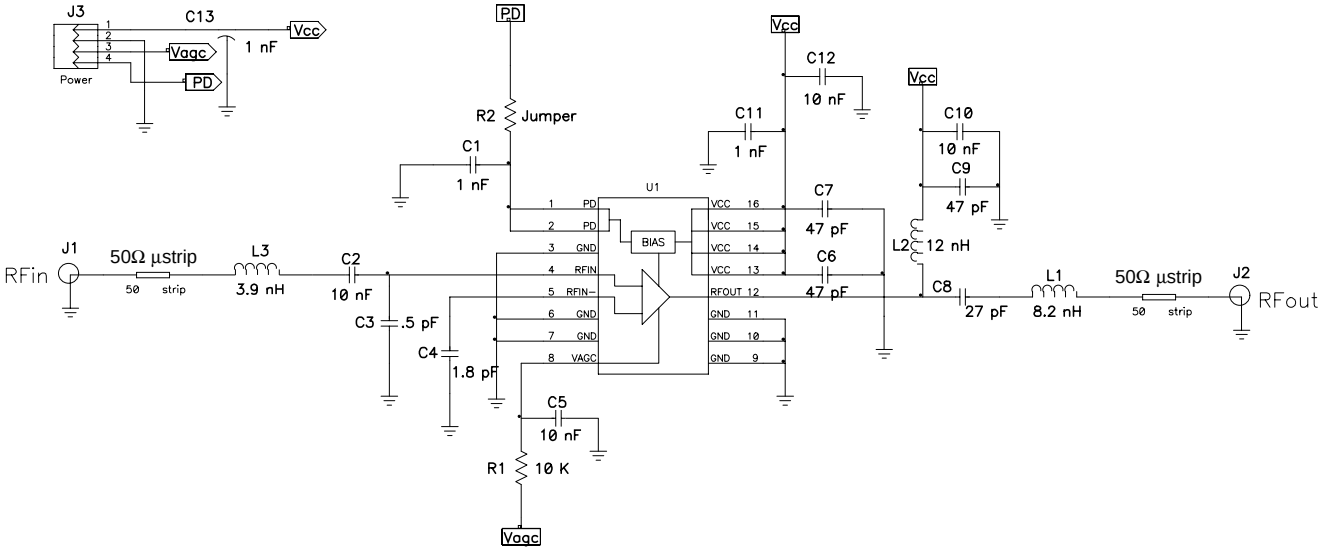
SYMBOL	PARAMETER	LIMITS			UNIT	TEST CONDITION
		MIN.	TYP.	MAX.		
F	Frequency	500		3000	MHz	
G	Gain	10	11.5	13	dB	NOTE 1
ΔG	Gain Control Range	35	40		dB	
P_{sat}	Saturated Output Power	-4	-2.5		dBm	NOTE 1
OIP3	Output Third Order Intercept Point	4	6.5		dBm	NOTE 2
NF	Noise Figure		13		dB	AGC=3.0 V
IRL	Input Return Loss		12		dB	
Icc	Supply Current	17	22	26	mA	
Icc_{PD}	Supply Current, Power-down Mode		0.5		µA	NOTE 3
Vcc	Supply Voltage	3.0		5.0	Vdc	
NOTE 1: Using Application Schematic						
NOTE 2: P_{IN} per tone = -23 dBm, F_1 = 1900 MHz, F_2 = 1901 MHz						
NOTE 3: V_{CC}=3.0 V, V_{PD}=0.0 V						

Absolute Maximum Ratings

PARAMETER	RATING	UNIT	TEST CONDITION
Supply Voltage	8	Volts	V_{PD}=3.0V
Power-down Voltage	4	Volts	V_{CC}=V_{PD}
RF Power Input	0	dBm	V_{CC},V_{PD}=3.0V
Ambient Operating Temperature	-40 to +85	°C	

CAUTION!
SENSITIVE ELECTRONIC DEVICE

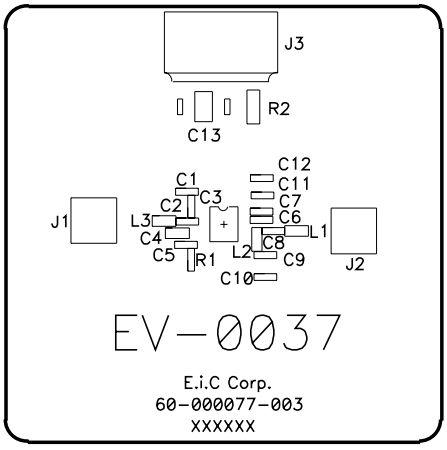
Evaluation Board Application Schematic

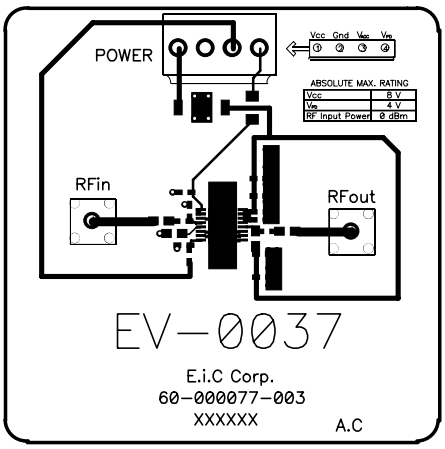


Evaluation Board Materials

MANUFACTURER	PART NUMBER	QTY.	DESCRIPTION	VALUE	DESIGNATORS
TOKO	LL2012-F8N2K	1	Inductor (0805)	8.2 nH	L1
TOKO	KLL2012-F12NK	1	Inductor (0805)	12 nH	L2
TOKO	LL2012-F3N9K	1	Inductor (0805)	3.9nH	L3
MMC	CE102J1N0	2	Capacitor (0603)	1 nF	C1,C11
MMC	CC103K1NR	4	Capacitor (0603)	10 nF	C2,C5,C10,C12
MMC	CE0R5C1N0	1	Capacitor (0603)	.5 pF	C3
MMC	CE470J1N0	3	Capacitor (0603)	47 pF	C6,C7,C9
MMC	CE270J1N0	1	Capacitor (0603)	27 pF	C8
MMC	CE1R8C1N0	1	Capacitor (0603)	1.8 pF	C4
ROHM	MCR03J104	1	Resistor (0603)	10 KΩ	R1
ROHM	MCR03J000	1	Resistor (0603)	0Ω	R2
FAI	NFM61R10T102T1	1	Feedthru Cap	1n pF	C13
1st Source	R124.680.120	2	Right Angle SMA Connector	-	J1, J2
Jameco	104791	1	.156" Center Header	-	J3
EiC Corp	EC-0037	1	VGA	-	U1
EiC Corp	60-000077-003	1	PCB	-	-

Evaluation Board Layout
2.5” x 2.5”





Typical Characteristics
(using *EIC*'s EV-0037 Evaluation Board)
Matched @ 1900 MHz

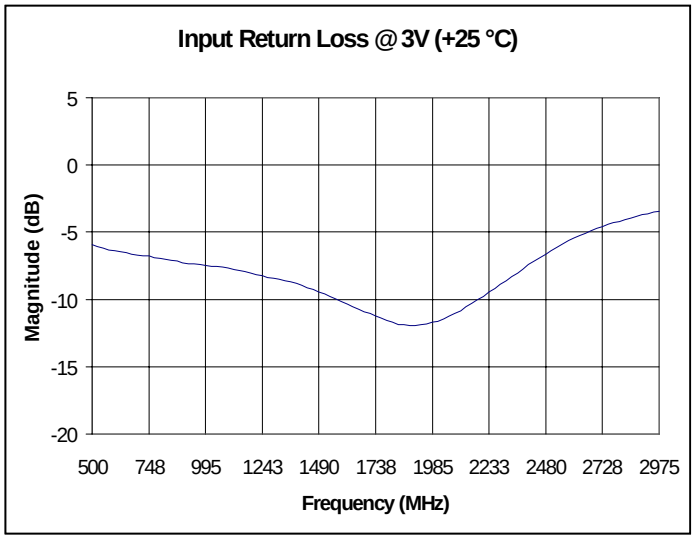


Figure 1

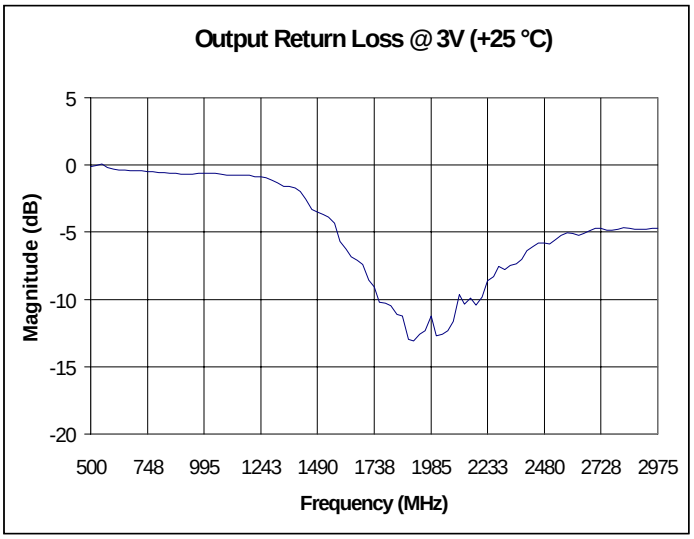


Figure 2

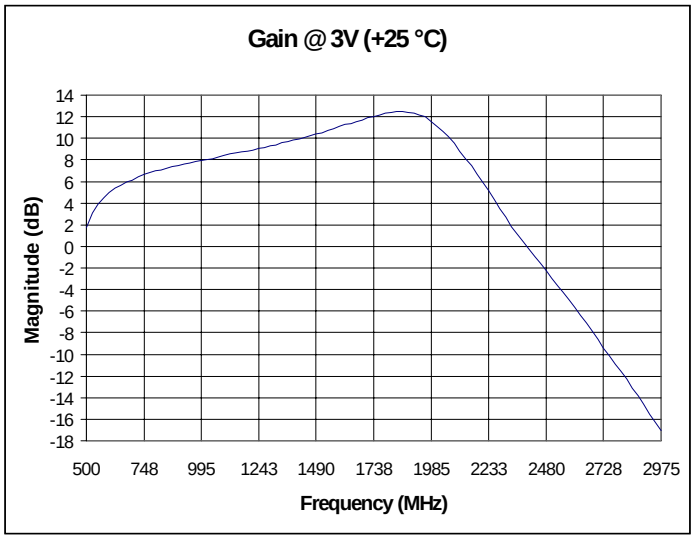


Figure 3

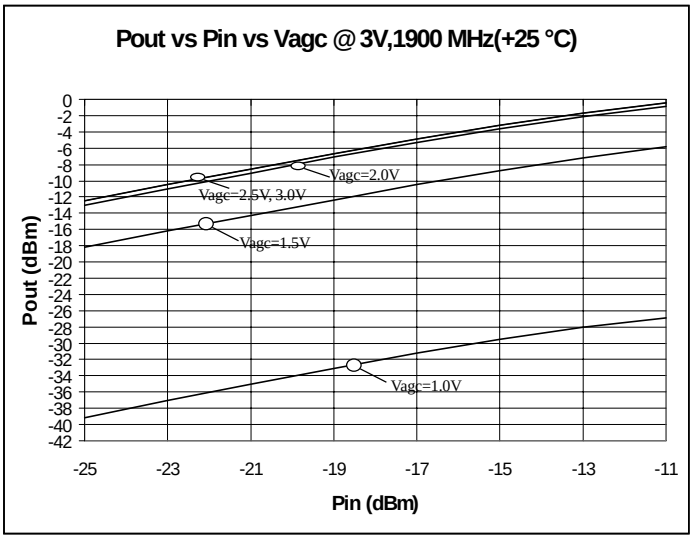


Figure 4

NOTE: Similar results are obtainable at other frequencies, with minor changes in external matching.

Package Outline