

Features

- Single 3.0 to 5.0 Vdc Operation
- High Linearity for Digital Modulation Systems
- Power-down Capability
- 50 Ohm IF and LO Input Impedance
- -10 dBm LO Input Power
- Input IF Frequency to 200 MHz
- Open Collector Output
- Single-ended IF Input

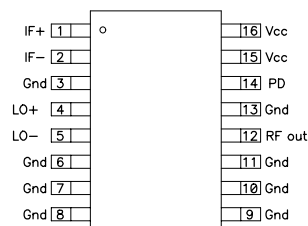
Applications

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

Description

The EC-5117 is a high-performance upconverter for commercial mobile communications. Utilizing advanced Gallium Arsenide heterojunction bipolar transistor technology (GaAs HBT), the amplifier features excellent linearity. The EC-5117 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)

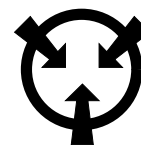
Electrical Specifications

Test Conditions: $T_a = 25^\circ\text{C}$, $V_{CC} = +3.0\text{ V}$, V_{PD} (power-down voltage) = +3.0 V, $F_{OUT} = 1900\text{ MHz}$

SYMBOL	PARAMETER	LIMITS			UNIT	TEST CONDITION
		MIN.	TYP.	MAX.		
F	Frequency (LO and RF)	500		3000	MHz	
G	Gain	7	9	11	dB	NOTE 1
P_{SAT}	Output Power at 6 dB Compression	-4		0	dBm	NOTE 1
LO-RF	Isolation	15	18		dB	NOTE 1
IRL_{RF}	RF Port Return Loss		10		dB	NOTE 1
IRL_{IF}	IF Port Return Loss		15		dB	NOTE 1
OIP3	Output Third Order Intercept	3	4		dBm	NOTE 2
I_{CC}	Supply Current	15	18	23	mA	
I_{CCPD}	Supply Current, Power-down Mode		0.5		μA	NOTE 3
V_{CC}	Supply Voltage	3.0		5.0	Vdc	
NOTE 1: Using Application Schematic						
NOTE 2 P_{IN} per tone = -23 dBm, $F_1 = 50\text{ MHz}$, $F_2 = 51\text{ MHz}$, $F_{LO} = 1850\text{ MHz}$, $P_{LO} = -10\text{ dBm}$						
NOTE 3: $V_{CC} = 3.0\text{ V}$, $V_{PD} = 0.0\text{ V}$						

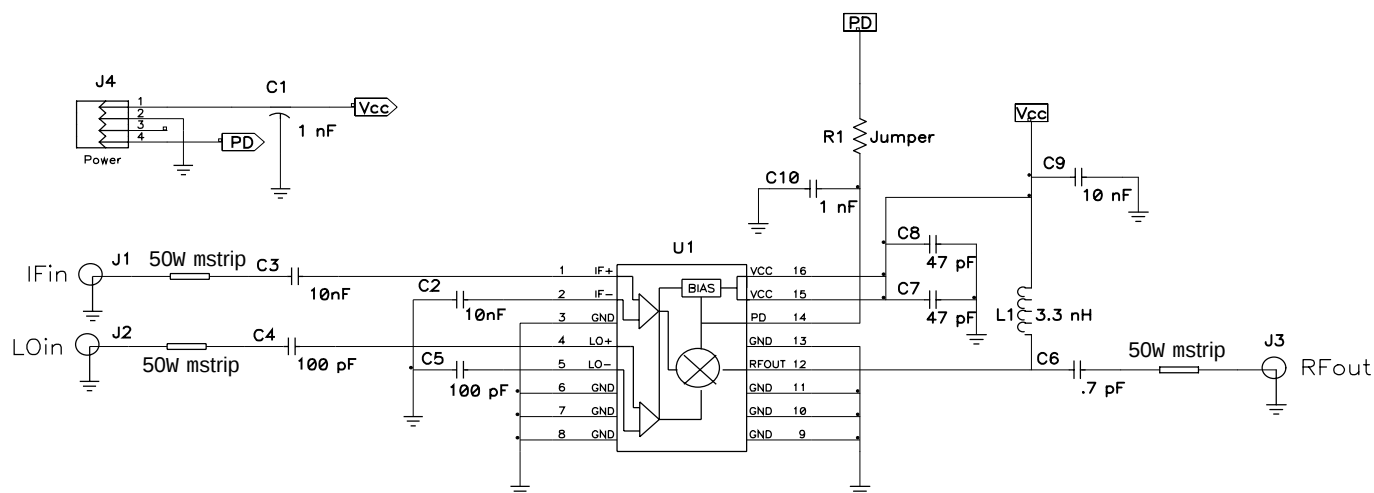
Absolute Maximum Ratings

PARAMETER	RATING	UNIT	TEST CONDITION
Supply Voltage	7	Volts	$V_{PD} = 3.0\text{ V}$
Power-down Voltage	4	Volts	$V_{CC} = V_{PD}$
IF Power Input	10	dBm	$V_{CC}, V_{PD} = 3.0\text{ V}$
Ambient Operating Temperature	-40 to +85	$^\circ\text{C}$	



CAUTION!
SENSITIVE ELECTRONIC DEVICE

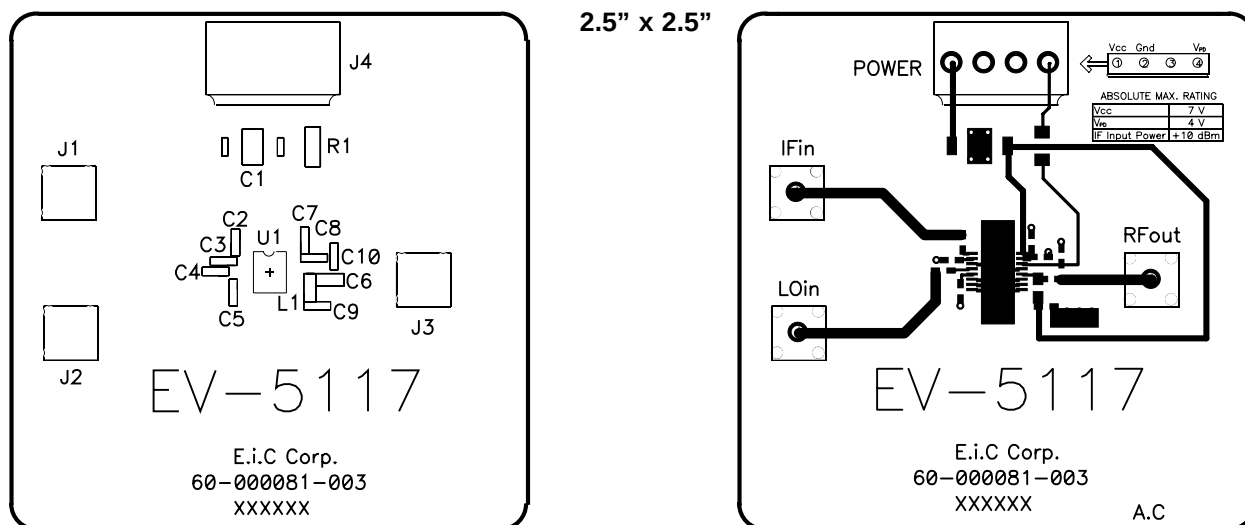
Evaluation Board Application Schematic for 1900 MHz



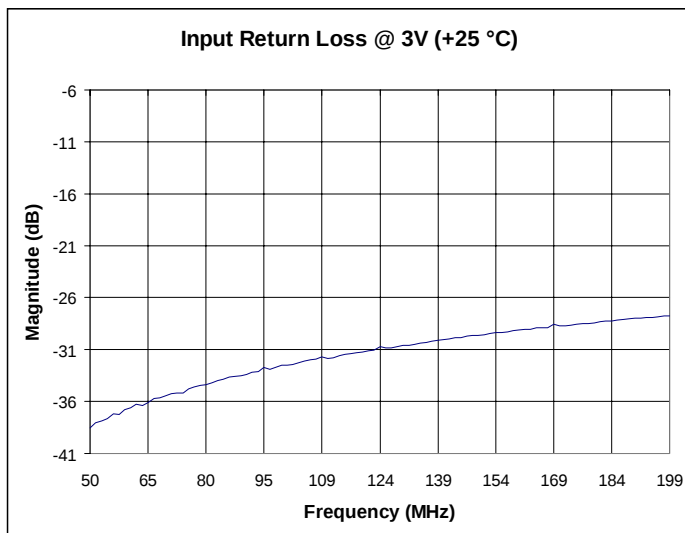
Evaluation Board Materials

MANUFACTURER	PART NUMBER	QTY.	DESCRIPTION	VALUE	DESIGNATORS
FAI	NFM61R10T102T1	1	Feedthru Cap	1 nF	C1
MMC	CC103K1NR	3	Capacitor (0603)	10 nF	C2,C3,C9
MMC	CE101J1N0	2	Capacitor (0603)	100 pF	C4,C5
ATC	100A0R7CW	1	Capacitor (0805)	.7 pF	C6
MMC	CE470J1N0	2	Capacitor (0603)	47 pF	C7,C8
MMC	CE102K1NR	1	Capacitor (0603)	1 nF	C10
Coilcraft	0805CS-030XMBC	1	Inductor (0805)	3.3 nH	L1
ROHM	MCR03J000	1	Resistor (0603)	0Ω	R1
Jameco	104791	1	.156" Center Header	-	J4
1st Source	R124.680.120	3	Right Angle SMA Connector	-	J1, J2,J3
EiC Corp	EC-5117	1	Upconverter	-	U1
EiC Corp	60-000081-003	1	PCB	-	-

Evaluation Board Layout

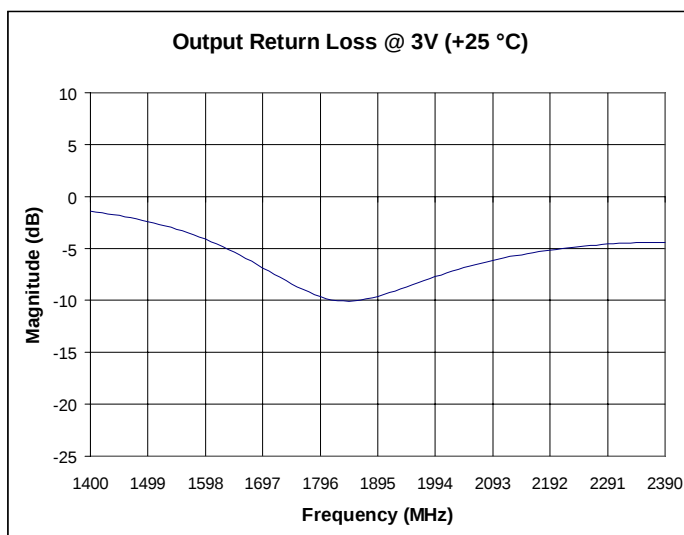


Typical Characteristics
(Using EiC's EV-5117 Evaluation Board)



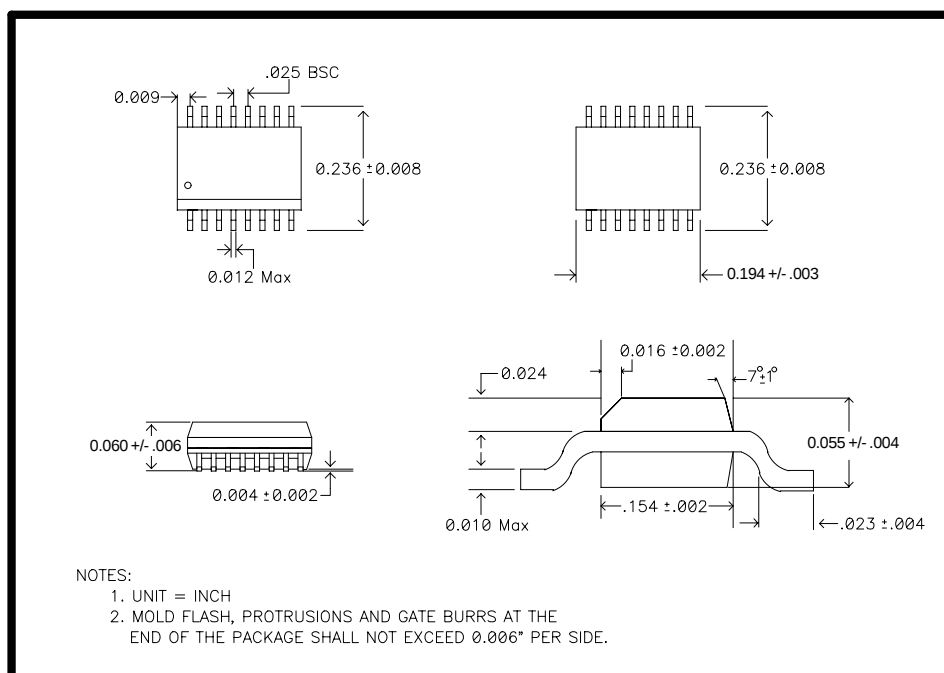
IF Input Port
Figure 1

(RF Output Matched @ 1900 MHz)



RF Output Port
Figure 2

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

Package Outline

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