

Anaren

Anaren Microwave, Inc.
6635 Kirkville Road
East Syracuse, NY 13057, U.S.A.
Tel: (315) 432-8909
Toll Free: (800) 544-2414
Fax: (315) 432-9121

Surface Mount Quad IF Mixer/ IQ Modulator

Model 55A0016

Data Sheet

Anaren Microwave, Inc. has developed a new surface mount quadrature IF mixer(QIFM) for use in wireless voice and data transmission systems. The unit holds two balanced mixers with two equal amplitude IF outputs (I and Q) in phase quadrature.

The new QIFM contains diodes with low 1/f noise. Low 1/f noise provides for good sensitivity at low IF frequencies, even in the kilohertz range. Anaren's SMT QIFM has an IF range of DC to 250 MHz.

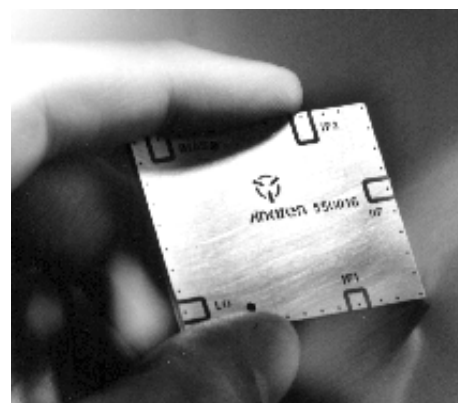
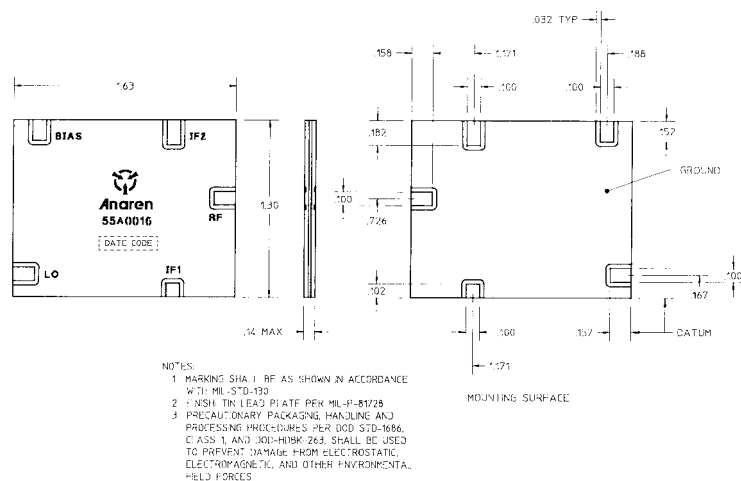
RF and LO frequencies are 2.3 GHz to 2.5 GHz. Conversion loss is typically 10 dB, LO to RF isolation is typically 10 dB, IF amp balance is typically less than ± 1.5 dB, and IF phase balance is typically less than ± 8 degrees at LO powers of 0 dBm.

Bias circuits permit the QIFM to be operated at LO power levels of -7 to 10 dBm.

Specifications

Frequency	2.3 to 2.5 GHz
LO to RF Isolation	8 dB min
IF Bandwidth	DC to 250 MHz
RF VSWR	2.32:1 max
LO VSWR	2.10:1 max
Conversion Loss	11.5 dB max @ 16 KHz IF
Phase Balance	$\pm 10^\circ$ max @ 60 MHz IF
Amp. Balance	± 1.5 dB max @ 60 MHz IF
1/f Noise	-168 dBm/Hz @ 16 KHz IF
LO Power	0 dBm to +1 dBm
Bias	+ 10 ma max
Operating Temp	-40°C to +85°C
Price	\$110ea.(qty 1-24), \$20ea.(qty 5K-10K)

Outline Drawing



Anaren's surface mount QIFM is tiny. It measures 1.63" wide x 1.3" high x 0.14" thick.

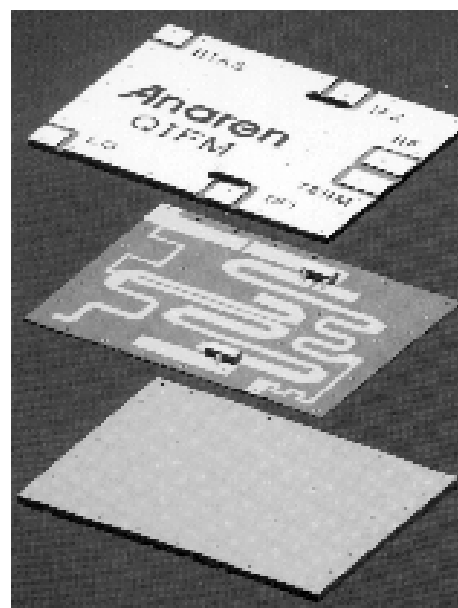
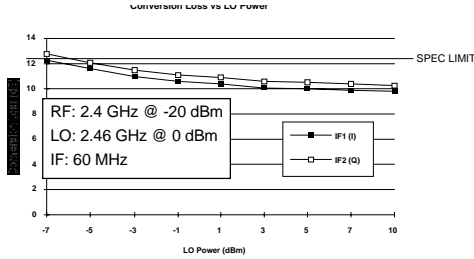


Photo shows top layer, middle circuit layer and bottom layer. Plated through holes improve grounding for better performance.

Typical Performance Data

Conversion Loss vs LO Power

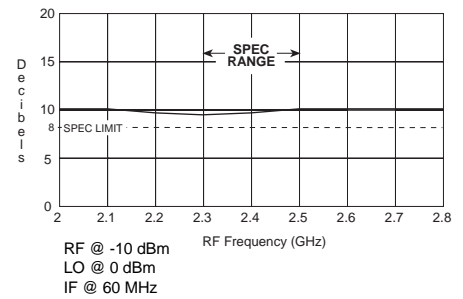


Note: When LO frequency is higher than the RF frequency, then IF1 (I) leads IF2 (Q) by 90°.

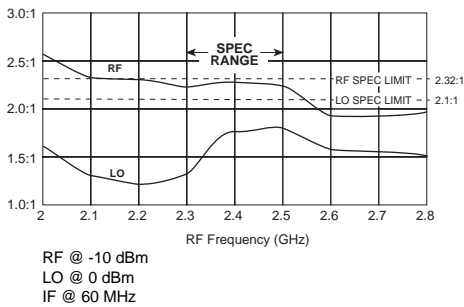
Conversion Loss vs RF Freq.

RF @ -10 dBm
 LO @ 0 dBm
 IF @ 60 MHz

LO - RF Isolation vs RF Freq.



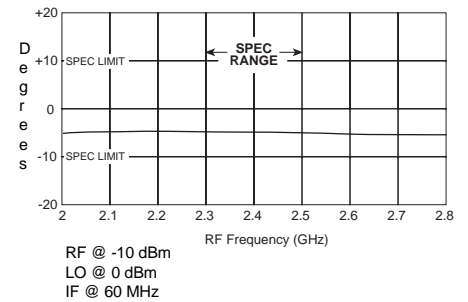
LO - RF VSWR vs RF Freq.



Amp Tracking vs RF Freq.

RF @ -10 dBm
 LO @ 0 dBm
 IF @ 60 MHz

Phase Tracking vs RF Freq.



Application Tips

Bias Circuitry

A unique feature of Anaren's QIFM/IQ Modulator is the low LO power requirement. This is accomplished by applying DC bias from an external bias circuit. A typical bias circuit is shown in the accompanying drawing. The value of C should provide a low reactance (compared to 50Ω) at the lowest IF frequency expected.

Anaren

Anaren Microwave, Inc.
 6635 Kirkville Road
 East Syracuse, NY, USA, 13057
 Tel: (315) 432-8909
 Toll Free: (800) 544-2414
 Fax: (315) 432-9121

Anaren Microwave, Ltd.
 Frimley Business Park
 Frimley, Camberley
 Surrey, GU16 5SG, England
 Tel: 011-44-276-692829
 Fax: 011-44-276-682635