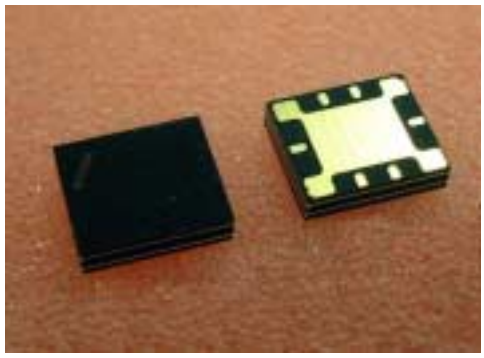
Preliminary

ES/FMM5117YE

K,Ka-Band Down-Converter MMIC

FEATURES

- High Conversion Gain, Gc = -11 dB (Typ.)
- High Linearity
- Broad RF Frequency Band ; 20 - 30 GHz
- SMT Laminate Package (YE Package)
- Impedance Matched Zin/Zout = 50Ω



DESCRIPTION

The FMM5117YE is a double, single balanced diode mixer down-converter MMIC. The device consists of a low noise mixer, LO amplifier, and LO frequency doubler. This downconverter is uniquely suited for point-to-point radios, point-to-multi point radios, and satellite communications.

Eudyna's stringent Quality Assurance Program assures the highest reliability and consistent performance.

ABSOLUTE MAXIMUM RATING

Item	Symbol	Rating	Unit
DC Supply Voltage	V_{DD}	8	V
RF Input Power	P_{inRF}	20	dBm
Lo Input Power	P_{inLO}	10	dBm
Storage Temperature	T_{stg}	-55 to +125	°C

RECOMMENDED OPERATING CONDITIONS

Item	Symbol	Recommend	Unit
DC Supply Voltage	V_{DD}	<=5	V
Input Local power level	P_{inLO}	0 to +5	dBm
Operating Case Temperature	T_C	-40 to +85	°C

ELECTRICAL CHARACTERISTICS (Ambient Temperature Ta=25°C)

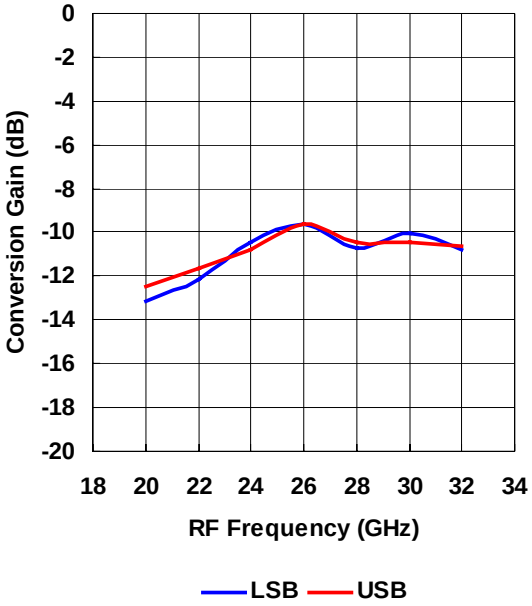
Item	Symbol	Test Conditions	Limits			Unit
			Min.	Typ.	Max.	
RF Frequency Range	f_{RF}		20	-	30	GHz
LO Frequency Range	f_{LO}		9.5	-	16.5	GHz
IF Frequency Range	f_{IF}		0.1	-	3	GHz
Conversion Gain	G_C	V_{DD}=+5V P_{LO}=+3dBm P_{RF}=0dBm	-19	-11	-	dB
Conversion Gain Flatness (fixed fIF,swept fLO) (fIF=1.0GHz)	dG		-	5	-	dB
Conversion Gain Flatness (fixed f_{LO},swept f_{IF}) (f_{LO}=13.5GHz)	dG		-	2	-	dB
Return Loss (RF/LO)	RL_{RF}, RL_{LO}		-	-12	-	dB
Return Loss (IF)	RL_{IF}		-	-4	-	dB
3rd Order Input Intercept Point	I_{IP3}		-	22	-	dBm
Current Consumption @DC	$I_{DD(DC)}$		-	120	170	mA
Current Consumption @RF	$I_{DD(RF)}$		-	160	220	mA

ESD	Class 0	~ 199V

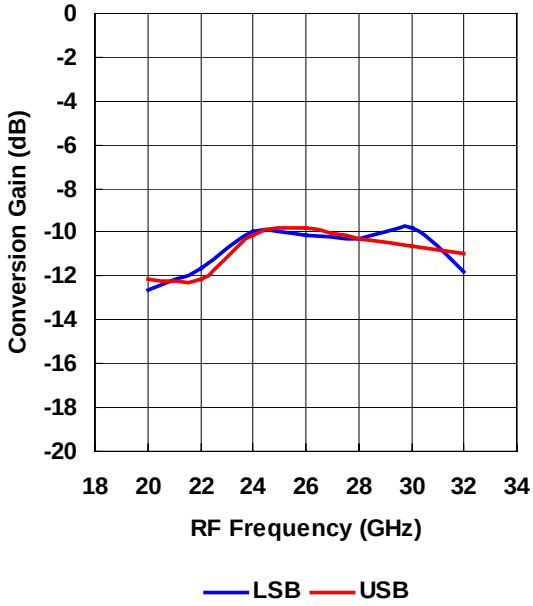
Note : Based on EIAJ ED-4701 C-111A(C=100pF, R=1.5kW)

Case Style	YE

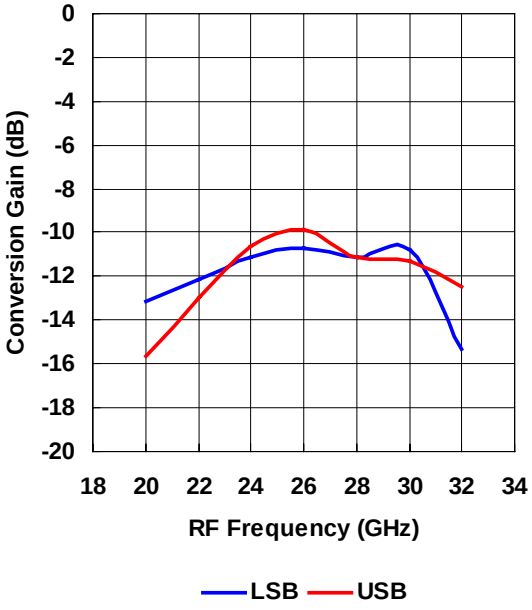
Conversion Gain vs. Frequency
@ f_{IF}=1GHz, V_{DD}=5V, $P_{in(RF)}$=0dBm, $P_{in(Lo)}$=+3dBm



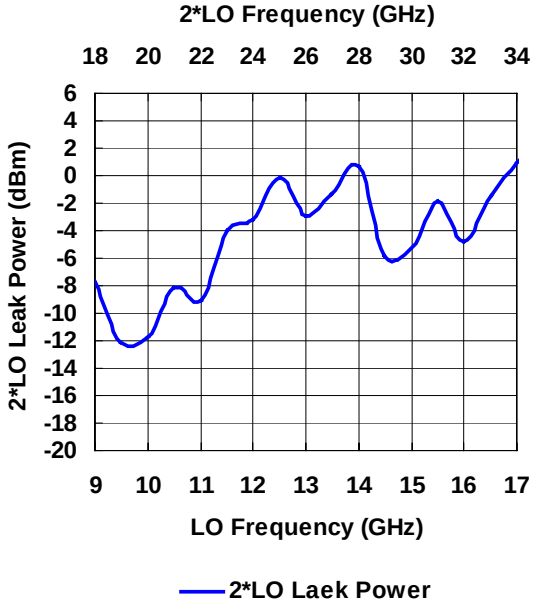
Conversion Gain vs. Frequency
@ f_{IF}=2GHz, V_{DD}=5V, $P_{in(RF)}$=0dBm, $P_{in(Lo)}$=+3dBm



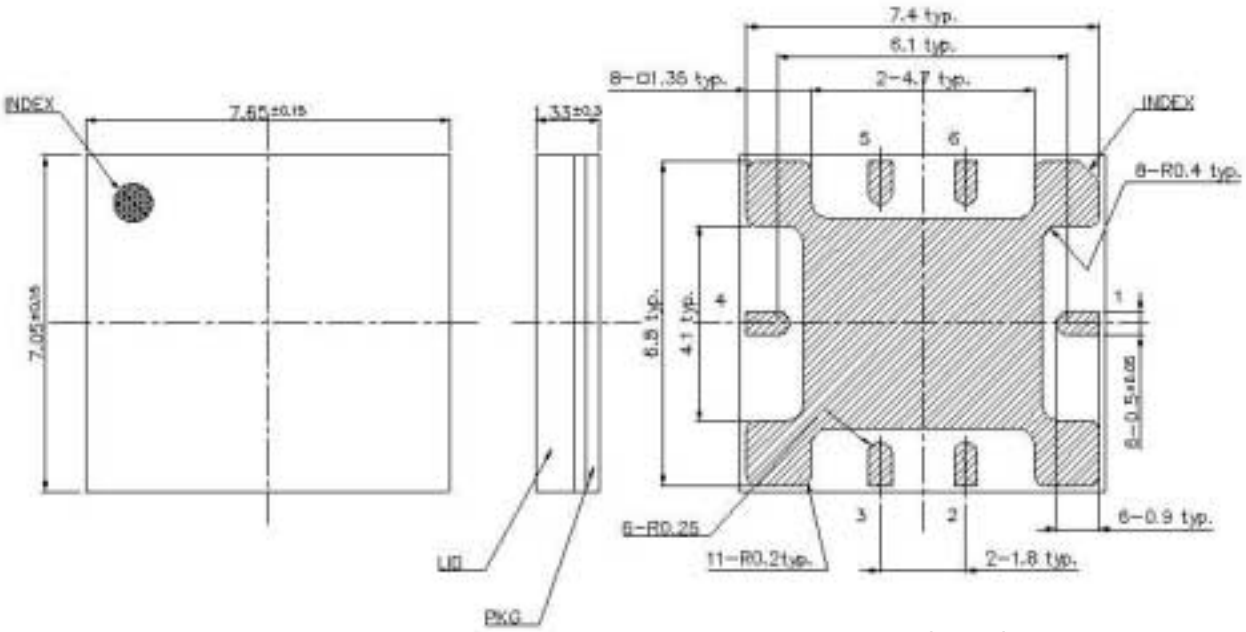
Conversion Gain vs. Frequency
@ f_{IF}=3GHz, V_{DD}=5V, $P_{in(RF)}$=0dBm, $P_{in(Lo)}$=+3dBm



2xLo Leak Power vs. Frequency
@V_{DD}=5V, $P_{in(Lo)}$=+3dBm

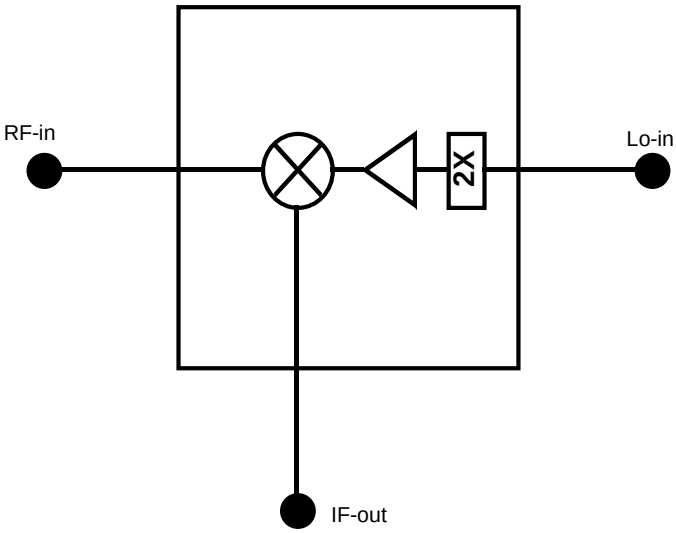


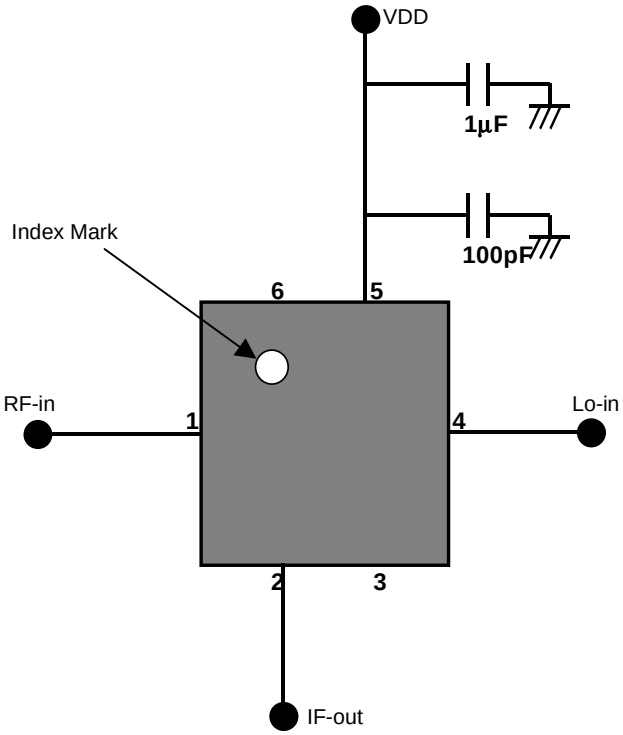
■ Package Outline



Pin Assignment
1 : RF-input
2 : IF-Output
3 : N.C.
4 : Lo-Input
5 : VDD
6 : N.C.

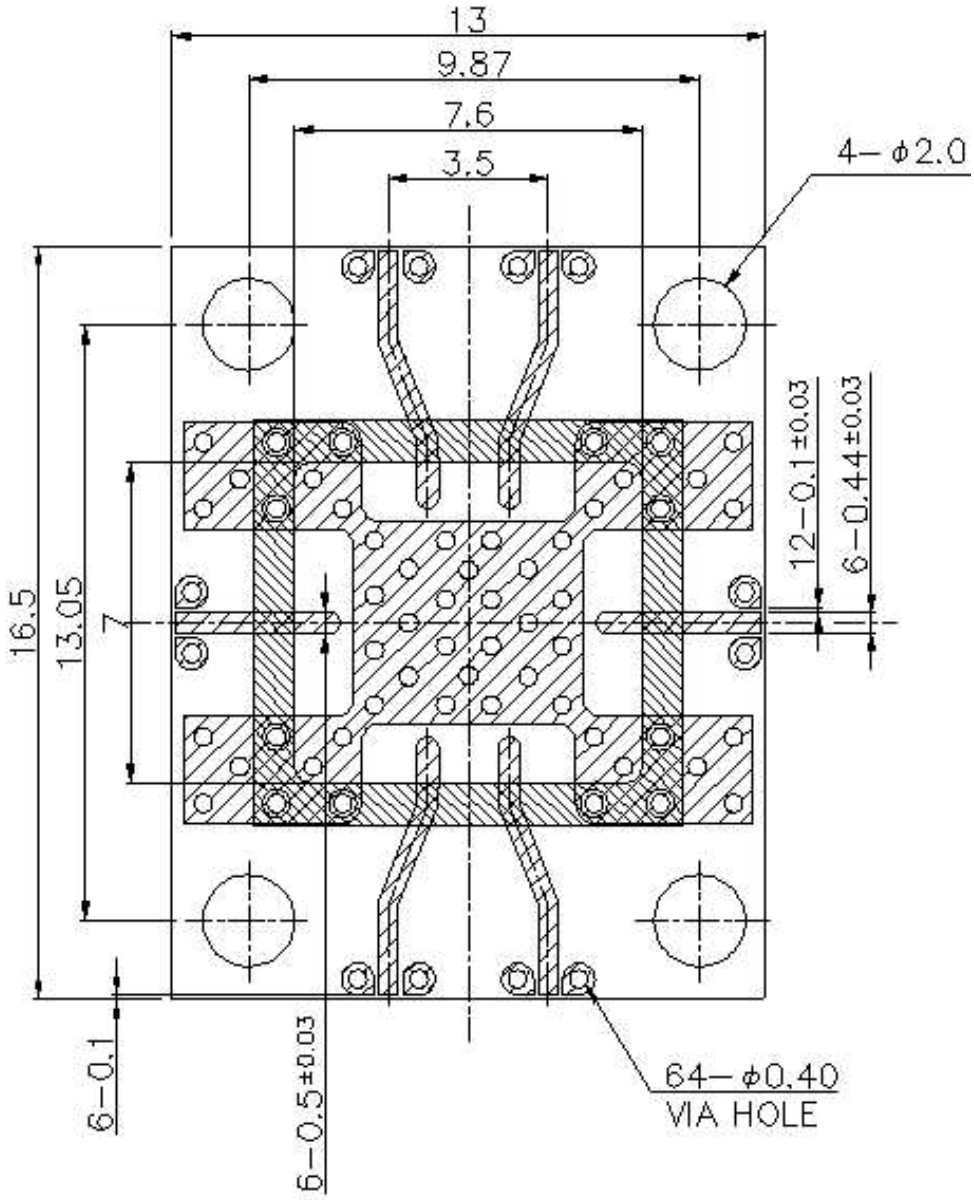
■ Block Diagram and External Component





Note) : The capacitors are recommended on the bias supply line, close to the package, in order to prevent video oscillations which could damage the module.

■ **Recommended Foot Pattern Layout**



Notes :

1.LAMINATE : Rogers Corporation RO4003, Thickness t=0.2mm, Cu Foil 18 μm

2. ▨ : Finish to copper foil ; Ni 0.1 μm min./Au 0.1±0.08 μm (Both side)

3. ▨ : Resist

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CAUTION

Eudyna Devices Inc. products contain **gallium arsenide (GaAs)** which can be hazardous to the human body and the environment. For safety, observe the following procedures:

・Do not put these products into the mouth.

・Do not alter the form of this product into a gas, powder, or liquid through burning, crushing, or chemical processing as these by-products are dangerous to the human body if inhaled, ingested, or swallowed.

・Observe government laws and company regulations when discarding this product. This product must be discarded in accordance with methods specified by applicable hazardous waste procedures.