SONY

CXG1111EN

800MHz Band Receive Mixer

Description

The CXG1111EN is a mixer MMIC for the Japan CDMA cellular. This IC is designed using the Sony's GaAs J-FET process.

Features

- High conversion gain: Gc = 13.0dB (Typ.)
- Low noise figure: NF = 4.5dB (Typ.)
- Low distortion: IIP3 = +2.5dBm (Typ.)
- Small package: 10-pin VSON

Applications

J-CDMA, PDC 800MHz and others

Structure

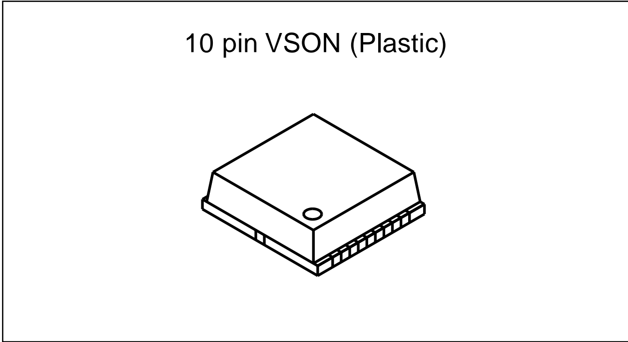
GaAs J-FET MMIC

Absolute Maximum Ratings (Ta = 25°C)

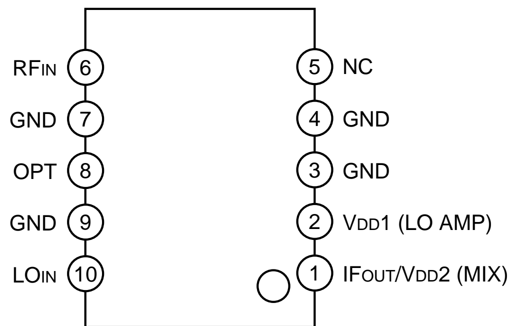
• Supply voltage	V_{DD}	4.5	V
• Input power	P_{IN}	+5	dBm
• Operating temperature	Topr	–35 to +85	°C
• Storage temperature	Tstg	–65 to +150	°C

Recommended Operating Condition

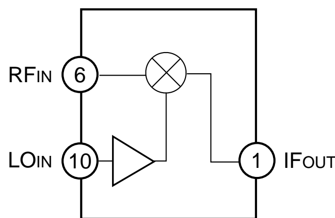
Supply voltage	V_{DD}	2.7 to 3.3	V



Pin Configuration



Block Diagram



Note on handling

GaAs MMICs are ESD sensitive devices. Special handling precautions are required.

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Electrical Characteristics

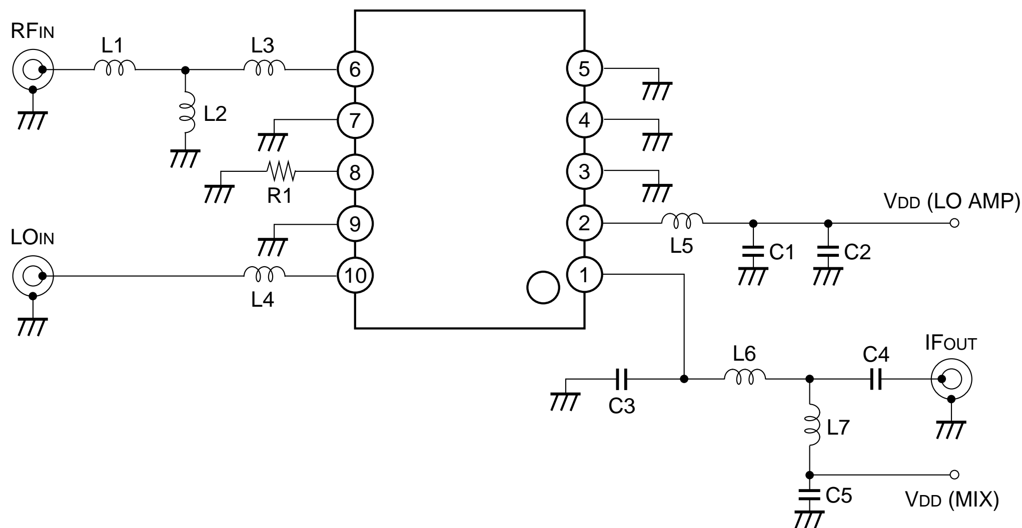
Conditions: V_{DD} = 2.7V, f_{RF} = 850MHz, f_{LO} = 740MHz, P_{LO} = –10dBm

(Ta = 25°C)

Item	Symbol	Min.	Typ.	Max.	Unit	Condition
Current consumption	I_{DD}	—	7.5	10	mA	When no signal
Conversion gain	G_C	11.5	13	14.5	dB	When a small signal
Noise figure	NF	—	4.5	6	dB	When a small signal
Input IP3	IIP3	0.5	2.5	—	dBm	*1
LO – RF leak level	P_{LK}	—	–20	–17	dBm	—

*1 Conversion from the IM3 suppression ratio for two-wave input: f_{RF} = 850MHz/850.9MHz and P_{RF} = –25dBm.

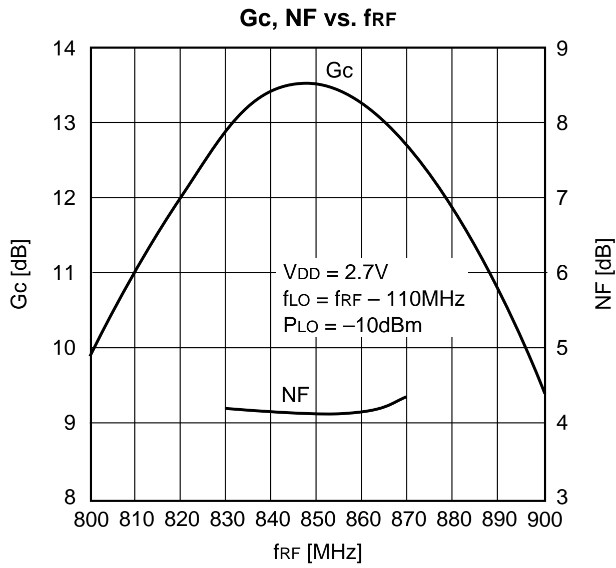
Recommended Evaluation Circuit

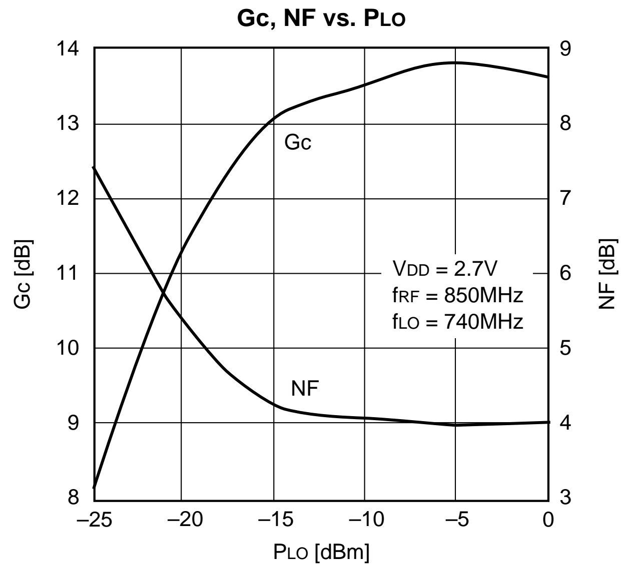


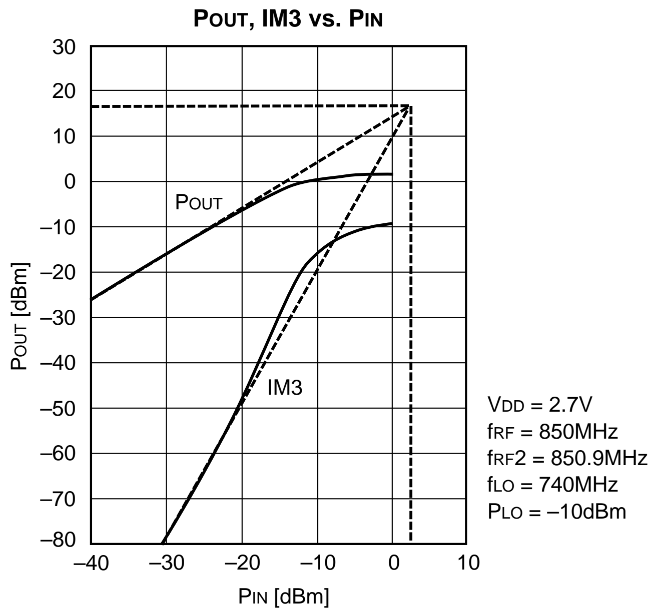
L1	18nH	L6	220nH	C4	1000pF
L2	22nH	L7	220nH	C5	1000pF
L3	27nH	C1	100pF	R1	27Ω
L4	33nH	C2	1000pF		
L5	33nH	C3	8pF		

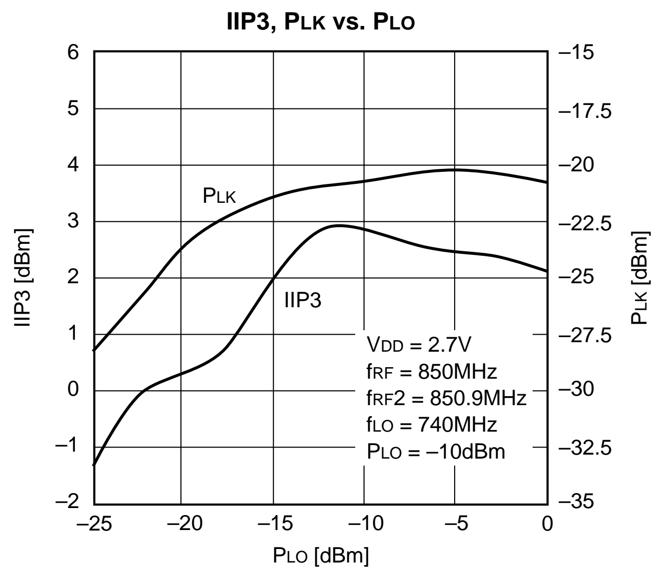
Example of Representative Characteristics (Ta = 25°C)

Mixer Block

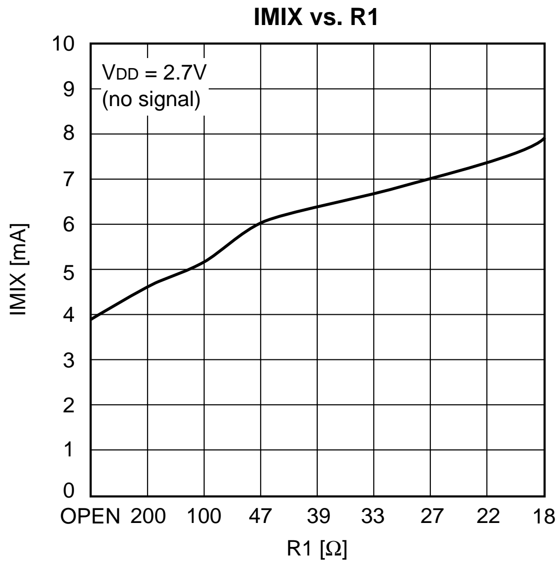


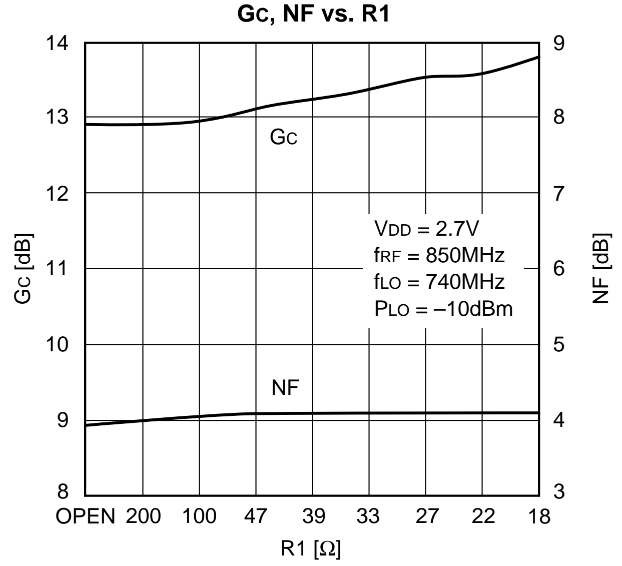


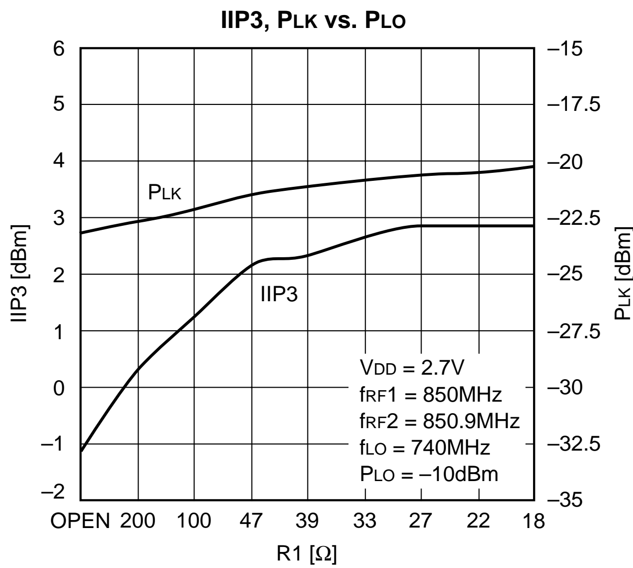




Example of Representative Characteristics for Option Resistance R1 Changed (Ta = 25°C)

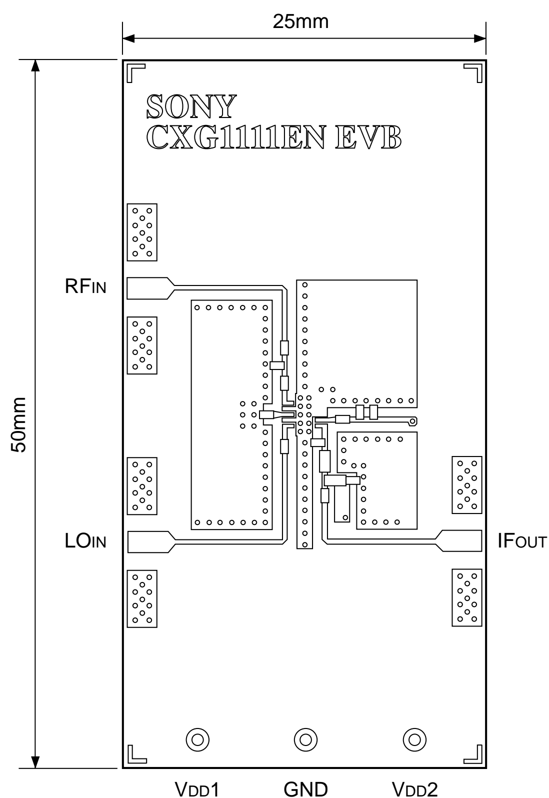






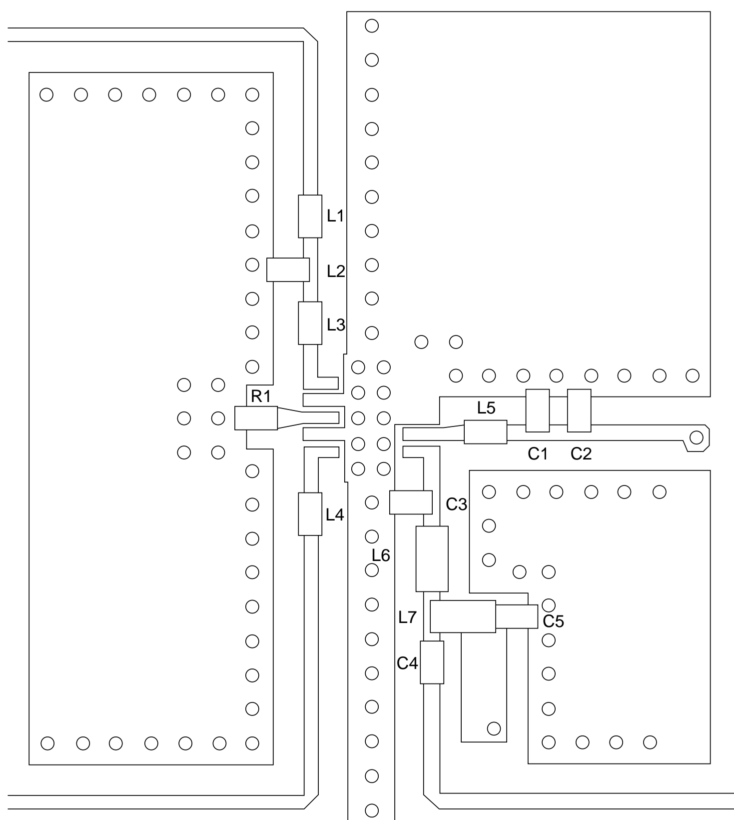
Recommended Evaluation Board

Front

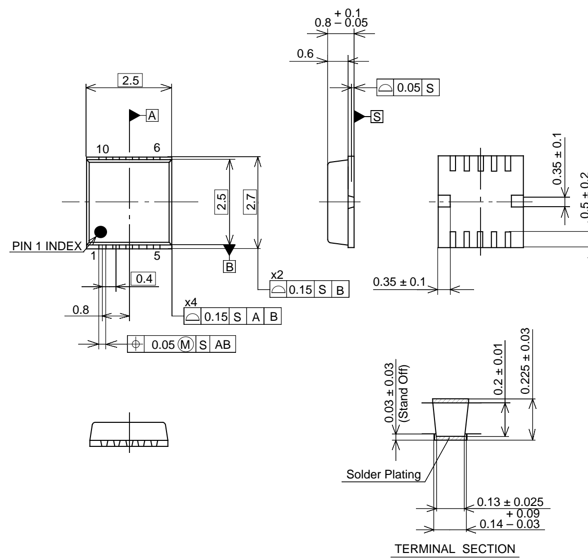


Glass fabric-base 4-layer epoxy board (thickness: 0.2mm × 2)
GND for the whole 2nd and 3rd layers

Enlarged Diagram of Center Part



Package Outline Unit: mm

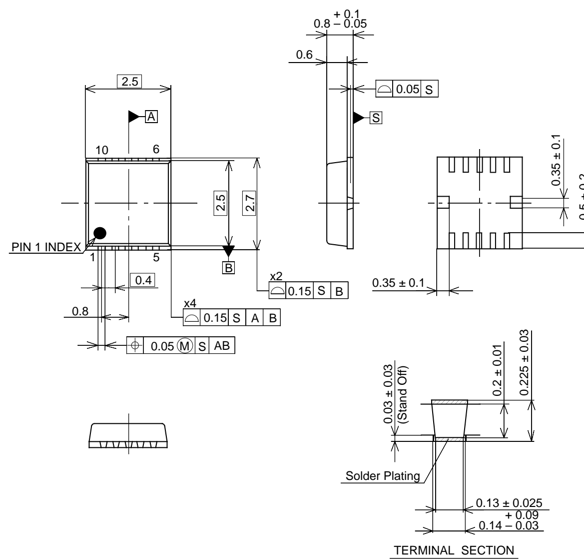


SONY CODE	VSON-10P-01
EIAJ CODE	——————
JEDEC CODE	——————

PACKAGE STRUCTURE

PACKAGE MATERIAL	EPOXY RESIN
LEAD TREATMENT	SOLDER PLATING
LEAD MATERIAL	COPPER ALLOY
PACKAGE MASS	0.013g

Kokubu Ass'y



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LEAD PLATING SPECIFICATIONS

ITEM	SPEC.
LEAD MATERIAL	COPPER ALLOY
SOLDER COMPOSITION	Sn-Bi Bi:1-4wt%
PLATING THICKNESS	5-18μm