UM10414

General Purpose Wideband Amp in SOT363 Demo Board

Rev 01 — 21 June 2010 **User manual**

Document information

Info	Content
Keywords	IF gain block, DBS, LNB, VSAT
Abstract	This document explains the demo board for the General Purpose Wideband Amplifiers in SOT 363 package

Revision history

Rev	Date	Description
1.0	20100621	First version

Contact information

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1. Introduction

NXP BGA2776 demoboard is designed to evaluate the performance of the general-purpose wideband amplifiers in SOT363 package. The types that can be evaluated on the board are mentioned in Table 3 in section 7.

2. General description

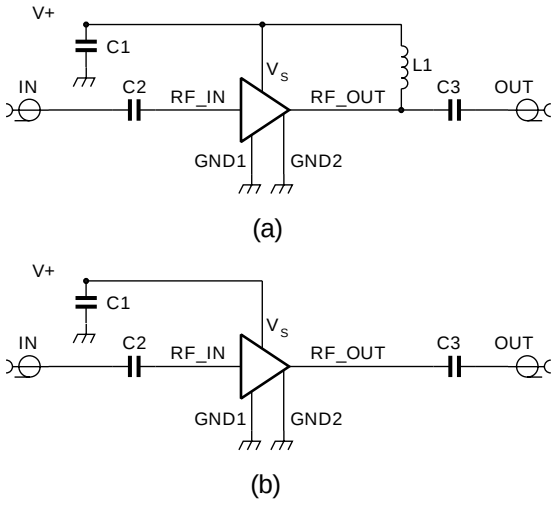

Fig 1. Application circuit with (a) and without (b) output inductor L1

Fig 1 shows the applications possible on the board.

Capacitors C2 and C3 are DC blocking capacitors, C1 is a supply decoupling capacitor.

L1 is an RF choke.

See the Bill of Materials table (Table 1) for the used values

3. Layout

The layout has been made with the following guidelines (in order of importance):

1) The PCB top ground plane, connected to pins 2, 4 and 5 must be as close as possible to the MMIC, preferably also below the MMIC.

2) When using via holes, use multiple via holes as close as possible to the MMIC.

3) Place the decoupling cap C3 as close as possible to the MMIC.

4) Place the inductor L1 as close as possible to the MMIC.

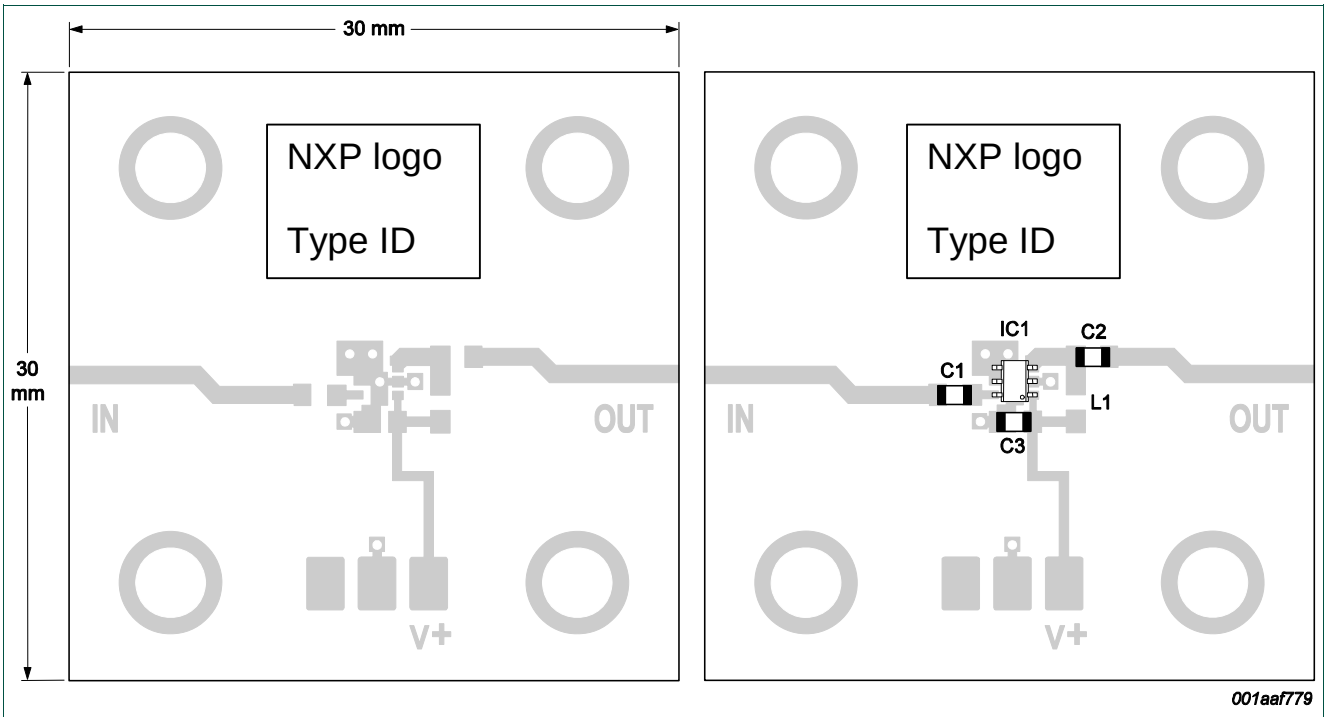

Fig 2. Board layout with component placement. Note that L1 is only required for a subset of the mentioned gain blocks in Table 3.

4. Bill of materials

Table 1. BOM of the BGA2776 evaluation board.

Part	Qty	Type / Value	Size	Description	Mfr	Order Code
PCB	1	BGA2776 PCB	30x30mm	PCB for the demo board		
Block	1	Aluminum block	30x30x10mm	mounting block for PCB		
Screw	8	Pan head machine screw	M2.5x6mm	Screws for mounting PCB and connectors		
Sticker	1	Sticker with type name	ca. 12x5 mm	Shows demo board type name		
IC1	1	See Table 2	SOT363 / 2.0x1.25mm	MMIC	NXP	
C1, C2	2	100 pF NPO	0603	RF coupling capacitor		
C3	1	22 nF X7R	0603	RF decoupling capacitor		
L1*	1	Depending on type	0805	DC bias / RF blocking inductor	Epcos	B82498-B3101-K
X1, X2	2	SMA panel launcher, female, stripline tab	12.7x12.7mm	RF connector	Huber + Suhner	23 SMA-50-0-2/111 NE

5. Measurement set up

5.1 Required Equipment

Table 2. Used equipment.

ID	Description	Mfr	Type
PSU	Power Supply. Voltage and current capability determined by the used amplifier	TTi	QL355TP
GEN 1	Signal generator for large signal measurements	Rohde & Schwarz	SMA100A
GEN 2	Signal generator for large signal measurements	Rohde & Schwarz	SMA100A
SPA	Spectrum Analyzer for large signal measurements	Rohde & Schwarz	FSU26
NWA	Network Analyzer	Rohde & Schwarz	ZVA24
Noise Source			
NFA	Noise Figure Analyzer	Rohde & Schwarz	FSU26 – noise option

5.2 Picture of the BGA2776 demo board

Fig 3. Picture of board, without L1 mounted.

5.3 Equipment connection

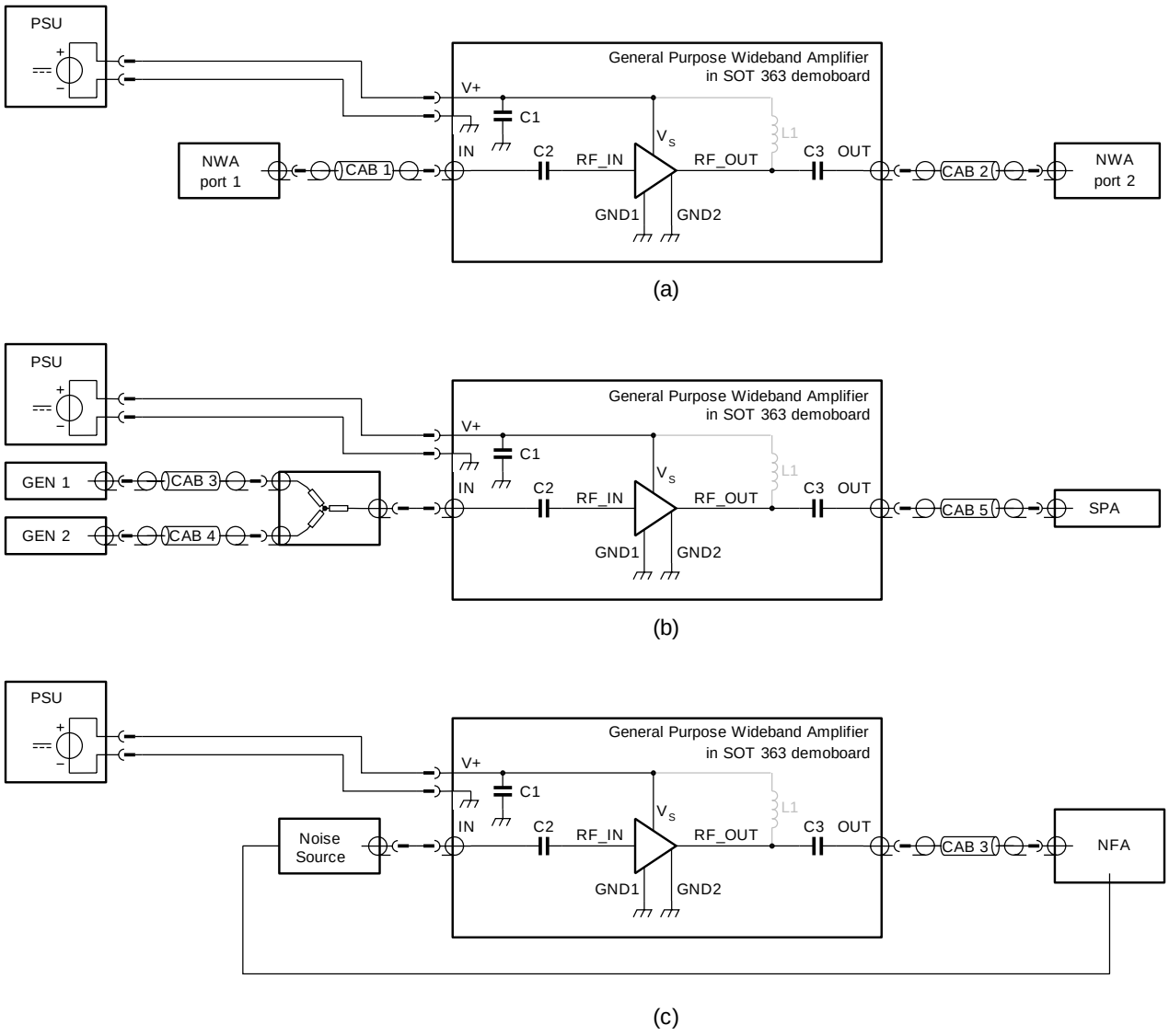

Fig 4. Measurement set up for S parameters (a), large signal measurements (b) and noise figure measurements (c).

6. Measurement results

The measurement results are given in the datasheet of the product.

7. Type numbers

Table 3. General-purpose wideband amplifiers which can be tested on the BGA2776 board

Type nr BGA27 series	Type nr BGA28 series	Type nr BGM10 series
BGA2709	BGA2800	BGM1011
BGA2711	BGA2801	BGM1012
BGA2712	BGA2815	BGM1013
BGA2714	BGA2816	BGM1014
BGA2715	BGA2850	
BGA2716	BGA2865	
BGA2717	BGA2866	
BGA2748		
BGA2771		
BGA2776		

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9. Contents

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