A3M40PD012

Airfast Pre-driver Module

Rev. 0 — April 2021

Data Sheet: Technical Data

The A3M40PD012 is a wideband low power amplifier module designed for cellular infrastructure applications.

- Typical Performance: V_{CC} = 3.3 Vdc, P_{in} = –20 dBm

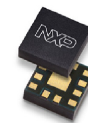
Frequency	G_{ps} (dB)	I_{CC} (mA)
2300 MHz	37.2	110
2600 MHz	36.8	110
3500 MHz	34.0	90
4100 MHz	33.0	85

Features

- Frequency: 2300–4200 MHz
- 3.3 V supply
- P1dB: 25 dBm across the frequency band
- Power consumption: 330 mW
- Fully matched (50 ohm input/output, DC blocked)
- Compact 2.2 mm × 2.2 mm LGA package

A3M40PD012

2300–4200 MHz, 37 dB, 25 dBm AIRFAST PRE-DRIVER MODULE



2.2 mm × 2.2 mm Module

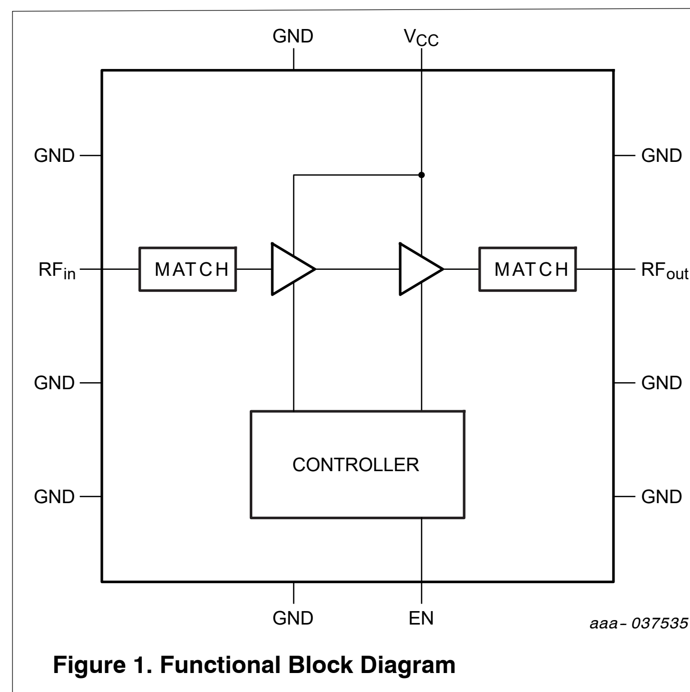


Figure 1. Functional Block Diagram

NXP reserves the right to change the detail specifications as may be required to permit improvements in the design of its products.

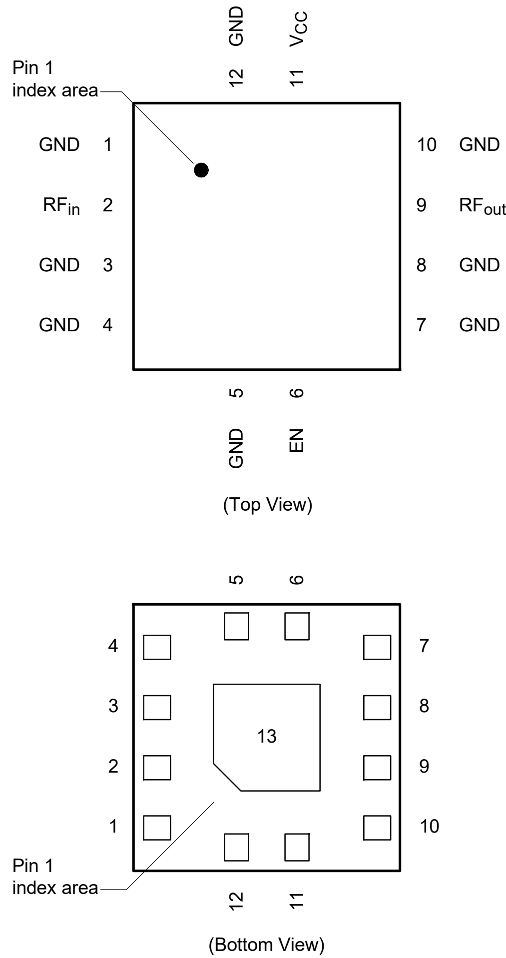


Figure 2. Pin Connections

Table 1. Functional Pin Description

Pin Number	Pin Function	Pin Description
1, 3, 4, 5, 7, 8, 10, 12	GND	Ground
2	RF_{in}	RF Input
6	EN	Bias Enable/Disable
9	RF_{out}	RF Output
11	V_{CC}	Supply Voltage

Table 2. Maximum Ratings

Rating	Symbol	Value	Unit
Supply Voltage	V_{CC}	3.6	V
Supply Current	I_{CC}	300	mA
RF Input Power	P_{in}	25	dBm
Storage Temperature Range	T_{stg}	–65 to +150	°C
Case Operating Temperature	T_C	125	°C

Table 3. ESD Protection Characteristics

Test Methodology	Class
Human Body Model (per JS-001-2017)	2
Charge Device Model (per JS-002-2014)	C2a

Table 4. Moisture Sensitivity Level

Test Methodology	Rating	Package Peak Temperature	Unit
Per JESD22-A113, IPC/JEDEC J-STD-020	3	260	°C

Table 5. Electrical Characteristics (V_{CC} = 3.3 Vdc, 3500 MHz, T_A = 25°C, 50 ohm system, in NXP Application Circuit)

Characteristic	Symbol	Min	Typ	Max	Unit
Small-Signal Gain (S21)	G_p	30.0	34.0	—	dB
Input Return Loss (S11)	IRL	—	20	—	dB
Output Return Loss (S22)	ORL	—	16	—	dB
Power Output @ 1dB Compression	P1dB	—	25	—	dBm
Quiescent Supply Current	I_{CQ}	—	65	—	mA
Supply Current	I_{CC}	—	90	—	mA

Table 6. Ordering Information

Device	Tape and Reel Information	Package
A3M40PD012T7	T7 Suffix = 3,000 Units, 12 mm Tape Width, 7-inch Reel	2.2 mm × 2.2 mm Module

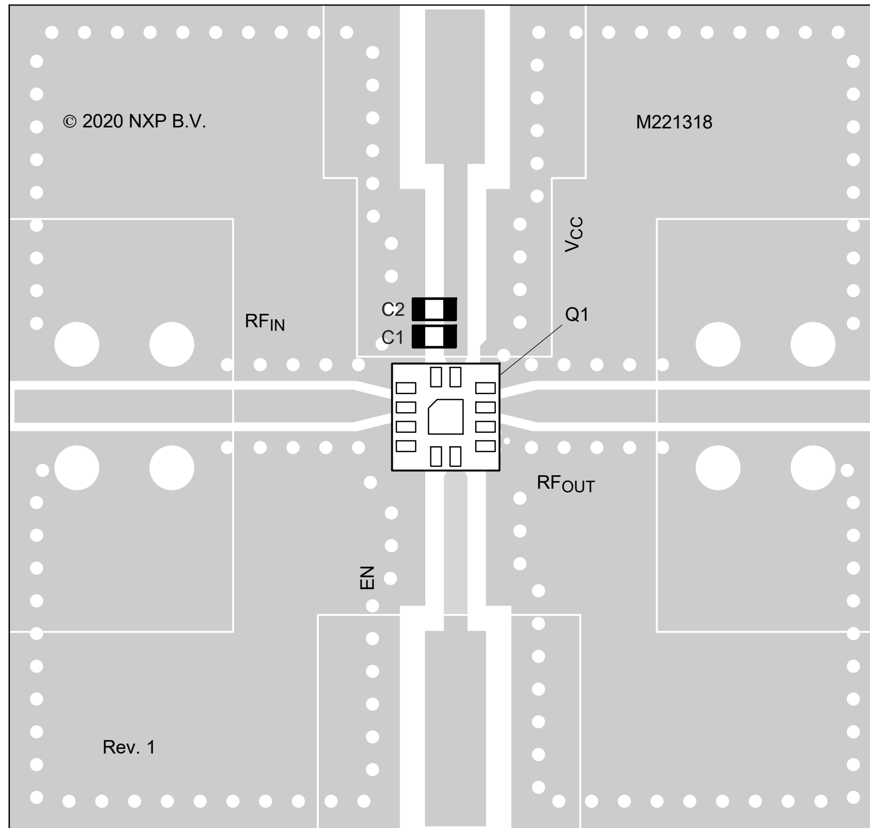


Figure 3. A3M40PD012 Application Circuit Component Layout

Table 7. A3M40PD012 Application Circuit Component Designations and Values

Part	Description	Part Number	Manufacturer
C1	1 nF Chip Capacitor	GRM155R61H102KA01	Murata
C2	4.7 μF Chip Capacitor	GRM188R60J475KE19	Murata
Q1	Pre-driver Module	A3M40PD012	NXP
PCB	Rogers RO4350B, 0.01″, ε_r = 3.66	M221318	MTL

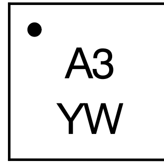


Figure 4. Product Marking

Package Information

H-FC-PLGA-13 I/O
2.2 X 2.2 X 0.68 PKG, 0.5 PITCH

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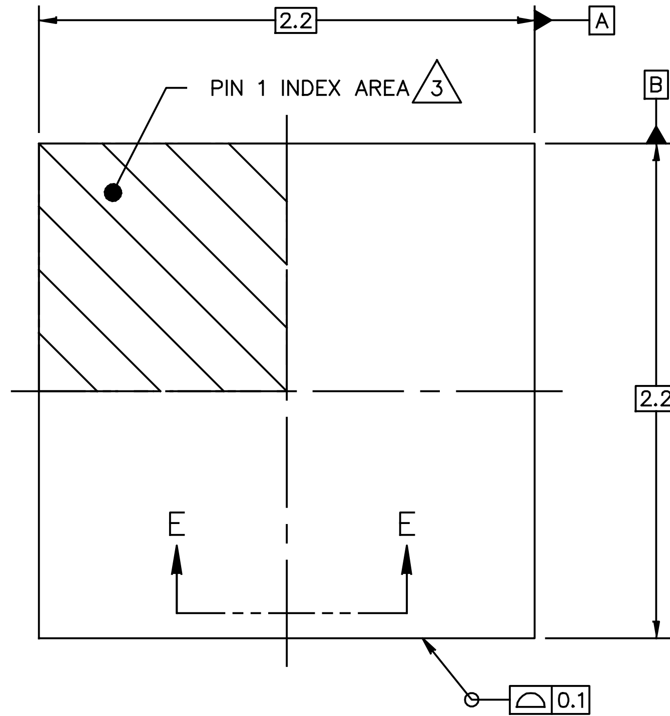

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2.2 X 2.2 X 0.68 PKG, 0.5 PITCH

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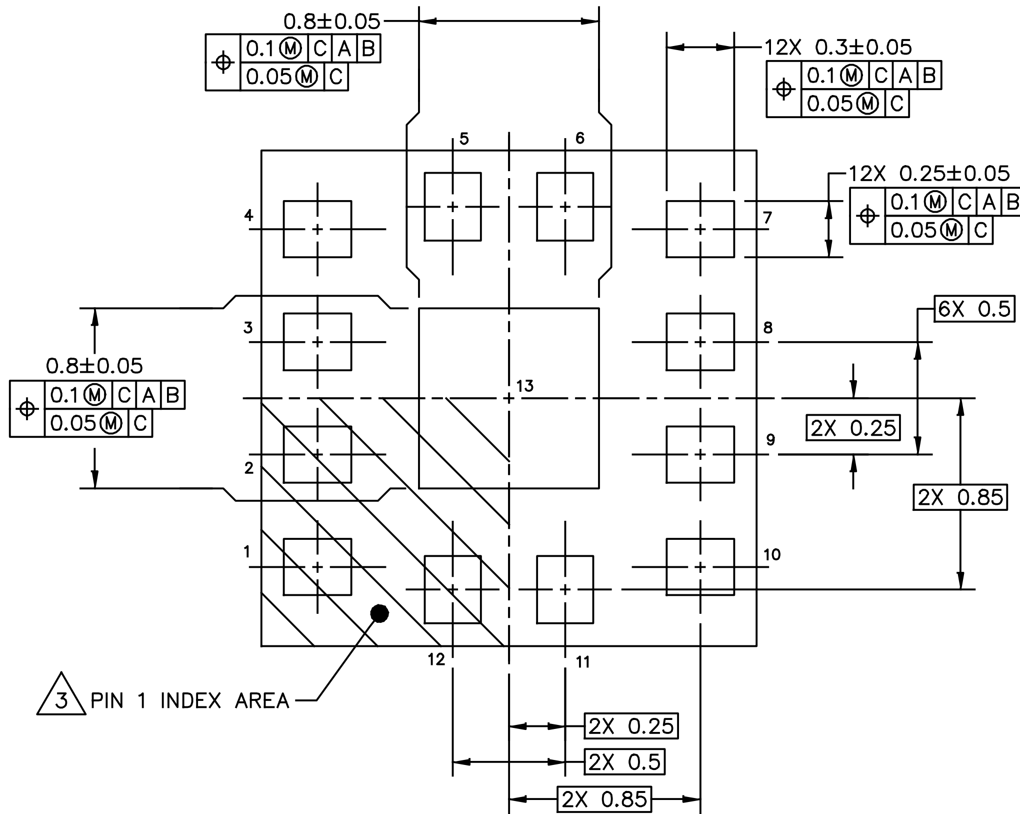
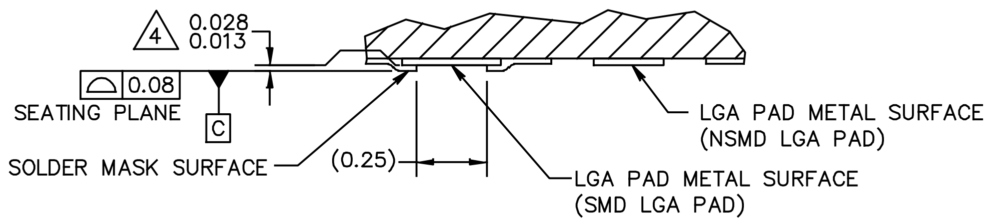


VIEW D–D
(BOTTOM VIEW)



SECTION E–E 5

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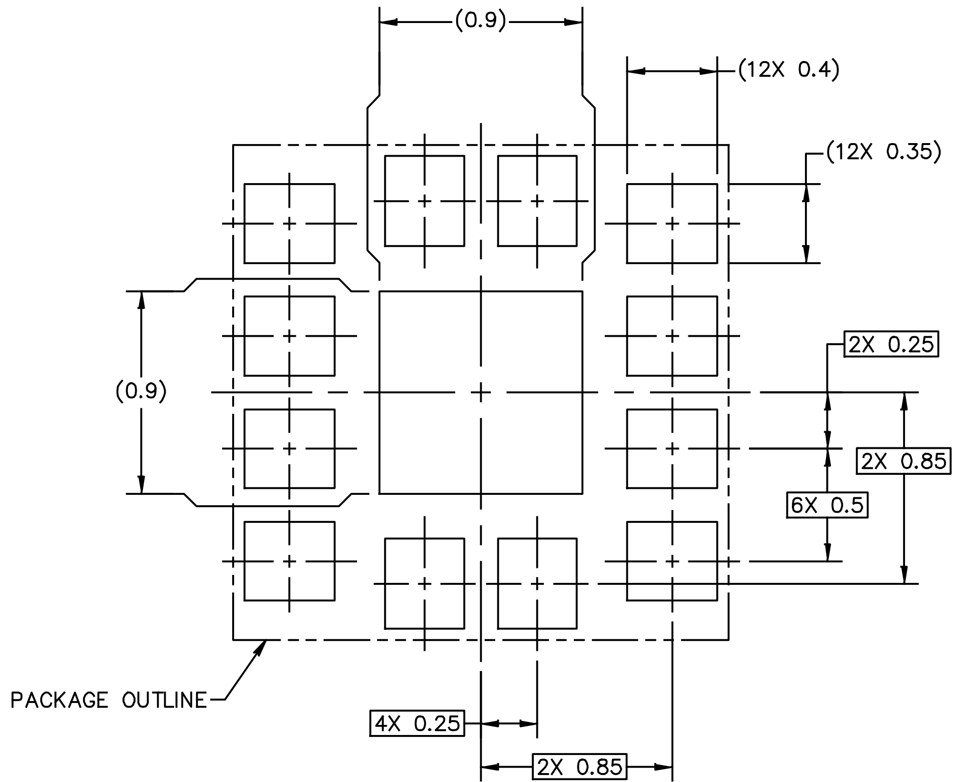

PCB DESIGN GUIDELINES – SOLDER MASK OPENING PATTERN

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2.2 X 2.2 X 0.68 PKG, 0.5 PITCH

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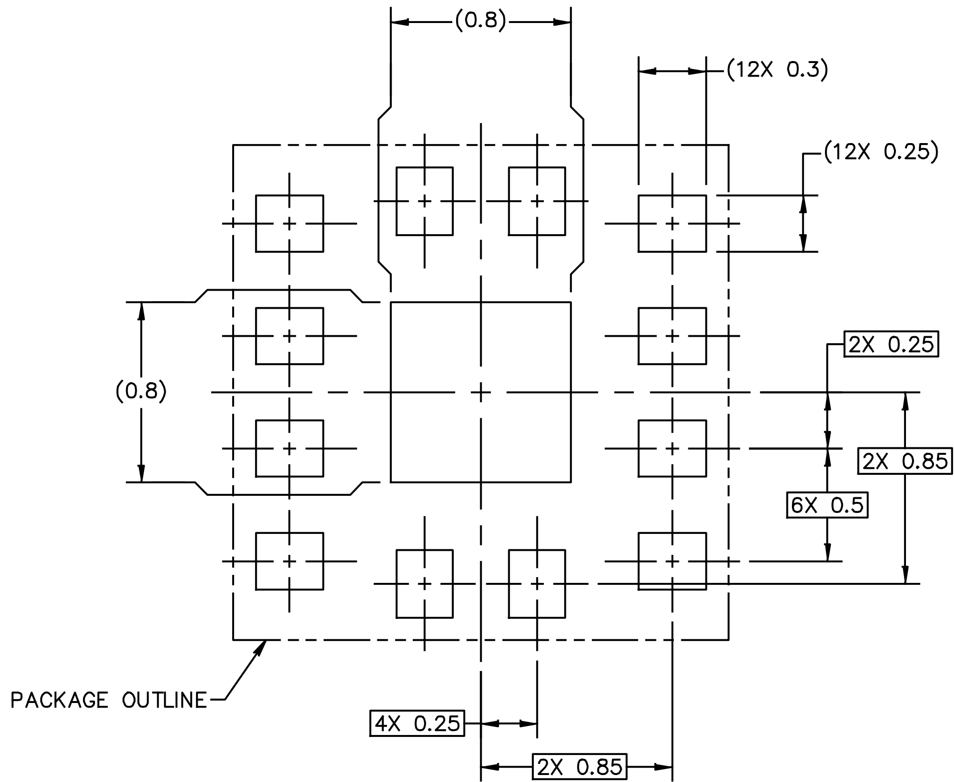

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H-FC-PLGA-13 I/O
2.2 X 2.2 X 0.68 PKG, 0.5 PITCH

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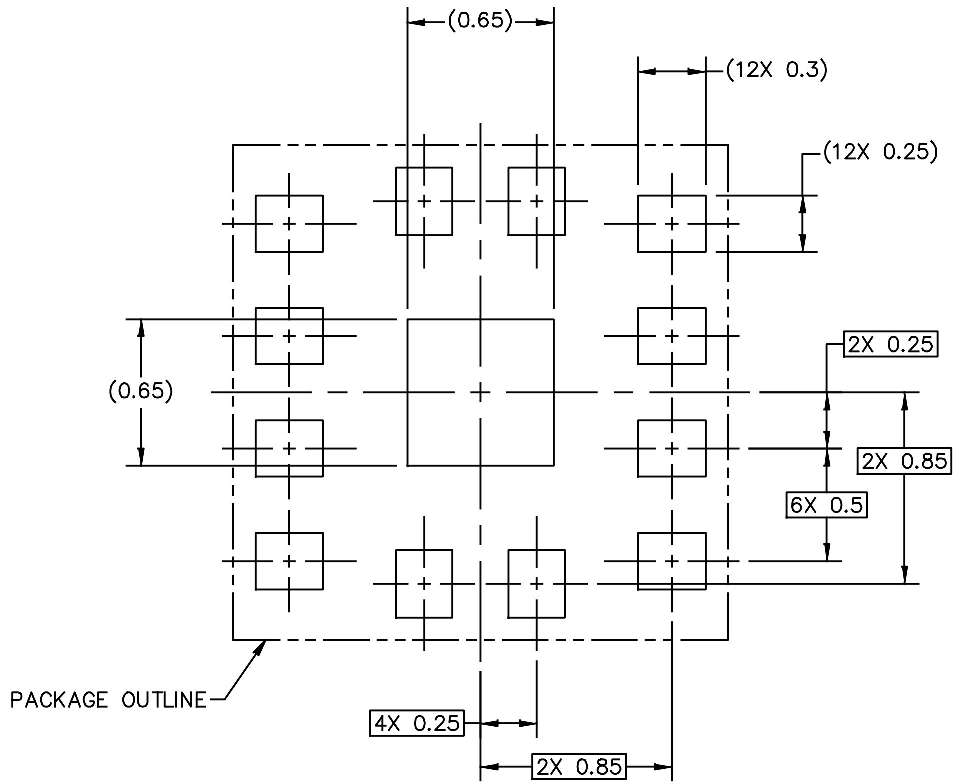

RECOMMENDED STENCIL THICKNESS 0.1

PCB DESIGN GUIDELINES – SOLDER PASTE STENCIL

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NOTES:

1. ALL DIMENSIONS IN MILLIMETERS.
2. DIMENSIONING AND TOLERANCING PER ASME Y14.5M-1994.
3. PIN 1 FEATURE SHAPE, SIZE AND LOCATION MAY VARY.
4. DIMENSION APPLIES TO ALL LEADS AND FLAG.
5. THE BOTTOM VIEW SHOWS THE SOLDERABLE AREA OF THE PADS. THE CENTER PAD (PIN 13) IS SOLDER MASK DEFINED. SOME PERIPHERAL PADS ARE SOLDER MASK DEFINED (SMD) AND OTHERS ARE NON-SOLDER MASK DEFINED (NSMD).

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Product Tools

Refer to the following resource to aid your design process.

Development Tools

- Printed Circuit Boards

Failure Analysis

At this time, because of the physical characteristics of the part, failure analysis is limited to electrical signature analysis. In cases where NXP is contractually obligated to perform failure analysis (FA) services, full FA may be performed by third party vendors with moderate success. For updates contact your local NXP Sales Office.

Revision History

The following table summarizes revisions to this document.

Revision	Date	Description
0	Apr. 2021	• Initial release of data sheet

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