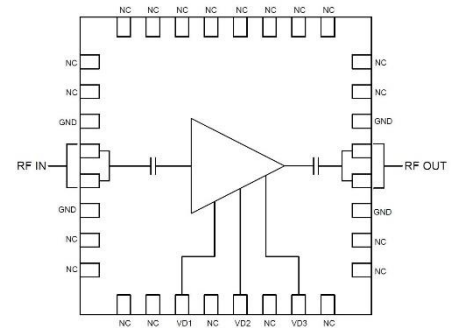


## X BAND LOW NOISE AMPLIFIER (8.8 – 10.2 GHz)

### Features

- ◆ Frequency Range : 8.8-10.2GHz
- ◆ Nominal Gain : 28dB
- ◆ Noise Figure : 1.5dB
- ◆ Return Loss : >10dB
- ◆ Output P1dB : 10dBm
- ◆ OIP3 : 20dBm
- ◆ Self-bias 2V operation
- ◆ DC decoupled Input and Output
- ◆ Package Dimensions: 5mm x 5mm x 1mm

Functional Diagram



### Typical Applications

- ◆ Radar
- ◆ Military
- ◆ Test Equipment & Sensor

### Description

The ASTRA 2142072OP is X-band Low noise amplifier available in 32 Lead -- 5mm X 5mm X 1mm QFN package for surface mount applications. The LNA uses 3 stages of amplification and operates in 8.8 – 10.2 GHz frequency range. The LNA features 28dB of minimum gain with a noise figure of 1.5dB typical and input and output return losses of 10dB and 12dB typical respectively. Input/output matching networks and bypass capacitors are provided on-chip for simplification of assembly operation. The package is suitable in applications where high gain, very low noise and excellent linearity are desired.

### Absolute Maximum Ratings<sup>1</sup>

Parameter	Absolute Maximum	Units
Positive DC voltage	+6	V
RF input power	+23	dBm
Operating Temperature	-55 to +90	°C
Storage Temperature	-65 to +150	°C

1. Operation beyond these limits may cause permanent damage to the component

**Electrical Specifications @ T<sub>A</sub> = 25°C, Z<sub>o</sub> =50Ω**

Parameter	Typical		Units
Frequency	9 -10	8.8 – 10.2	GHz
Gain	29(min)	28(min)	dB
Gain Flatness	+/-0.7	+/-1	dB
Noise Figure	1.5	1.5	dB
Input Return loss	- 12	-10	dB
Output Return loss	- 12	-10	dB
Output Power at 1dB Compression	10	10	dBm
OIP3	20	20	dBm
Voltage (Vd1,Vd2,Vd3 )	2	2	V
Current (Id)	75 - 90	75 - 90	mA

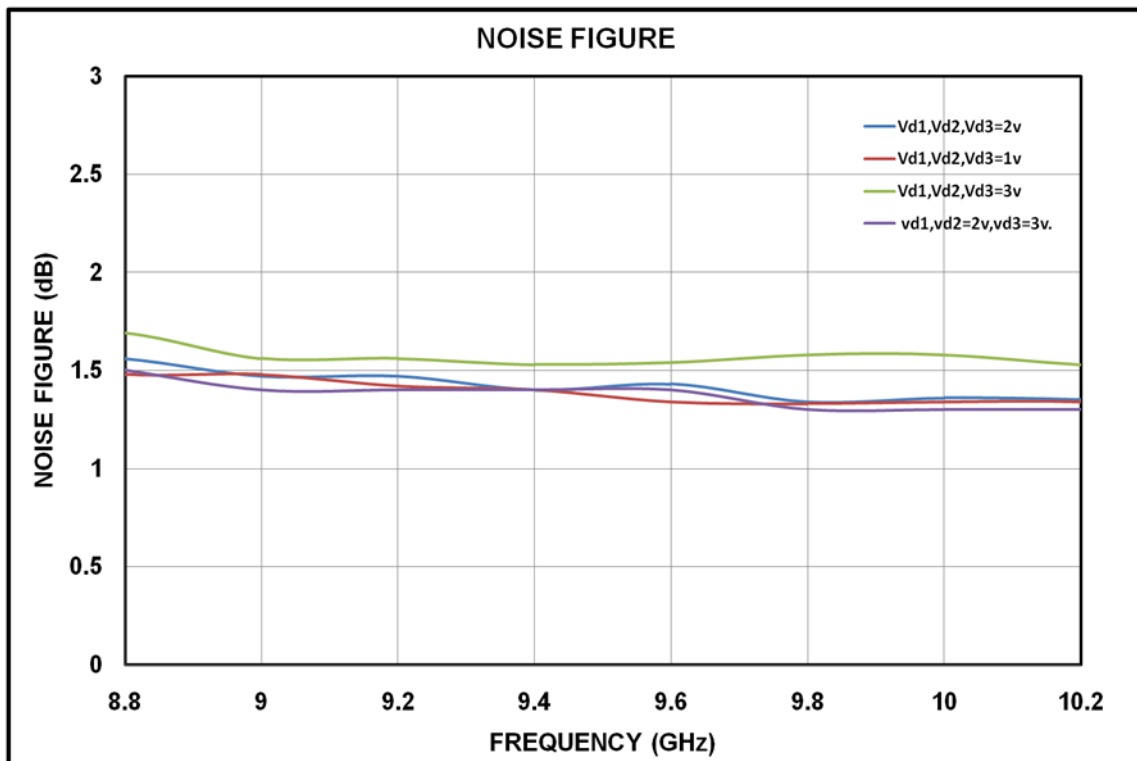
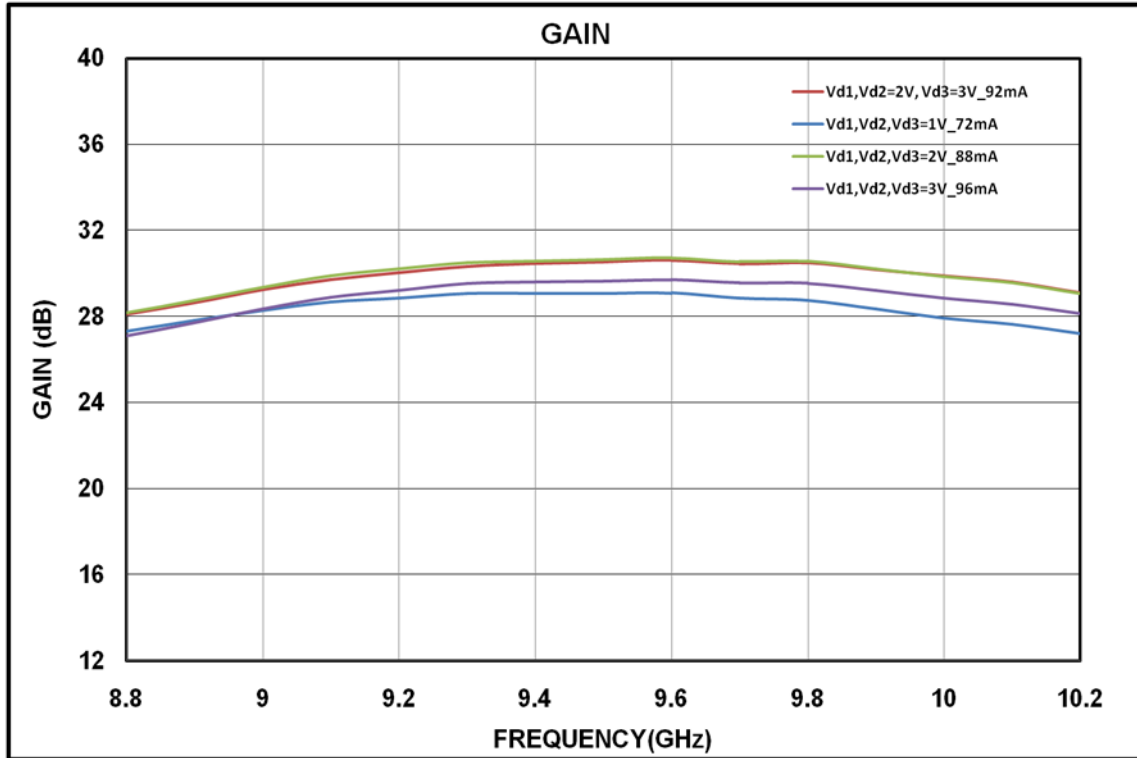
**Note:**

1. The above mentioned electrical specifications are measured on PCB mounted QFN package
2. This is High Performance Device. Damage can be caused due to inappropriate handling



Test fixture data

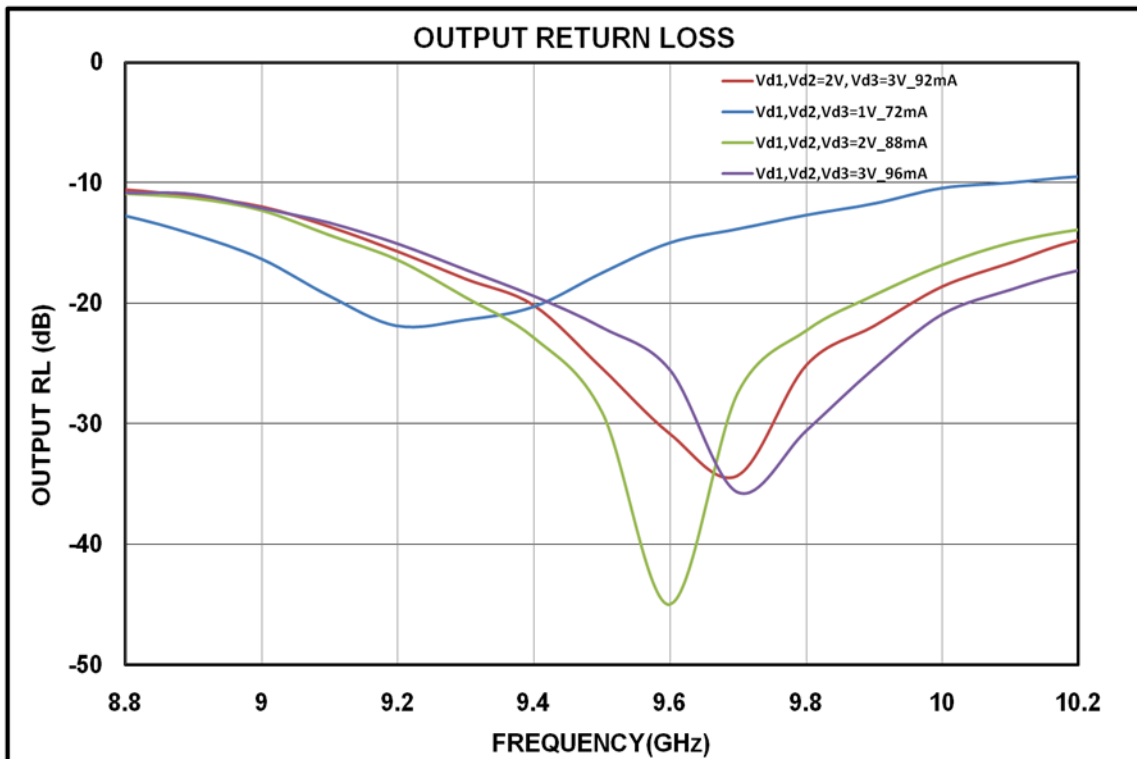
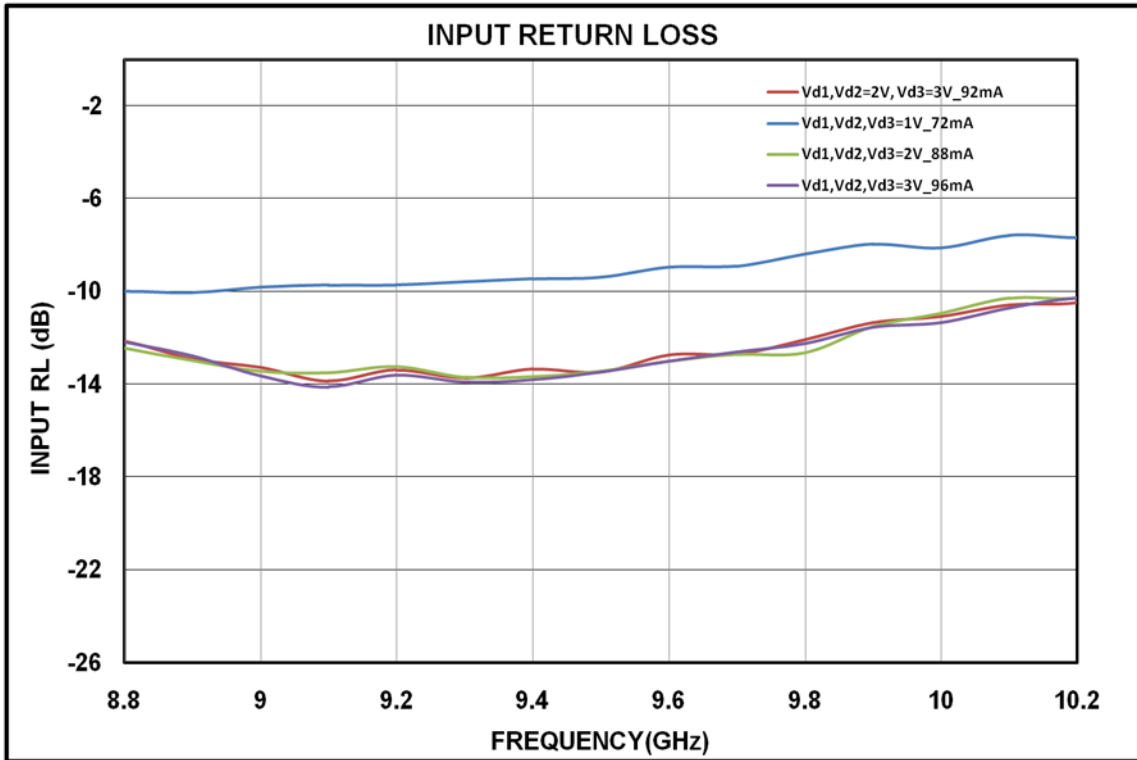
Vd1=Vd2=Vd3=2V, Total Current =88mA (Typ.), @ T<sub>A</sub> = 25 °C, Z<sub>o</sub>=50Ω





Test fixture data

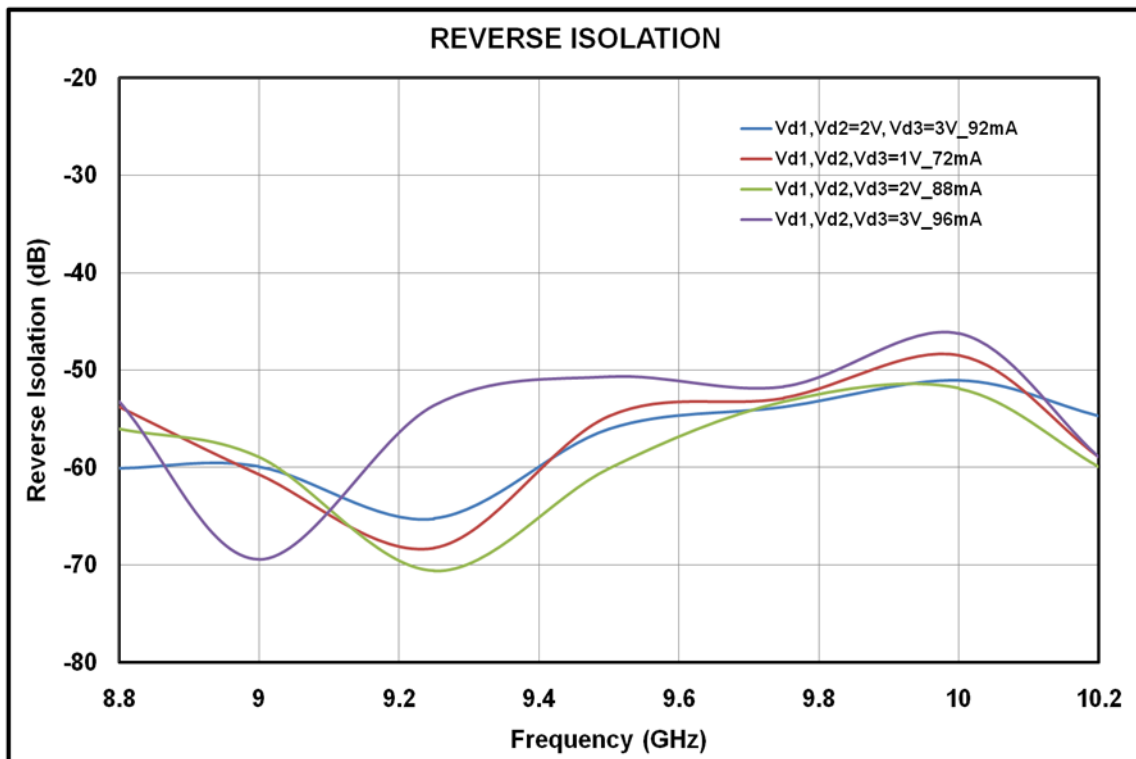
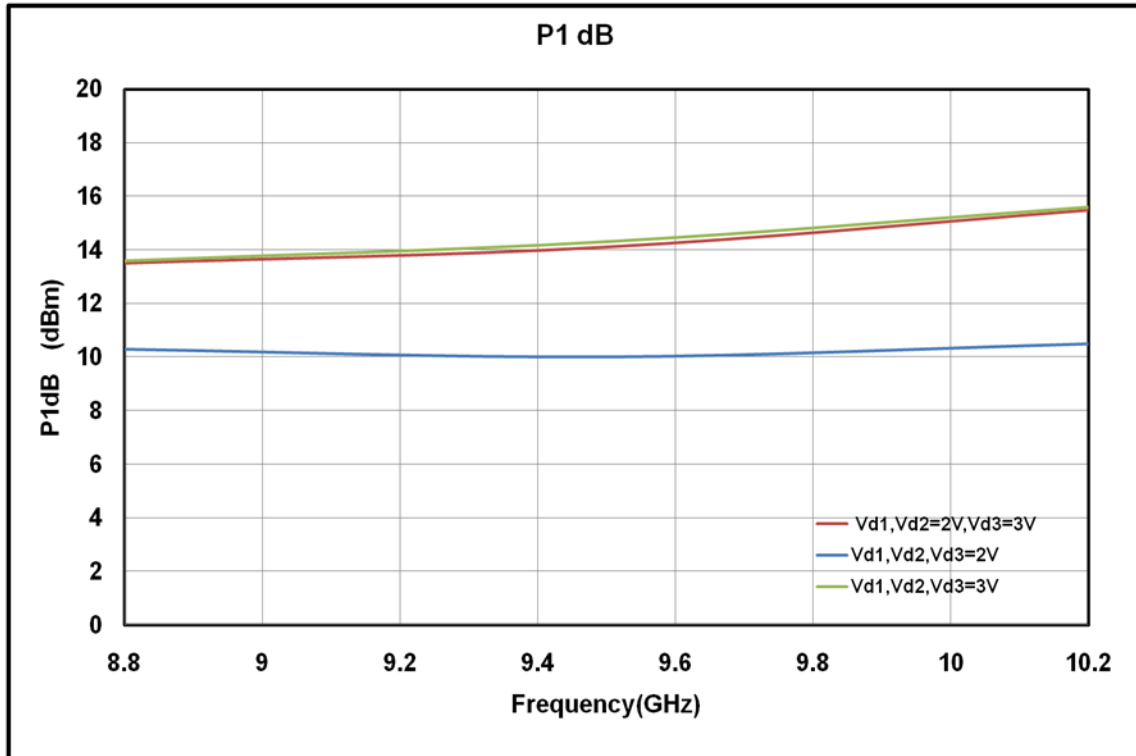
Vd1=Vd2=Vd3=2V, Total Current =88mA (Typ.), @ T<sub>A</sub> = 25 °C, Z<sub>o</sub>=50Ω



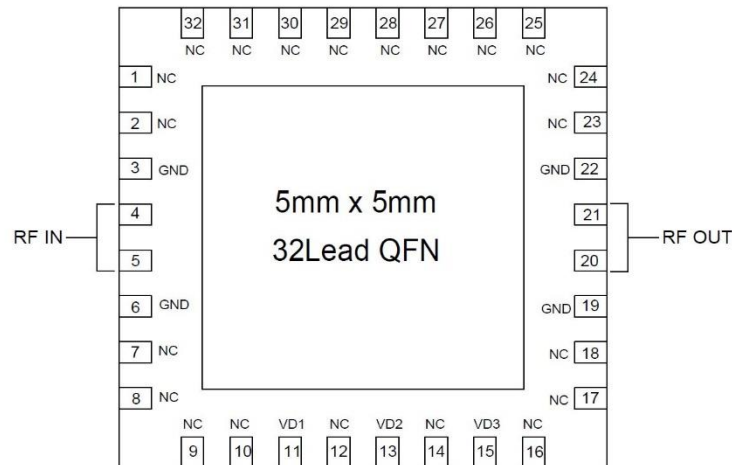


Test fixture data

Vd1=Vd2=Vd3=2V, Total Current =88mA (Typ.), @ T<sub>A</sub> = 25 °C, Z<sub>0</sub>=50Ω



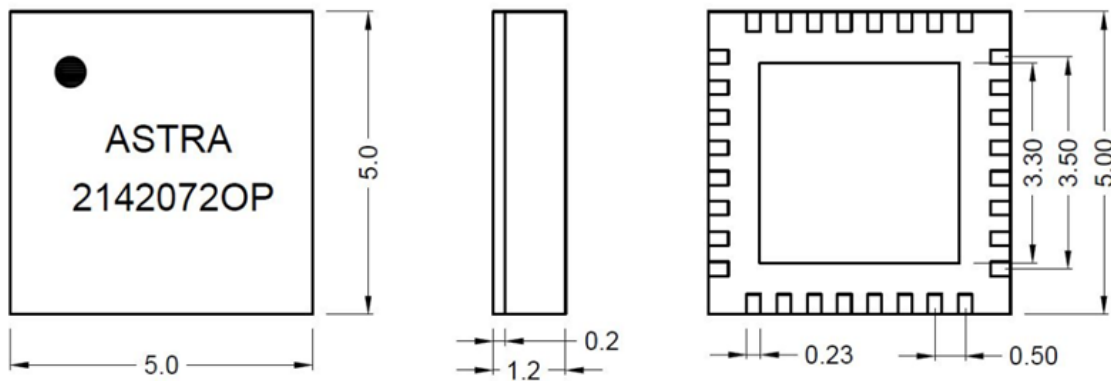
## PIN CONFIGURATION



## PIN Description

Pin 4, 5	: RF IN
Pin 11	: Drain Bias 1
Pin 13	: Drain Bias 2
Pin 15	: Drain Bias 3
Pin 20, 21	: RF OUT
Pin 3, 6, 19, 22	: Ground
Remaining all other Pins are NC (No Connection)	

## QFN Package outline

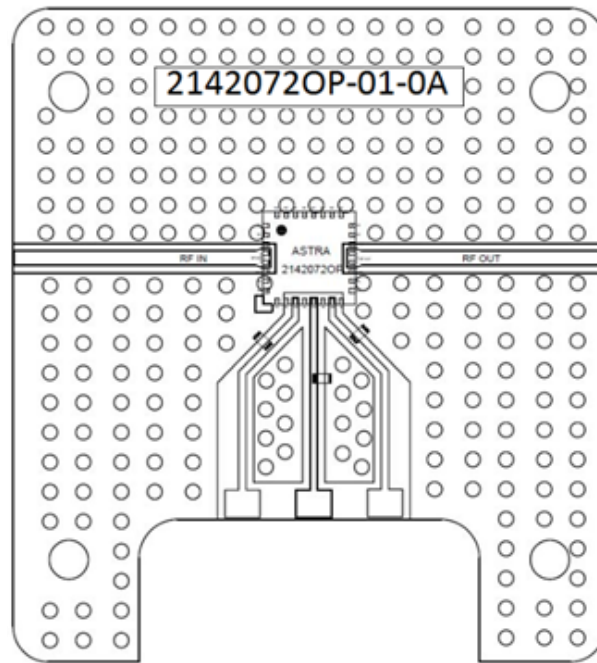


TOP VIEW

BOTTOM VIEW

**Note: All Units are in mm.**

## Recommended Assembly Diagram



### Note:

1. Input and output 50-ohm lines are on 10 mil RO5880 substrate.
2. Input / Output signal lines have 50Ω impedance.
3. 0.1 μF capacitors may be additionally used as a second level of bypass for reliable operation.

## Bill of Material

Component ID	Value	Description	Manufacturer	Part Number
C1,C2,C3	0.1μF	CAP MCC 0.1UF±10% 10V 0603 X7R	Digi-Key	0603ZC104KAT2A



***GaAs MMIC devices are susceptible to Electrostatic discharge. Proper precautions should be observed during handling, assembly & testing***

All information and Specifications are subject to change without prior notice. Before using the product, please download and refer to latest datasheet from website.