

**DESCRIPTION**

Sanland's AVG1012 is a variable Gain Amplifier with Attenuator. The Amplifier has high linearity achieved through the use of 0.5um GaAs Enhancement-mode pHEMT process. It is housed in a miniature 4.0 x 4.0 mm 24-pin Quad-Flat-Non-Lead (QFN) package. It is designed for optimum use from 0.05GHz up to 1018MHz. The compact footprint and low profile coupled with high gain and high linearity make the AVG1012 an ideal choice as a amplifier for CATV network and FTTH network.

**KEY FEATURES**

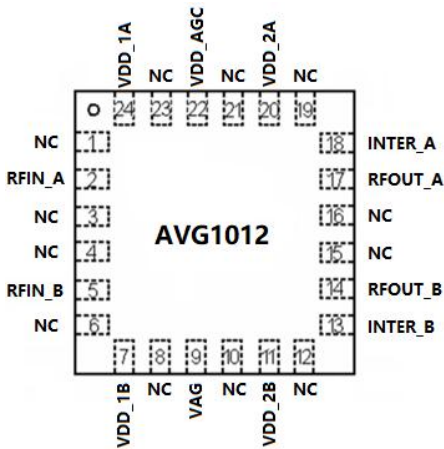
- 50-1018MHz operating frequency range
- 42 dB Gain
- High dynamic gain range, 34dB Gain Control Range,
- Support 20dBm optical range Single supply, Single +5V Supply
- 0-3V AGC control voltage
- Low power consumption, 210mA for one RF output at 5V supply voltage
- Lead-free/RoHS compliant QFN4X4-24L package

**Major Applications**

- CATV Network
- FTTH Network
- PON ONU



**Pin Assignment**



**Pin Details**

Pin	Name	Description	Pin	Name	Description
1	NC	Not connected	13	INTER_B	AMP3 RF IN
2	RFIN_A	RF IN PORT	14	RFOUT_B	RF OUT PORT
3	NC	Not connected	15	NC	Not connected
4	NC	Not connected	16	NC	Not connected
5	RFIN_B	RF IN PORT	17	RFOUT_A	RF OUT PORT
6	NC	Not connected	18	INTER_A	AMP3 RF IN
7	VDD_1B	AMP1 Supply voltage	19	NC	Not connected
8	NC	Not connected	20	VDD_2A	AMP2 Supply voltage
9	VAG	ATT Control	21	NC	Not connected
10	NC	Not connected	22	VDD_AGC	ATT Supply voltage
11	VDD_2B	AMP2 Supply voltage	23	NC	Not connected
12	NC	Not connected	24	VDD_1A	AMP1 Supply voltage

**Absolute Maximum Ratings**

Parameter	Rating	Unit
DC Power Supply	+6	V
Max. Input Power	+5	dBm
Operating Ambient Temperature	-40 to +85	°C
Storage Temperature	-65 to +150	°C
AGC Control Power	5	V
MSL	Level 3	
Operation beyond any one of these limits may cause permanent damage.		

**Important Note:**

The information provided in this datasheet is deemed to be accurate and reliable only at present time. Sanland Technology Corp. reserves the right to make any changes to the specifications in this datasheet without prior notice.

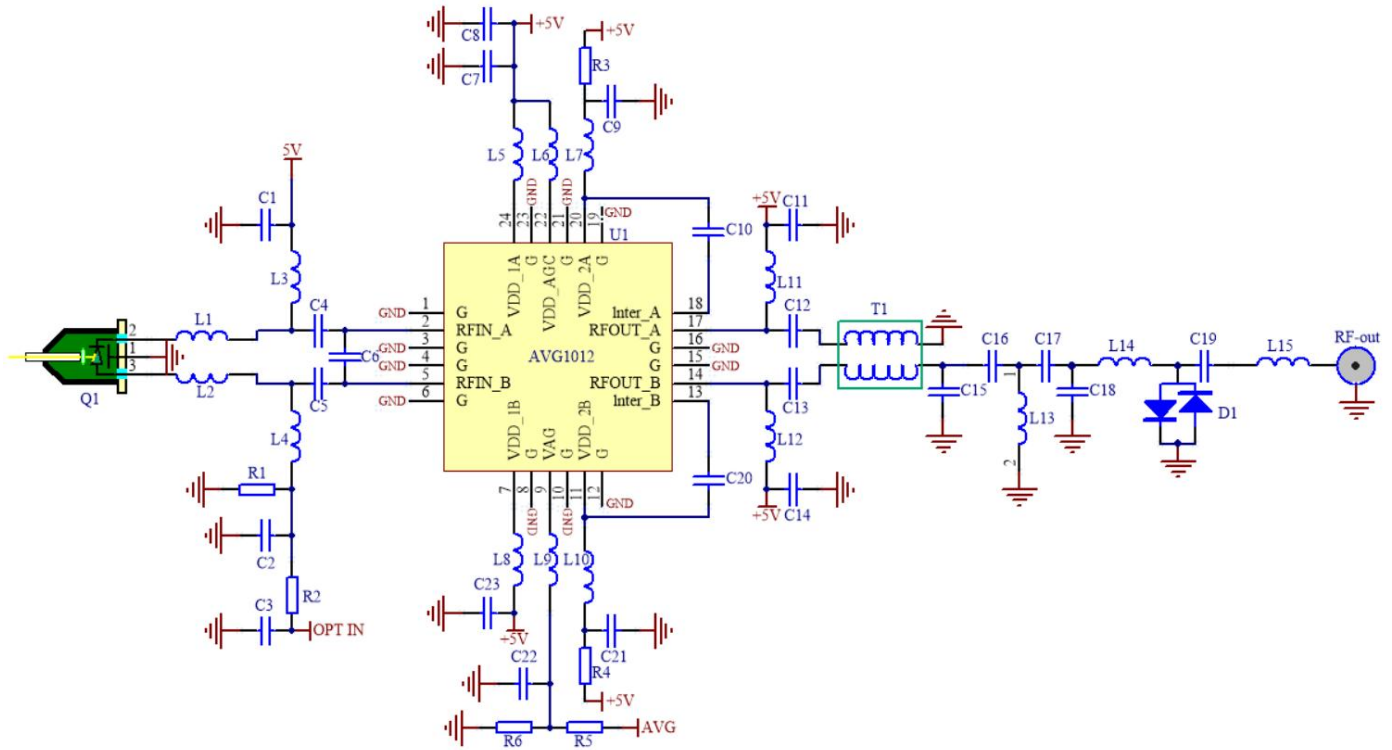


**Caution: ESD Sensitive**  
Appropriate precaution in handling, packaging And testing devices must be observed.

**Electrical Characteristics for Application**

Parameter	Specification			Units	Notes
	Min	Typ.	Max		
Gain	-	42	-	dB	50-1018MHz
Gain Control Range	-	34	-	dB	0-34
AGC Control Voltage	0	-	3	V	-
Output return loss	-	-15	-	dB	50-1018MHz
CTB	-	70	-	dB	Test at Optical input Power -8dBm. 60 PAL-D channels DS22, OMI=3.5%per channel
CSO	-	63	-	dB	
CNR	-	44	-	dB	
MER	-	38	-	dB	Test results using 99CH digital signal. Optical Input power -8dBm ,256QAM
VDD	-	5	-	V	-
IDD	190	210	230	mA	Vdd = 5.0V
Test Conditions: VDD=5V, IDD=210mA					
TL=25°C, ZL=75 Ohms, Freq: 0.05— 1018MHz					

**Application Circuit**



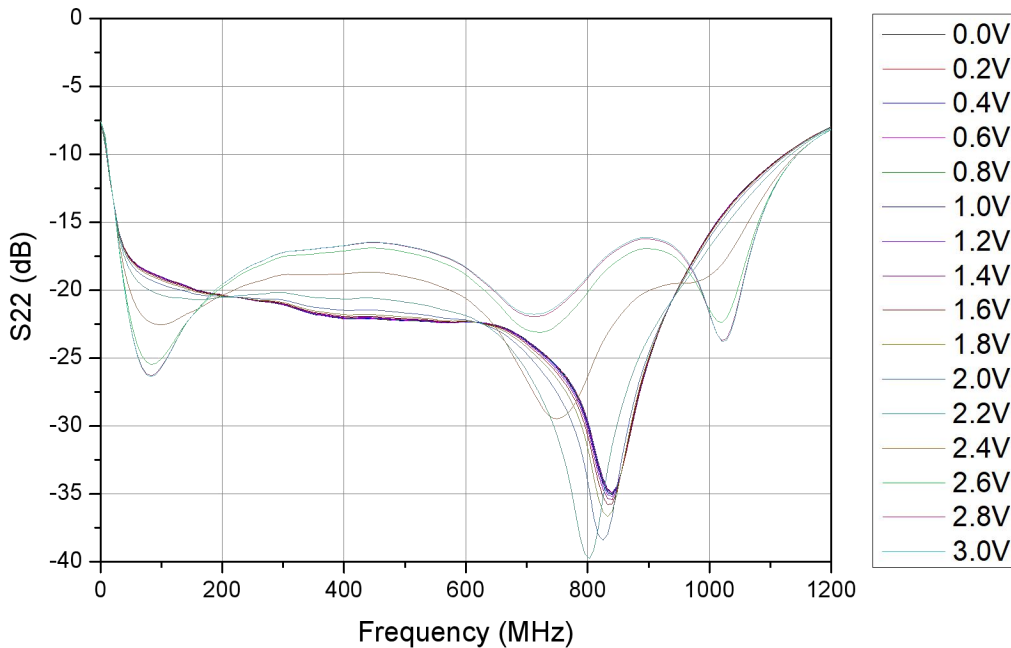
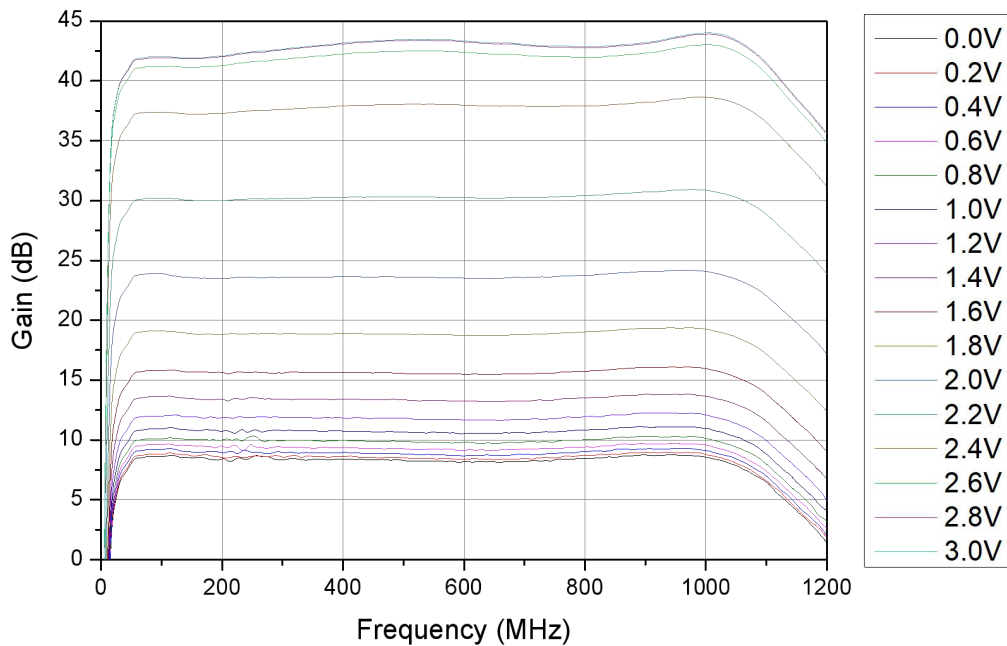
Component	Value	Component	Value
L15	5.6nH(0402)	R2,R6	10K(0402)
L1	6.2nH(0402)	R5	12K(0402)
L2	12nH(0402)	C2,C4,C5,C10, C12,C13,C19,C20	10nF(0402)
L3,L4,L5,L6,L7, L8,L9,L10,L11,L12	BLM15HD182SN1(0402)	C11,C14,	100nF(0402)
L13	270nH(0402)	C1,C3,C7,C8, C9,C21,C22,C23	1uF(0402)
L14	0R(0402)	C6,C15,C18	0.25P(0402)
R3,R4	56R(0402)	C16	56P(0402)
R1	1K(0402)	C17	100P(0402)

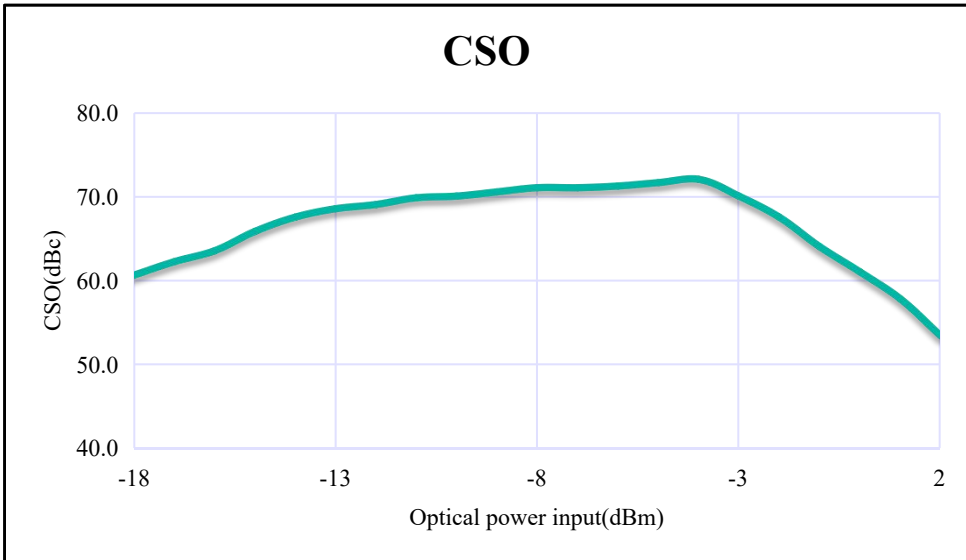
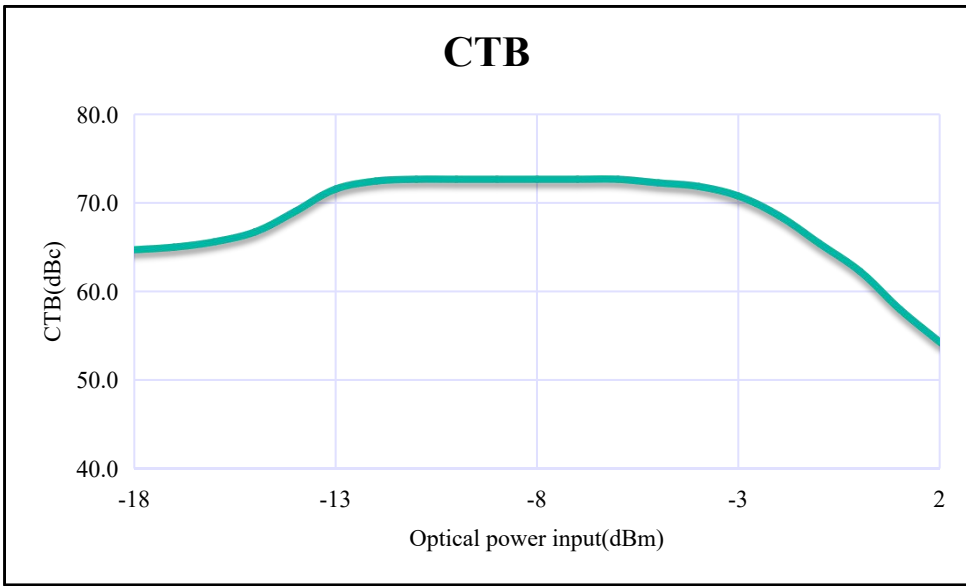
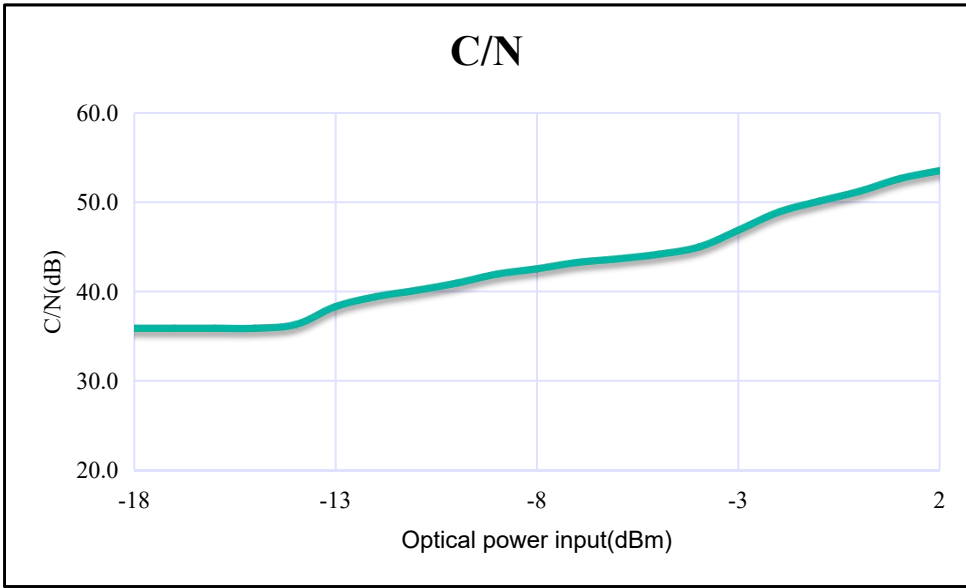
**Typical Performance (+25°C)**

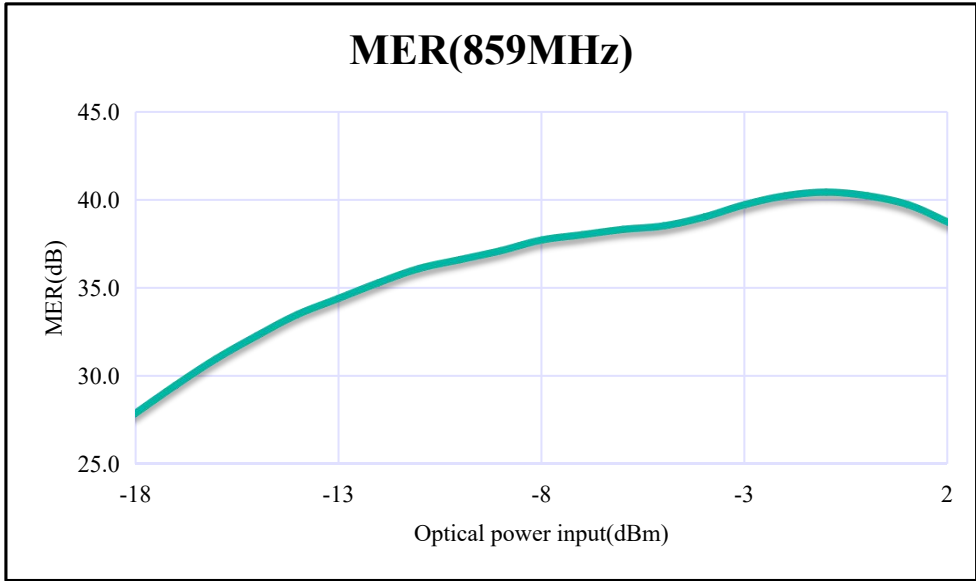
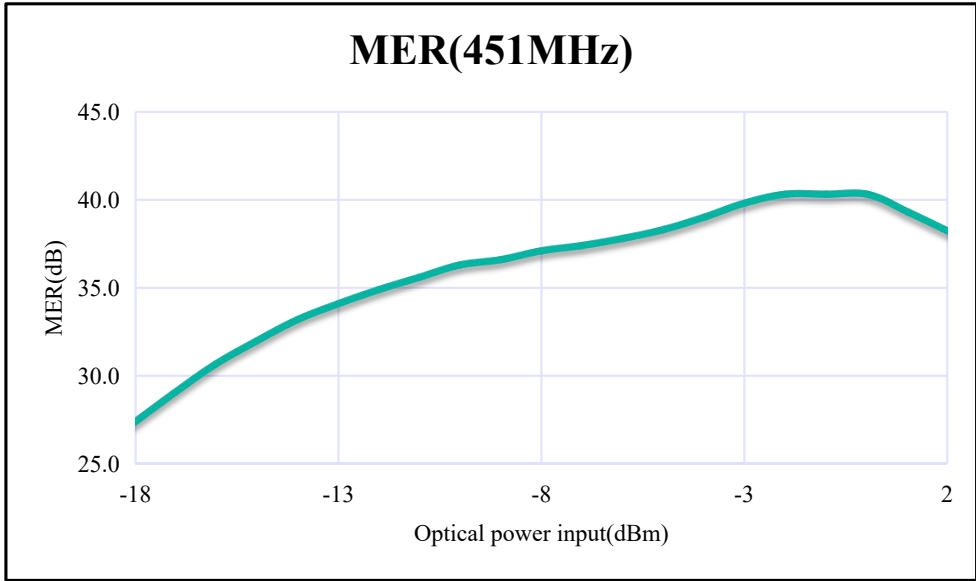
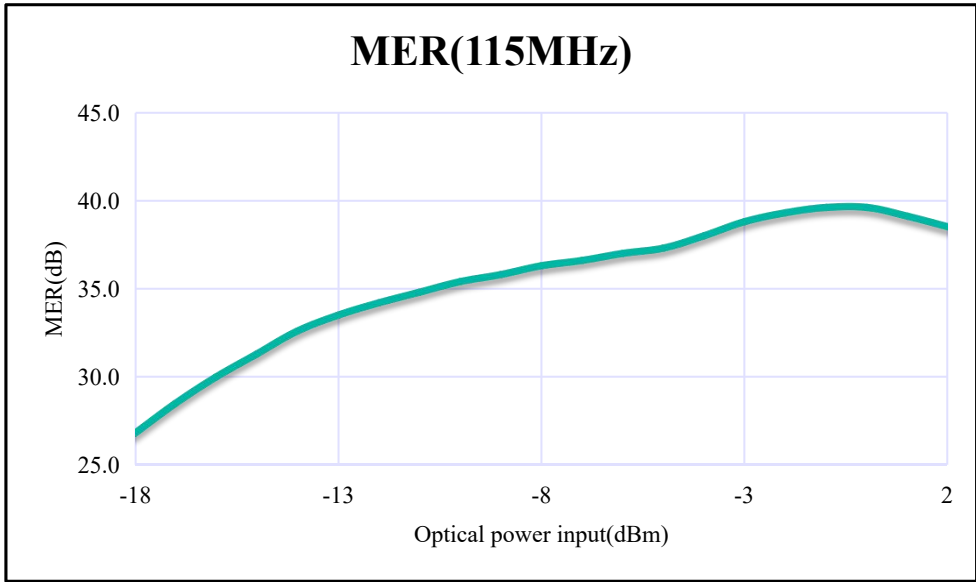
1.  $V_{DD}=+5V$  ,  $V_{AGC}=0\sim 3V$  , Temperature = +25°C.

2. C/N, CTB, CSO : Test at Optical input Power -8dBm. 60 PAL-D channels DS22, OMI=3.5% per channel

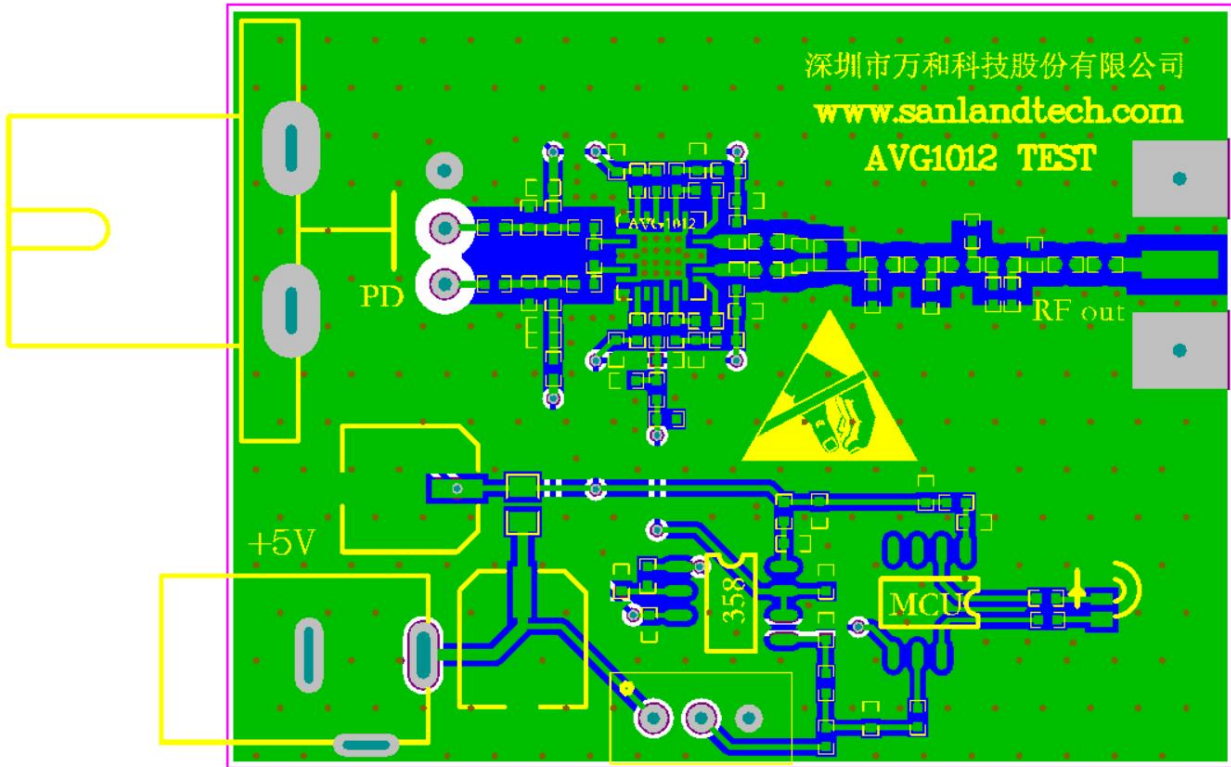
3. MER : Test results using 99CH digital signal. Optical Input power -8dBm ,256QAM



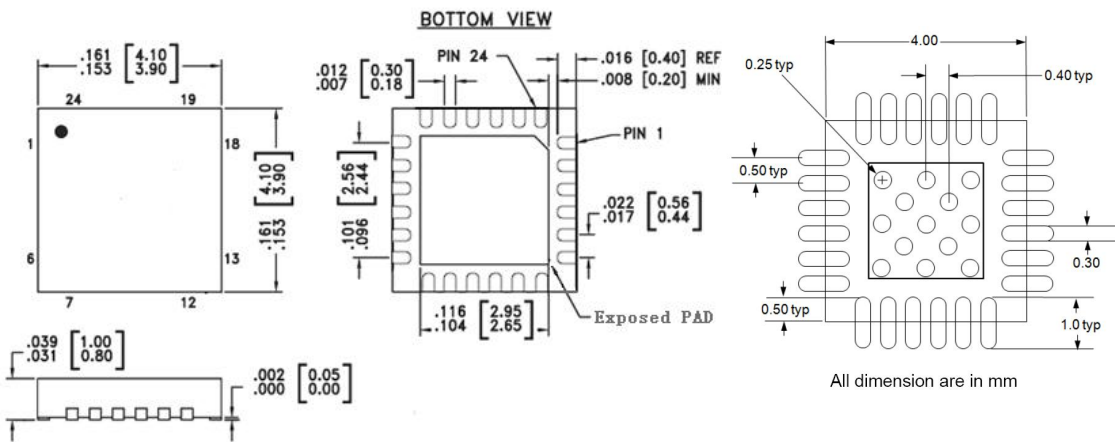




**Recommended PCB**



**QFN4X4-24L Package Outline Dimension**



1. Dimension applies to metallized terminal and is measured between 0.25 and 0.30 from terminal tip.
2. Coplanarity applies to the exposed heat sink slug as well as the terminals.
3. Dimensions are in millimeters.