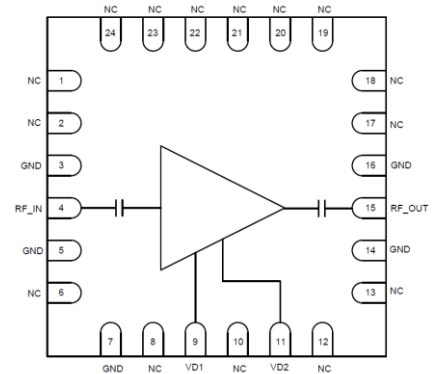


4.5 – 6.5 GHz Low Noise Amplifier

Features

- ◆ Frequency Range : 4.5-6.5 GHz
- ◆ Nominal Gain : 18dB
- ◆ Noise Figure : 1.5 dB
- ◆ I/O Return Losses : 12 dB
- ◆ Output P1dB : 13dBm
- ◆ Self-bias 3V operation
- ◆ DC decoupled Input and Output
- ◆ Package Dimensions : 4mm x 4mm x 0.6mm

Functional Diagram



Typical Applications

- ◆ Radar
- ◆ Military
- ◆ Test Equipment and Sensors.

Description

The ASL1026P4 is a Low Noise Amplifier MMIC packaged in QFN package size of 4mm x 4mm x 0.6mm, it is designed to operate over the frequency band of 4.5 to 6.5 GHz. The LNA uses 2 stages of amplification and provides 18dB of gain with noise figure better than 1.6dB over the band. The amplifier is matched to 50ohms over the entire operating bandwidth having input & output return losses better than 12dB. The LNA has P1 dB of 13dBm over the entire operating frequency band. The amplifier operates on a single 2V or 3V DC supply with a minimal current consumption of 47mA (typ).The LNA die is fabricated using In GaAs pHEMT technology

Absolute Maximum Ratings¹

Parameter	Absolute Maximum	Units
Positive DC voltage	+6	V
RF input power	+20	dBm
Supply Current	100	mA
Operating Temperature	-55 to +85	°C
Storage Temperature	-65 to +150	°C

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

Electrical Specifications @ $T_A = 25\text{ }^\circ\text{C}$, $V_d = +3\text{V}$, $Z_o = 50\Omega$,

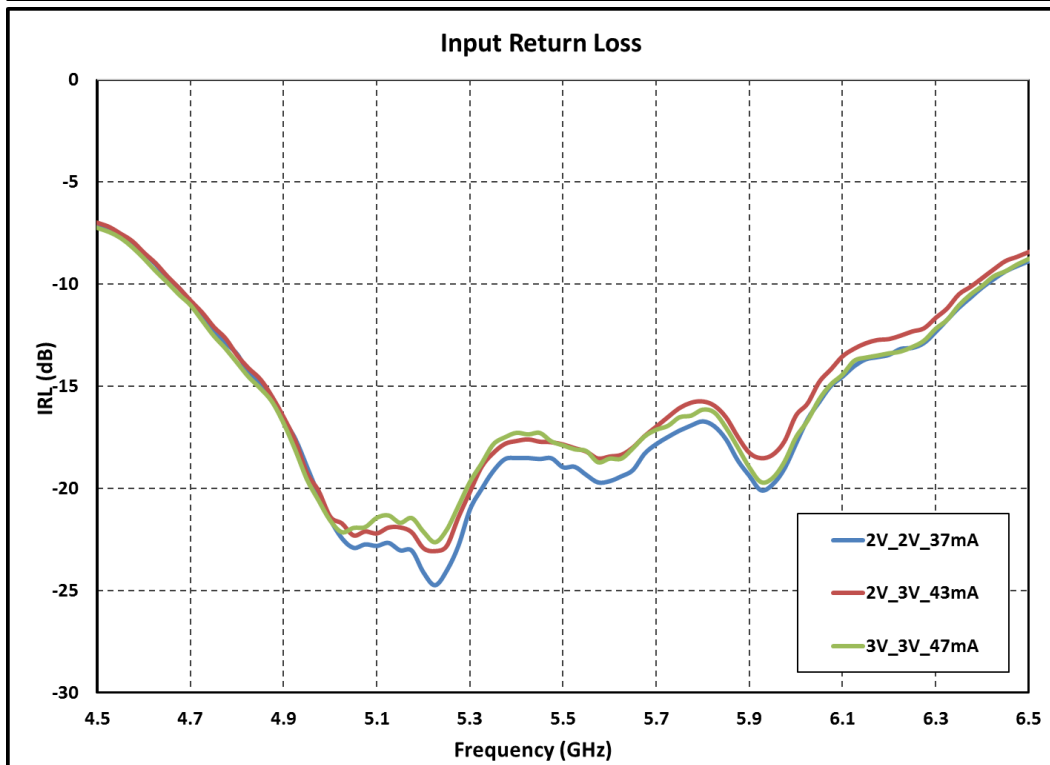
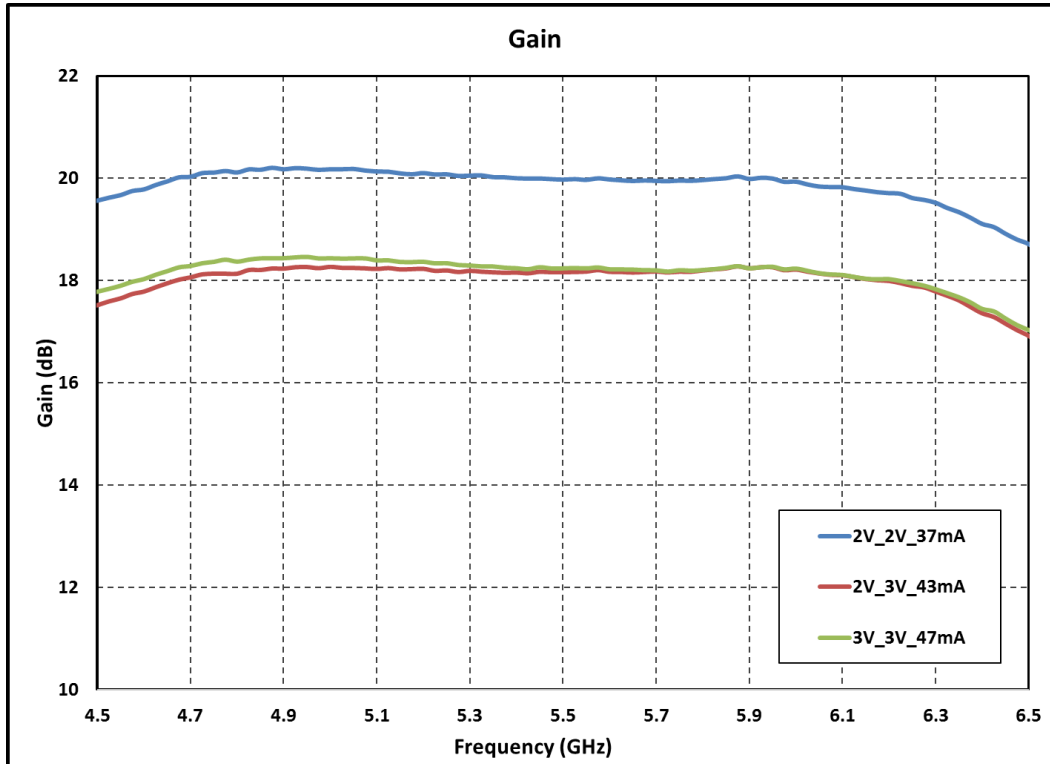
Parameter	Min.	Typ.	Max.	Units
Frequency	4.5		6.5	GHz
Gain ⁽¹⁾	-	18	-	dB
Gain Flatness ⁽¹⁾	-	± 0.4	-	dB
Noise Figure ⁽¹⁾	1.25	1.5	1.6	dB
Input Return Loss ⁽¹⁾	10	12	-	dB
Output Return Loss ⁽¹⁾	-	12	-	dB
Output Power ($P_{1\text{dB}}$) ⁽¹⁾		13.5 ⁽²⁾		dBm
Supply Voltage		3		V
Supply Current		47		mA

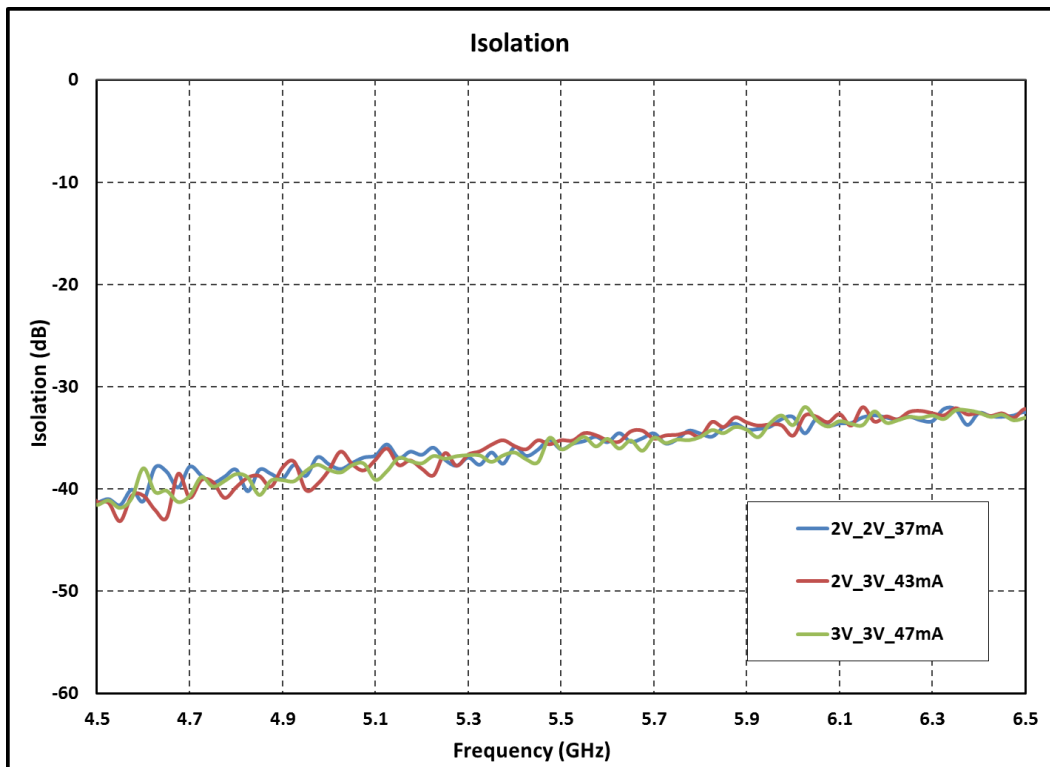
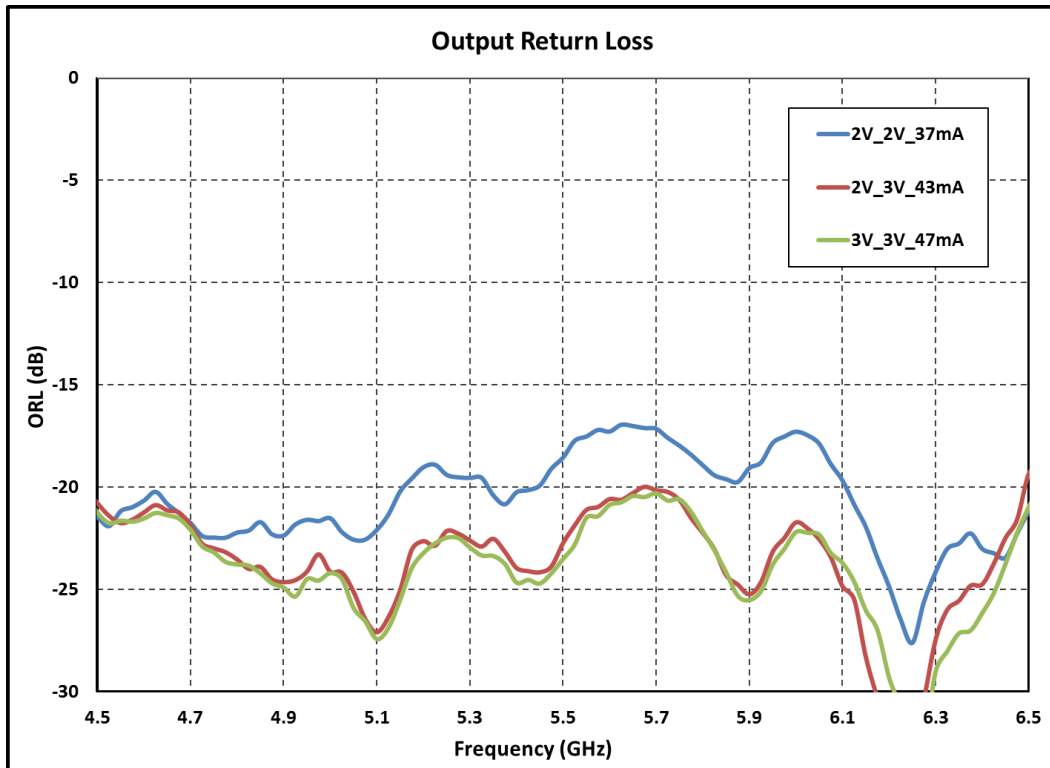
Note:

1. Electrical specifications as measured in test fixture.
2. 13.5dBm P1dB can be achieved by operating last stage drain supply voltage at 3V.

Test fixture data

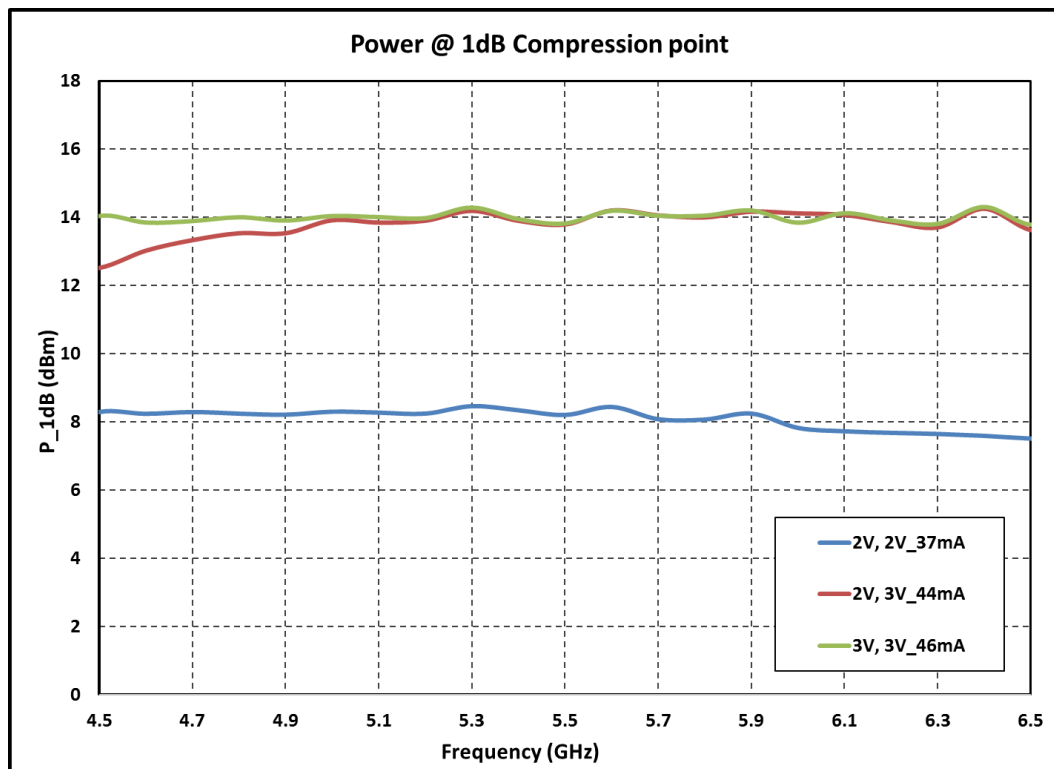
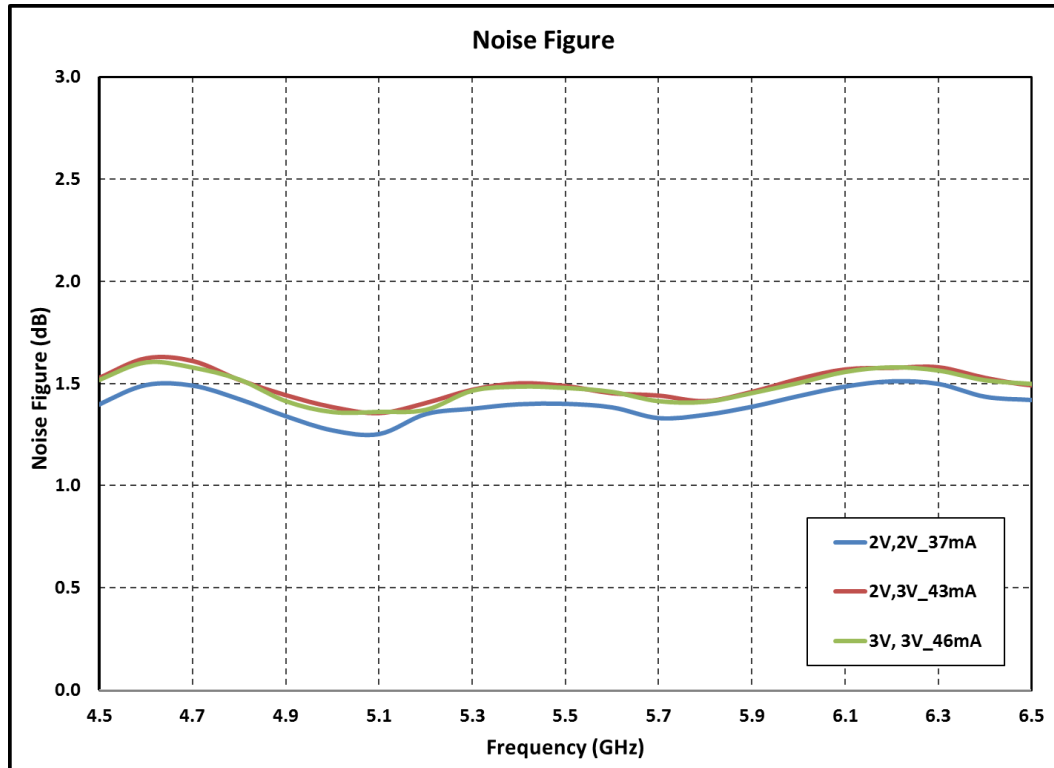
$V_{d1} = V_{d2}$ @ different bias voltages, $T_A = 25\text{ }^\circ\text{C}$



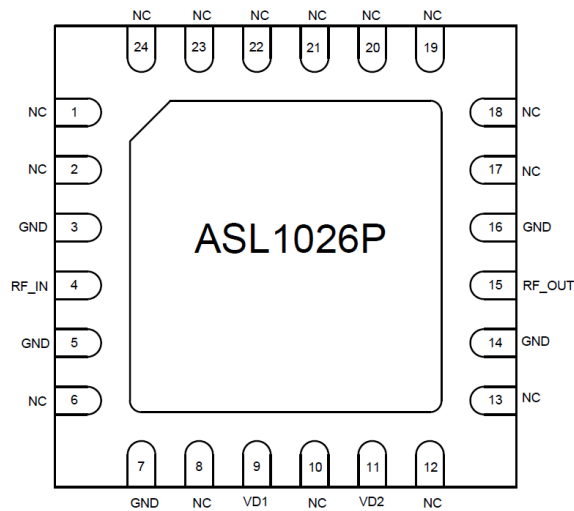
Test fixture data $V_{d1} = V_{d2}$ @ different bias voltages, $T_A = 25\text{ }^\circ\text{C}$ 

Test fixture data

$V_{d1} = V_{d2}$ @ different bias voltages, $T_A = 25\text{ }^\circ\text{C}$



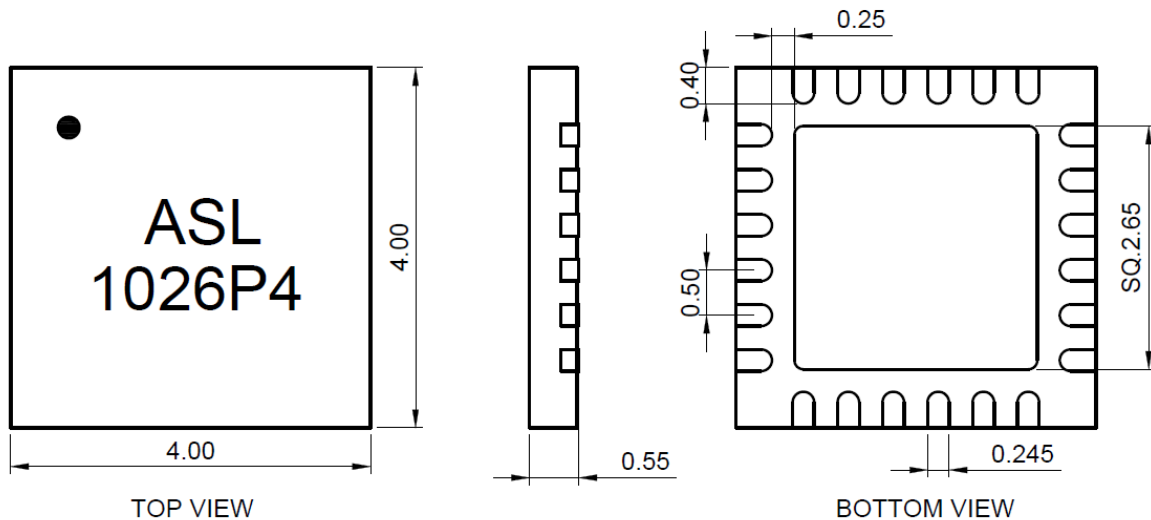
Pin Configuration Details



Pin Description:

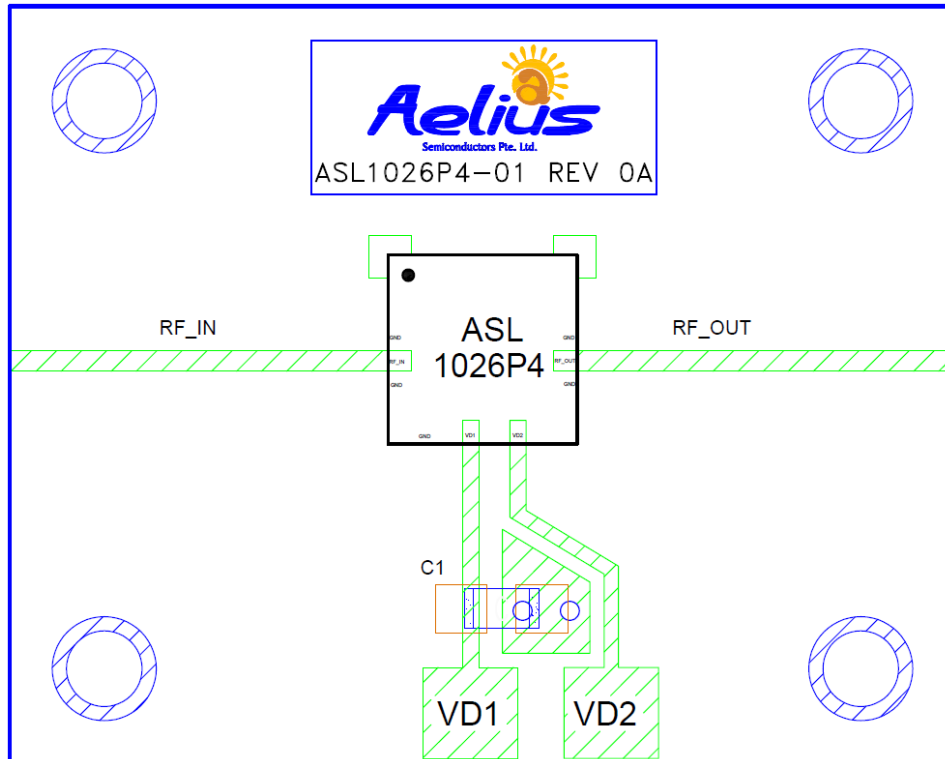
Pin 4 : RF in
Pin 9 : Drain Bias 1
Pin 11 : Drain Bias 2
Pin 15 : RF out
Pin 3,5,7,14,16 : Ground
 Remaining all other pins are NC (No Connection)

QFN package outline



Note: All Units are in mm.

Recommended Assembly Diagram



Bill of Material

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

Note:

1. Input and output 50 ohm lines are on 8 mil RO4003 substrate
2. 0.1 µF capacitors may be additionally used as a second level of bypass for reliable operation



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.