

Applications

- PCIe Gen3, USB3.1 & 10Gbps Ethernet in ATE



Features

- Small footprint and integrated loopback circuit with 4 inductors & 2 capacitors
 - > Inductor is manufactured by MEMS (Micro Electro Mechanical Systems)
 - > Inductor is designed specifically for broadband applications : up to 6.5GHz
- Surface mounted component with high reliability
- Package size : 3.45 x 4.55 x 2.30mm (W x L x H mm)
- Package cap is hermetically sealed and protects MEMS inductors
- The capacitance of 2 capacitors can be determined by user requirement

Electrical Specification		Environmental Specification	
Inductance*1 (Tolerance : ±5%)	60.7nH @ 5MHz 59.8nH @ 100MHz	Thermal Shock	200 cycles, -65°C ~ +150°C
SRF*2 (Typ.)	6.6GHz	Pressure Cooker Test	+130°C, 85% RH, 96Hrs
Idc*3 (Max)	300mA	Operating Temperature Range	-55°C ~ +85°C
DCR *4	1.97±0.1Ω		

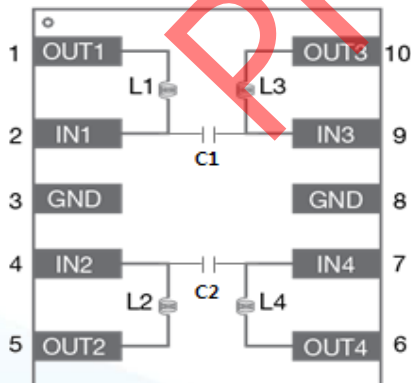
*1. Measurement Instrument : Impedance Analyzer Agilent 4294 & 42941A(Probe Kit)

*2. Measurement Instrument : VNA Agilent 8720ES

*3. Idc Measurement Condition : The DC resistance changes were observed by supplying 5V and maintaining 300mA current for 30 minutes at room temperature

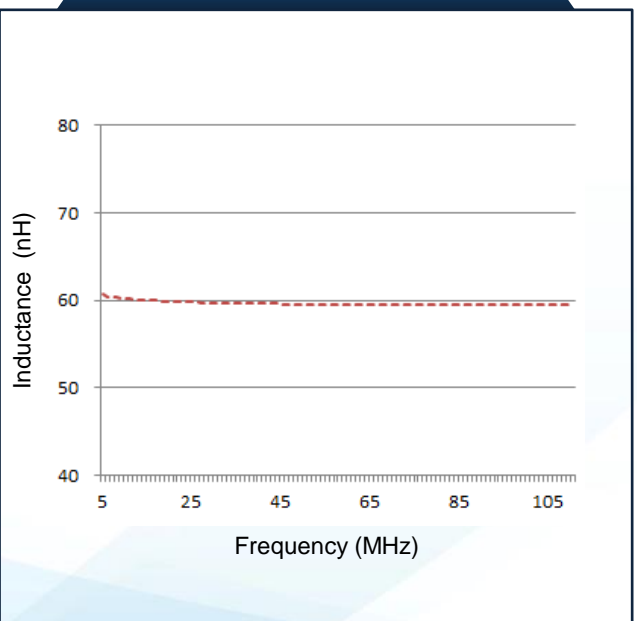
*4. Measurement Instrument : Keithley 2000

Pin Assignment

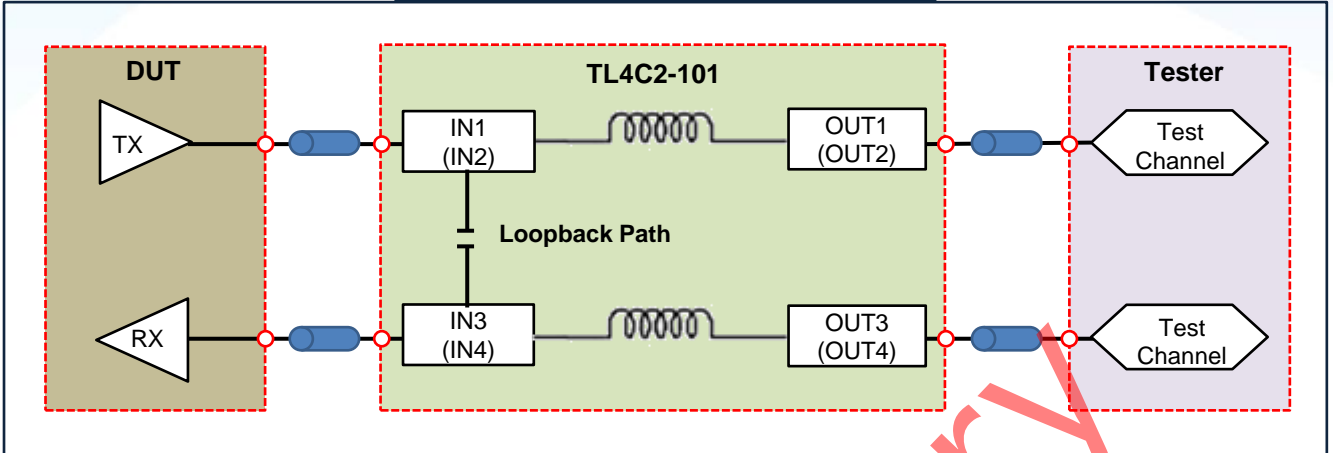


- L1~L4 : MEMS Inductor
- C1,C2 : AC Coupling Capacitor
- AC Coupling Capacitor Specification : 220nF (±10%), 6.3V rated voltage

Inductance vs Frequency

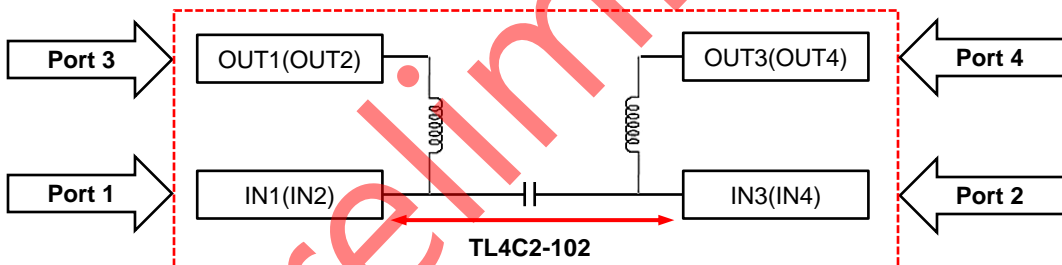


Typical Application

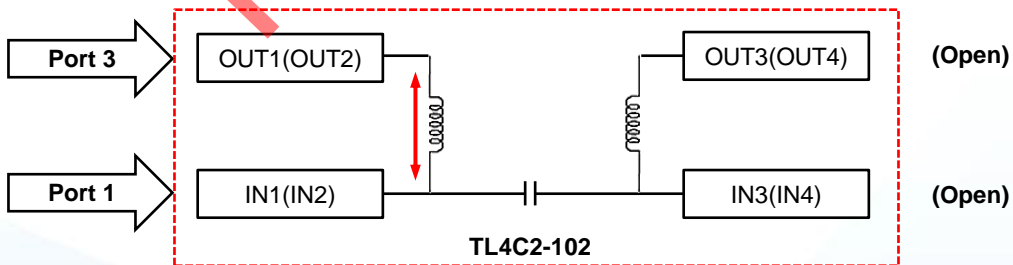


S-Parameter Measurement Set up

- Loopback Path



- Inductor Path (Test Channel Connection)



[Note] Other pads are open except probing pads

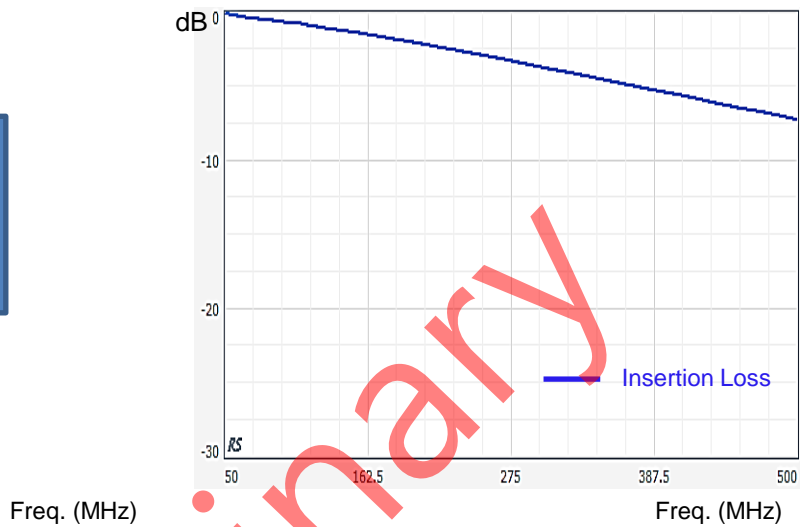
S-Parameter

- Loopback Path S-Parameter

dB



- Inductor Path S-Parameter (Test Channel Connection)



- Loopback Path S-Parameter

Frequency	Insertion Loss(dB)	Return Loss(dB)
0.5 GHz		
1.0 GHz		
2.0 GHz		
3.0 GHz		
4.0 GHz		
5.0 GHz		
6.0 GHz		
7.0 GHz		

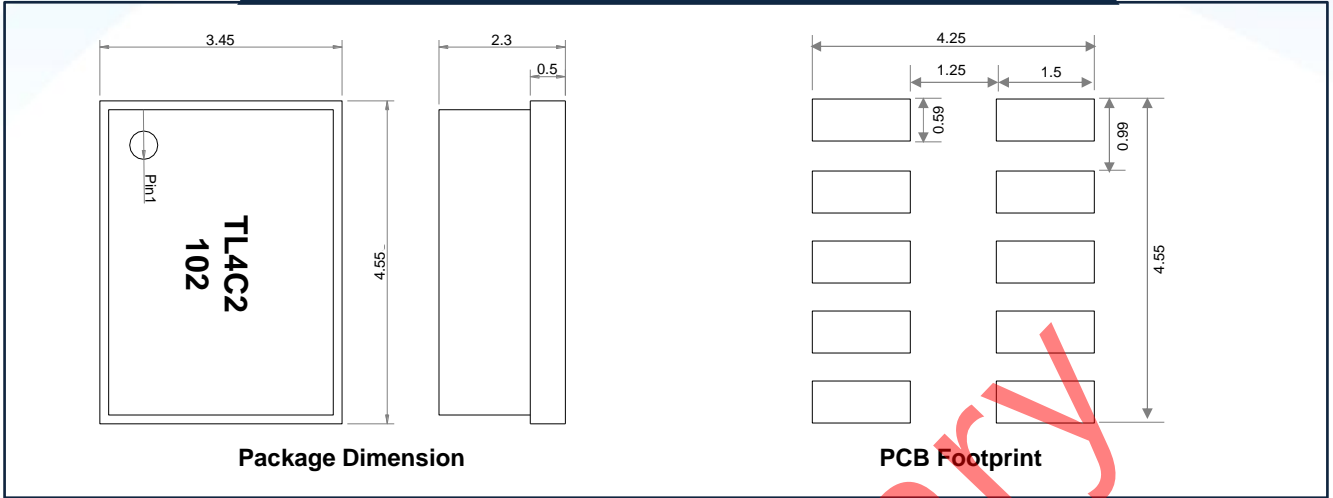


- Inductor Path (Test Channel Connection) S-Parameter

Frequency	Insertion Loss(dB)
100 MHz	-0.66
200 MHz	-2.02
300 MHz	-3.70
400 MHz	-5.43

TL4C2-102

PKG Dimension & PCB Footprint (Unit : mm)



SMT Reflow Profile (for Lead Free)

Parameter	Specification
Preheat and Soak [Temperature min (T _{smin}) Temperature max (T _{smax}) Time (T _{smin} to T _{smax})	150 °C 200 °C 60~120 seconds
Average ramp-up rate (T _{smax} to T _p)	3 °C/second maximum
Liquidous temperature (T _L) Time at liquidous (t _L)	217 °C 60~150 seconds
Peak temperature in reflow (T _p)	260 °C (+0/-5 °C)
Time(t _p) within 5 °C of the specified classification temperature (T _c)	20 seconds
Average ramp-down rate (T _p to T _{smax})	6 °C/second max
Time 25 °C to peak temperature	8 minutes max

[Note] Prior to SMT, bake TL4C2-102 for 1.5hour at 120 °C if it was stored over 3days at room temperature after unpacking. A one year warranty before opening vacuum pack from the date of delivery of the components & 3 months warranty after opening vacuum pack.

