



ST1394-01SC6

IPAD™
(Integrated Passive and
Active Devices)

IEEE1394 ONE PORT CABLE TERMINATION NETWORK WITH ESD PROTECTION DIODES

MAIN APPLICATIONS

IEEE1394 line termination on:

- Desktops
- Notebooks
- Digital Camcorders
- External storage drive
- Set Top Box

FEATURES

- LINE TERMINATION FOR 2 TWISTED PAIRS
TPA AND TPB
- THE DEVICE COMPLIES WITH IEEE1394
REQUIREMENT FOR DIFFERENTIAL AND
COMMON MODE IMPEDANCE ON TPA AND
TPB LINE
- MONOLITHIC DEVICE WITH COMPLETE
TERMINATION FOR ONE IEEE1394
CONNECTION

DESCRIPTION

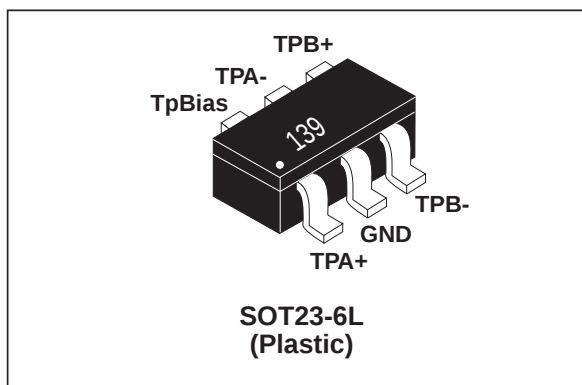
The ST1394-01SC6 is an integrated termination network that optimizes board layout of the PHY layer in IEEE1394 one port cable application.

This monolithic device is tested, according to ESD requirement described in IEC61000-4-2 standard level 2. ST1394-01SC6 device ruggedness limits overvoltage at the 1394 transceiver inputs and outputs below acceptable limits.

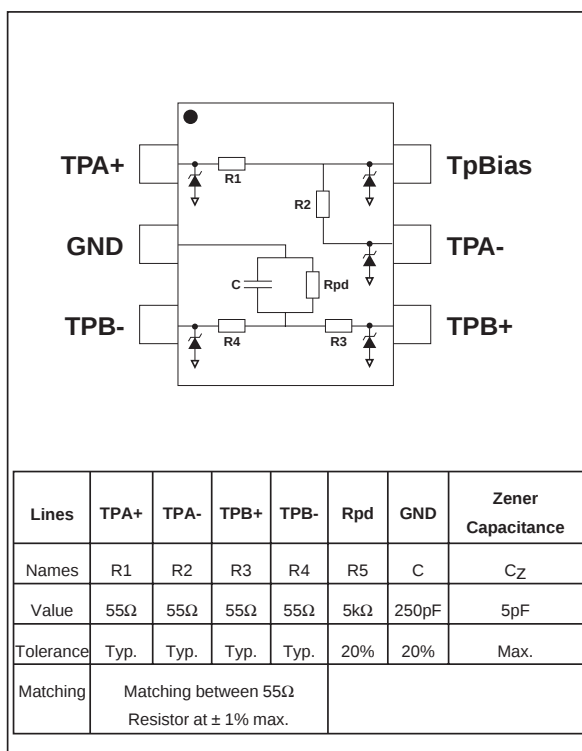
The ST1394-01SC6 implements IEEE1394 recommendation for line termination of TPA and TPB differential lines. Excellent matching of the termination resistor will minimize common mode noise that is needed to improve communication speed.

BENEFITS

- Resistor matching between TPA / TPB lines.
- Resistor matching between TPA+ / TPA-
- Single chip device versus 11 discretes
- No need for additional overvoltage protection device
- High level of integration



FUNCTIONAL DIAGRAM



ST1394-01SC6

ABSOLUTE RATINGS ($T_{amb} = 25^{\circ}\text{C}$)

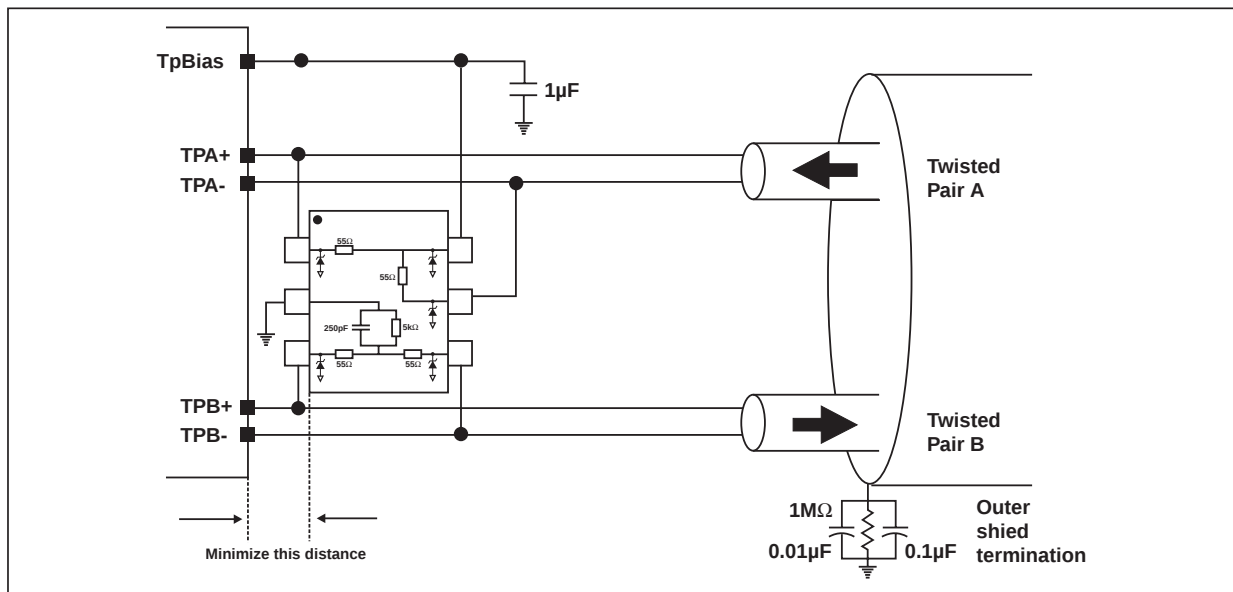
Symbol	Parameter and test conditions	Value	Unit
T_{stg}	Storage temperature range	-55 to +150	$^{\circ}\text{C}$
T_j	Maximum junction temperature	+150	$^{\circ}\text{C}$
TL	Lead solder temperature (10 second duration)	260	$^{\circ}\text{C}$

ELECTRICAL CHARACTERISTICS ($T_{amb} = 25^{\circ}\text{C}$)

Symbol	Parameter	Min.	Typ.	Max.	Unit
R1, R2, R3, R4	Bus termination resistors (note 1)		55		Ω
C_z	Zener capacitance			5	pF
R_{pd}	Pull down resistor		5		k Ω
C	Capacitor in parallel with R_{pd}		250		pF
(R1+R2), (R3+R4)	Bus termination impedance	102	110	118	Ω

Note 1: matching between 55 Ω resistors is better than $\pm 1\%$.

FUNCTIONAL DIAGRAM



APPLICATION INFORMATION

The functional diagram here above presents a IEEE1394-a cable and shows how to connect the ST1394-01SC6 in order to correctly terminate and filter the TPA and TPB lines.

TECHNICAL INFORMATION

FREQUENCY BEHAVIOR OF DATA AND STROBE SIGNALS

Fig. A1: Measurement conditions.

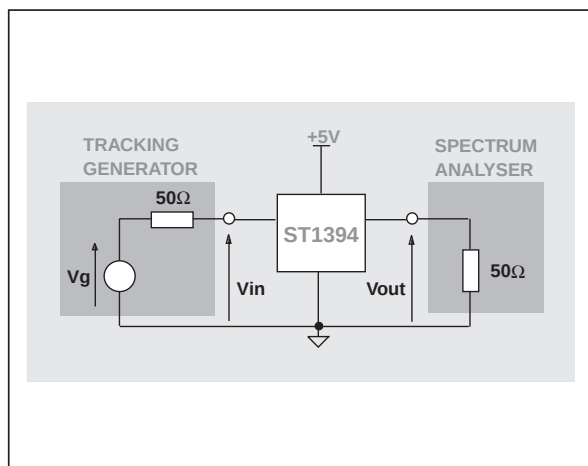


Fig. A2: Test Board.

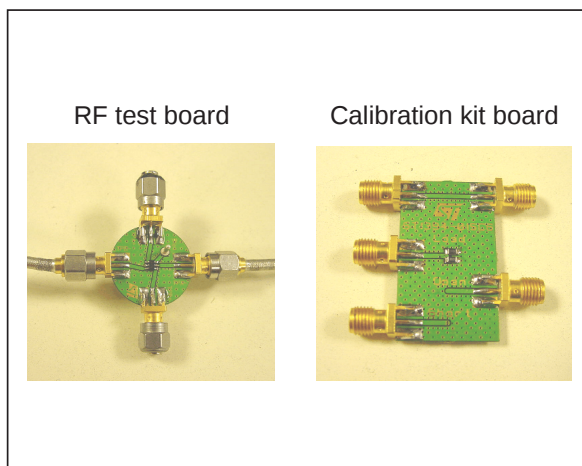


Fig. A3: TPA line: comparison between Aplac model and device.

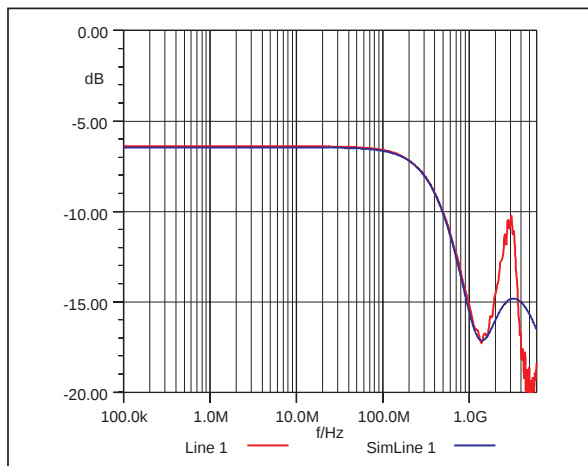
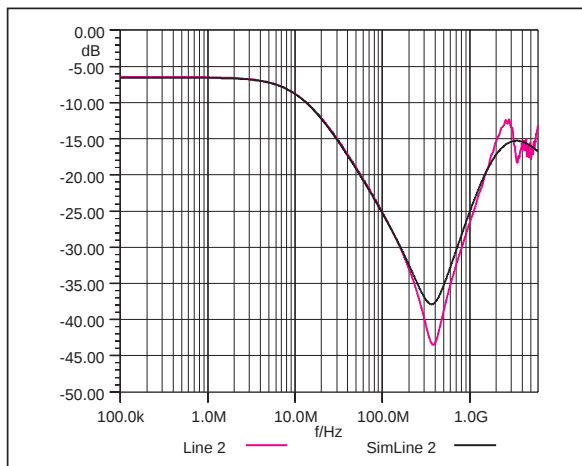


Fig. A4: TPB line: comparison between Aplac model and device.



Note: For a convenience reason, frequency response have been carried out on both TPA and TPB lines as if TPA+ and TPA- or TPB+ and TPB- were respectively Inputs and Outputs lines

Fig. A5: Crosstalk between TPA and TPB lines.

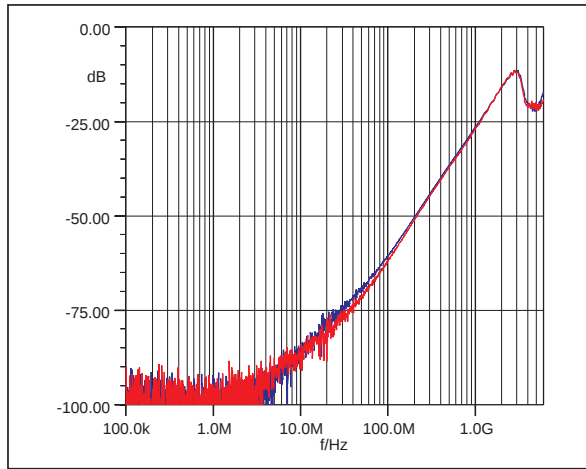
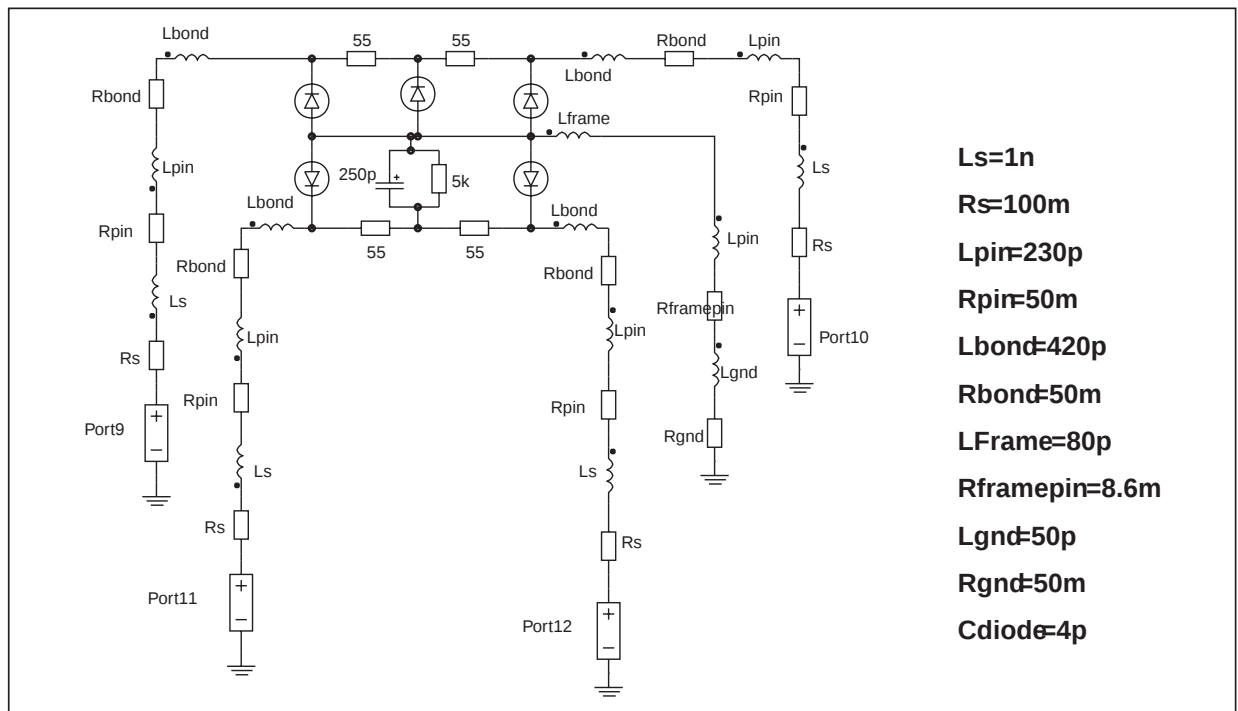


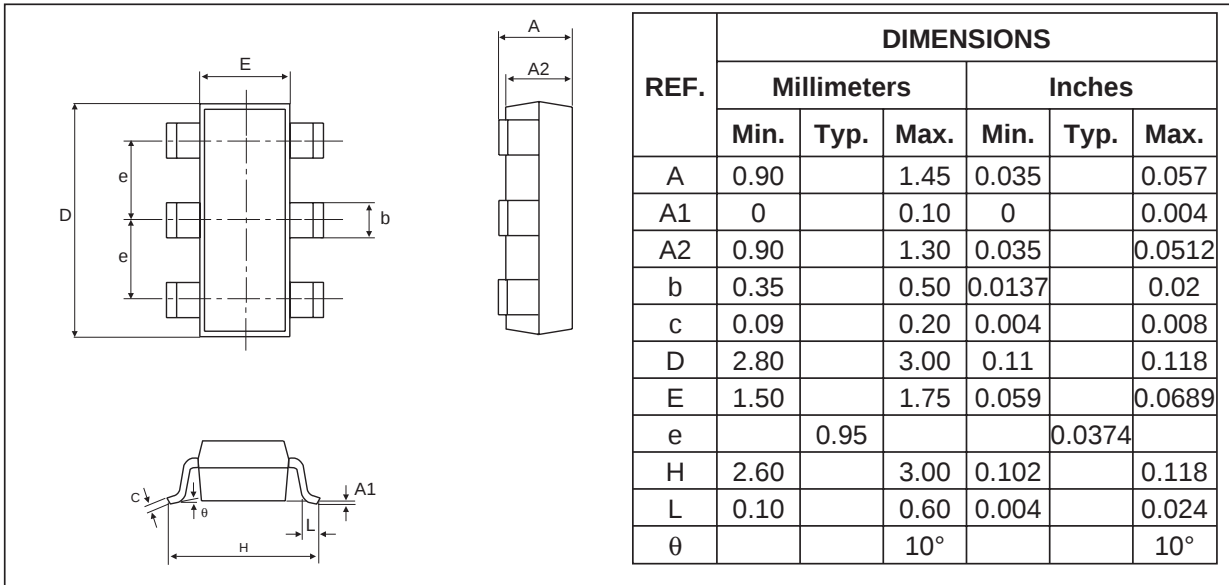
Fig. A6: ST1394 APLAC model.



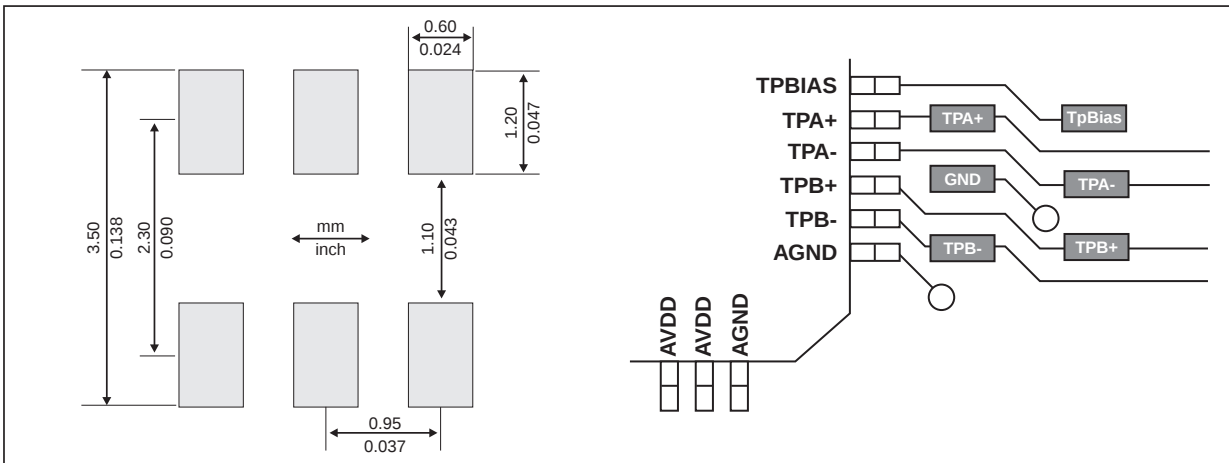
ST1394-01SC6

PACKAGE MECHANICAL DATA

SOT23-6L (Plastic)



FOOTPRINT DIMENSIONS



Order code	Marking	Package	Weight	Delivery mode	Base qty
ST1394-01SC6	139	SOT23-6L	16.7 mg	Tape & reel	3000

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