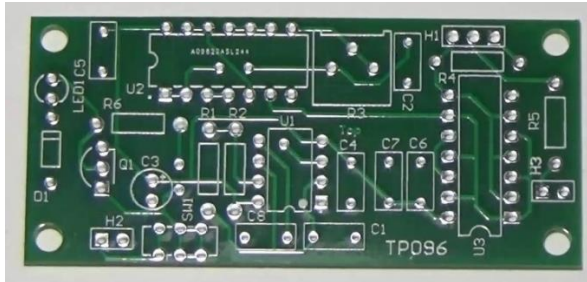


- Able to detect degradations on coaxial cables
- Pulse with very short width generation
- Pulses High Repetition frequency
- Power Supply 9V
- Low power consumption
- Configurable Output Impedance matching



PCB Top View



TDR in running mode

**DESCRIPTION**

The TDR (Time Domani Reflectometer) is a tool designed for measure integrity of coaxial cables by using the reflectometry technique: a short pulse is generated and by analyzing the signal on the scope, the cable property can be found.

**TDR TECHNICAL DATA**

PARAMETER	DESCRIPTION	VALUE			UNIT
		MIN	TYP	MAX	
$t_w$	Pulse Width (adjustable)	45		220	ns
$f$	Repetition Frequency (fixed)	230		500	KHz
$t_r$	Pulse Rise Time		4		ns
$t_f$	Pulse Fall Time		4		ns
$Z_o$	Output impedance (configurable)	50		75	ohm
$V_{IN}$	Power Supply Voltage		+9		V
$I_{IN}$	Power Supply Current			10	mA
L	Cable length	10		200	m

**PCB TECHNICAL DATA**

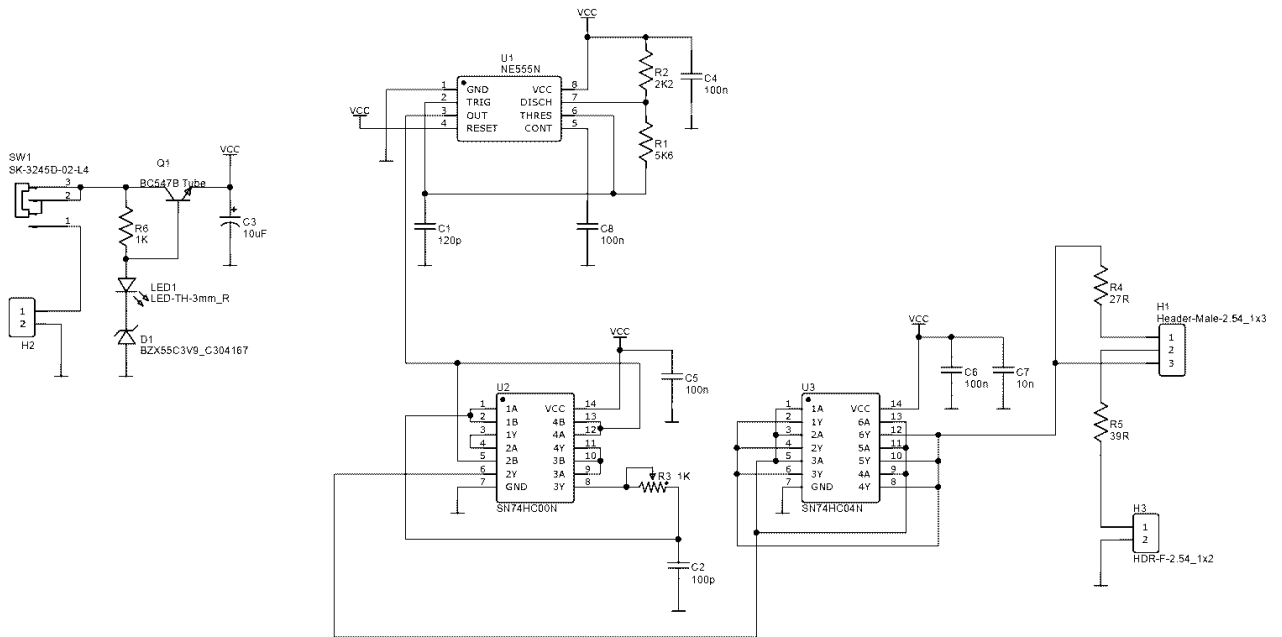
PARAMETER	VALUE	UNIT
Dimensions Lenght x Width	67 x 31	mm
Colors	GREEN, BLUE	
PCB thickness (RED, YELLOW)	1.6	mm
Layers	2	
Surface finish	HASL	
Copper Weight	1	oz
Material Details	FR4-Standard Tg 130-140C	

**BILL OF MATERIALS**

- C1, C2: 100pF ceramic [2]
- C3: 10uF electrolytic [1]
- C4, C5, C6, C7, C8: 100nF ceramic [5]
- D1: zener 3,6V or 3,9V 0.5W [1]
- H1: PIN header male 3 (output impedance selection) [1]
- H2: PIN header male 2 (power supply input) [1]
- H3: PIN header male 2 (output) [1]
- LED1: LED diode [1]
- Q1:BC547 Transistor [1]
- R1: 5.600 ohm [1]
- R2: 2.200 ohm [1]
- R3: trimmer 1.000 ohm [1]
- R4: 27 ohm [1]
- R5: 39 ohm [1]
- R6: 1.000 ohm [1]
- SW1: switch 2 way [1]
- U1: NE.555 [1]
- U2: TTL SN74HC00N [1]
- U3:TTL SN74HC04N [1]
- Z1: 8 pin socket [1]
- Z2,Z3: 14 pin socket [2]

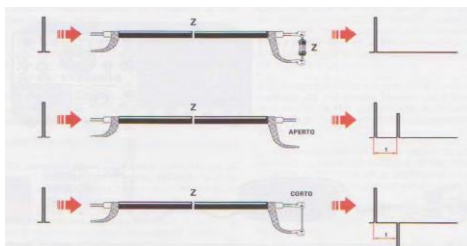


**ELECTRICAL SCHEME**



**POWER ON**

1. Select the output impedance, by placing a jumper on H1 connector: 2-3 for 50 ohm or 1-2 for 75 ohm impedance matching
2. Connect the output connector H3 on the cable to be measured and to the oscilloscope (pin 1 probe pin 2 ground)
3. Provide a 9V input on the H2 Header (Left pin is positive – Right pin is Ground)
4. Adjust the pulse width by modifying the R3 potentiometer between 20ns and 250ns
5. Check the transmitted pulse on the scope and the reflection (refer to following figure)
  - If the received pulse has the same polarity of the transmitted pulse the cable is in open circuit
  - If the received pulse has the opposite polarity of the transmitted pulse the cable is in short circuit
  - If the received pulse has no amplitude the cable is closed on and impedance equal to the characteristic impedance of the cable



TDR Coaxial cable measure



TDR scope time delay measurement



TDR Coaxial cable Pulse shape

**ADDITIONAL INFORMATION**

Cable to be measured shall be connected in the HSelect the output impedance, by

**ORDERING INFORMATION**

[pieraisaforum@gmail.com](mailto:pieraisaforum@gmail.com)



**Pier Aisa Electronic  
Community Forum**

<https://pieraisa.it/forum/> pieraisaforum@gmail.com