

CC-TLP-1 Capacitively Coupled TLP Probe



1. Description

The CC-TLP module utilizes the principle of Transmission Line Pulsing (TLP) where a transmission line is capacitively coupled to the device under test. When a pulse is applied to the transmission line, charge is transferred through the capacitor to simulate an Electrostatic Discharge (ESD) event on the device. CC-TLP involves applying extremely short yet high-voltage pulses on the transmission line to simulate ESD events and the amplitude/duration of CC-TLP are adjusted according to testing requirements.

2. Features

- 18 GHz SMA connector
- Tilt depth & angle adjustment
- Compatible with probing station
- Reproducible CDM-like stress
- Calibration gauge for needle height adjustment
- Easily replaceable coaxial tip

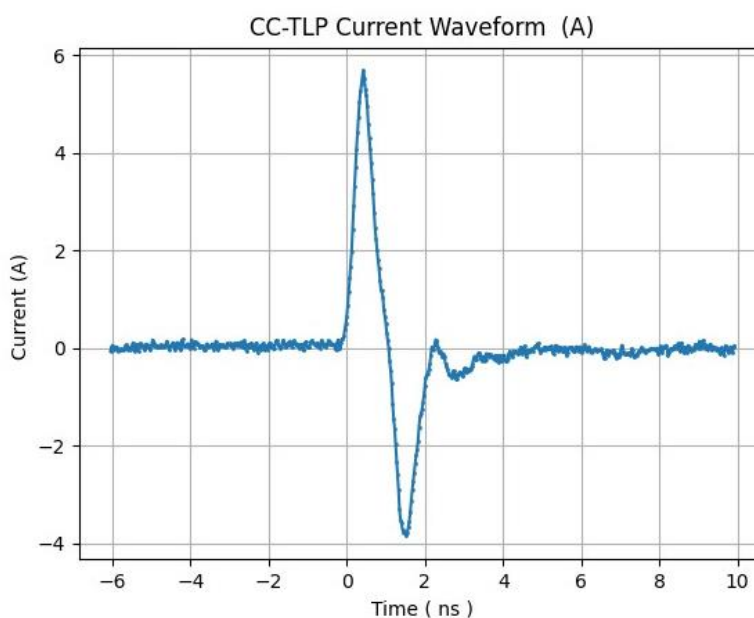
3. Applications

- CDM Events Test for Wafer Level
- Device and Materials CDM Failure Analysis

4. Specifications

Parameters	CC-TLP-1-50	CC-TLP-1-90	Unit	Comments
SMA Connection Bandwidth	18		GHz	
Needle Tip Radius	0.5, 1, 5		μm	Default 5 um
Needle Slot	1		mm	
GND Diameter	50	90	mm	

Typical CC-TLP Waveform:



5. Ordering Information

Line	Part #	Description	Status
1	CCTLP-1-90	CC-TLP Probe with 90 mm diameter GND Plate	Active
2	CCTLP-1-50	CC-TLP Probe with 50 mm diameter GND Plate	Active
3	CCTLP-CAL-1	CC-TLP needle height calibration gauge	Active
4	CC-TLP-1-RN5	CC-TLP Replacement Probe - 5 um radius tungsten tip	Active
5	CC-TLP-1-RN1	CC-TLP Replacement Probe - 1 um radius tungsten tip	Active
6	CC-TLP-1-RN0p5	CC-TLP Replacement Probe - 0.5 um radius tungsten tip	Active

6. Application Reference

- [1] J. Weber, R. Fung, R. Wong, H. Wolf H. A. Gieser L. Maurer. Stress current slew rate sensitivity of an ultra-high-speed interface IC. IEEE Transactions on Device and Materials Reliability Vol. 19, Issue: 4, November 2019
- [2] H. Wolf, H. Gieser, W. Stadler, w. wilkening. Capacitively Coupled Transmission Line Pulsing CC-TLP - A Traceable and Reproducible Stress Method in the CDM-Domain. Journal of Microelectronics Reliability, Elsevier, volume 45, no.2,2005, pp.279-285.
- [3] M. Drallmeier, L. Zeitlhofer, W. Huang, F. zur Nieden, D. Pommerenke. Study of CDM, relay pogo-contact first CDM, and CC-TLP pulses. 2021 43rd Annual EOS/ESD Symposium, Tucson, AZ, USA, September 26 – October 01, 2021.
- [4] H. Wolf, H. Gieser, K. Bock, A. Jahanzeb, c. Duvvury, Y. Lin. Capacitive Coupled TLP (CC-TLP) and the Correlation with the CDM. 2009 31st EOS/ESD Symposium, Anaheim, USA, August 30-September 04, 2009.
- [5] K. Esmark, R. Gaertner, S. Seidl, F zur Nieden, H. Wolf H. Gieser, Using CC-TLP to get a CDM Robustness Value. 2015 37th EOS/ESD Symposium, Reno, USA, September 27-October 02, 2015.
- [6] The standardization body of the ESD Association has published the standard practice document ANSI/ESD SP5.3.4-2022, which establishes the CC-TLP as an approved test method.