

M-PHY GEAR5 Solder-In Probe™

Key Features

- Supports MIPI M-PHY PWM and High-Speed Gears 1-5 at Rate A and B
- X1 and X2 Bundles available
- Small form factor solder in tips
- 5.6mm x 5.2
- 24GHz Bandwidth
- Supports HIBERN8
- Supports Adapt
- Supports HS Link State Startup

Specifications

Bandwidth	24 GHz (Probe only, guaranteed) (System bandwidth, typical)
Rise Time	(10–90%) 75 ps (typical) (20–80%) 56 ps (typical)
Noise (System)	<61 nV/√Hz (4.8 mVrms) (typical)
Environmental	Temperature (operating): 0° to 40°C (41° to 104°F)
	Temperature (non-operating): 40° to 70°C (-4° to 140° F)
	Humidity (operating): 5% to 80% RH (non-condensing) 50% RH above 30 °C Humidity (non-operating): 5% to 95% max RH (non-condensing) 75% RH above 30 °C and 45% RH above 40 °C

The M-PHY GEAR5 Teledyne LeCroy Solder-In Probe™ allows developers using an embedded bus in their PCB designs to tap into the signal traces directly and capture bus traffic for protocol analysis and debugging. The probe connects to a Teledyne LeCroy Eclipse M52 Analyzer via a Probe Amplifier.

Figure 1 shows the complete assembly of the M-PHY GEAR5 Solder-In Probe and its components.

The M-PHY GEAR5 has DH-SI-PG Solder in probe (A in figure below), 40GHz SMP to SMP Differential cable (B), Molex to Lemo Power Cable (C), and GEAR5 Amplifier (D).

Support is provided for M-PHY systems including GEAR1, GEAR2, GEAR3, GEAR4, and GEAR5 for both rate A and rate B.

- One Probe Amplifier is required for link widths of up to x1. Figure 1 shows a x1 connection.
- Two Probe Amplifiers are needed for link widths of up to x2. See Section 7 for analyzer cable configurations and lane mapping.



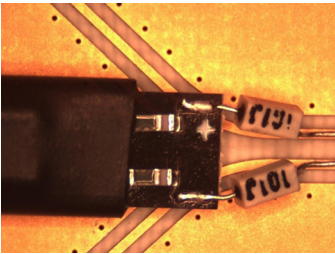
Since the Solder-In probe system is designed for use with PCB configurations that may not have been specifically laid out with probing in mind, probe points must be identified and selected to allow the protocol analyzer system to access the M-PHY bus contained within the board. Typical probe points might include exposed pins of components, or exposed traces or vias on the board along the M-PHY channel.

For each bi-directional lane of a M-PHY bus, the probe tips need to make contact with four signals (Rx+, Rx-, Tx+ and Tx-) to capture data traffic going in each direction. For x1 design, four signals must be sampled; for x2, eight signals must be sampled.

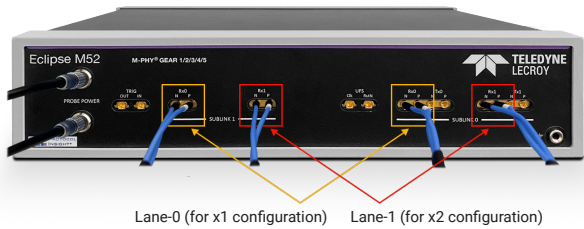
The GEAR5 Solder-In probe tip is designed to sample one of two points in close proximity:

- The Rx+ and Rx- differential pair
- The Tx+ and Tx- differential pair

Therefore, each bi-directional lane requires two probe tips (up to 4 probe tips for x2 designs).



The DH-SI-PG tips are supplied with two, pre-installed 50W Resistors, which are intended to be soldered to the runs or pad test points on the board under test. Because of their small size, these tips provide the maximum signal fidelity at the highest frequency response. The + input is indicated by a small + symbol on the tip, and by a white marker on the corresponding side of the tip lead. The probe tip kit comes with 50Ω and 100Ω tip resistors. 50Ω resistor provides the stronger signal to the analyzer compared to 100Ω resistor. However, use a 100Ω resistor if Host to DUT MPHY has link issues.



Input	Referred to input, 24 GHz bandwidth
Input Dynamic Range	1Vpk-pk, ±0.5V (Nominal)
Input Common Mode Voltage	±0.5 V Range (Nominal)
Input Offset Voltage Range	±0.5 V Differential (nominal)
Non-destructive Input Range (Nominal)	±0.5 V
Attenuation	3.2X / 1.9X (nominal)
DC Input Resistance	200 kΩ Differential (Nominal) 50 kΩ Common Mode

Impedance (Zmin, typical)	>250 Ω Differential
Impedance (Mid-band, typical)	475 Ω at 3 GHz, 250 Ω at 6 GHz
CMRR	30 dB DC to 10 MHz 26 dB 10 MHz to 6 GHz
ESD Tolerance	2 kV (typical), 100 pF, 300 Ω HBM

Ordering Information

Base Hardware Platform

Eclipse M52 Analyzer
Eclipse M52 Analyzer/Exerciser

Eclipse M52 x1 Solder Down Probe
Eclipse M52 x2 Solder Down Probe
Eclipse M-PHY Gear5 Probe Tip (Qty 1)
Eclipse M52 Multi Lead Amplifier Pod (Qty1)
Eclipse M52 Multi Lead Power Cable
Eclipse M52 Multi Lead SMP Cable Pair

Product Code

MPHY-M52-TAA
MPHY-M52-TZA

MPHY-MLP-M52X1-X
MPHY-MLP-M52X2-X
DH-SI-PG
MPHY-MLP-G5POD-X
MPHY-MLP5-AC001-X
MPHY-MLP5-AC002-X



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