

Data sheets

ICI IC side channel analysis



ICI L-EFT Test Set-up

IC EM Pulse Injection Langer Pulse

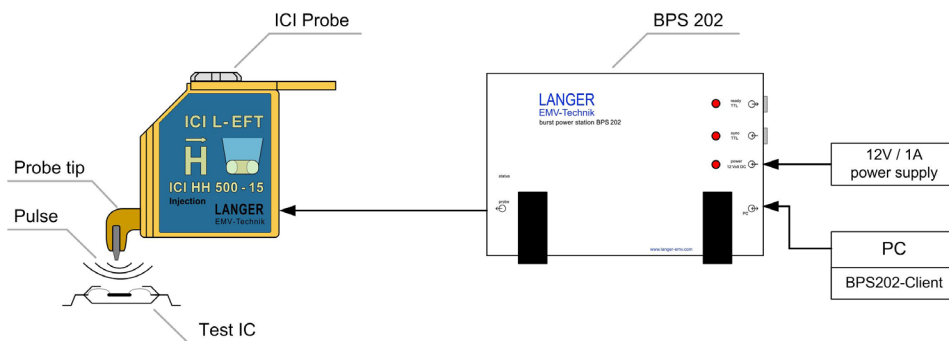
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Short Description

The test set-up includes one of our ICI couple sources. The sources couple fast transient pulses into test ICs. You can choose between pulse magnetic field, pulse e-field, and pulse current source. All sources allow for side channel analysis or testing the immunity of individual areas of ICs. These sources are calibrated as measuring section together with the shipped BPS 202.

Schematic Test Set-up



Technical Parameters

| | |
|---|---|
| Pulse parameter | |
| Rise time | < 2 ns |
| Repetition frequency | 0.1 Hz - 20 kHz |
| Polarity (set by software) | + / - / alternating |
| Trigger-pulse delay (Bypass Mode - Delay Line) | |
| min. trigger-pulse delay (typ.) | 100 ns |
| max. trigger-pulse delay (typ.) | 450 ns |
| max. jitter (typ.) | ± 1 ns |
| Trigger-pulse delay (Timer Mode) | |
| min. trigger-pulse delay (typ.) | 200 ns |
| max. trigger-pulse delay (typ.) | 100 ms |
| max. jitter (typ.) | ± 15 ns |
| Trigger delay, min. increment | 10 ns |
| Supply | BPS 202 (incl. in the scope of delivery) |
| Software | BPS 202-Client / DLL (32 Bit / 64 Bit) Win XP SP3 oder höher |



BPS 202

Burst Power Station



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Short Description

The BPS 202 is used as power supply and control unit for the Langer EMV-Technik GmbH pulse probes. The control unit is connected to the user PC via an USB interface. BPS 202-Client software does the controlling. With the BPS 202 input „sync“ interference pulses of the connected probes can be synchronized on the functional process of an IC.

- Adjustment of the pulse frequency and pulse current of the couple source
- Adjustment of single pulse or pulse sequence of the couple source
- External triggering possible
- Adjustable trigger delay

Technical Parameters

| | |
|---|---|
| Output voltage | ± (5 ... 500) V |
| External trigger input | TTL / BNC |
| Trigger-pulse delay (Bypass Mode - Delay Line) | |
| min. trigger-pulse delay (typ.) | 30 ns |
| max. jitter (typ.) | ± 1 ns |
| | |
| Trigger-pulse delay (Timer Mode) | |
| min. trigger-pulse delay (typ.) | 130 ns |
| max. trigger-pulse delay (typ.) | 100 ms |
| max. jitter (typ.) | ± 15 ns |
| Trigger delay, min. increment | 10 ns |
| Supply voltage | 12 V / 1 A DC |
| Weight | 300 g |
| Sizes (L x W x H) | (175 x 122 x 51) mm |
| Software | BPS 202-Client / DLL (32 Bit / 64 Bit) Win XP SP3 oder höher |



ICI HH500-15 L-EFT

Pulse Magnetic Field Source



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Short Description

The ICI HH500-15 L-EFT pulse magnetic field source couples fast transient pulses into a test IC (open die). This allows for side channel analysis or testing the immunity of individual areas of the IC.

Curves

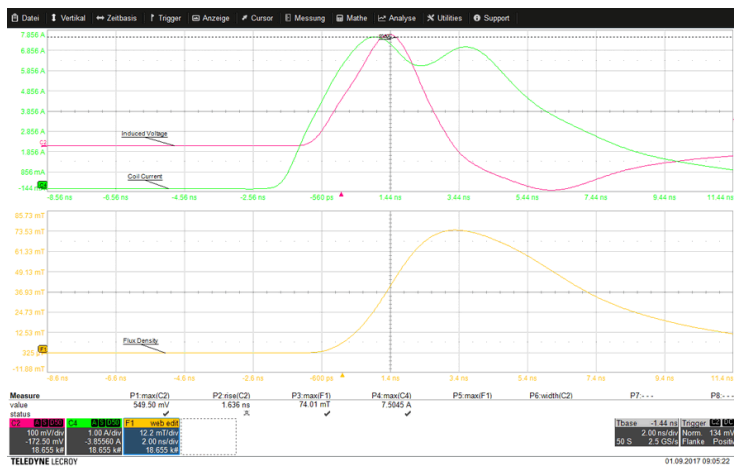


Figure 1: Pulse shape ICI HH500-15 L-EFT

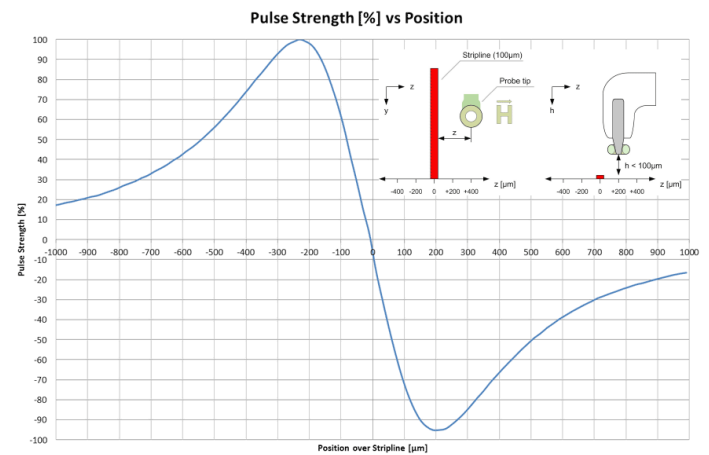


Figure 2: Transverse scan ICI HH500-15 L-EFT

Technical Parameters

| | |
|---|---------------------|
| Probe head dimensions | Ø 500 µm |
| Magnetic flux density (typ.) | 50 mT |
| Pulse parameter | |
| Rise time | < 2 ns |
| Repetition frequency | 0.1 Hz - 20 kHz |
| Polarity (set by Software) | + / - / alternating |
| Messausgang | 50 Ω |
| Trigger-pulse delay (Bypass Mode - Delay Line) | |
| min. trigger-pulse delay (typ.) | 70 ns |
| max. trigger-pulse delay (typ.) | 420 ns |
| max. jitter (typ.) | ± 1 ns |
| Supply | BPS 202 |
| Weight | 70 g |
| Sizes (L x W x H) | (26 x 43 x 53) mm |



ICI E450 L-EFT

Pulse E-Field Source



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Short Description

The ICI E450 L-EFT pulse electric field source couples fast transient pulses into a test IC (open die). This allows for side channel analysis or testing the immunity of individual areas of the IC.

Curves

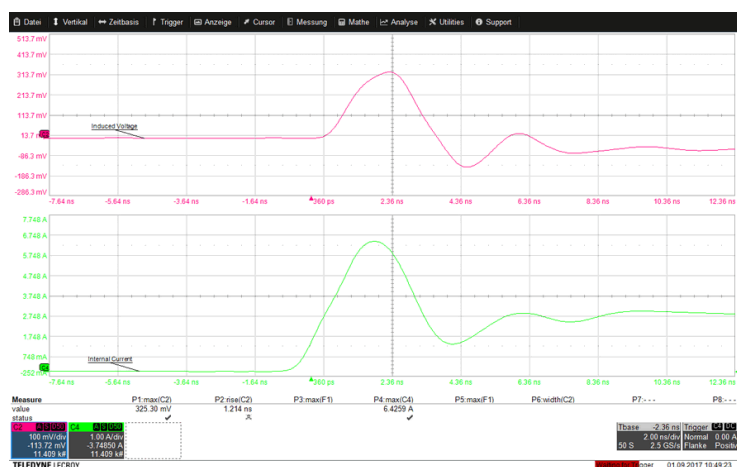


Figure 1: Pulse shape ICI E450 L-EFT

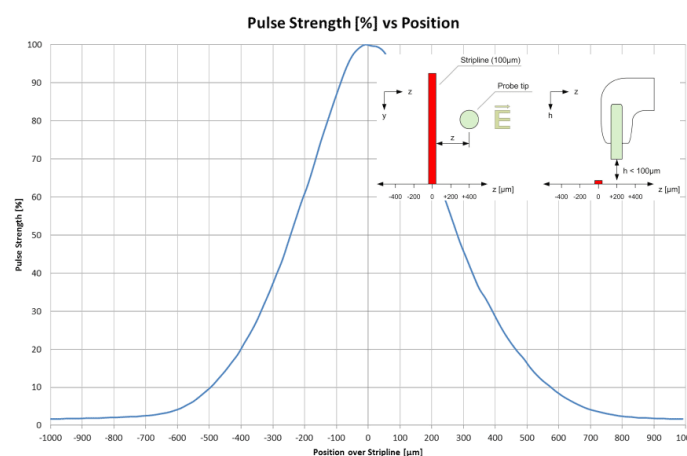


Figure 2: Transverse scan ICI E450 L-EFT

Technical Parameters

| | |
|---|---------------------|
| Probe head dimensions | Ø 450 µm |
| Max. displacement current (Stripline 100 µm) | 7 mA |
| Pulse parameter | |
| Rise time | < 2 ns |
| Repetition frequency | 0,1 Hz - 20 kHz |
| Polarity (set by Software) | + / - / alternating |
| Messausgang | 50 Ω |
| Trigger-pulse delay (Bypass Mode - Delay Line) | |
| min. trigger-pulse delay (typ.) | 70 ns |
| max. trigger-pulse delay (typ.) | 420 ns |
| max. jitter (typ.) | ± 1 ns |
| Supply | BPS 202 |
| Weight | 70 g |
| Sizes (L x W x H) | (26 x 43 x 53) mm |



ICI 1900 L-EFT

Pulse Current Source (FBBI)

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Short Description

The ICI 1900 L-EFT pulse current source couples fast transient pulses into a test IC (Forward body biased injection). This source allows for side channel analysis or testing the immunity of individual areas of the IC.

Curves



Figure 1: Pulse shape (maximum intensity) ICI 1900 L-EFT

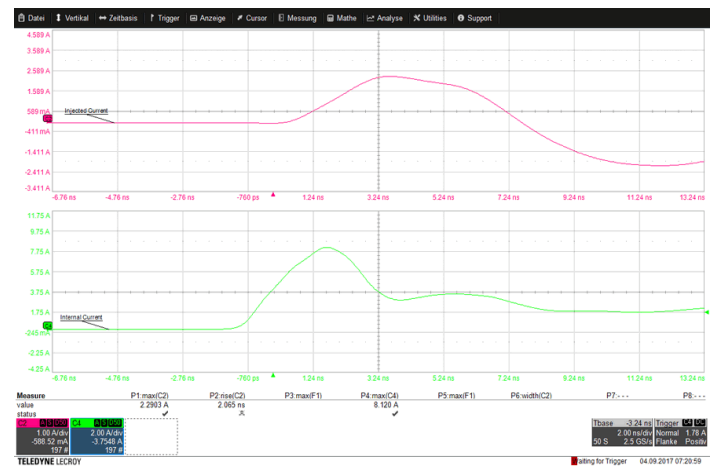
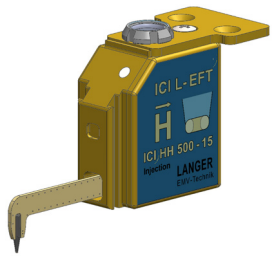


Figure 2: Pulse shape (minimum Intensity) ICI 1900 L-EFT

Technical Parameters

| | |
|---|---------------------|
| Probe head | Spring Pin |
| Max. current (1 Ω load) | 4 A |
| Pulse parameter | |
| Rise time | < 2 ns |
| Repetition frequency | 0.1 Hz - 20 kHz |
| Polarity (set by software) | + / - / alternating |
| Messausgang | 50 Ω |
| Trigger-pulse delay (Bypass Mode - Delay Line) | |
| min. trigger-pulse delay (typ.) | 70 ns |
| max. trigger-pulse delay (typ.) | 420 ns |
| max. jitter (typ.) | ± 1 ns |
| Supply | BPS 202 |
| Weight | 70 g |
| Sizes (L x W x H) | (26 x 43 x 53) mm |



ICI L-EFT Ls

Couple source with extended probe tip



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Short Description

The ICI L-EFT Ls (I900 L-EFT Ls, HH500-15 L-EFT Ls, E450 L-EFT Ls) is manufactured with an extended probe tip according to customer requirements.

- for customer-specific measurement set-up

Technical Parameters

| | |
|--|---------|
| Max. horizontal distance from coil to probe body | 24.5 mm |
|--|---------|

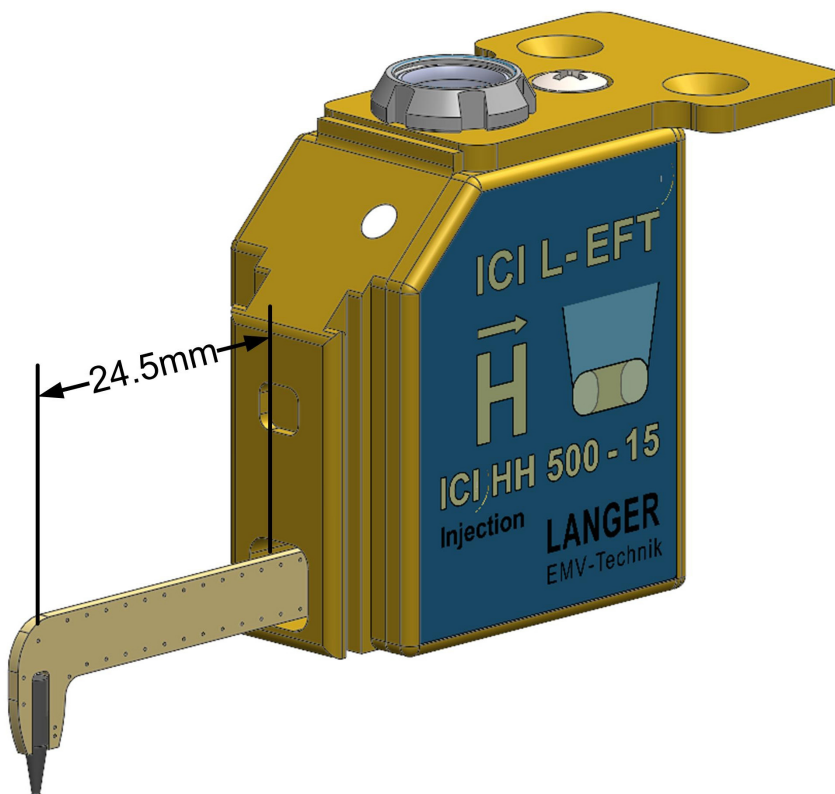


Figure 1: Example of ICI couple source with extended probe tip (schematic)