

These PSPL components are proprietary, passive Impulse Forming Networks (IFNs). They have the unique property of providing an output that is approximately the derivative of the input waveform while also maintaining an excellent impedance match on all ports.



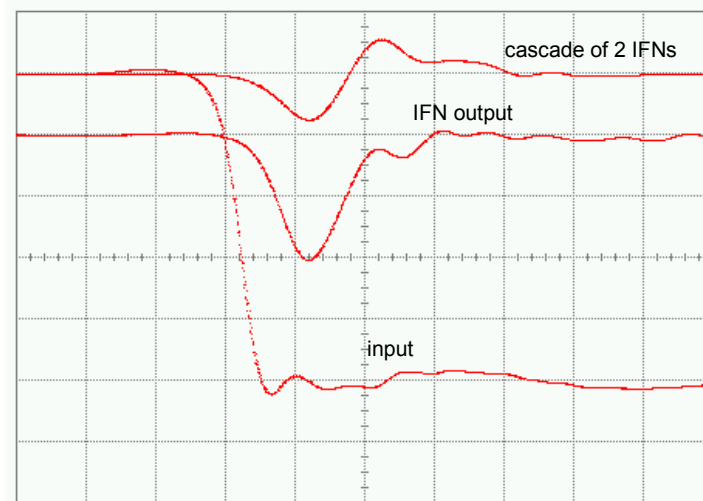
$$V(\text{out}) \approx T_c * dV(\text{in}) / dt$$

Where T_c is the derivative time coefficient. When driven by a step, the output is an impulse. When driven by an impulse, the output is a monocycle. The various models are optimized for use with different input risetimes. A third IFN port is labeled "DC" and terminated in 50Ω . A DC baseline offset, bias voltage, and/or a slower risetime, pedestal pulse may be connected to this DC port. See PSPL Application Note AN-9 for more details.

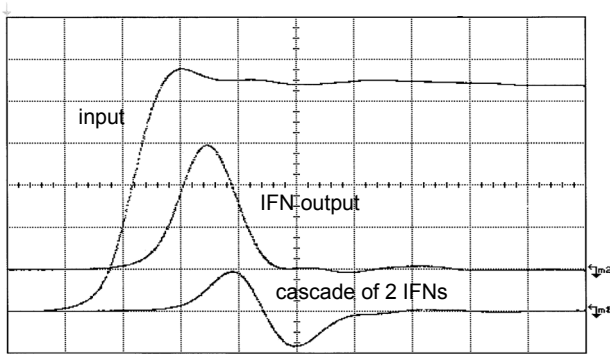
| Model | 5208 | 5210 | 5212A | 5214 | 5216 |
|--|--|------------------------|-------------------------|-------------------------|-------------------------|
| T_c, Derivative Coefficient | 8 ps | 13 ps | 21 ps | 34 ps | 88 ps |
| Min. Recommended Input Risetime [1] | 15 ps | 25 ps | 40 ps | 60 ps | 150 ps |
| Impedance | 50 Ω , $\pm 2 \Omega$ (DC), all models | | | | |
| Reflection Coefficient (35 ps TDR) | -6%, $t < 200$ ps | -3% $t < 200$ ps | -10% $t < 200$ ps | 12% ptp $t < 500$ ps | 10% ptp $t < 600$ ps |
| Max CW Input Power | $\frac{1}{2}$ Watt, all models | | | | |
| Connectors | 2.9 mm | SMA | SMA | SMA | SMA |
| Warranty | One year. See Terms and Conditions of Sale for details | | | | |
| Recommended PSPL Pulse Generator | 4015D -5 V, 12 ps | 10,050A 10 V, 45 ps | 10,070A 7.5 V, 65 ps | 4500E 35 V, 100 ps | 10,300B 50 V, 300 ps |
| Resultant Output | -2 V | 2.5 V | 2 V | 10 V | 11.5 V |
| Impulse from IFN | 20 ps | 50 ps | 80 ps | 135 ps | 350 ps |

Note:

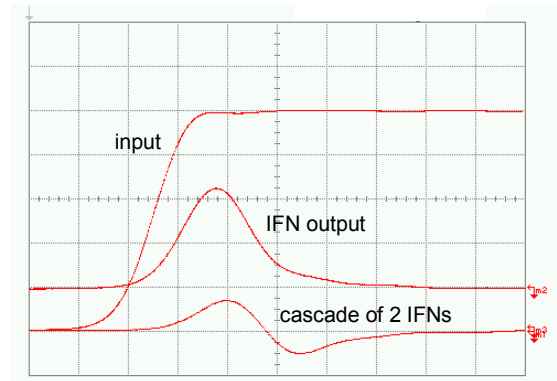
[1] Do not use with faster risetimes as the output waveform is no longer the derivative of the input but will also contain ringing.



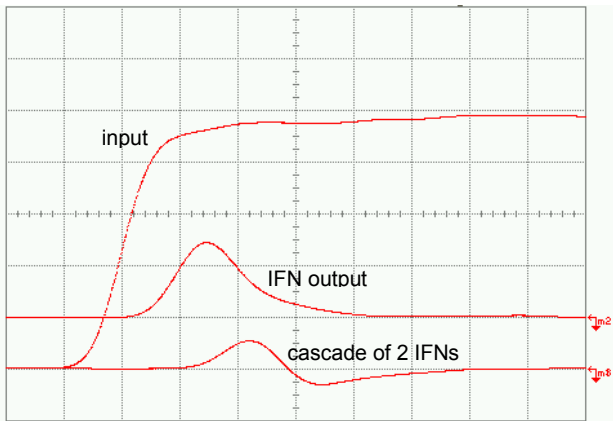
5208 IFN, 20 ps/div
5.10 V, 11.3 ps Step Input, 2 V, 20 ps Impulse and
1.3 V ptp, 13 GHz Monocycle Outputs



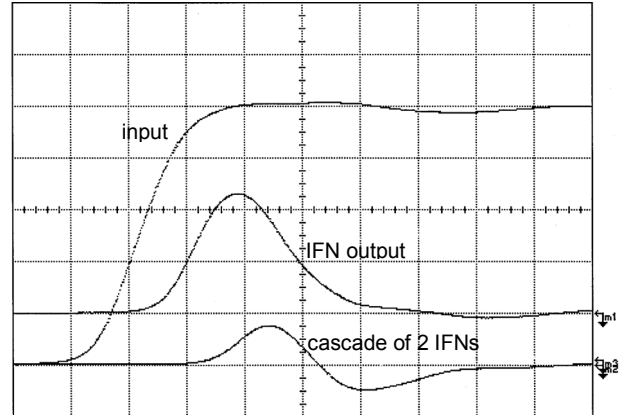
5210 IFN, 50 ps/div
10 V, 45 ps Step Input from PSPL 10,050A Pulse Gen.
2.7 V, 50 ps Impulse and
1.7 V ptp, 6.5 GHz Monocycle Outputs



5212A IFN, 50 ps/div
10 V, 65 ps Step Input from PSPL 10,070A Pulse Gen.
2.9 V, 80 ps Impulse and
1.6 V ptp, 4 GHz Monocycle Outputs



5214 IFN, 100 ps/div
34 V, 129 ps Step Input from PSPL 4500E Pulse Gen.
10 V, 130 ps Impulse and
5.9 V ptp 2 GHz Monocycle Outputs



5216 IFN, 200 ps/div
50 V, 300 ps Step Input from PSPL 10,300B Pulse Gen.
11.5 V, 350 ps Impulse and
6.2 V ptp 700 MHz Monocycle Outputs

Ordering Information

| Model Number | Connector Configuration |
|--------------|--------------------------------------|
| 5208-218 | 2.92 mm jacks (f) on In, Out, and DC |
| 5210-104 | SMA jacks (f) on In, Out, and DC |
| 5212A-104 | SMA jacks (f) on In, Out, and DC |
| 5214-104 | SMA jacks (f) on In, Out, and DC |
| 5216-104 | SMA jacks (f) on In, Out, and DC |