

Programmable Pulse Generator [PPG]

- Access to All DUT Pins
- Pulse Height Controlled by VFIF or VF
- Voltage Clamp when Opening Links
- 300Ω or 1500Ω Source Resistance
- Indefinite Short Circuit Protection
- Voltage Overload Protection

The programmable pulse generator (PPG) augments pulsing capability of Reedholm VF and VFIF programmable sources. Pulses as short as 1msec can be generated by a VF or VFIF without special software, but their designs do not permit much shorter ones. With a PPG, single or multiple pulses up to 30V can be generated with 300Ω or 1500Ω source resistance.

Operation

In figure 1, a universal timer/counter controls a high-speed switch that shunts voltage from a VF or VFIF to ground for 0V output, and opening to provide a pulse whose height is set by the VF or VFIF output voltage. When a VFIF is used as the source, it is programmed to 100mA on the 100mA range to keep overshoot to <5%.

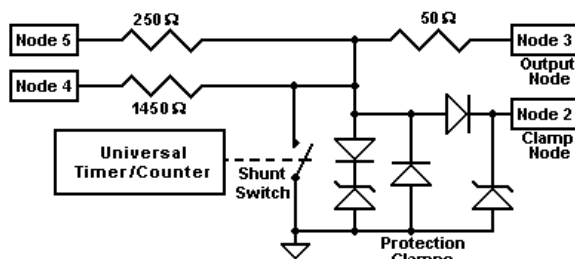


Figure 1 - PPG Block Diagram

Output impedance is determined by node selection. When the bias source is on node 4, source resistance is 1500Ω. When node 5 is used, source resistance is 300Ω. PPG output pulses are placed on node 3.

Specifications (18°C ≤ T _A ≤ 28°C)	
Pulse Width	1 to 65,533μs in 1μs steps (1)
Pulse Period	3 to 65,535μs in 1μs steps (2)
Total Pulses	1 to 65,535 in steps of one (3)
Pulse Risetime	~100ns for 300Ω; ~500ns for 1500Ω (4)
Pulse Height	50mV to 30V; overshoot is <2%
Clamp Voltage	<36V (5)
Output Impedance	Selectable: 300Ω or 1500Ω

1. Maximum error: ±(0.1% of value + 1μs at start of transition)
2. Pulse period must be 2μs > pulse width
3. Maximum pulse count error: ± 1 count
4. In RI-40 system with 36" PAC
5. Unless clamp source set to lower voltage

Programmable Clamp

If the PPG is used to open links or fuses, the voltage immediately following opening might be too high for the device under test. To limit the voltage, another supply is attached to node 2 as a programmable clamp.

Pulse Trains

In addition to providing single pulses, the PPG can be used to produce series of pulses that are accurate within one count. All pulses in a train are the specified width except the last one that could be zero width.

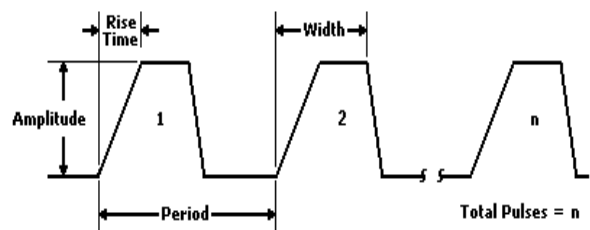


Figure 2 - Pulse Train

Protection Zeners

So that improper node connections cannot result in catastrophic PPG damage, high power, 36V zener diodes limit voltage at the highest possible currents.