Model 8282-1 Transient Pulse Generator

**for conducted transient susceptibility testing,
0.15 µS - 5.0 µS - 10.0 µS up to 600 V (peak)**

DESCRIPTION

APPLICATION
The Solar Model 8282-1 Transient Pulse Generator was designed for screen room use in making conducted spike susceptibility tests. It provides all the waveshapes required by MIL-STD-461B/C and many other military EMI specifications. The generator will meet the testing requirements of NEMA TS 2-2003, Version 02.06, sections 2.1.6.1 and 2.1.7. **The Model 8282-1** is not suitable for RTCA/DO-160G Section 17 (**see Solar Model 7054-2**) or MIL-STD-461F CS106 (**see Solar Model 2854-2**).

DESCRIPTION
Spike generators required for susceptibility testing have been our specialty since 1962, when our first unit, the **Solar Model 6254-1**, was introduced. The **Model 8282-1** incorporates all the flexibility and technical excellence of the previous models and provides features required by specification MIL-STD-461B/C.

Three different spike durations are provided: 0.15 µS, 5.0 µS, and 10.0 µS. The pulse shape approximates the curve of Figure 1 in MIL-STD- 462. The amplitude of the spike voltage is fully adjustable and is displayed on a digital meter.

Two sets of output terminals allow either parallel or series injection into the power line. Series injection is used on AC lines. Parallel injection is used on DC lines. The output winding used for series injection can carry 25 A of power current. The output terminals are isolated from the chassis and the power cord.

The repetition rate of the spike can be adjusted with a panel control to any rate from 0.5 to 50 pulse per second. A single pulse can be injected with the aid of a panel-mounted pushbutton.

All functions are selected by pushbuttons which are lighted when activated.

The **Solar Model 8282-1 Transient Pulse Generator** provides up to 600 V peak amplitude for each of the 0.15, 5.0 and 10.0 µS spikes. The output voltage rises steeply to peak amplitude as adjusted by the panel control, then falls exponentially to cross through zero at the duration of 0.15, 5.0, or 10.0 µS as selected by pushbuttons. The voltage falls below zero and "rings" for a period determined by the inductance in the output circuit or the load.

With series injection on 50, 60 or 400 Hz power lines, the spike can be applied to either the positive or negative half cycle of the power frequency sine wave. The spike can be adjusted to fall on the power sine wave from 0° to 360° . For non-

synchronous injection, the repetition rate can be adjusted from 0.5 to 50 p.p.s.

A pushbutton enables the "single spike" feature and the spike can be manually triggered by pushing another button. A connector on the rear panel makes provision for remote triggering of the single spike feature.

Two methods of remote triggering are provided. One method requires the application of 24 V DC to trigger the pulse at rates determined by an external switch up to 50 pulse per second. The second method requires the application of a square wave which can be used to trigger the spike up to 50 pulse per second for the 0.15 µS spike and up to 1000 pulse per second for the 5.0 and 10.0 µS spikes. This latter feature can be used to trigger the spike in sync with some function within the equipment under test.

FEATURES

- Provides outputs up to 600 V peak amplitude for the 0.15, 5.0 and 10.0 µS spikes into a 5 Ω resistive load (low source impedance).
- A wide range of repetition rates allows spike injection in terms of the pulse rates of items being tested.
- The single pulse feature enables controlled isolation of transient effects.
- Adjustable pulse position on AC power lines relates the transient susceptibility to the real time aspects of digital circuitry served by AC power.
- Transients can be injected in synchronism with repetitive circuit functions as required by Method CS06 of MIL-STD-462.
- Remote triggering of single or repetitive pulses in terms of particular system characteristics.
- The upper terminals of the PARALLEL pair and the SERIES pair provide a positive-going spike on the 5 µS and the 10 µS modes. These terminals deliver a negative-going spike in the 0.15 µS mode. When the test plan requires both a positive and a negative spike, it is necessary to reverse the connections to the output terminals of the **Solar Model 8282-1 Transient Pulse Generator.**

SPECIFICATIONS

Spike durations: Pushbutton selectable durations of 0.15 µS, 5.0 µS and 10.0 µS (±20%) to zero crossover, into 5.0 Ω resistive load

Adjustable peak amplitude: Up to 600 V for 0.15 µS, 5.0 µS and 10.0 µS durations into 5 Ω non-inductive load

Internal impedance: Less than 5.0 Ω for 0.15 µS, less than 2.0 Ω for 5.0 µS, less than 1.0 Ω for 10.0 µS

Pulse repetition rate: Manually adjustable up to 50 pulse per second for all pulse durations

Pulse shape: Ringing characteristic similar to Figure 19 in MIL-STD-462 when connected to non-inductive load

Pulse position: Adjustable from 0° to 360° on 50 Hz, 60 Hz or 400 Hz power lines

External sync operation: Remotely triggerable up to 50 pulse per second for 0.15 µS, up to 1000 pulse per second for 5.0 and 10.0 µS

Amplitude display: Panel meter is a digital display of peak amplitude as it would be into a 5 Ω resistive load

Power current in series injection mode: Handles up to 50 amperes of EUT current at power frequencies

Power requirements: 115 V 60 Hz, 3.0 A (230 V 50 Hz, 1.5 A available)

Dimensions: 12.25" wide x 8.7" high x 13" deep (311 mm x 211 mm x 330 mm)

Weight: 30 pounds (13.6 kg)

FIGURES

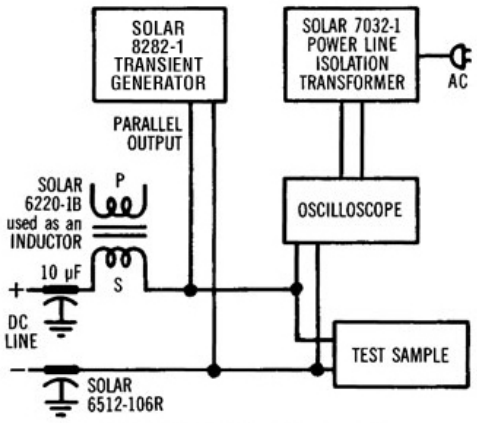

FIG. 1 – PARALLEL INJECTION ON DC LINE

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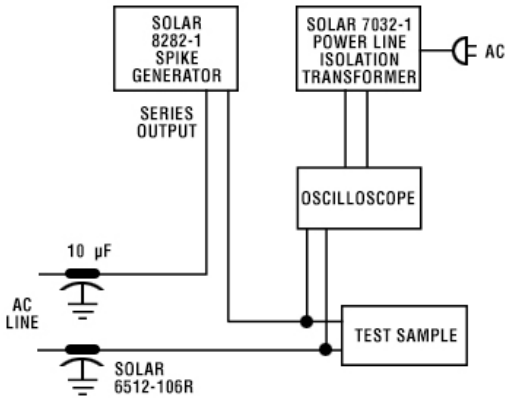

FIG. 2 – SERIES INJECTION ON AC LINE

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USEFUL ACCESSORIES

Solar Type 6220-1B Audio Isolation Transformer

Solar Type 6512-106R 10 µF Feed-Thru Capacitor

Solar Type 7032-1 Isolation Transformer

Solar Type 7115-2 High Voltage Pulse Transformer
Plugs into SERIES output terminals to provide transient levels up to 15 kV, peak, into **Type 7510-1 Spark Gap** assembly for static discharge tests.

Solar Type 8282-150 Transient Pulse Transformer
Plugs into SERIES output terminals. Handles up to 150 A through the secondary for high current test samples.

Solar Type 8525-1 Non-Inductive 5 Ω Load

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To meet the needs of our clients, Solar Electronics Company engineers are in the lab every day. If you don't see a Solar product that suits your application, please send us your specifications so we can provide a solution.

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