Model TD2000 Ultra Fast Timing Discriminator with GHz LE operation

FEATURES
- -2.0 to +3.0V input range
- ±1.25V input threshold range
- GHz operation capability
- 750ps min. output pulse width
- Four outputs
- Fast VETO input
- Shaped output pulse widths <1ns to >350ns
- Unshaped output bandwidth 2.4GHz (3dB)

APPLICATIONS
- Ultra high count rate Single Photon Counting
- LIDAR
- TOF Mass-Spectrometry
- Ultra high count rate Multiscaling

DESCRIPTION
Probably the fastest leading edge discriminator available today. The unshaped outputs can be used at rates in the GHz range (ref. Fig 3). A fast NIM VETO input provides for inhibiting the shaped outputs. The fast NIM outputs exhibit fall times of <200ps. The shaped fast NIM output has a minimum pulse width of typ. 750ps only. Even the positive output has a fast rise time of approx. 500ps. Thus, pulse widths as low as 2ns can be achieved at full amplitude.

SPECIFICATIONS

General:
Input to unshaped output delay: approx. 1.7ns
Input to shaped output delay: approx. 3.3ns

Inputs:
Signal: BNC, 50Ω, direct coupled, -2.0 to +3.0V, sensitivity <10mV, slew rate requirement >5V/µs
Threshold: ±1.25V, 10-turn precision potentiometer, 2mm monitor test point for voltmeters
Veto: BNC, 50Ω, direct coupled, -300mV threshold, fast NIM compatible, slew rate requirement >5V/µs

Outputs:
Unshaped: 2x BNC, 50Ω back-terminated, fast NIM current mode, -16mA into external 50Ω, inverting & non-inverting, 2.4GHz (3dB) bandwidth

Fig 1: Input sensitivity
Fig 2: FAST NIM attenuation (dBc)
Shaped: 2x BNC, pulse width 10-turn screwdriver adjustable, <1ns to >350ns, input edge sensitivity rising/falling switch selectable
a) 1x negative fast NIM current mode, 50Ω back-terminated, -16mA into external 50Ω, 400MHz continuous rate
b) 1x positive voltage follower mode, $V_{CL} < 0.5V, V_{CH} > +2.0V$ into external 50Ω (for widths > 2ns)

**Physical:**
- Case: extruded aluminium sheath Al Mg Si 0.5
- Lid: die cast, GD-Al Si 12
- Size: 121/153 x 142 x 37 mm
- Weight: 500 g

**Power Requirements:**
- Connector: 2.1 mm center pin
- Supply Voltage: nominal +12V, voltage range +10 ... +18V
- Supply Power: 6W
- Reverse polarity protected

**Absolute maximum ratings:**
- Supply: 25V (100ms max.)
- Signal input: -3V ... +4.0V
- EDS rating 1,500V HBM

**Accessories:**
- External wall power supply (included)
- Precision screwdriver (included)

Oscilloscope shots are taken with a 14 GHz sampling head