

FEATURES:

- Highly versatile CSA
- Simple connection and operation
- Accepts either input polarity
- Selectable output polarity
- Internal or external feedback
- Adjustable DC output offset
- High stability and low noise
- Hermetically sealed metal package
- Low cost and compact size
- Demo boards available

APPLICATIONS:

- Photomultiplier tubes
- Photon-counting systems
- Neutron detectors
- Spectrometry and counting systems



Table 1 - ABSOLUTE MAXIMUM RATINGS

Name	Value
Supply voltage, Vs	± 16 V
Input voltage	$\pm V_s$
DC offset voltage	$\pm V_s$

Table 2 - SPECIFICATIONS

Name	Min.	Recommended/ Set-point	Max.
Supply voltage, Vs	± 5 V		± 15 V
Internal feedback, Cf		330 pF	
Internal feedback, Rf		150 k Ω	
Unity-gain bandwidth		26 MHz	
Current consumption, no-load			15 mA
Weight, g			7

Table 3 - PIN CONFIGURATION

Pin #	Identification	Assignment
1	INV_IN	Non-inverting signal path
2	NINV_IN	Inverting signal path
3	PA1_OUT	Polarity selection / feedback input B
4	FB_B_OUT	Internal feedback output B
5	FB_A_OUT	Internal feedback output A
6	FB_A_INPUT	Feedback input A
7	OFFSET_INP	Offset voltage input; connect to GND if unused
9	-Vss	Negative power supply
10	+Vcc	Positive power supply
11	INPUT ⁽¹⁾	Input
13	OUT	Signal output
8,12,14, 15	GND	GND

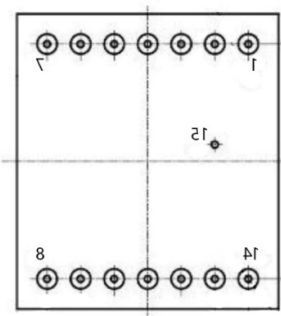


Fig. 1. Pin assignment, bottom view.

(1) When using the PMT with a positive high-voltage supply, a high-voltage DC blocking capacitor is mandatory; see Fig. 4.

FUNCTIONAL DIAGRAM AND CONNECTIONS

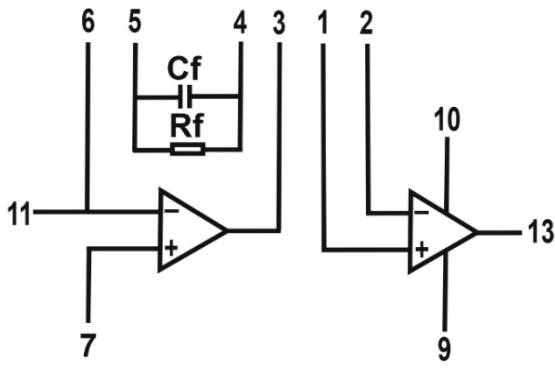


Fig. 2. Functional diagram with pin numbers.

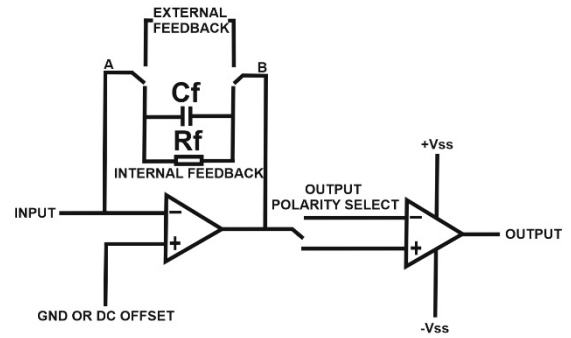


Fig. 3. Connection diagram.

CONNECTION TO A PMT

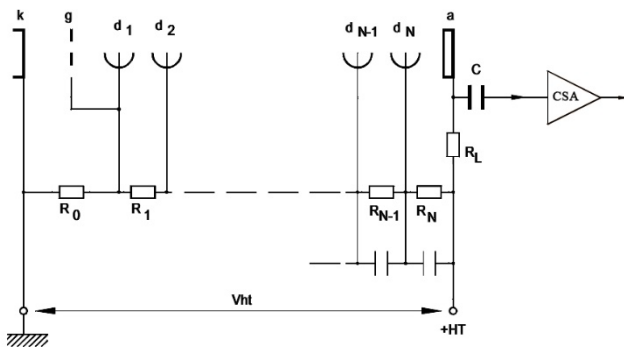


Fig. 4. u-CSA and PMT connection diagram with positive high-voltage supply.

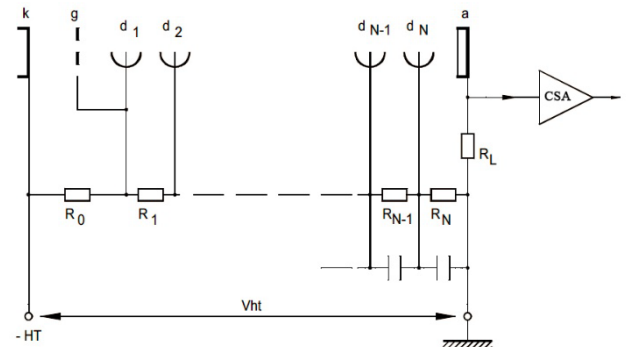


Fig. 5. u-CSA and PMT connection diagram with negative high-voltage supply.

PMT u-CSA EVM

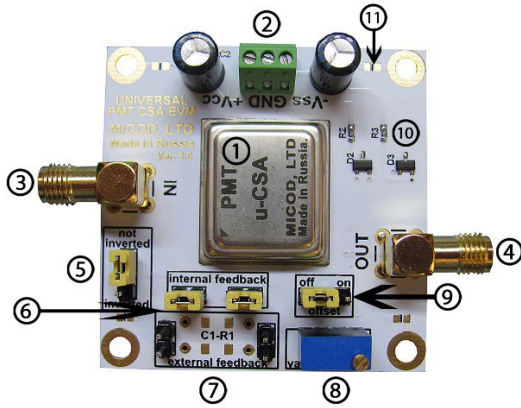


Fig. 6. EVM board.

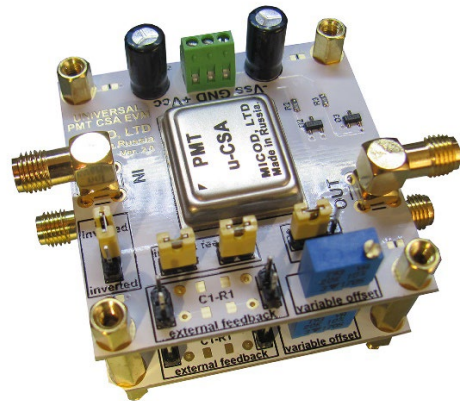


Fig. 7. Multichannel setup.

- 1 Universal CSA (u-CSA);
- 2 Power-supply connector (+Vcc, GND, -Vcc);
- 3 Signal input (SMA);
- 4 Signal output (SMA);
- 5 Output polarity selector;
- 6 Internal feedback selector;
- 7 External feedback selector and external feedback network C1-R1;
- 8 DC offset precision potentiometer;
- 9 DC offset signal selector;
- 10 Shunt voltage reference for offset circuit;
- 11 Mounting-hole GND connection; connect each mounting hole to GND separately, four holes total.

PMT u-CSA & SA EVM

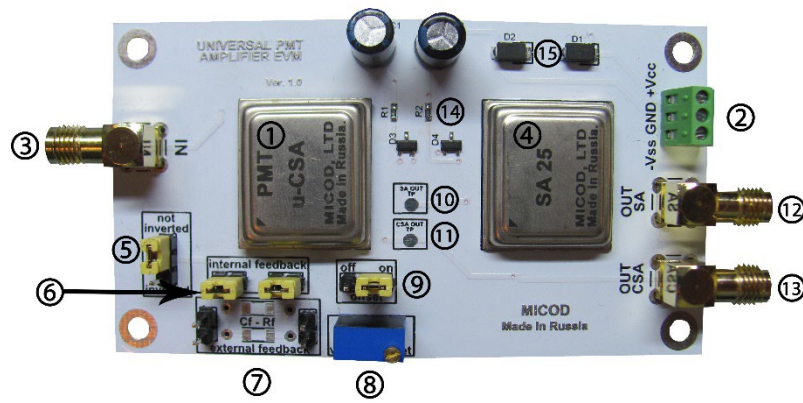


Fig. 8. EVM board.

- 1 Universal CSA (u-CSA);
- 2 Power-supply connector (+Vcc, GND, -Vcc), MAXIMUM VOLTAGE: ± 5 V;
- 3 Signal input (SMA connector);
- 4 SHAPER AMPLIFIER;
- 5 u-CSA output polarity selector;
- 6 Internal feedback selector;
- 7 External feedback selector and external Cf-Rf feedback network;
- 8 DC offset precision potentiometer;
- 9 DC offset signal selector;
- 10 Test point - SHAPER AMPLIFIER output signal;
- 11 Test point - u-CSA output signal;
- 12 SHAPER AMPLIFIER output signal (SMA);
- 13 u-CSA output signal (SMA);
- 14 Shunt voltage reference for offset circuit;
- 15 TVS protection diodes;

SETUP INSTRUCTIONS

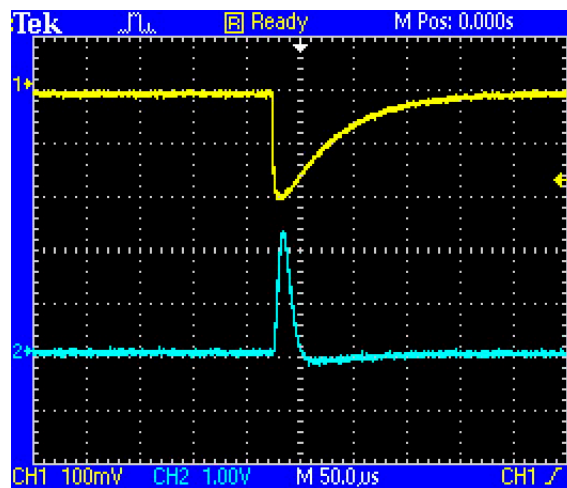


Fig. 9. Output signals

Yellow trace: u-CSA signal. Blue trace: SHAPER AMPLIFIER signal.

- 1 After power-up, use the polarity selector (5) to set the u-CSA output pulse polarity to negative; see Fig. 9.
- 2 Set the DC offset signal selector (9) to ON.
- 3 Using the DC offset precision potentiometer (8), set the DC offset voltage to +2.0 to +2.5 V.
- 4 Select external feedback (7) and empirically select the Cf-Rf feedback network so that the SHAPER AMPLIFIER does not saturate. Example: $C_f = 4.7$ nF, $R_f = 10$ k Ω .

PACKAGE DIMENSIONS AND MARKING

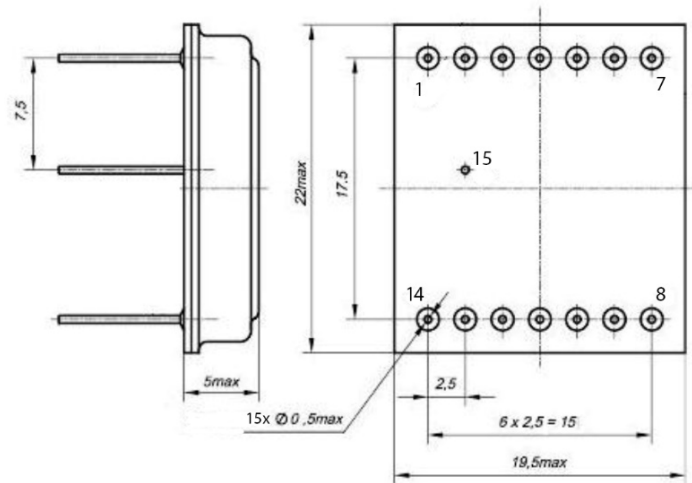


Fig. 10. 153.15-2 case drawing.

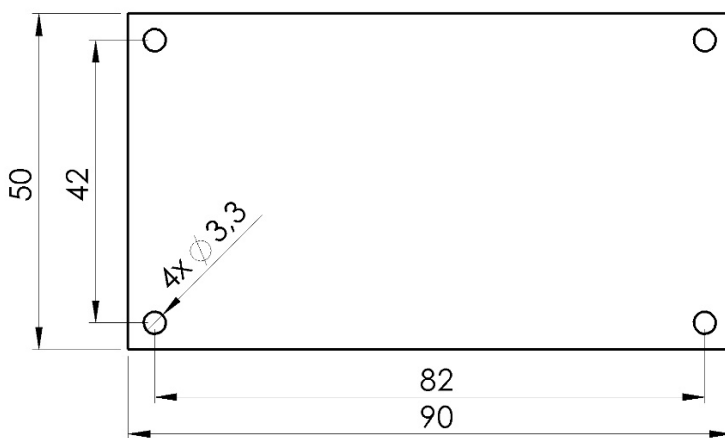


Fig. 11. PMT u-CSA & SA EVM board dimensions.

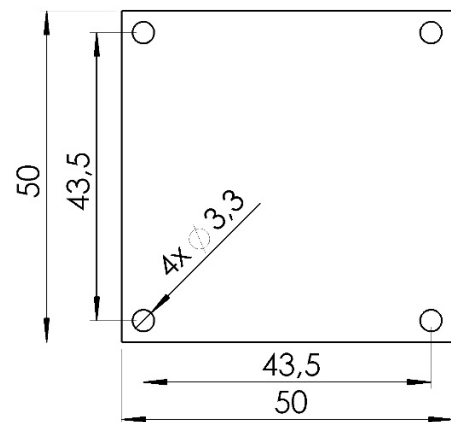


Fig. 12. PMT u-CSA EVM board dimensions.

Website: <https://shmytov.com>

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