1 DESCRIPTION

The HPMT is a proximity focused vacuum tube having a photocathode deposited on a Quartz input window and a Silicon PIN diode which is biased in reverse as an anode. As a function of their energy, which is determined by the high voltage applied to the photocathode, a number of electron-hole pairs is generated in the silicon causing a reverse current to flow. The unit can be used in high magnetic fields.

2 Major features

- more than 8 orders of magnitude linearity
- fast response
- good response uniformity
- high gain stability in time
- gain linear with high voltage
- insensitive for high magnetic fields
- high QE for UV

3 SPECIFIC DATA

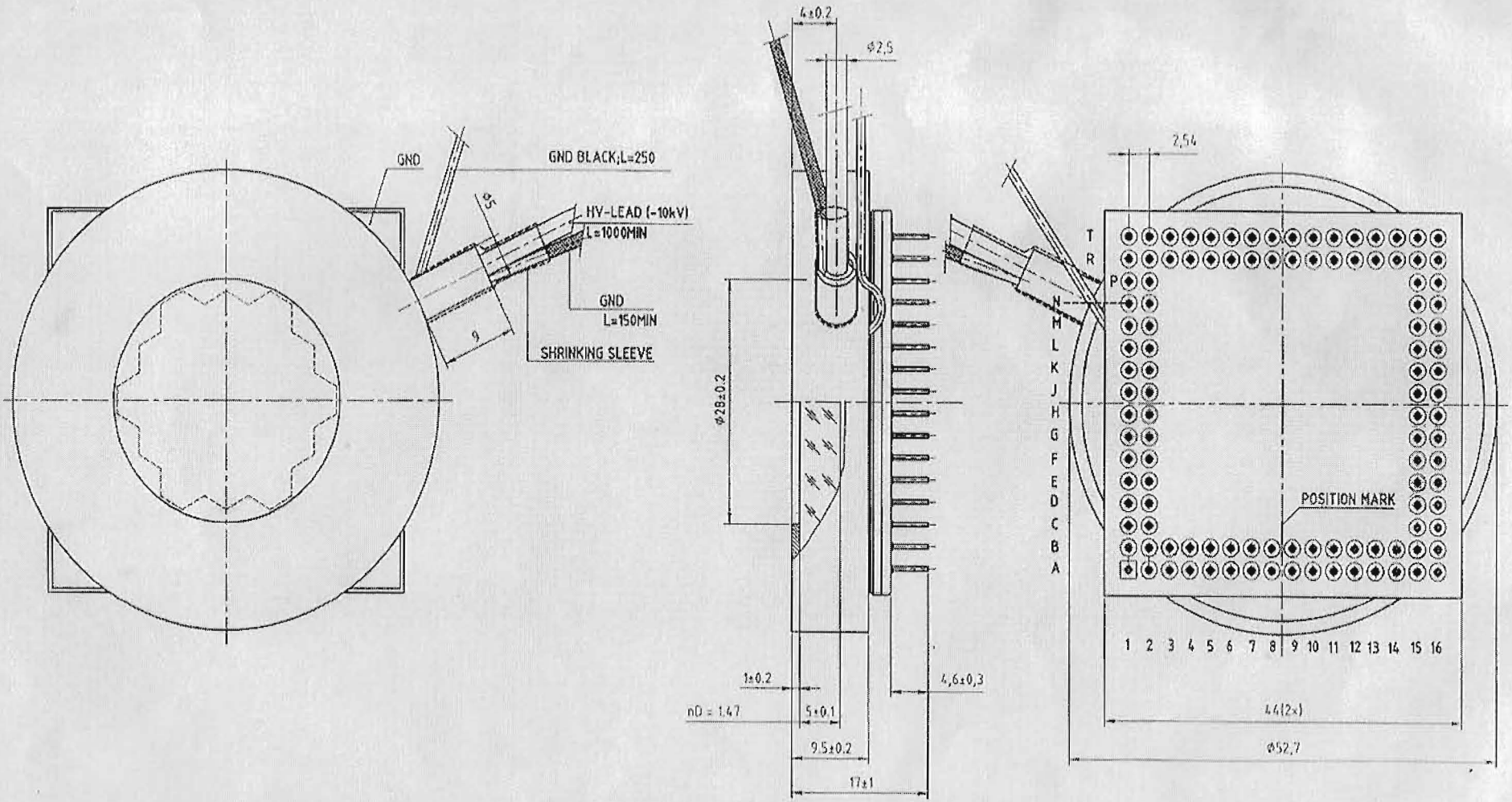
	Minimal	Typical	Maximal	Unit
3.1 Photo cathode				
Useful input diameter		25		mm
Input window: Quartz				
Photocathode: S20-UV				
Cathode sensitivity at:				
200 nm	40	50		mA/W
240 nm	40	50		mA/W
270 nm	55	65		mA/W
400 nm	60	70		mA/W

	Minimal	Typical	Maximal	Unit
Quantum efficiency at:				
200 nm	24.8	31		%
240 nm	20.7	26		%
270 nm	25.3	30		%
400 nm	18.6	22		%
Current gain at -12 kV		2700		
Operating Voltage	-6		-12	kV
Operating temperature	-20		+45	°C

3.2 Diode	Minimal	Typical	Maximal	Unit
PIN diode, T-type:				
Active area		490		mm^2
Depletion depth		300		microns
Silicon resistivity	4000	5000	12000	Ohm.cm
Capacitance		201	212	pF
Full depletion voltage	21		52	V
Bias voltage	60	80		V
Permissible bias voltage (voltage at least allowed)	90			V
Breakdown voltage (this voltage will be marked on the tube)*	100			V
Reverse current at 20 °C and typical operating voltage of 80 Volt			70	nA
Pulse performance at typical operating voltage:				
Rise time		5		ns
Fall time		10		ns

* : The breakdown voltage is defined as the voltage at which the noise on the signal starts to increase rapidly and the DC current increases more than linear. The marked breakdown voltage is the maximum allowed bias voltage.

	new	cancelled		new	cancelled
A1	5	6			



SIGNAL : pin F1(MAIN)
T13;T8;T4;P15;R12;R5;P2;L16;L15;G2;G1;C15;B12;B5;C2;A13;A8;A4

CONNECTED TO SENSOR-IN :
T5,M2,E2,A5,A12,E15,M15 AND T12.

CONNECTED TO GUARD RING SEGMENT 1:
A11,B14,E16,M16,R14 AND T11.

CONNECTED TO GUARD RING SEGMENT 2:
M1,E1,B3,A6,T6 AND R3.

OTHER PINS : NOT CONNECTED.

TOLERANCES : TO BE DEFINED.

DEP
DELFT ELECTRONIC PRODUCTS BV

ISO 128	screw thread ISO 965	finish ISO 1302	material:	drawn: AHJM	A0	21-2-02
A3	glass ISO 10110	vorm- en plaatstol. ISO 1101	maateenheid: mm	scale: 2:1	A1	15-4-02

FOTOMULTIPLIER, PP0350
(photomultiplier, PP0350)

sheet: 1 of 1

183-0831A1 TA

with output voltage control and ultra low
output voltage ripple

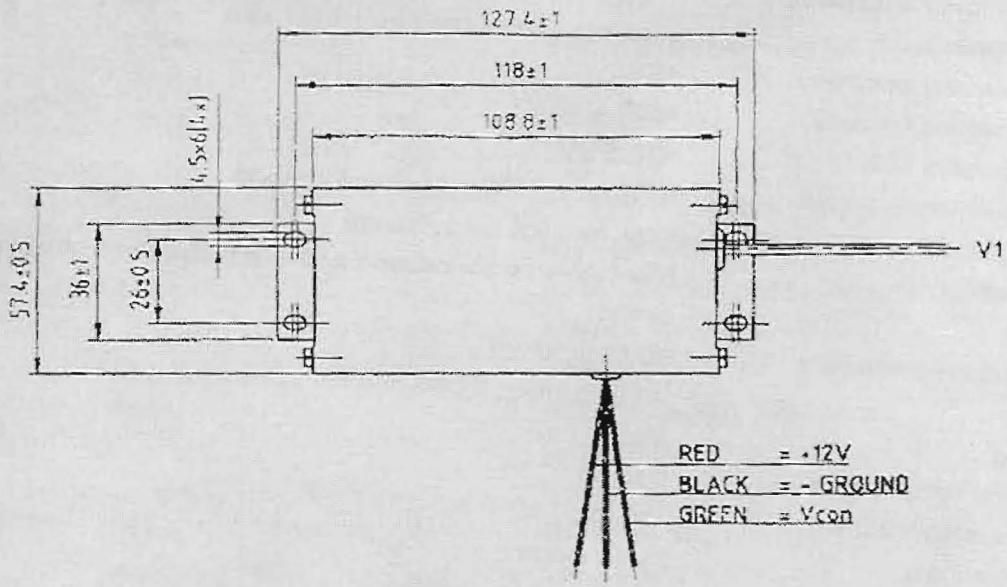
PPO100Z

Input voltage	12V ± 1V
Input current	50 mA max, 35 mA typ.
Output voltage	V1 = -12KV (Vcontrol = 6V / I load = 1 µA)
Vcontrol	0-6 V (Vout = 0-max) — Far as I can tell it draws ~20µA at 5V.
Maximum output current	> 1 µA (max ~10µA) – according to Lear.
Output ripple	ultra low, guaranteed for HPMT use ~0.1% (Lear)
Voltage setting accuracy	<5%
Voltage setting linearity	<500 V of V1
Output voltage limit	<13,5 KV
Line regulation	<1% for + 1V input voltage change
Load regulation	<1% for 10% load change
Protection	Input reverse connection and intermittent output short circuit
Temperature coefficient	<0,01%/°C
Stability	<0,01%/hour, 0,05%/month
Housing	Metal case
Operating temperature	0 to 50 °C
Storage temperature	-20 to 50 °C
Input terminals	flying leads
Output terminals	shielded flying leads

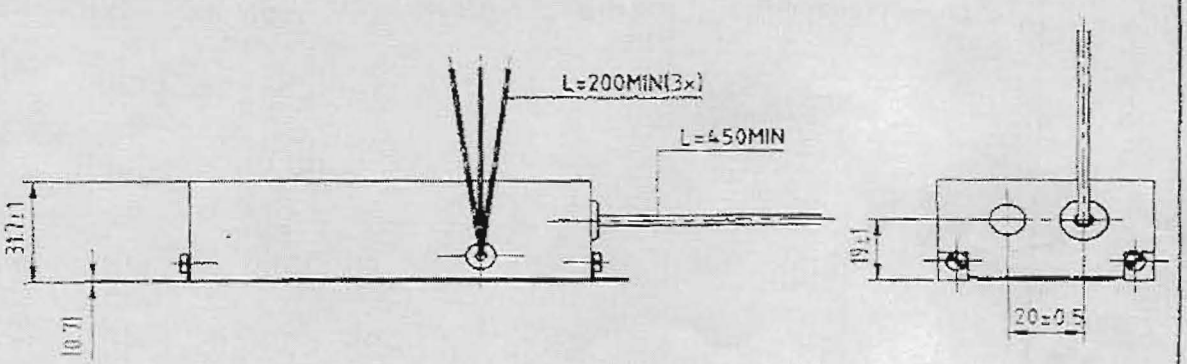
	25-05-1999	get. rdw	gecontr.	gecontr.	gez.	184-1564A4

	nieuw	vervallen	vakmanschap	
A6	red;green	orange;gray	pers.nr.:	paraaf:

				min.	gemeten	max.
A2	TOL.AANGEGEVEN					
A3	11.5±1; 15±1; 35±2	6±1; 14±1				
A4	GEHEEL	GEHEEL				
A5	V1	V1				



RED = +12V
BLACK = - GROUND
GREEN = Vcon



VP
VK

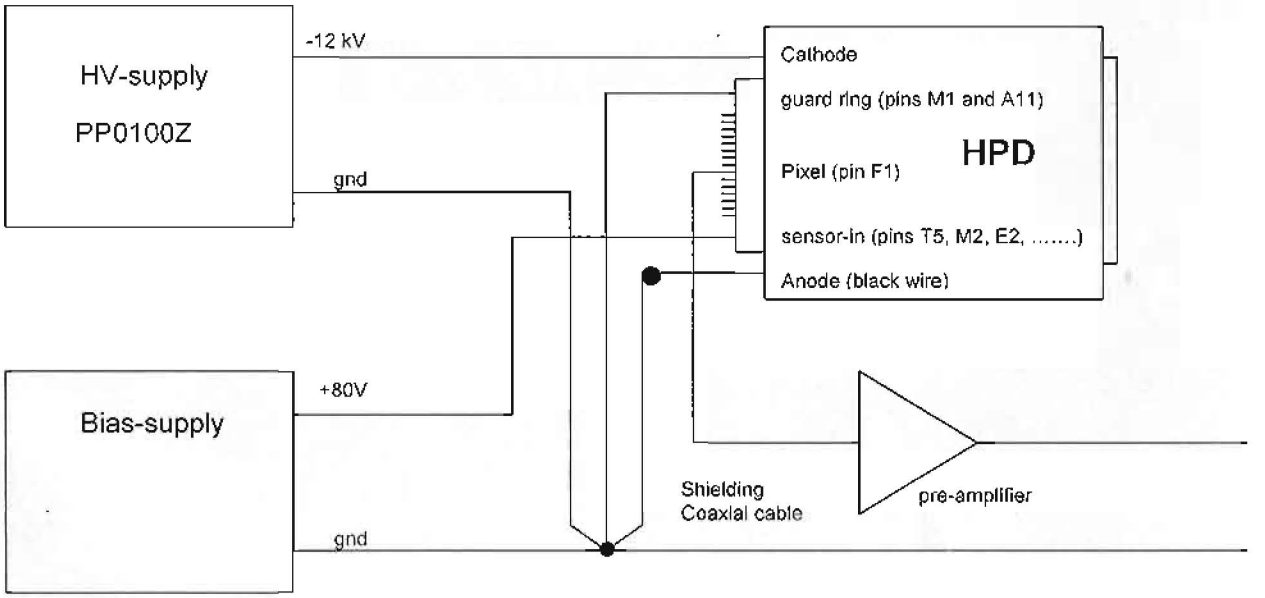
DEP
DELFT ELECTRONIC PRODUCTS BV

ISO 128	schroefdraad ISO 965	ruwheid ISO 1302	materiaal:	get.: Jk	A6 8-6-99
				gec.:	A1 15-3-95
A4 glas ISO 10110	vorm- en plaatstol. ISO TH01	maateenheid: mm	schaal: 1:2	gec.:	A2 29-9-95
				gez.:	A3 24-1-96
				aantal bladen:1 blad:1	A4 13-4-99
					A5 17-5-99

BUISVOEDING 37, PP0100Z
(TUBE POWER SUPPLY 37, PP0100)

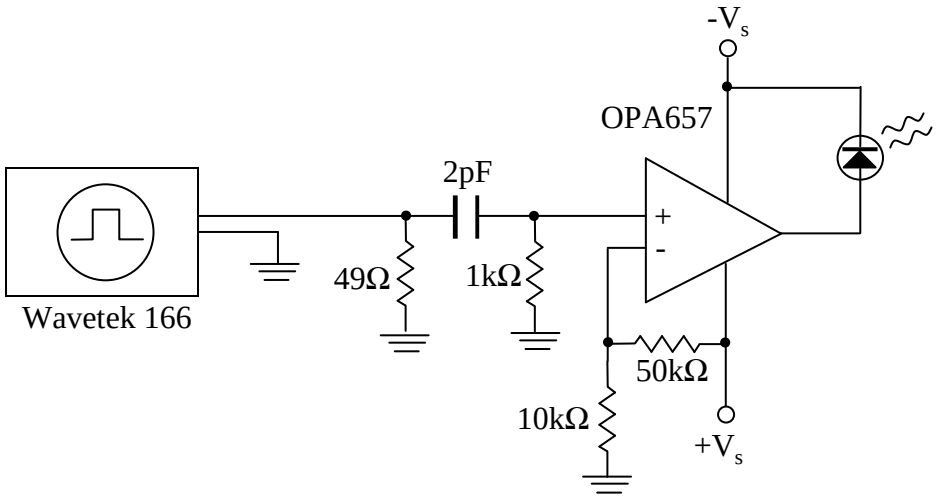
120-0452A6 TA

Connection diagram PP0350P



Bias voltage connections: pins T5, M2, E2, A5, A12, E15, M15 and T12
Guard Ring Segment 1: pins A11, B14, E16, M16, R14 and T11
Guard Ring Segment 2: pins M1, E1, B3, A6, T6 and R3

Fast LED Pulser Schematic Diagram

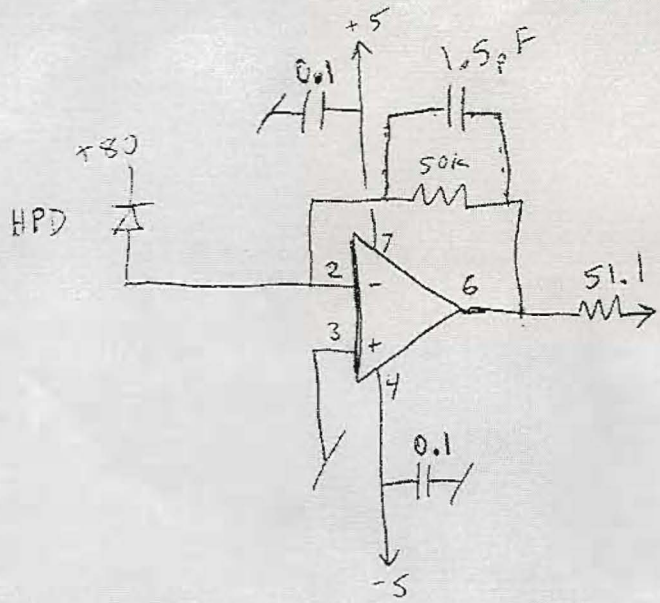


P Smith

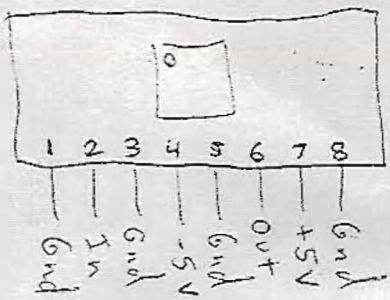
27 Feb 2003

Richard:
← package of 10 included (antistatic pouch). Please protect & return when done.
Thanks, Zisis

OPA 657



1, 5, 8 NC



feedback pole:

$$\frac{1}{2\pi R_F C_F} = \sqrt{\frac{GBP}{4\pi R_F C_D}}$$

$$\frac{1}{2\pi(50k)C_F} = \sqrt{\frac{1.6GHz}{4\pi(50k)\,200pF}} = \sqrt{\frac{1.6\times10^9}{4\pi(5\times10^4)\,200\times10^{-12}}} = \frac{\sqrt{1.6\times10^9}}{\sqrt{4\pi\times10^{-6}}}$$

$$\frac{1}{\pi\times10^5} = \frac{1}{314159.265\,C_F} = 3.568\times10^{-6}$$

$$C_F = \frac{1}{\pi\times10^5\times3.568\times10^{-6}} = \frac{1}{1.121\times10^{-12}} = 8.9\times10^{-13} = \frac{1}{(3.568)\pi\times10^{11}} = .89pF$$

$$f_{-3db} = \sqrt{\frac{GBP}{2\pi R_F C_D}} = \sqrt{\frac{1.6\times10^9}{2\pi(5\times10^4)\,200\times10^{-12}}} \sim 5MHz$$