

# HL6553FG

## Visible High Power Laser Diode

ODE-208-016B (Z)

Rev.2

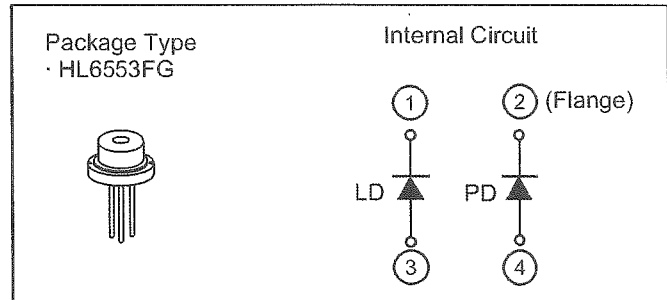
Mar. 13, 2006

### Description

The HL6553FG is a 0.65  $\mu\text{m}$  band AlGaInP laser diode (LD) with a multi-quantum well (MQW) structure. It is suitable as a light source for measurement, and various other types of optical equipment.

### Features

- Optical output power : 120mW CW operation
- Single longitudinal mode.
- Visible light output :  $\lambda_p = 660 \text{ nm Typ}$



Note: This type is preliminary. Therefore, this data sheet may be changed without any notice.

4pin package (FG type) : Isolated LD polarity from flange (stem)

### Absolute Maximum Ratings

( $T_C = 25^\circ\text{C}$ )

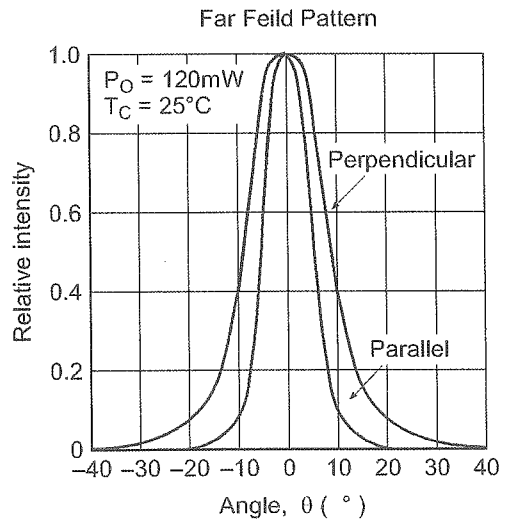
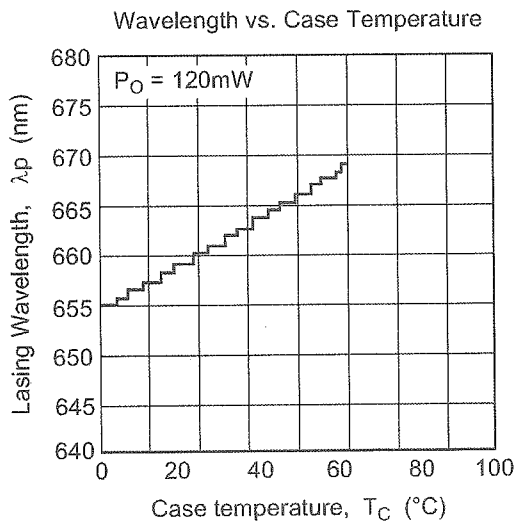
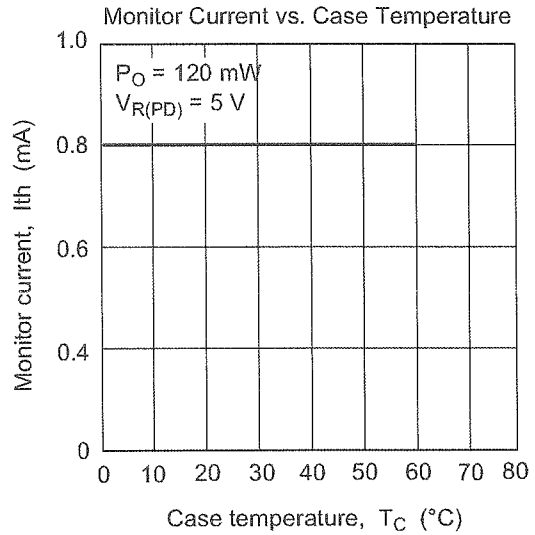
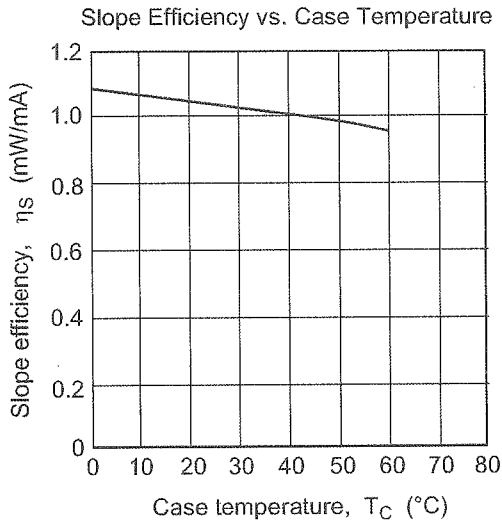
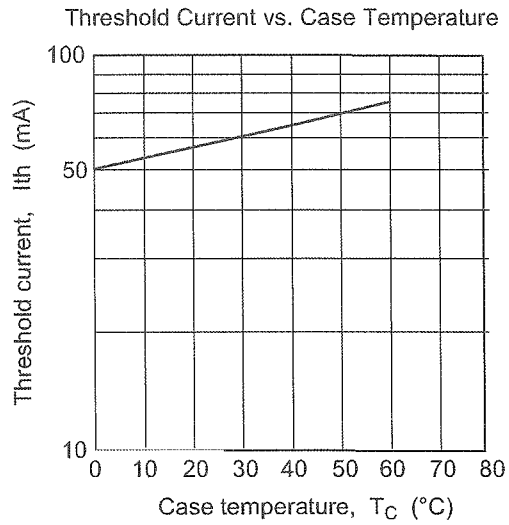
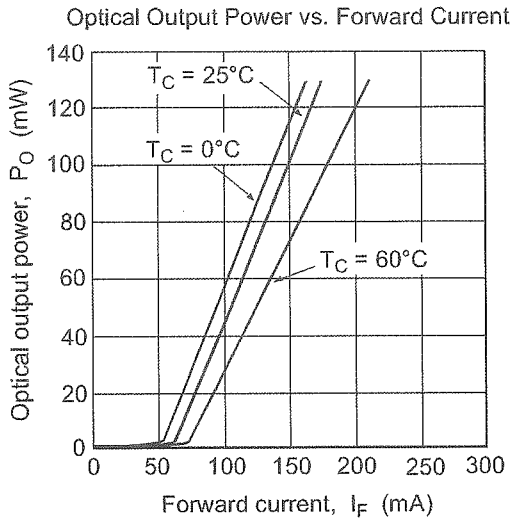
Item	Symbol	Ratings	Unit
Optical output power	$P_O$	130	mW
LD reverse voltage	$V_{R(LD)}$	2	V
PD reverse voltage	$V_{R(PD)}$	30	V
Operating temperature	$T_{opr}$	-10 to +60	$^\circ\text{C}$
Storage temperature	$T_{stg}$	-40 to +85	$^\circ\text{C}$

### Electrical Characteristics

( $T_C = 25^\circ\text{C}$ )

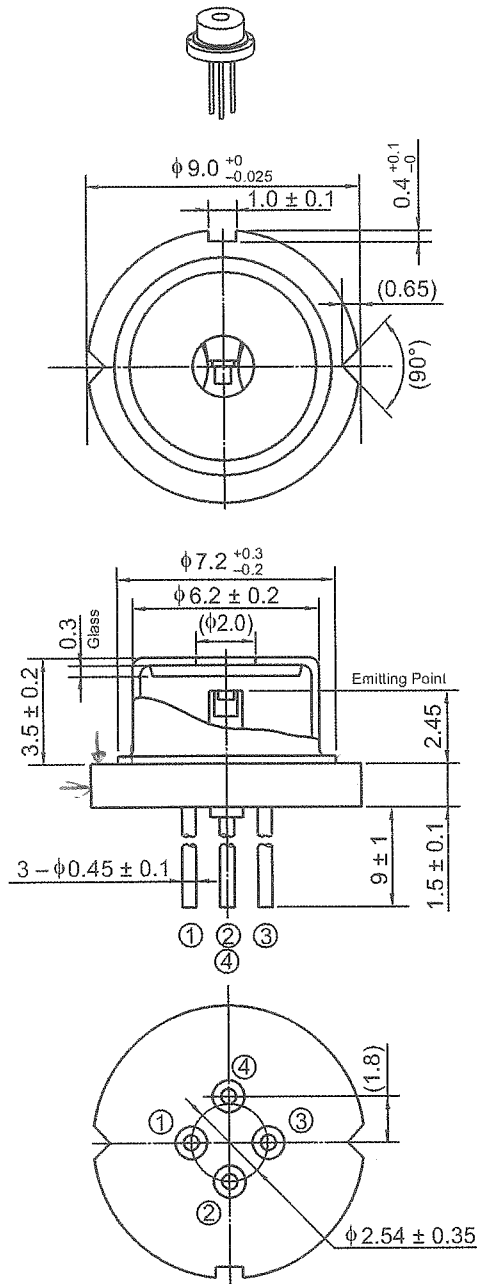
Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Threshold current	$I_{th}$	—	55	70	mA	—
Operating current	$I_{OP}$	—	175	210	mA	$P_O = 120 \text{ mW}$
Operating voltage	$V_{OP}$	—	2.6	3.0	V	$P_O = 120 \text{ mW}$
Lasing wavelength	$\lambda_p$	654	660	665	nm	$P_O = 120 \text{ mW}$
Beam divergence parallel to the junction	$\theta_{//}$	7	10	13	$^\circ$	$P_O = 120 \text{ mW}$
Beam divergence perpendicular to the junction	$\theta_{\perp}$	15	17	20	$^\circ$	$P_O = 120 \text{ mW}$
Monitor current	$I_s$	—	0.8	—	mA	$P_O = 120 \text{ mW}$ , $V_{R(PD)} = 5\text{V}$

Typical Characteristic Curves



Package Dimensions

As of June, 2005  
Unit: mm



OPJ Code	LD/FG
JEDEC	—
JEITA	—
Mass (reference value)	1.1 g

## Cautions

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1. The laser light is harmful to human body especially to eye no matter what directly or indirectly. The laser beam shall be observed or adjusted through infrared camera or equivalent.
2. This product contains gallium arsenide (GaAs), which may seriously endanger your health even at very low doses. Please avoid treatment which may create GaAs powder or gas, such as disassembly or performing chemical experiments, when you handle the product.  
When disposing of the product, please follow the laws of your country and separate it from other waste such as industrial waste and household garbage.
3. Definition of items shown in this CAS is in accordance with that shown in Opto Device Databook issued by OPJ unless otherwise specified.

## Sales Offices

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Partlist V3.21 16-May-89

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Temperaturregelung fuer Laserdiode

Pelt2.SCH

Revised: August 22, 2007

Revision:

FH-Trier

Laserlabor

Prof.Schuth Koster Berres

Bill Of Materials

March 11, 2008

11:12:37

Page 1

Item	Quantity	Reference	Part
1	13	C1, C2, C3, C4, C5, C7, C8, C9, C10, C12, C13, C14, C15	10uF
2	1	C6	4, 7uF
3	1	C11	100nF
4	4	C16, C17, C18, C19	47nF
5	1	C20	1nF
6	2	C21, C22	68uF
7	2	C23, C24	100uF
8	4	D2, D3, D4, D5	D
9	2	D6, D7	5V1
10	2	D8, D9	1N4148
11	1	JP1	AD592
12	1	JP2	DVM
13	1	JP3	MP
14	1	JP4	Pelt
15	1	JP5	Laser
16	1	JP6	UB
17	1	JP7	Opto
18	1	N1	REF02
19	1	Q1	BD243
20	2	Q2, Q5	BC546
21	1	Q3	BC556
22	1	Q4	BD244
23	7	R1, R3, R4, R5, R16, R17, R27	10K
24	2	R2, R7	1K
25	1	R6	9K1
26	1	R8	39K
27	1	R9	10M
28	1	R10	4M7
29	2	R11, R14	5K6
30	2	R12, R13	0, 27
31	1	R15	15K
32	1	R18	22
33	1	R19	3, 9K
34	4	R20, R21, R22, R32	4K7
35	1	R23	22K
36	3	R24, R30, R31	100K
37	1	R25	47K
38	1	R26	120K
39	1	R28	8K66
40	1	R29	100
41	1	R33	1K5
42	6	U1, U2, U3, U4, U5, U6	TL081
43	1	U7	4011
44	1	U8	OP07

Partlist V3.21 16-May-89

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Laserdiodenregelung fuer HL6553FG 120mW

Laser2.SCH

Revised: August 22, 2007

Revision:

FH-Trier MB

Laserlabor

Prof.Schuth Koster Berres

Bill Of Materials

March 10, 2008

13:33:26

Page 1

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2	2	C2, C3	4,7uF
3	1	C4	47uF
4	1	C5	10uF
5	1	C6	1uF
6	1	D1	1N4004
7	1	D2	1N4148
8	2	JP1, JP2	Jump
9	1	JP3	Laser
10	1	JP4	Term
11	1	Q1	BD139
12	3	Q2, Q3, Q4	BC556
13	1	R1	1K8
14	2	R2, R10	2K2
15	1	R3	7K5
16	3	R4, R22, R23	1K
17	5	R5, R8, R17, R18, R20	10K
18	1	R6	18
19	2	R7, R14	5K
20	2	R9, R12	100K
21	1	R11	47K
22	2	R13, R19	270
23	1	R15	2K49
24	1	R16	4K7
25	1	R21	22K
26	1	U1	OP07
27	2	U2, U3	TL071
28	1	U4	LM7908
29	1	U5	TL081
30	1	U7	CNY17
31	1	U8	LM336

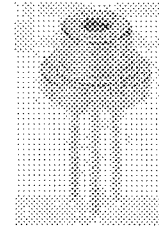
## IMDL-650-5-I-56

Wellenlänge: 650nm (typ.)  
 Geringer Schwellstrom: 30mA (typ.)  
 Max. Ausgangsleistung: 5mW  
 Hohe Betriebstemperatur: +50°C

Anwendungsgebiete:  
 Bar Code Leser  
 Lasermodule  
 Laserwasserwaagen

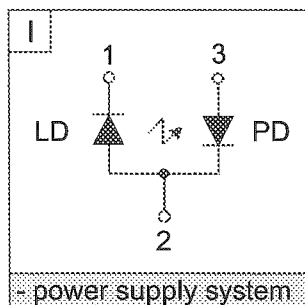
### Maximalwerte

Parameter	Symbol	Wert	Einheit
Ausgangsleistung	CW	Po	5 mW
Sperrspannung	Laser	VR	2 V
	PIN	VR	30 V
Betriebstemperatur	Topr	-10...+50	°C
Lagertemperatur	Tstr	-40...+85	°C

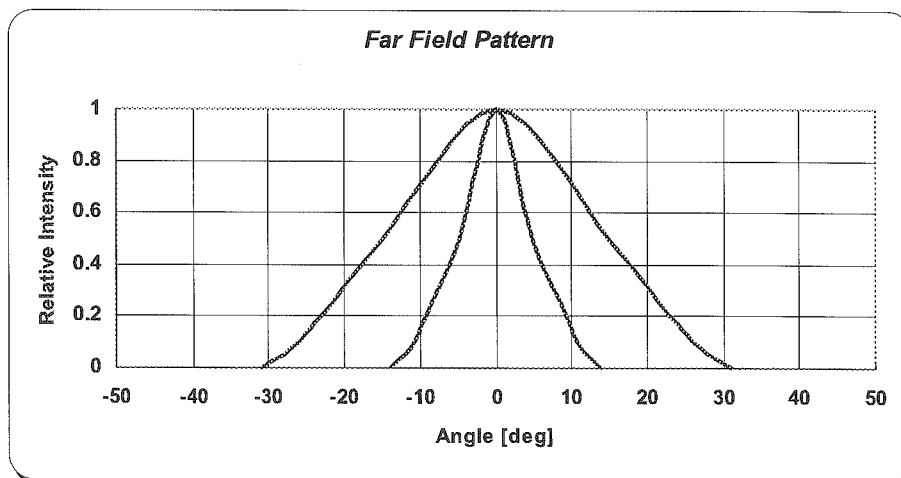
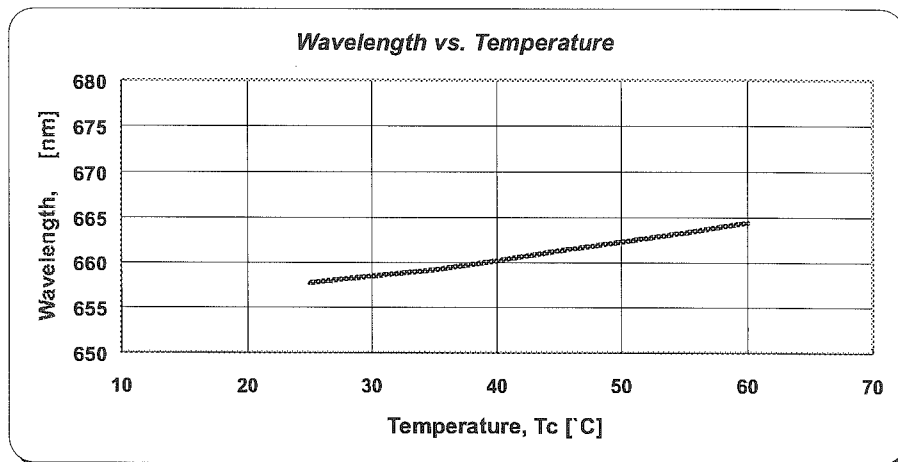
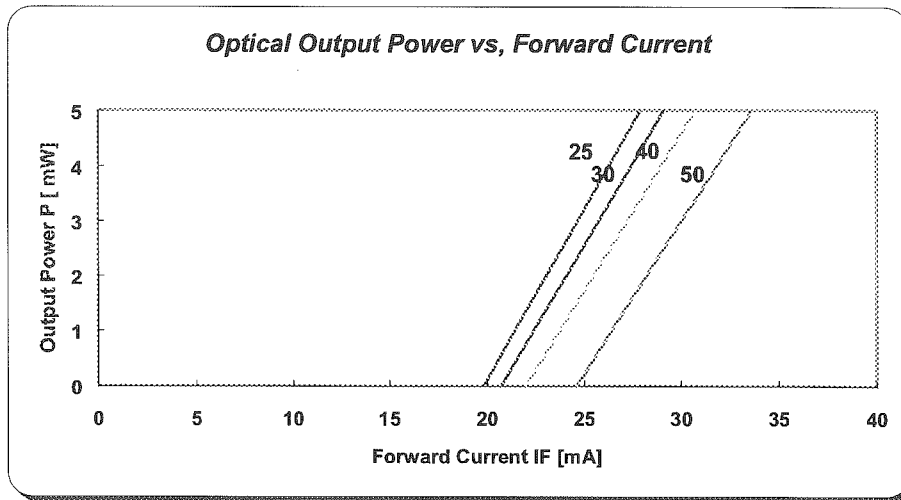


### Elektrische und optische Eigenschaften bei 25°C

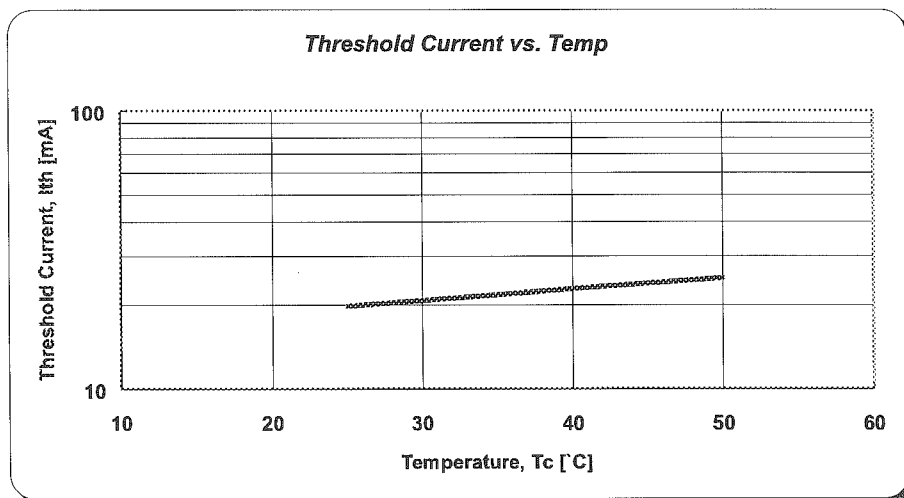
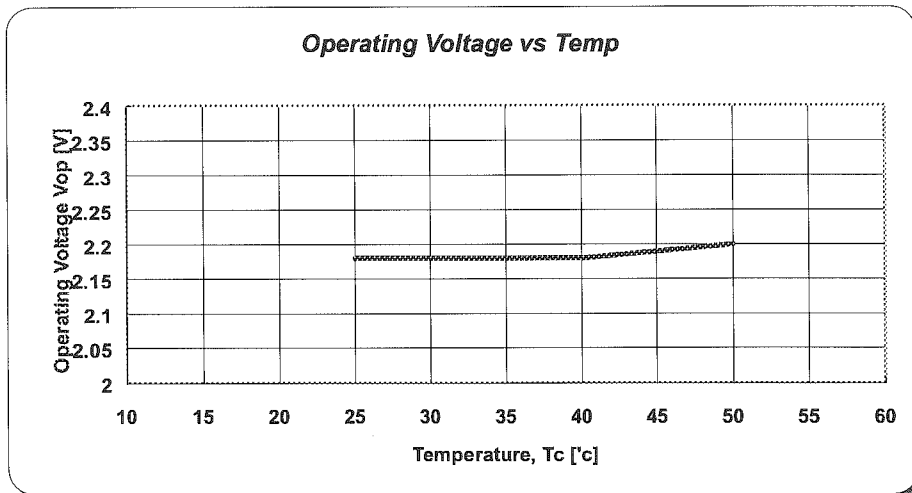
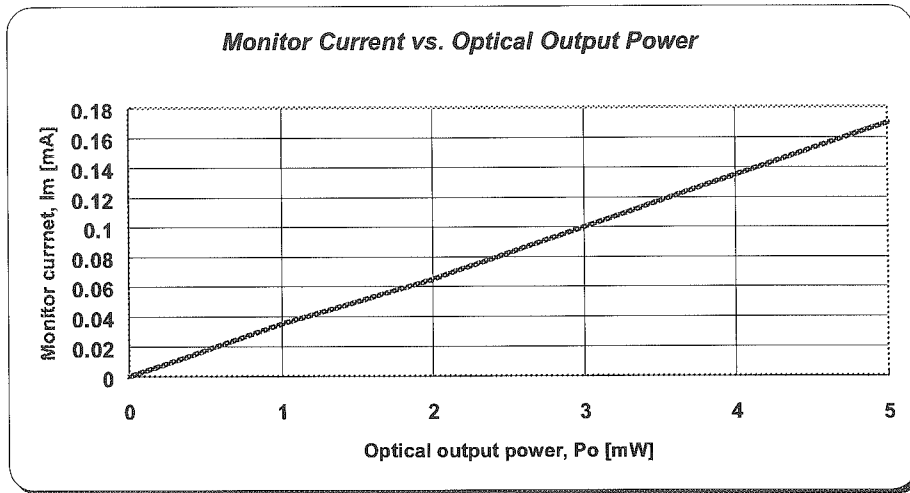
Parameter	Symbol	Betriebsbedingung	Min.	Typ.	Max.	Einheit
Schwellstrom	Ith	CW	---	21	30	mA
Betriebsstrom	Iop	Po=5mW	---	28	35	mA
Betriebsspannung	Vop	Po=5mW	---	2,2	2,6	V
Wellenlänge	$\lambda$	Po=5mW	650	655	660	nm
Strahl- divergenz	Senkrecht	$\theta_{\perp}$	---	22	32	38 deg.
	Parallel	$\theta_{\parallel}$	---	6	8	12 deg.
Strahl- abweichung	Senkrecht	$\Delta \theta_{\perp}$	---	---	+/-1,5	deg.
	Parallel	$\Delta \theta_{\parallel}$	---	---	+/-2,5	deg.
Monitordiodenstrom	I <sub>m</sub>	Po=5mW	0,1	0,2	0,5	mA



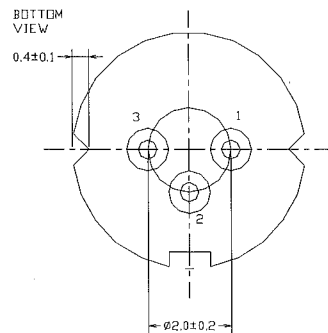
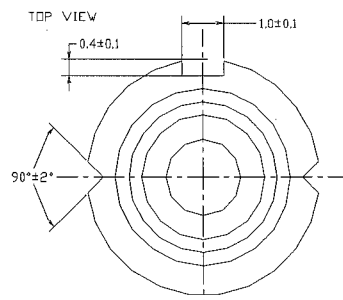
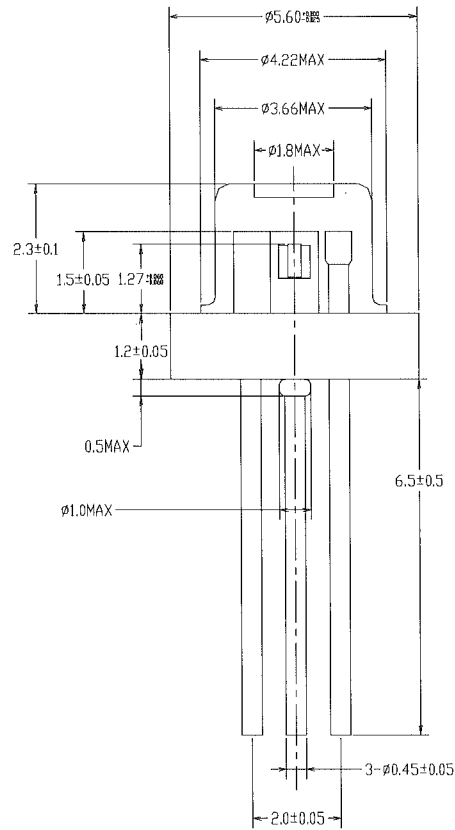
## EXAMPLE of REPRESENTATIVE CHARACTERISTICS







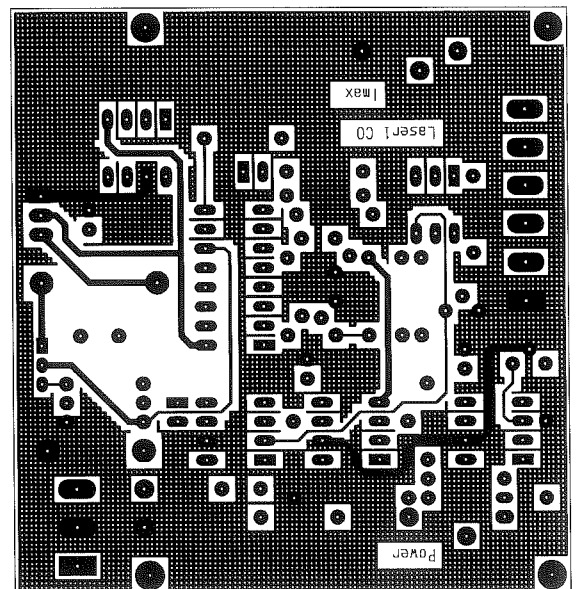
5,6mm Gehäuse (TO-18)



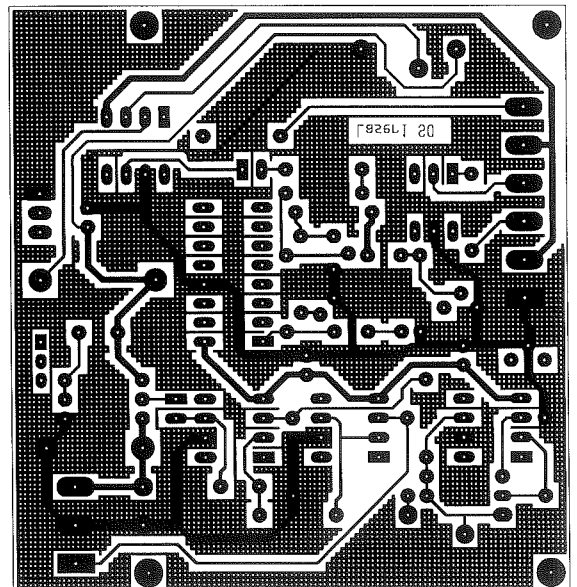


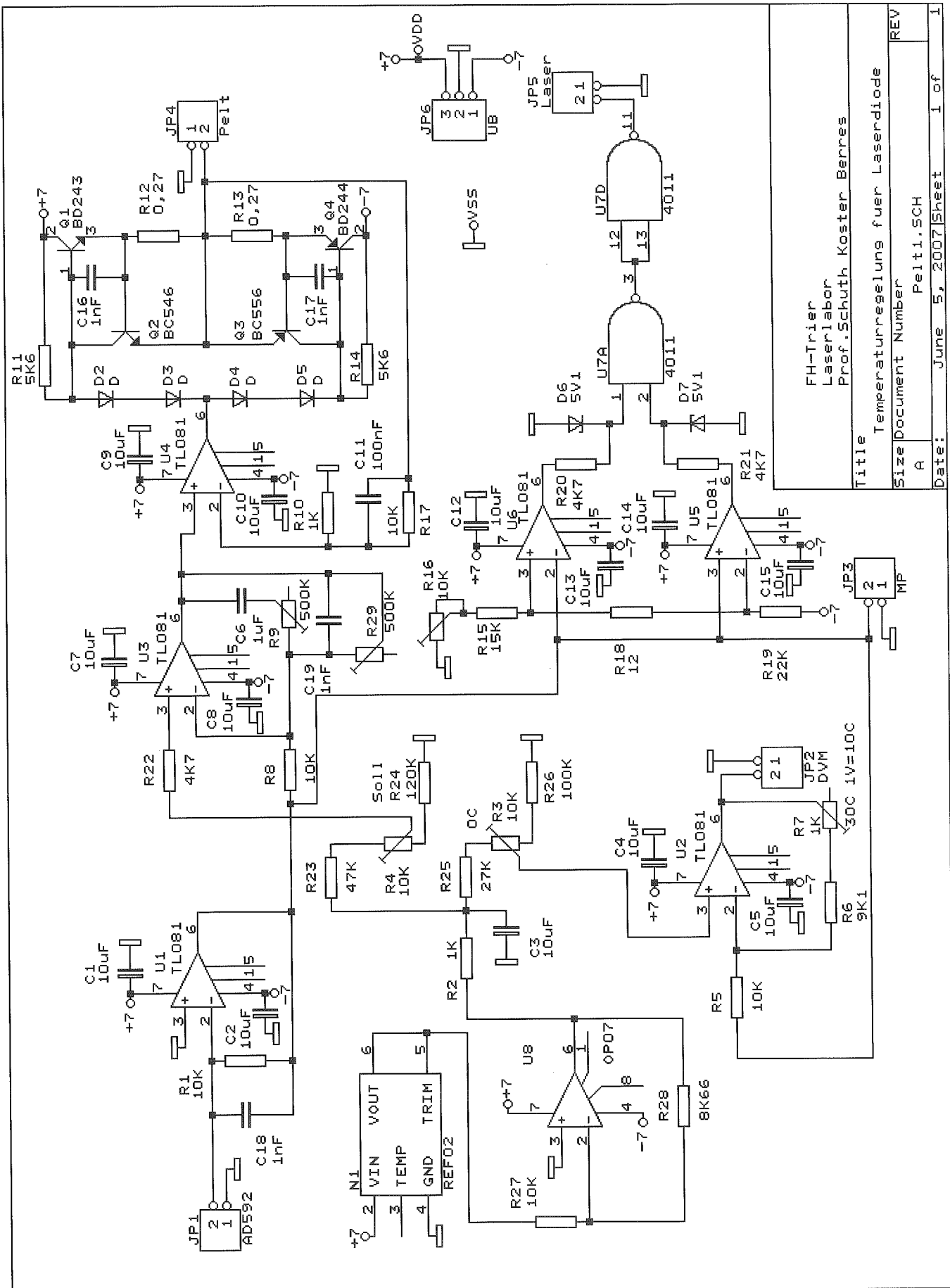


1 user ↑



Case 1

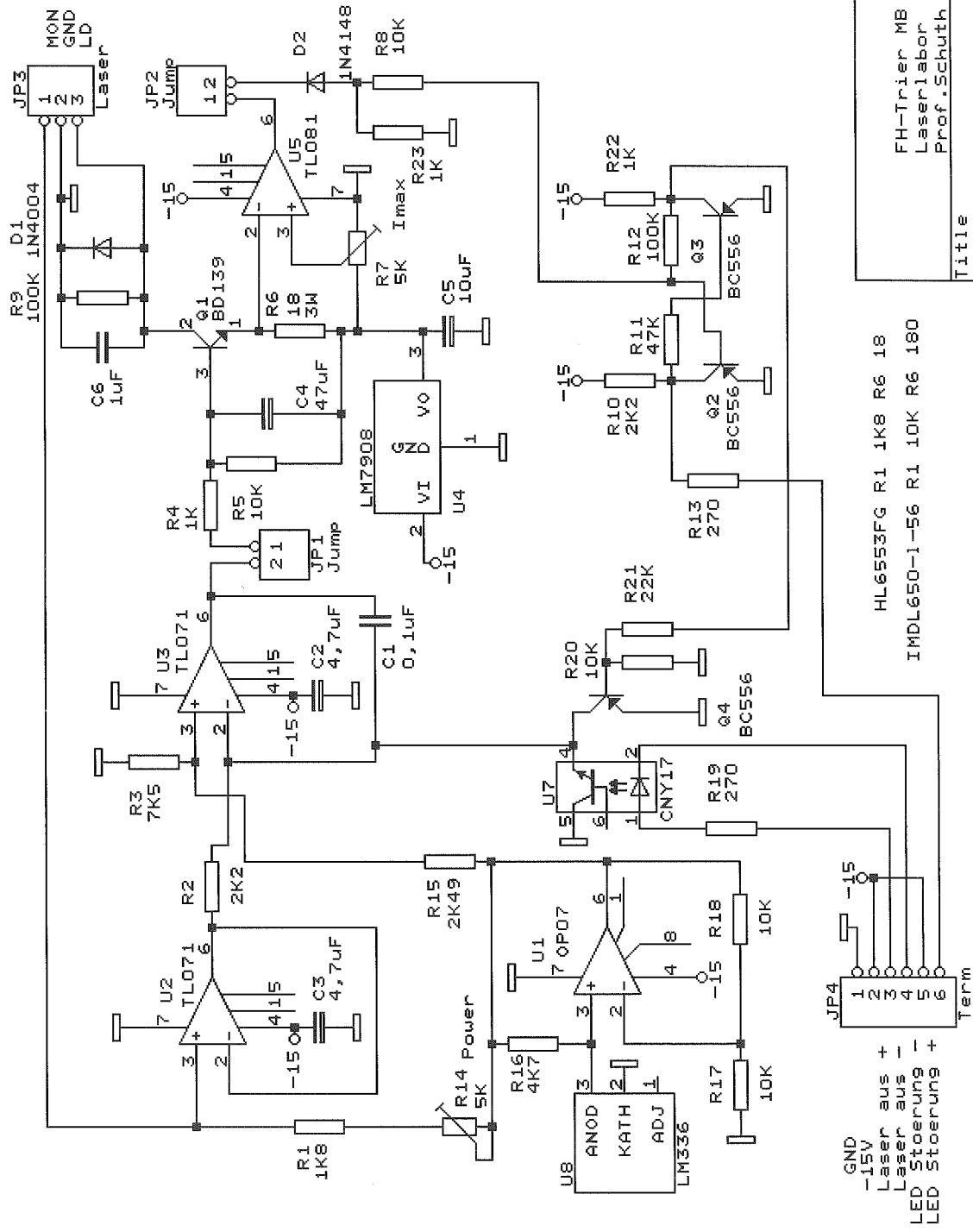




FH-Trier  
 Laserlabor  
 Prof. Schuth Koster Berres

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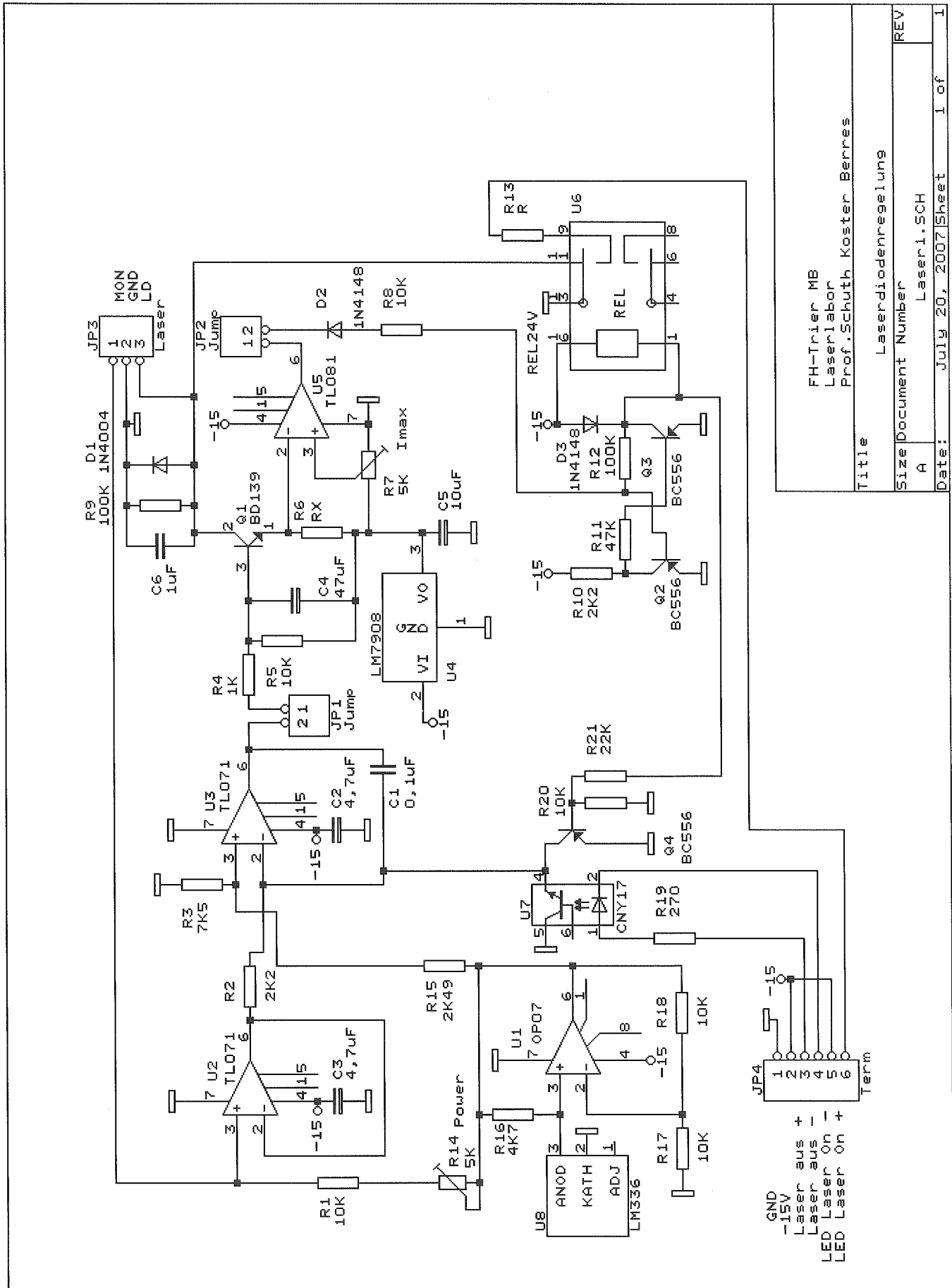
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HL6553FG R1 1K8 R6 18  
 IMDL650-1-56 R1 10K R6 180

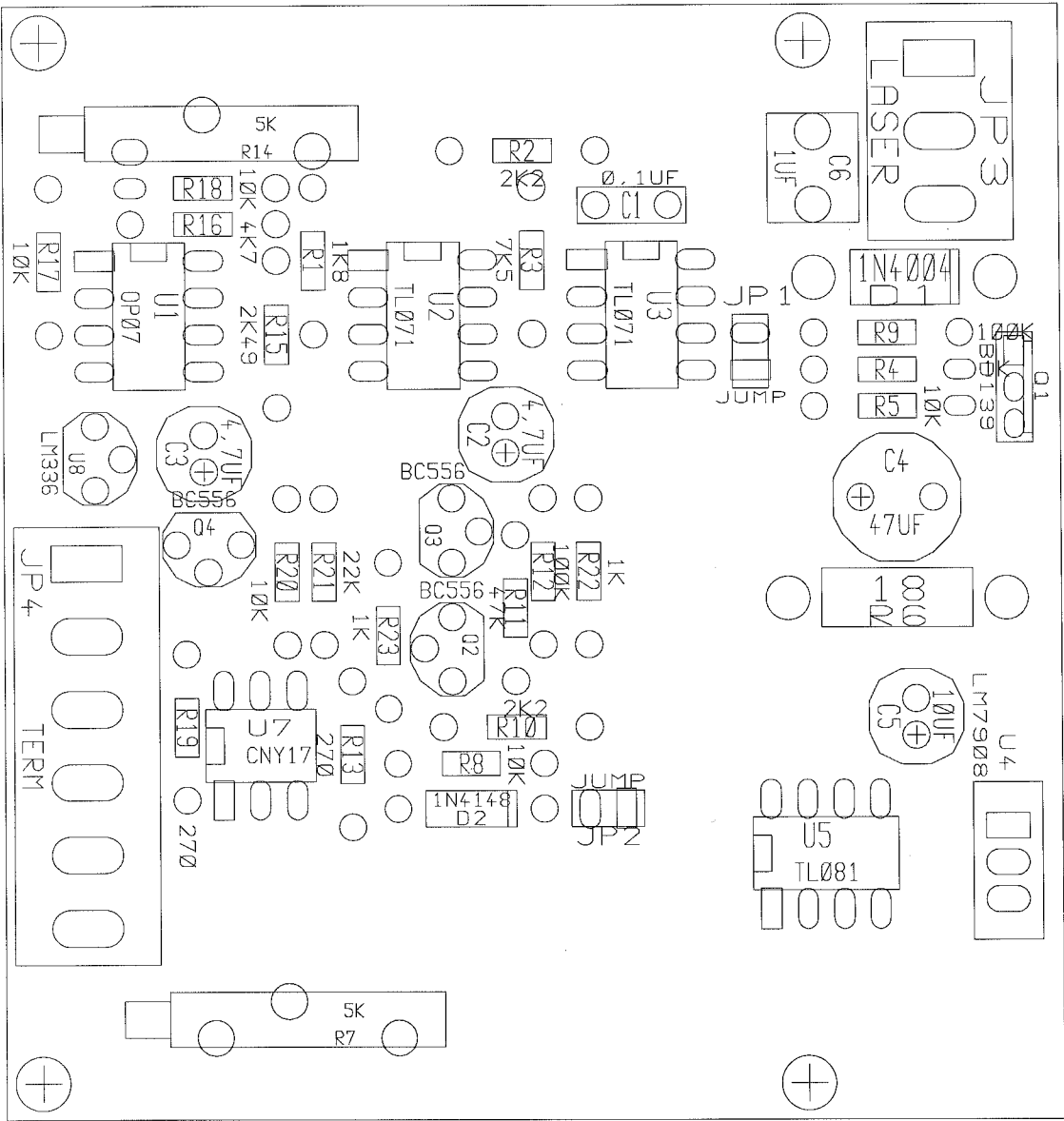
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Date:	August 22, 2007
Sheet	of 1





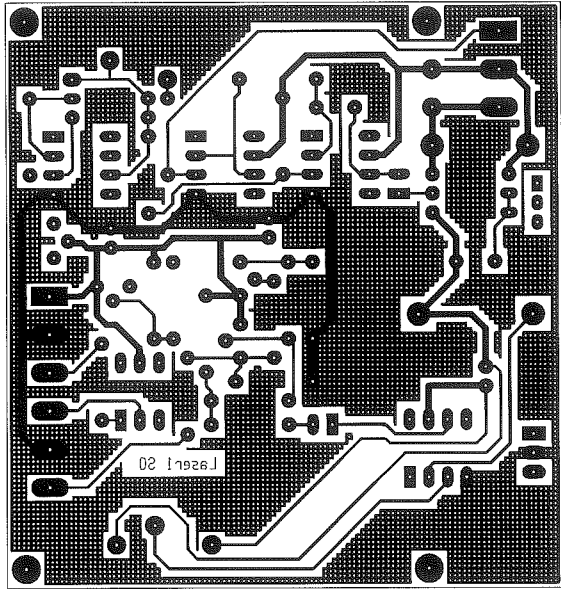
FH-Trier MB  
 Laserlabor  
 Prof.Schuth Koster Berres

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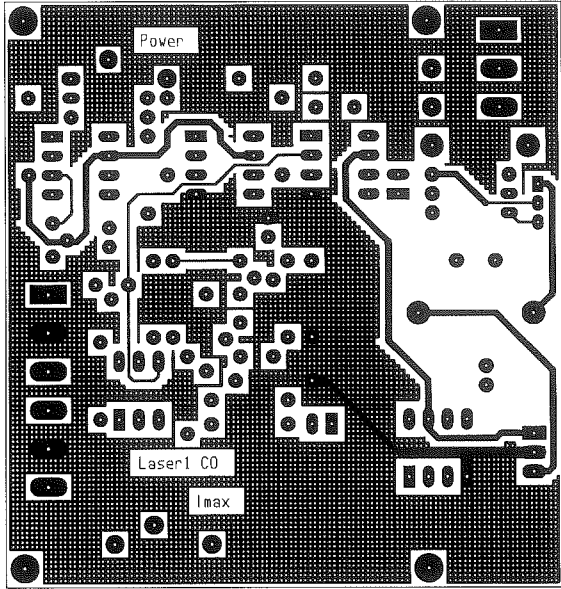


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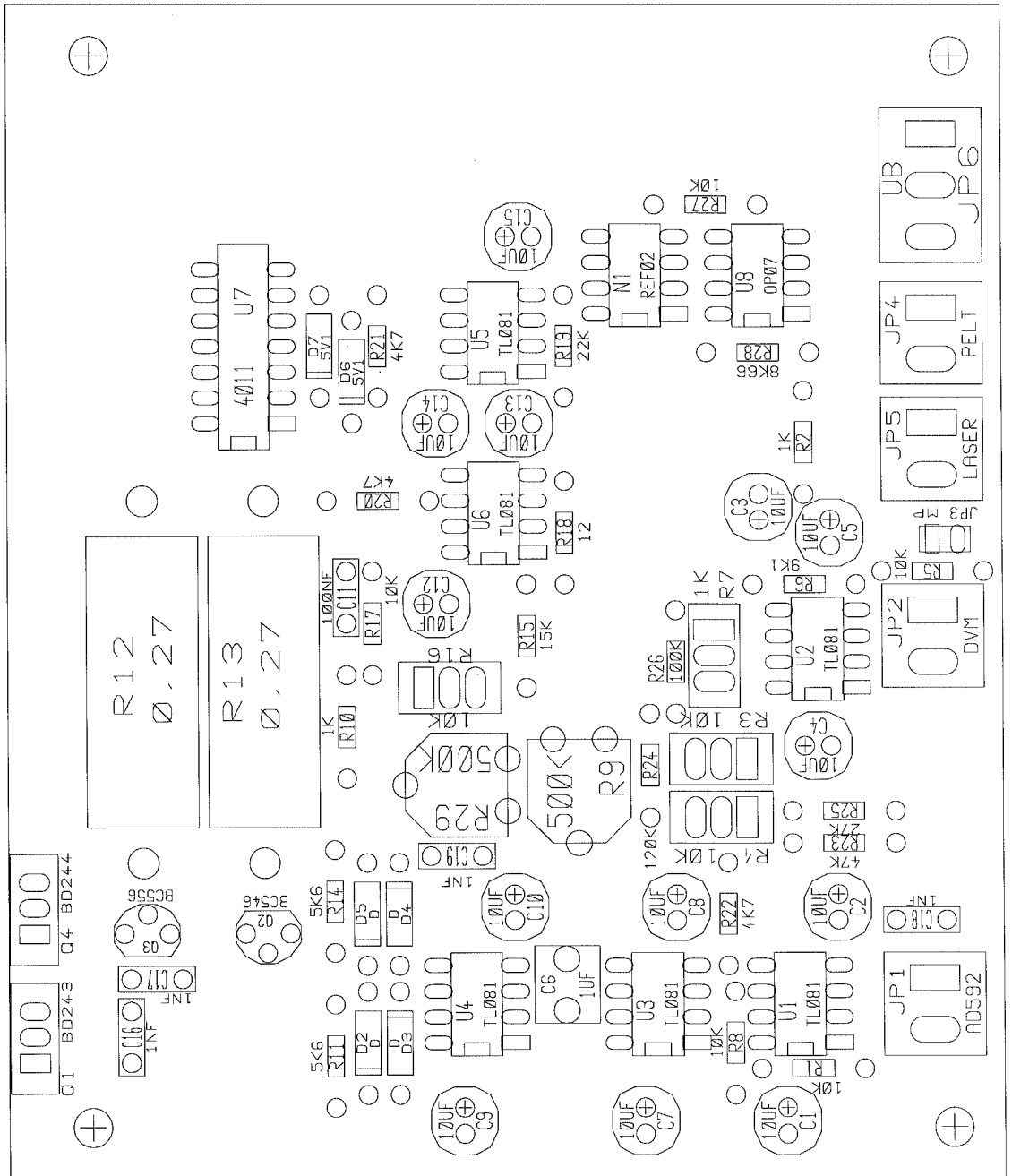


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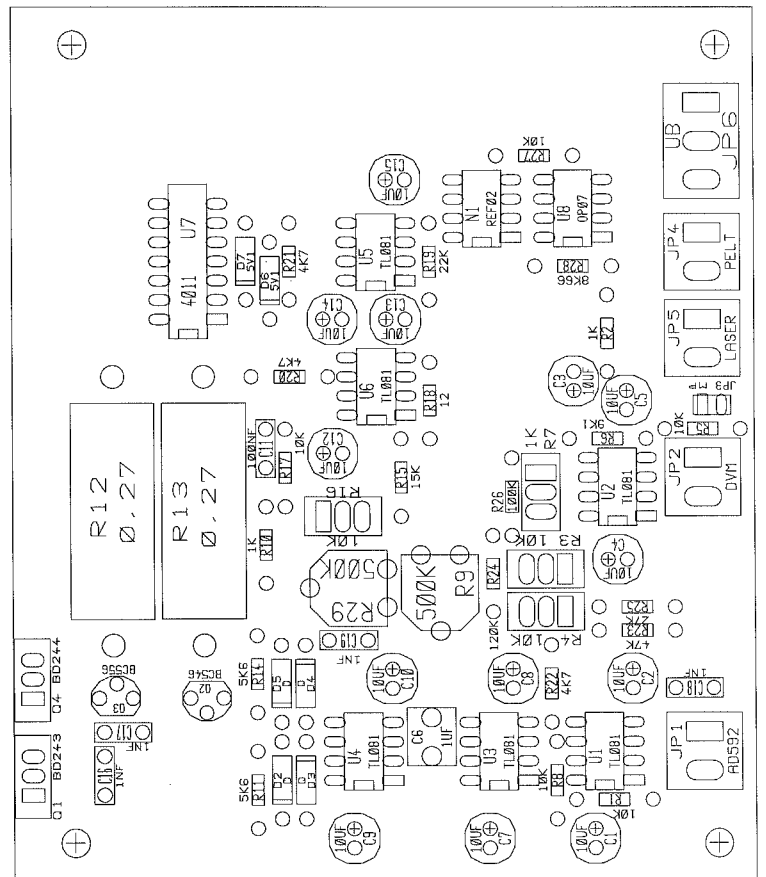


2 (0.5 r)

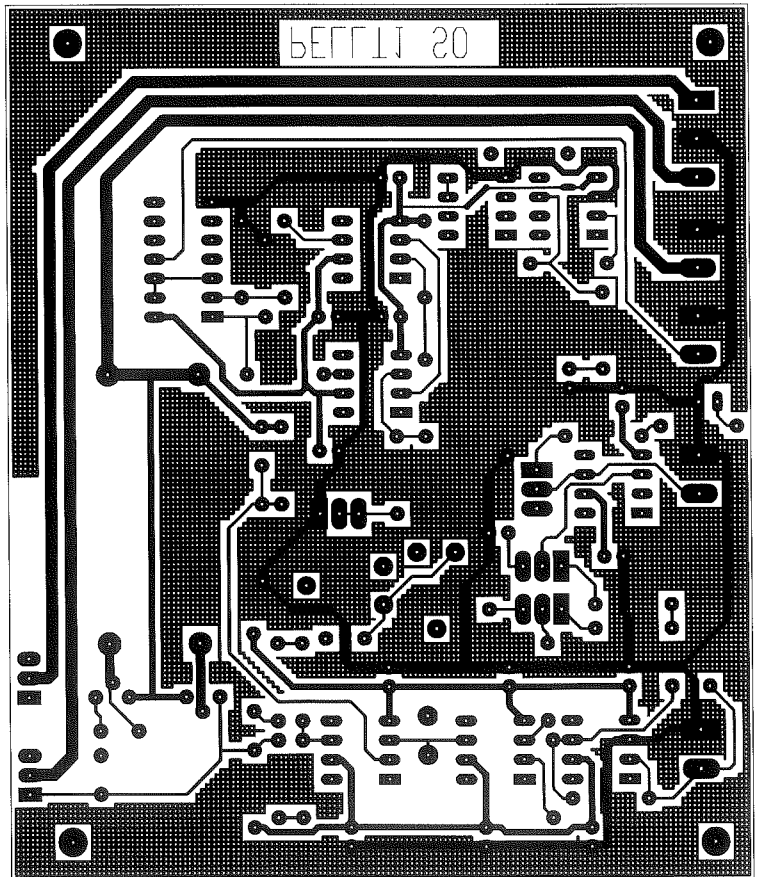
Pelt 1



Pelt 1

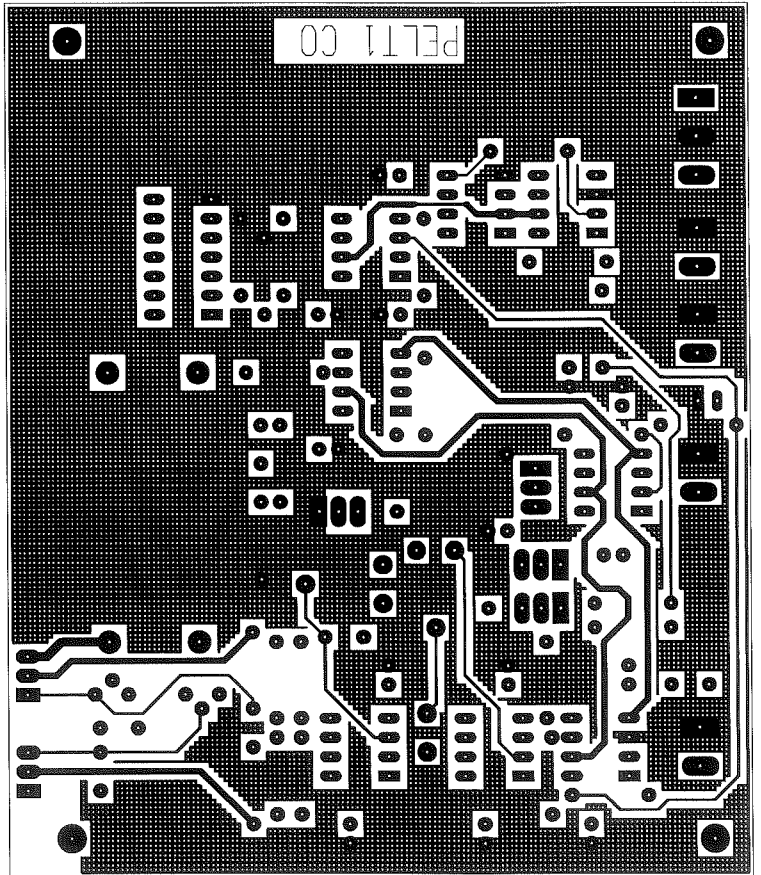


РсС+1

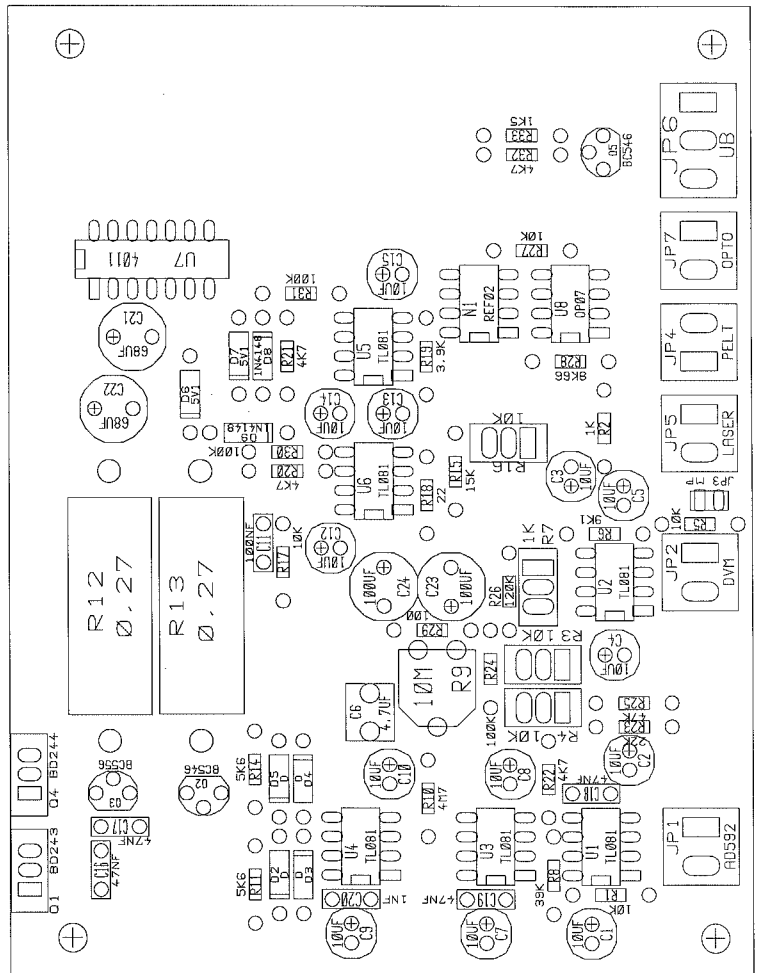




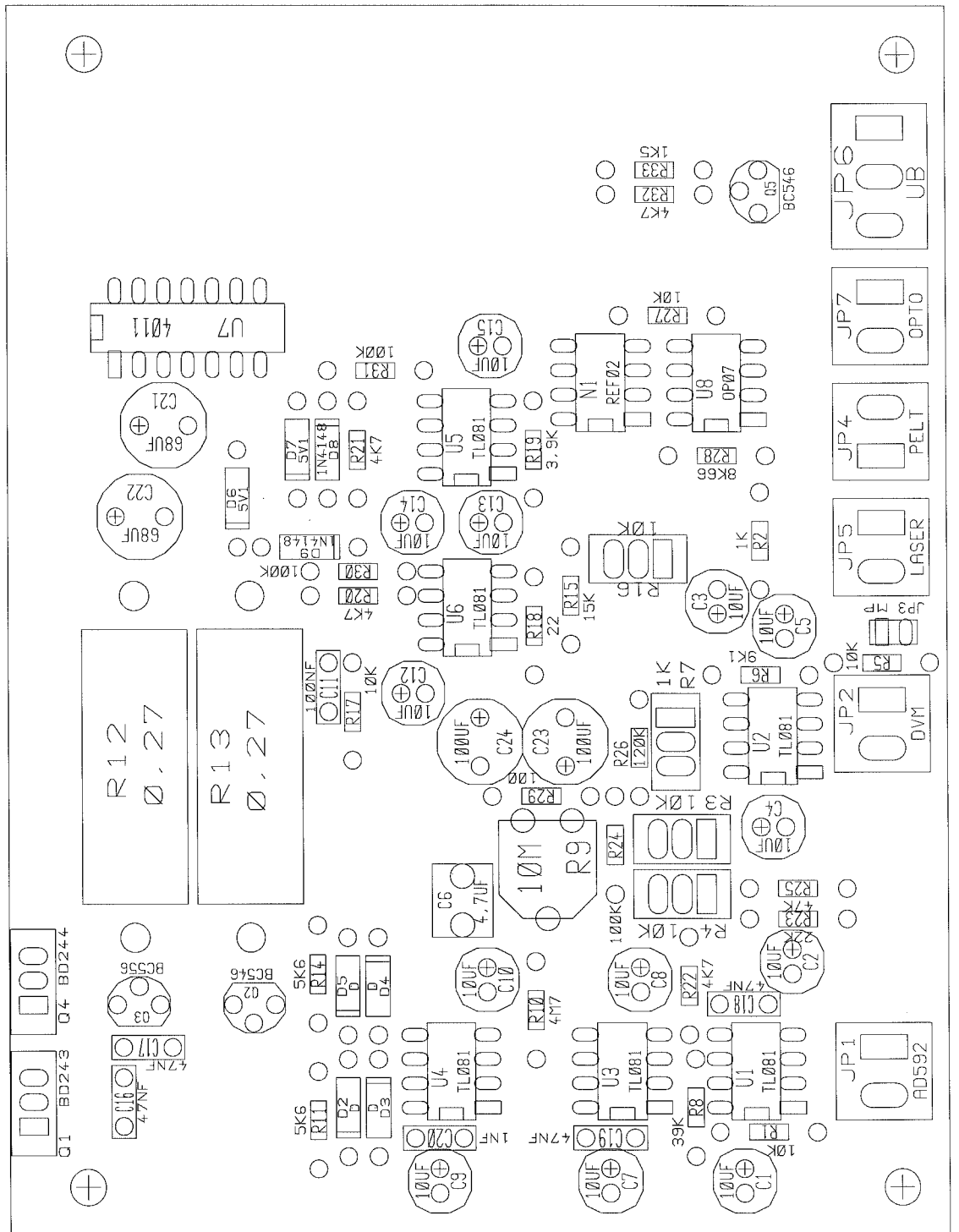
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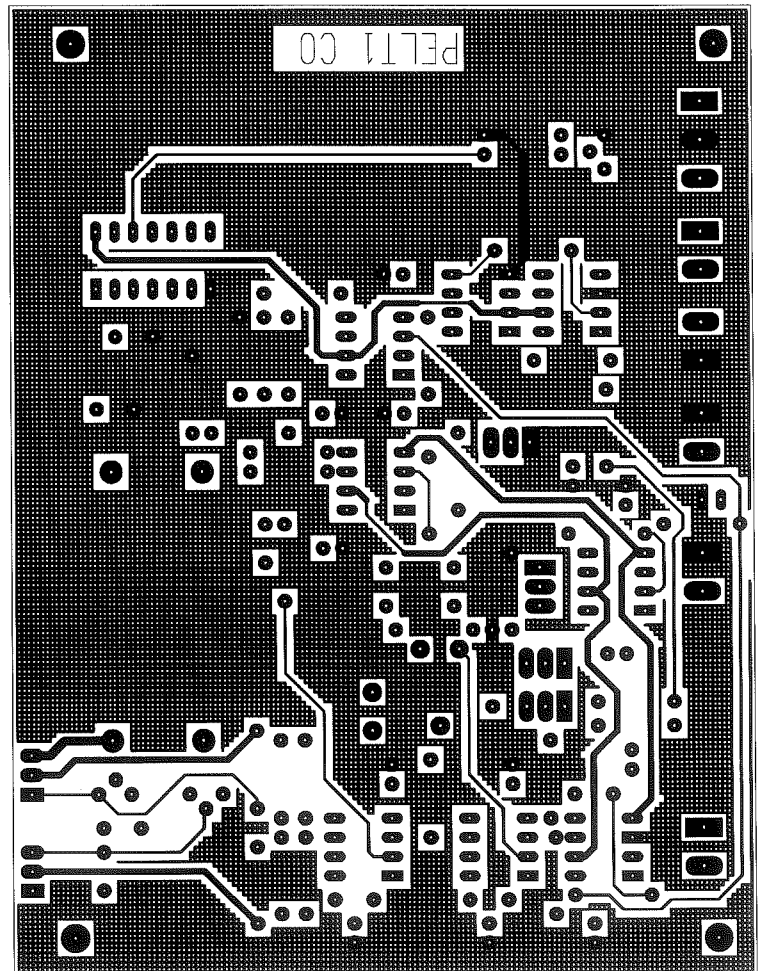
PcC42



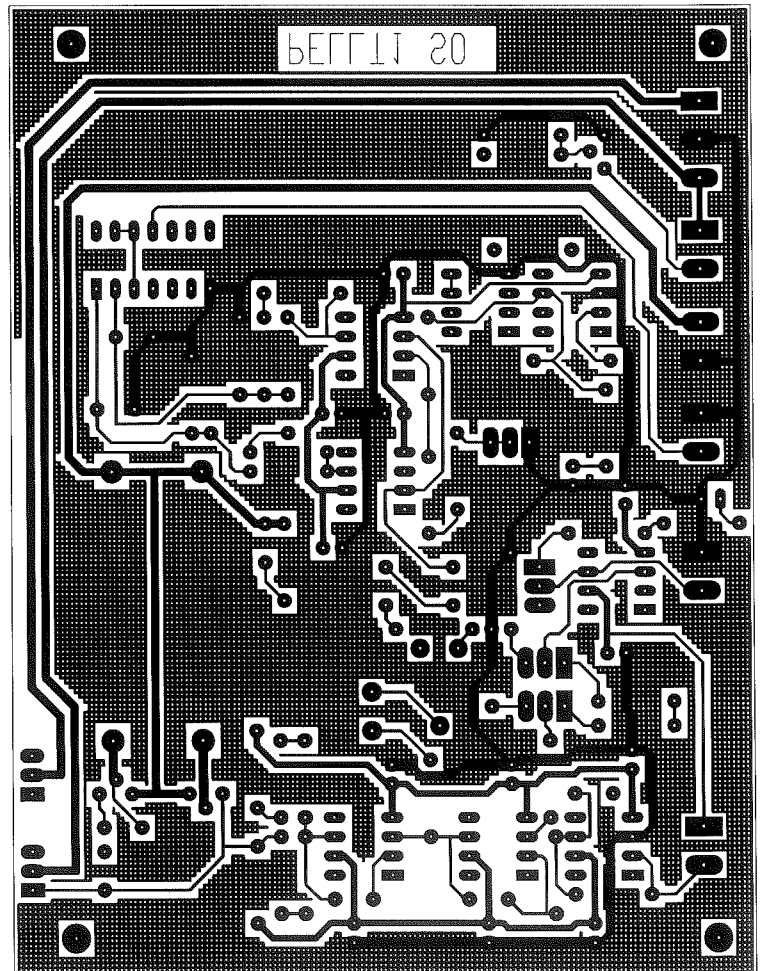
Pc142



PcL+ 2



Рел 2

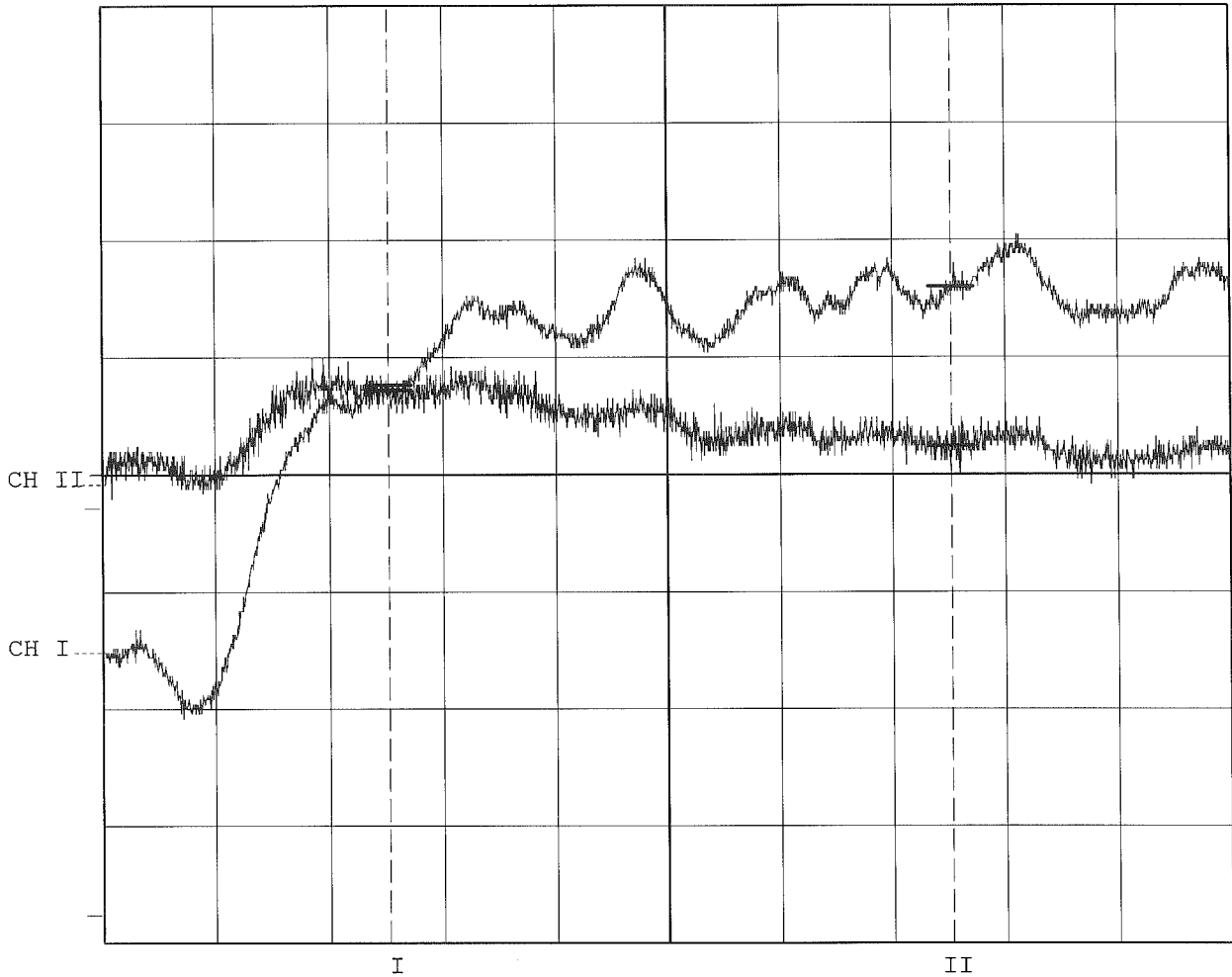


HAMEG Instruments

Measure time: 09:00:24

Measure date: 19.06.07

CH1: ,100V/DIV DC CH2: ,010V/DIV DC TB A: 20 s TR: CH2-DC PT:1,20 s



CH I : Cursor I: ,452V      Cursor II: ,536V      Diff. I-II: -,0840V  
CH II: Cursor I: ,010V      Cursor II: ,005V      Diff. I-II: ,0048V

dt: 100,000 s      1/dt: 10,000 mHz

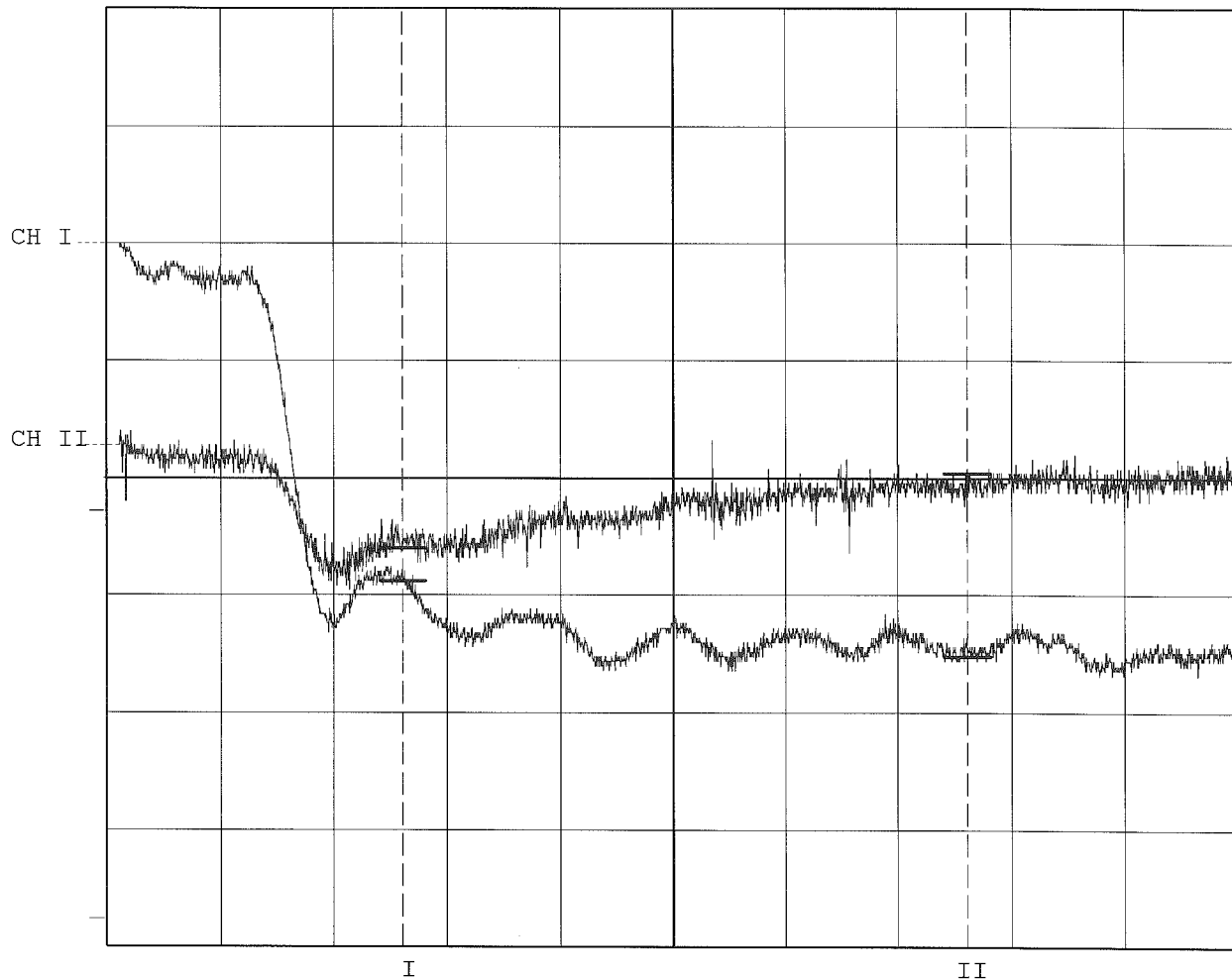
Notes:  
I=39K 12M 6,8uF  
D = 100 50uF  
Vert = 0,1°/Teil

HAMEG Instruments

Measure time: 09:03:54

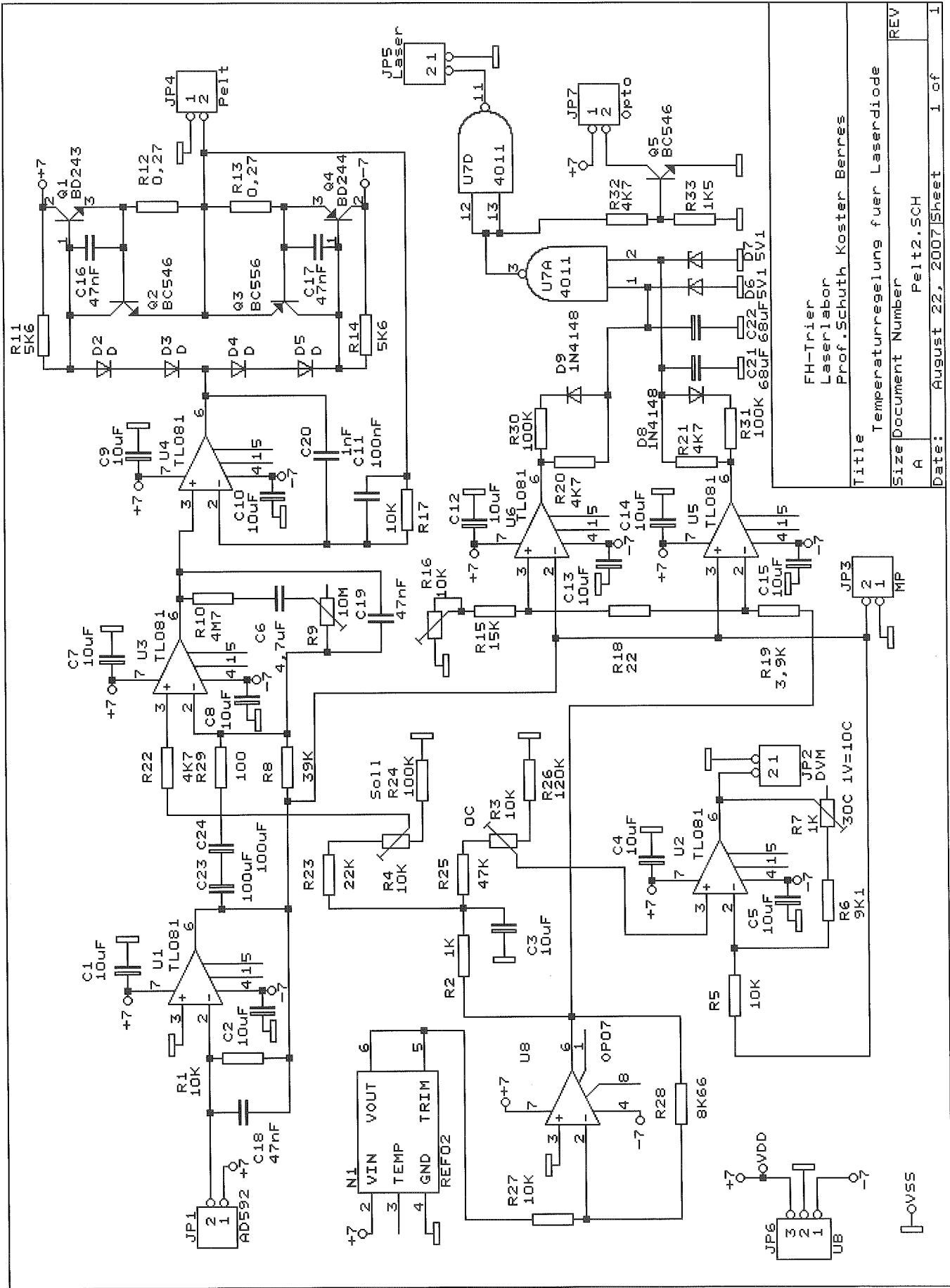
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CH1: ,100V/DIV DC CH2: ,010V/DIV DC TB A: 20 s TR: CH2-DC PT:1,20 s



CH I : Cursor I: ,288V      Cursor II: ,224V      Diff. I-II: ,0640V  
CH II: Cursor I: -,003V      Cursor II: ,003V      Diff. I-II: -,0064V  
dt: 100,000 s      1/dt: 10,000 mHz

Notes:  
I=39K 12M 6,8uF  
D = 100 50uF  
Vert = 0,1°/Teil



FH-Trier  
 Laserlabor  
 Prof. Schuth Koster Berres  
 Title Temperaturregelung fuer Laserdiode  
 Size Document Number A Pelt2.SCH  
 REV  
 Date: August 22, 2007 Sheet 1 of 1

-OVSS  
 +7V  
 -7V