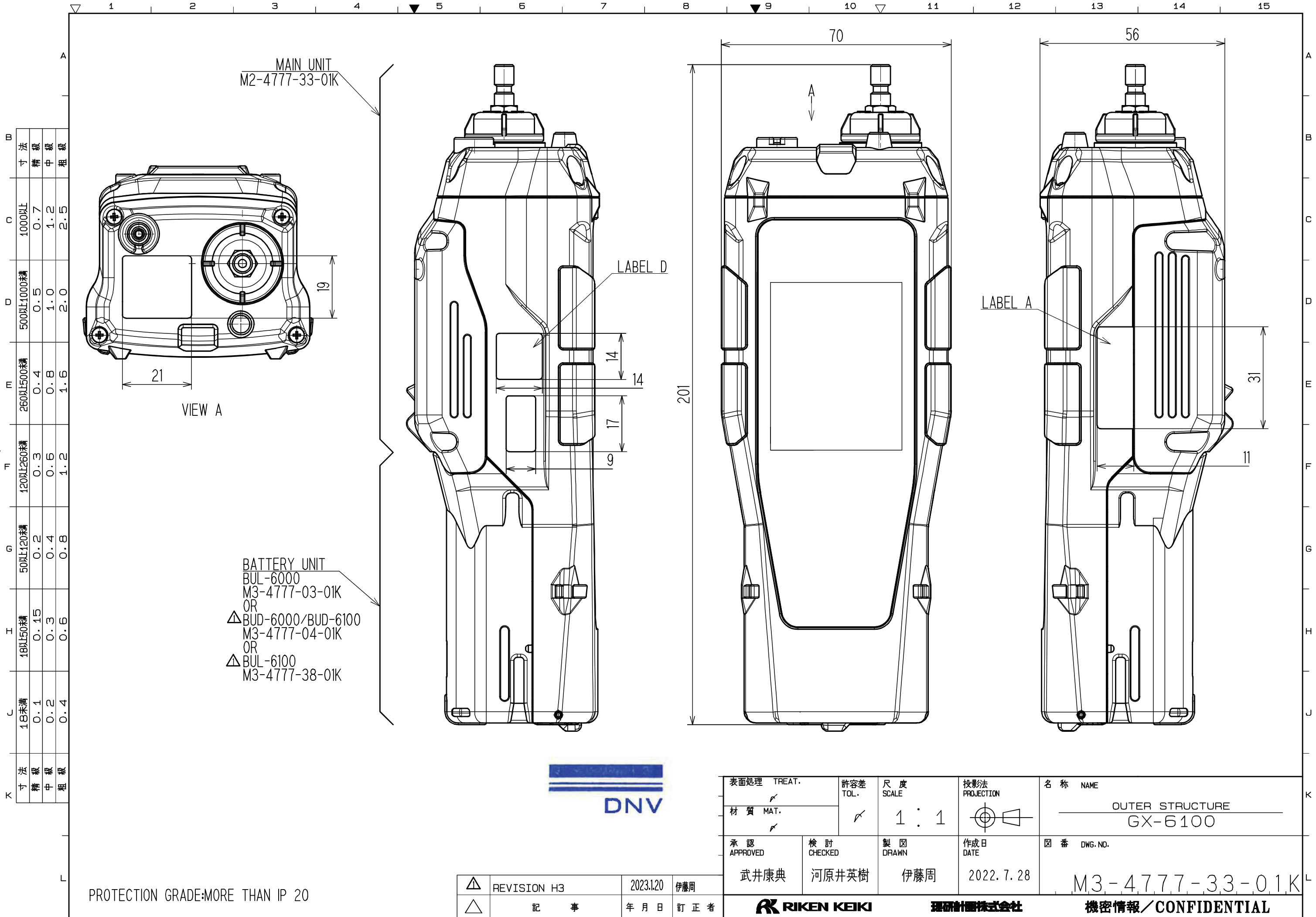
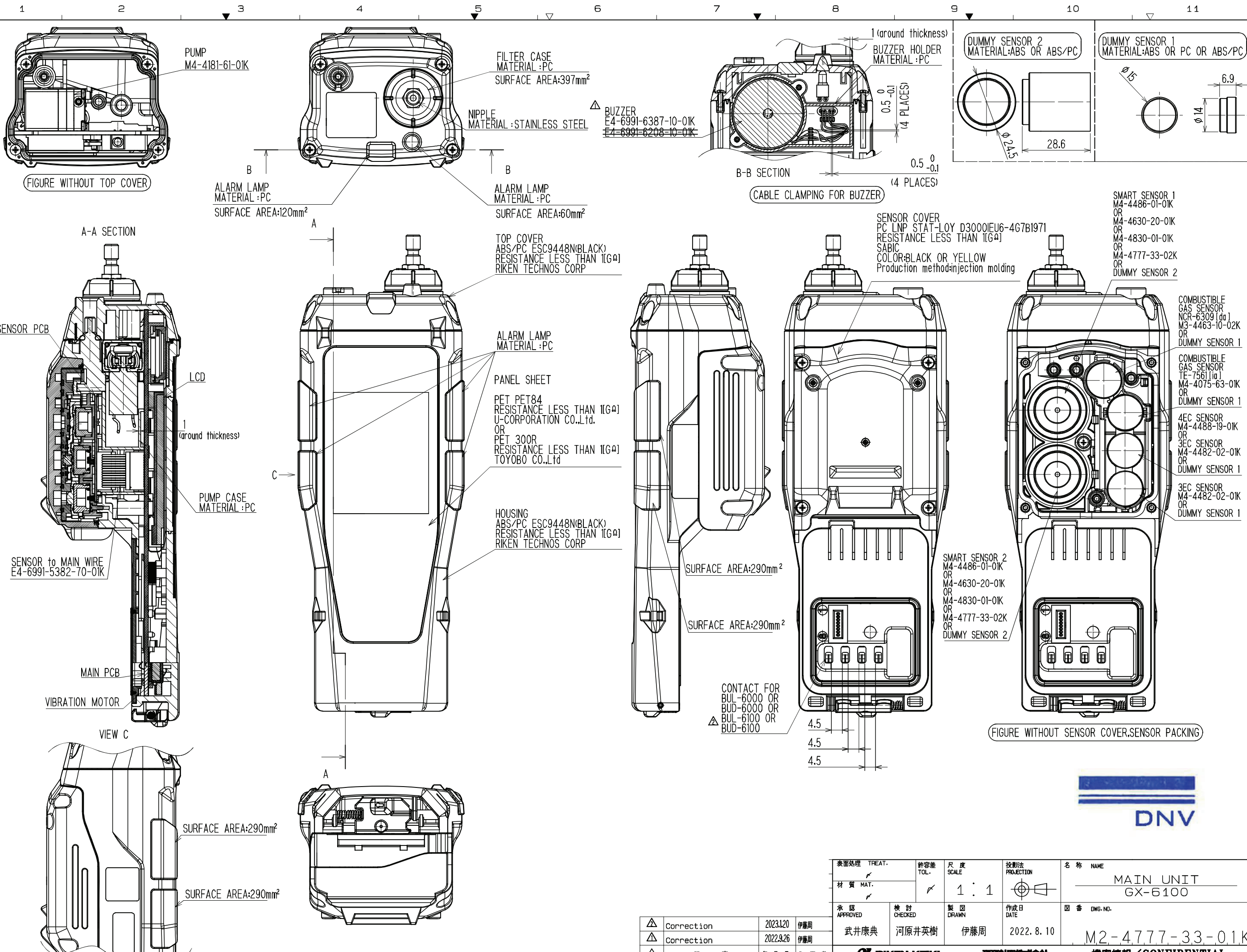


1	2	3	4	5	6	7	8	9	10	11	12	13	14
		DRAWING NAME		DRAWING No.		REV	DATE						
	01	BLOCK DIAGRAM FOR MODEL GX-6100		E3-6991-6362-60-01K		2	2023.1.17						
	02	DIAGRAM FOR I.S. KEEP FOR MODEL GX-6100		E3-6991-6352-70-01K		2	2023.1.17						
	03	OUTER STRUCTURE GX-6100		M3-4777-33-01K		1	2023.1.20						
	04	MAIN UNIT GX-6100		M2-4777-33-01K		2	2023.1.20						
	05	SCHEMATIC MAIN PCB FOR MODEL GX-6100		E3-6991-6364-10-01K		0	2022.7.7						
	06	SCHEMATIC MAIN PCB FOR MODEL GX-6100		E3-6991-6364-10-02K		1	2022.9.26						
	07	SCHEMATIC MAIN PCB FOR MODEL GX-6100		E3-6991-6364-10-03K		0	2022.7.7						
	08	SCHEMATIC MAIN PCB FOR MODEL GX-6100		E3-6991-6364-10-04K		0	2022.7.7						
	09	SCHEMATIC MAIN PCB FOR MODEL GX-6100		E3-6991-6364-10-05K		0	2022.7.7						
	10	PARTS LIST OF MAIN PCB FOR MODEL GX-6100		PLT-6991-6364-10 (1/4)		0	2022.7.7						
	11	PARTS LIST OF MAIN PCB FOR MODEL GX-6100		PLT-6991-6364-10 (2/4)		1	2022.9.26						
	12	PARTS LIST OF MAIN PCB FOR MODEL GX-6100		PLT-6991-6364-10 (3/4)		0	2022.7.7						
	13	PARTS LIST OF MAIN PCB FOR MODEL GX-6100		PLT-6991-6364-10 (4/4)		0	2022.7.7						
	14	MAIN PCB FOR MODEL GX-6100		E3-6991-6364-10-01A		0	2022.7.7						
	15	MAIN PCB FOR MODEL GX-6100		E3-6991-6364-10-02A		0	2022.7.7						
	16	SCHEMATIC SENSOR PCB FOR MODEL GX-6100		E3-6991-6365-80-01K		0	2022.7.7						
	17	PARTS LIST OF SENSOR PCB FOR MODEL GX-6100		PLT-6991-6365-80 (1/1)		0	2022.7.7						
	18	SENSOR PCB FOR MODEL GX-6100		E3-6991-6365-80-01A		0	2022.7.7						
	19	SENSOR to MAIN WIRE FOR MODEL GX-6000		E4-6991-5382-70-01K		0	2014.7.14						
	20	PUMP RP-12		M4-4181-61-01K		3	2013.1.29						
	21	BUZZER		E4-6991-6387-10-01K		0	2022.9.26						
	22	COMBUSTIBLE GAS SENSOR NCR-6309		M3-4463-10-02K		7	2022.6.16						
	23	4EC SENSOR TYPE-ESR		M4-4488-19-01K		2	2018.3.29						
	24	3EC SENSOR TYPE-ESR		M4-4482-02-01K		2	2018.3.29						
	25	SMART SENSOR Type-ESS		M4-4486-01-01K		0	2014.7.30						
	26	TOXIC GAS SENSOR		M4-4084-30-08K		0	2014.7.30						
	27	ESS SENSOR PCB		E3-6991-5384-10-01K		0	2014.7.14						
	28	SMART SENSOR Type-DES		M4-4630-20-01K		0	2014.7.24						
	29	DES SENSOR PCB		E3-6991-5385-90-01K		1	2015.5.25						
	30	DES DIGITAL PCB		E3-6991-5386-60-01K		1	2015.2.24						
		DRAWING NAME		DRAWING No.		REV	DATE						
	31	T- 3/4 BPA LAMP OL-8270BPA		E4-6991-5129-60-01K		0	2012.2.24						
	32	SMART SENSOR Type-PIS		M4-4830-01-01K		1	2015.3.25						
	33	PIS SENSOR PCB		E4-6991-5387-30-01K		2	2015.3.25						
	34	PIS DIGITAL PCB		E3-6991-5388-10-01K		1	2015.3.25						
	35	BUL-6000		M3-4777-03-01K		0	2014.7.28						
	36	BUL PCB		E3-6991-5389-80-01K		1	2014.9.5						
	37	BUD-6000 / BUD-6100		M3-4777-04-01K		2	2023.1.20						
	38	BUD PCB		E4-6991-5390-50-01K		1	2014.9.5						
	39	DIAGRAM FOR I.S. KEEP FOR MODEL BC-6000 / SDM-6000		E4-6991-5395-80-01K		1	2014.9.5						
*	40	LABEL		M4-4777-33-01K		3	2023.11.22						
	41	LABEL BC-6000 / SDM-6000		M4-4777-01-02K		0	2014.7.28						
	42	SCHEMATIC CHARGER PCB FOR MODEL BC-6000		E3-6991-5255-80-01K		0	2014.12.16						
	43	CHARGER PCB FOR MODEL BC-6000		E3-6991-5255-80-01A		1	2023.3.8						
	44	SCHEMATIC CHARGER PCB FOR MODEL SDM-6000		E3-6991-5445-60-01K		1	2015.3.5						
	45	CHARGER PCB FOR MODEL SDM-6000		E3-6991-5445-60-01A		2	2015.6.12						
	46	SMART SENSOR Type-OSS		M4-4080-01-01K		0	2015.2.24						
	47	OSS SENSOR PCB		E4-6991-5457-00-01K		0	2015.2.24						
	48	OSS DIGITAL PCB		E3-6991-5458-70-01K		0	2015.2.24						
	49	OXYGEN SENSOR		M4-4080-01-02K		0	2015.2.24						
	50	BC-6000		M3-4777-02-01K		1	2015.3.27						
	51	SDM-6000		M3-4395-23-01K		1	2015.3.27						
	52	SMART SENSOR Type-SHS		M4-4777-33-02K		0	2022.7.28						
	53	COMBUSTIBLE GAS SENSOR SH-8661		M3-4086-61-01K		0	2015.2.3						
	54	SHS DIGITAL PCB		E3-6991-6366-50-01A		0	2022.7.7						
	55	COMBUSTIBLE GAS SENSOR TE-7561		M4-4075-63-01K		0	2011.3.1						
	56	BUL-6100		M3-4777-38-01K		0	2023.1.20						
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		DRAWING NAME		DRAWING No.		REV	DATE						
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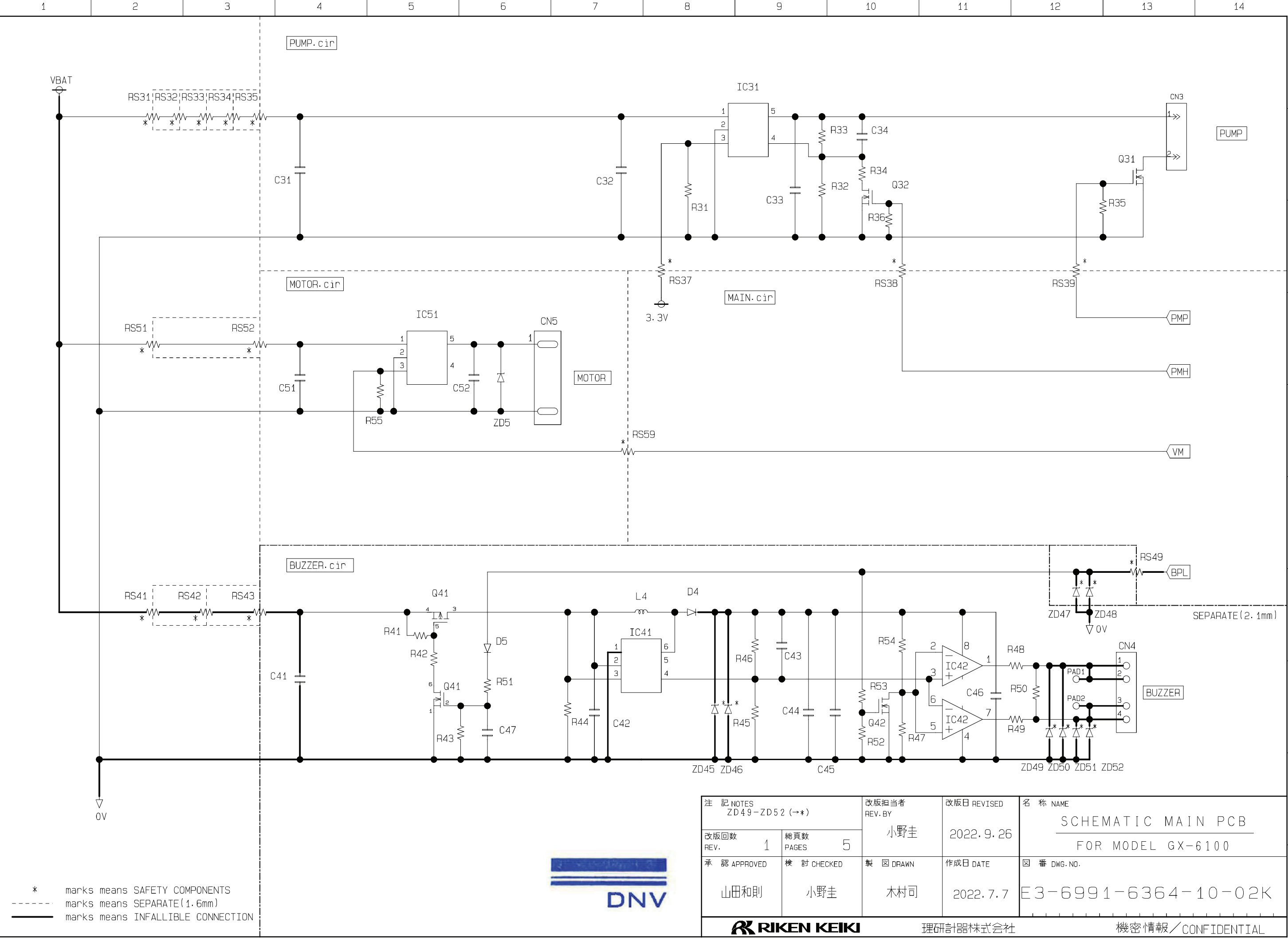





寸法	1000L	500L	250L	120L	50L	18L	1.8L
精度	0.7	0.5	0.4	0.3	0.2	0.15	0.1
中級	1.2	1.0	0.8	0.6	0.4	0.3	0.2
粗級	2.5	2.0	1.6	1.2	0.8	0.6	0.4



表面処理 TREAT.	許容差 TOL.	尺度 SCALE	投影法 PROJECTION	名称 NAME
材質 MAT.		1 : 1		MAIN UNIT GX-6100
承認 APPROVED	検討 CHECKED	製図 DRAWN	作成日 DATE	図番 DWG. NO.
武井康典	河原井英樹	伊藤周	2022. 8. 10	M2-4777-33-01K
記 事	年月日 訂正者	RIKEN KEIKI	理研計測株式会社	機密情報/CONFIDENTIAL





注 記 NOTES		改版担当者 REV. BY	改版日 REVISED	名 称 NAME SCHEMATIC MAIN PCB FOR MODEL GX-6100
改版回数 REV. 0	総頁数 PAGES 5			
承認 APPROVED 山田和則	検 討 CHECKED 小野圭	製 図 DRAWN 木村司	作成日 DATE 2022. 7. 7	図 番 DWG. NO. E3-6991-6364-10-03K
 理研計器株式会社 機密情報 / CONFIDENTIAL				



Mark of drawing	Kind of parts	Rating/Model of parts	Remarks
IC1	IC (CPU)	R5F564MFCDFP [RENESAS]	m
IC2	IC (IrDA encoder/decoder)	TIR1000IPWR [TI]	m
IC3	IC (Serial flash memory)	AT25SF641B-MHB [ADESTO]	m
IC4	IC (FRAM)	MB85RS512TPNF [FUJITSU]	m
IC5	IC (RTC)	RX4111CE [EPSON]	m
IC6	IC (BLE Module)	EYSHJN [TAIYO YUDEN]	D
IC10	IC (HALL EFFECT SWITCH)	S-5716ANDL0-M3T1U [ABLIC]	m
IC11,IC21	IC (Step up DC/DC Converter)	TPS61020DRC [TI]	m
IC12,IC22,IC72	IC (LDO)	TPS73133DBV [TI]	m
IC14	IC (OPAMP)	TLV333IDCK [TI]	m
IC15	IC (Pressure sensor)	2SMPP-03 [OMRON]	m
IC16	IC (OPAMP)	INA317IDGK [TI]	m
IC17	IC (Infrared Transceiver)	TFBS4650-TT [VISHAY]	m
IC25	IC (Digital MEMS Accelerometer)	ADXL343BCCZ [AD]	m
IC31	IC (LDO)	TPS79901DDC [TI]	m
IC41	IC (Step up DC/DC Converter)	TPS61041DRV [TI]	m
IC42	IC (dual comparators)	TS3702IPT [STMicro]	m
IC51	IC (Voltage regulator)	S-1200B30-M5T1-G [ABLIC]	m
IC71	IC (Step up DC/DC Converter)	LTC3526LEDC [AD]	m
IC73	IC (Voltage References)	ISL21080DIH312Z [RENESAS]	m
Q1,Q2,Q4,Q5,Q6,Q7, Q9,Q61	Nch MOS FET	SSM3K36TU [TOSHIBA]	m
Q3,Q91	PNP Transistor	DTA014YUB [ROHM]	m

NOTE

* marked parts are Safety Components.

m marked parts are mounted or not.

D marked parts, refer to datasheet.

[] Parts manufacturer and () Parts size code.

Non-Safety Components may be replaced with equivalent components or may not be mounted.



REV.	0	NAME	PARTS LIST OF MAIN PCB FOR MODEL GX-6100
DATE	2022.7.7	DWG.No.	PLT-6991-6364-10 (1/4)
RIKEN KEIKI CO., LTD.		機密情報 / CONFIDENTIAL	

Mark of drawing	Kind of parts	Rating/Model of parts	Remarks
Q11,Q21,Q41,Q71	Nch MOS FET	NTLJD3119C [Onsemi]	m
Q32,Q42	Nch MOS FET	RU1C001UN [ROHM]	m
Q31	Nch MOS FET	SSM3K123TU [TOSHIBA]	m
Q81	Pch MOS FET	SSM3J130TU [TOSHIBA]	m
D1,D2,D10,D11,D12, D13,D14,D15,D16	Schottky Barrier Diode	RB160VA-40 [ROHM] If = 0.7A, Vr = 40V	m
D3	Schottky Barrier Diode	RB751VM-40 [ROHM]	m
D4,D5	Schottky Barrier Diode	MMSD301T1G [Onsemi] If = 0.2A, Vr = 30V	m
ZD5	Zener Diode	TFZ5.1B [ROHM]	m
ZD61,ZD62,ZD63,ZD64, ZD65,ZD66,ZD67,ZD68, ZD69,ZD70	Zener Diode	TFZ5.1B [ROHM] Vz= 4.94 - 5.20V, 0.5W, Tj = 150°C	*
ZD11,ZD12,ZD21,ZD22	Zener Diode	1SMB5918BT3G [Onsemi] Vz=4.84 - 5.36V, 0.55W, Tj= 226°C	*
ZD13, ZD23	Zener Diode	TFZ6.8B [ROHM]	m
ZD45, ZD46	Zener Diode	KDZ11B [ROHM] Vz= 11.0 - 12.3V, 1.0W, Tj = 150°C	*
ZD47, ZD48	Zener Diode	KDZ4.7B [ROHM] Vz= 4.70 - 5.20V, 1.0W, Tj = 150°C	*
ZD49,ZD50,ZD51,ZD52	Zener Diode	KDZ15B [ROHM] Vz= 14.7 - 16.5V, 1.0W, Tj = 150°C	*
ZD57,ZD58,ZD59,ZD60	Zener Diode	TFZ18B [ROHM] Vz= 16.8 - 17.7V, 0.5W, Tj = 150°C	*
ZD71,ZD72	Zener Diode	1N5338BG [Onsemi] Vz = 4.85 - 5.36V, 5W, Tj = 200°C	*
LED1	LED Lamp	HLMP-NW50-U0000 [AVAGO]	m
LED2,LED3,LED4,LED5, LED7,LED8,LED9, LED10,LED11	LED Lamp	KPTD-3216SURCK [KINGBRIGHT] (3216 t1.8)	m
LED12	LED Lamp	HSMZ-C110 [AVAGO]	m

NOTE

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m marked parts are mounted or not.

D marked parts, refer to datasheet.

[] Parts manufacturer and () Parts size code.

Non-Safety Components may be replaced with equivalent components or may not be mounted.



REV.

1

NAME

PARTS LIST OF MAIN PCB

FOR MODEL GX-6100

DATE

2022.9.26

DWG.No.

PLT-6991-6364-10 (2/4)

RIKEN KEIKI CO., LTD.

機密情報 / CONFIDENTIAL

Mark of drawing	Kind of parts	Rating/Model of parts	Remarks
R1-R9, R11-R18, R21-R28, R31-R36, R41-R47, R50-R55, R61-R63, R71-R80, R82-R86, R89-R96, R101-R106, R108-R114, R116, R118-R132, R141-R144, R151-R154, R165, R166, R168, R169, R172-R174, R176-R199, RDT10	Chip metal film fixed resistor or Chip jumper	10 - 10M ohm / 1%, 0.1W or 50m ohm max, 1A (1608)	m
R48, R49, R100, R175	Chip metal film fixed resistor	10 - 10M ohm / 1%, 0.25W (3216)	m
RN1, RN2, RN3, RN4	Chip fixed resistor array	10 - 1M ohm x4 / 5%, 0.063W	m
RS81, RS91	Chip metal film fixed resistor	10 - 1M ohm / 0.5%, 0.5W (3216)	m
RS10	Chip metal film fixed resistor	ESR18_3001 [ROHM] 3 k ohm / 0.5%, 0.5W (3216)	*
RS11, RS12, RS13, RS14, RS15, RS21, RS22, RS23, RS24, RS25, RS31, RS32, RS33, RS34, RS35	Chip metal film fixed resistor	RK73HW3A_1R30 [KOA] 1.3 ohm / 1.0%, 1.0W (6432)	*
RS61	Chip metal film fixed resistor	RK73HW3A_62R0 [KOA] 62 ohm / 1.0%, 1.0W (6432)	*
RS37, RS38, RS39, RS49, RS59, RS62, RS65, RS71, RS72, RS82, RS85, RS86, RS87, RS92, RS95, RS96, RS97	Chip metal film fixed resistor	ESR18_1002 [ROHM] 10 k ohm / 0.5%, 0.5W (3216)	*
RSA1, RSA2, RSA3, RSA4, RSA5, RSB1, RSB2, RSB3, RSB4, RSB5, RSC1, RSC2, RSC3, RSC4, RSC5	Chip metal film fixed resistor	RPL18T_2R7 [TAITOSHA] 2.7 ohm / 1.0%, 0.5W (3216)	*
RS41, RS42, RS43	Chip metal film fixed resistor	RK73HW2H_4R70 [KOA] 4.7 ohm / 1.0%, 0.75W (5025)	*
RS51, RS52	Chip metal film fixed resistor	RK73HW2H_12R0 [KOA] 12 ohm / 1.0%, 0.75W (5025)	*
RS63, RS64	Chip metal film fixed resistor	RK73HW2H_82R0 [KOA] 82 ohm / 1.0%, 0.75W (5025)	*
RS83, RS84, RS93, RS94	Chip metal film fixed resistor	MCR18_1001 [ROHM] 1 k ohm / 1.0%, 0.25W (3216)	*
C1 - C6, C72, C76 - C93, C100 - C113 C115 - C117, C140, C151 - C153, C156, CA1, CA2	Chip multilayer capacitor inside MAIN.cir	Total capacitance 16.7uFmax	m

NOTE

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m marked parts are mounted or not.

D marked parts, refer to datasheet.

[] Parts manufacturer and () Parts size code.

Non-Safety Components may be replaced with equivalent components or may not be mounted.



REV.	0	NAME	PARTS LIST OF MAIN PCB FOR MODEL GX-6100
DATE	2022.7.7	DWG.No.	PLT-6991-6364-10 (3/4)
RIKEN KEIKI CO., LTD.		機密情報 / CONFIDENTIAL	

Mark of drawing	Kind of parts	Rating/Model of parts	Remarks
C11,C12,C13,C14,C15, C16,C17,C18, C19	Chip multilayer capacitor inside S_SENSOR1.cir	Total capacitance 17.3uFmax	m
C21,C22,C23,C24,C25, C26,C27,C28,C29	Chip multilayer capacitor inside S_SENSOR2.cir	Total capacitance 17.3uFmax	m
C31,C32,C33,C34	Chip multilayer capacitor inside PUMP.cir	Total capacitance 5uFmax	m
C41,C42,C43,C44,C45, C46,C47	Chip multilayer capacitor inside BUZZER.cir	Total capacitance 12.1uFmax	m
C51,C52	Chip multilayer capacitor inside MOTOR.cir	Total capacitance 2.2uFmax	m
C61	Chip multilayer capacitor	5.17uFmax	m
C62	Chip multilayer capacitor	0.0363uFmax	m
C71	Chip multilayer capacitor	11uFmax	m
L1, L2, L4	Chip multilayer inductor	10u H / 20% (2520)	m
L7	Chip multilayer inductor	4.7u H / 20% (2520)	m
PT1	Photo transistor	VTPS1192HB	m
X2	Quartz Crystal	DSX321G 14.7456MHz	m
X3	Quartz Crystal	FC-12M 32.768kHz	m
NF2	Chip Ferrite Beads or Chip metal film fixed resistor or Chip jumper	BLM18AG151SN1 or 10 - 10M ohm / 1%, 0.1W or 50m ohm max, 1A (1608)	m
NF3,NF4,NF5,NF6, NF,7NF8	Chip Ferrite Beads or Chip metal film fixed resistor or Chip jumper	BLM15HD182SN1 or 10 - 1M ohm / 1%, 0.1W or 50m ohm max, 1A (1005)	m
NF9,NF10,NF11,NF12	Chip Ferrite Beads or Chip metal film fixed resistor or Chip jumper	BLM18HD102SN1 or 10 - 10M ohm / 1%, 0.1W or 50m ohm max, 1A (1608)	m
BAT	LITHIUM COIN CELL	MS421R [SII] Vmax = 3.3V, Vtyp = 3.0V	*
LCD	LCD Module	BTG-128160B-FBWB [YEEBO] Internal x10 charge-pump Internal C = 200pFmax	D
MOTOR	Vibration motor	A3BE-MT4 [SICOH]	D

NOTE

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m marked parts are mounted or not.

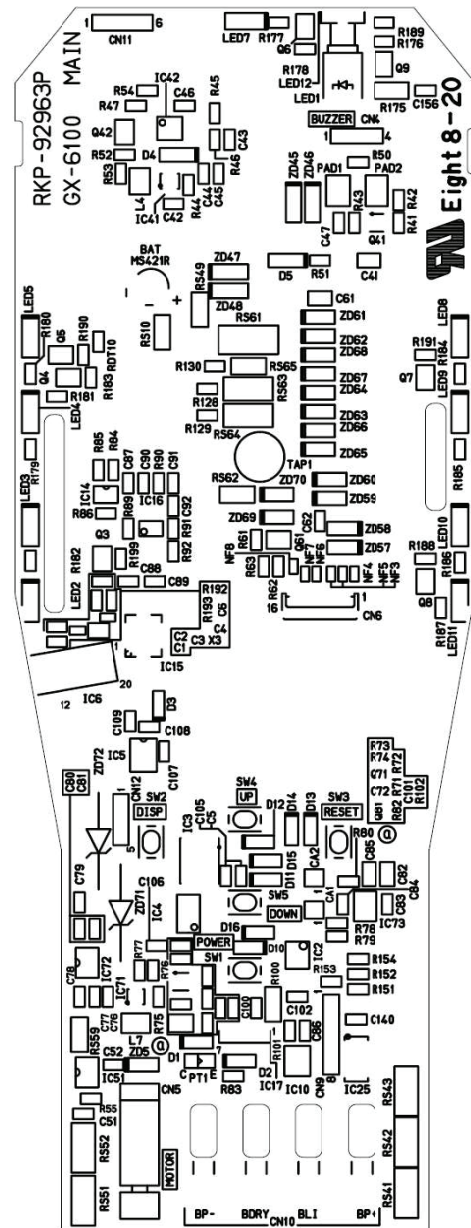
D marked parts, refer to datasheet.

[] Parts manufacturer and () Parts size code.

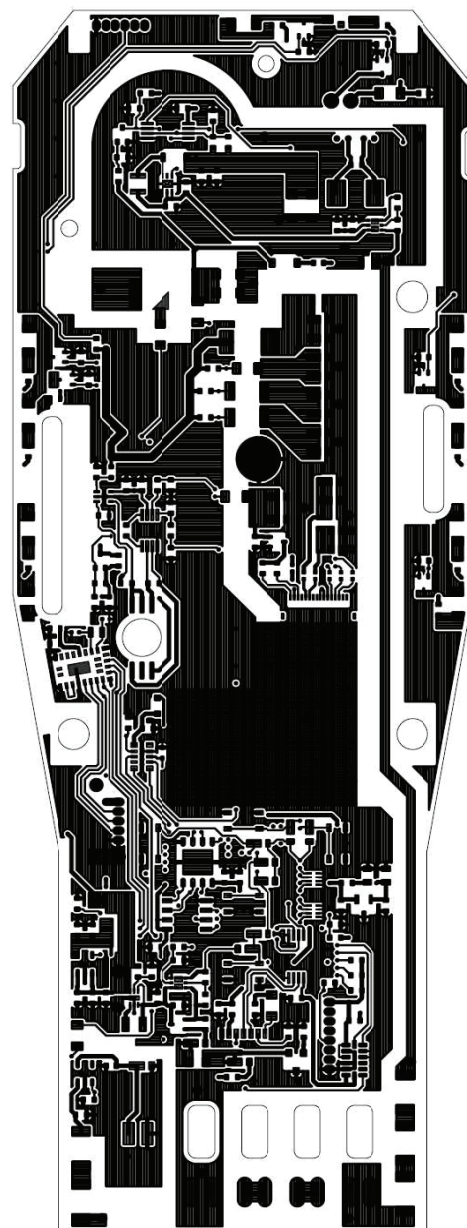
Non-Safety Components may be replaced with equivalent components or may not be mounted.



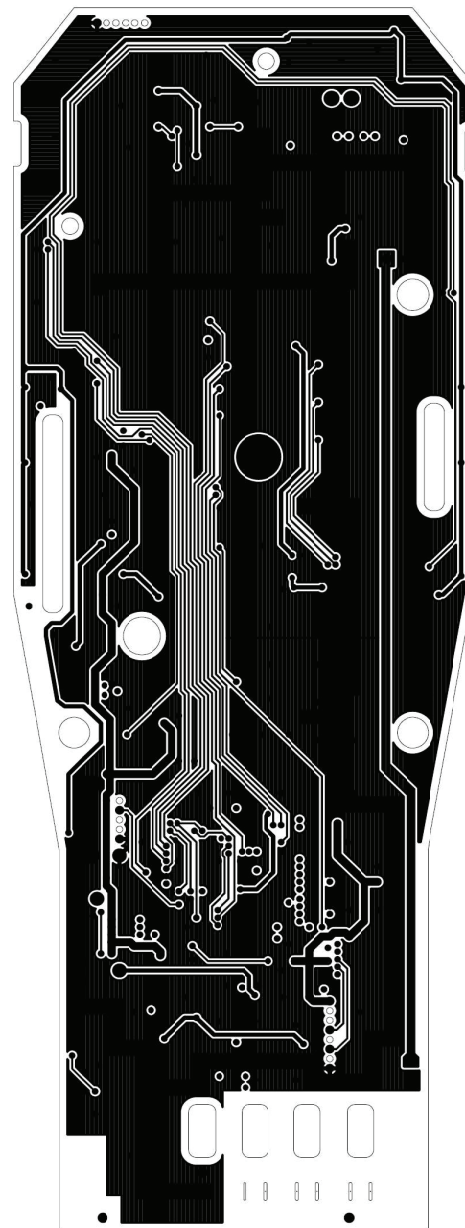
REV.	0	NAME	PARTS LIST OF MAIN PCB FOR MODEL GX-6100
DATE	2022.7.7	DWG.No.	PLT-6991-6364-10 (4/4)
RIKEN KEIKI CO., LTD.		機密情報 / CONFIDENTIAL	



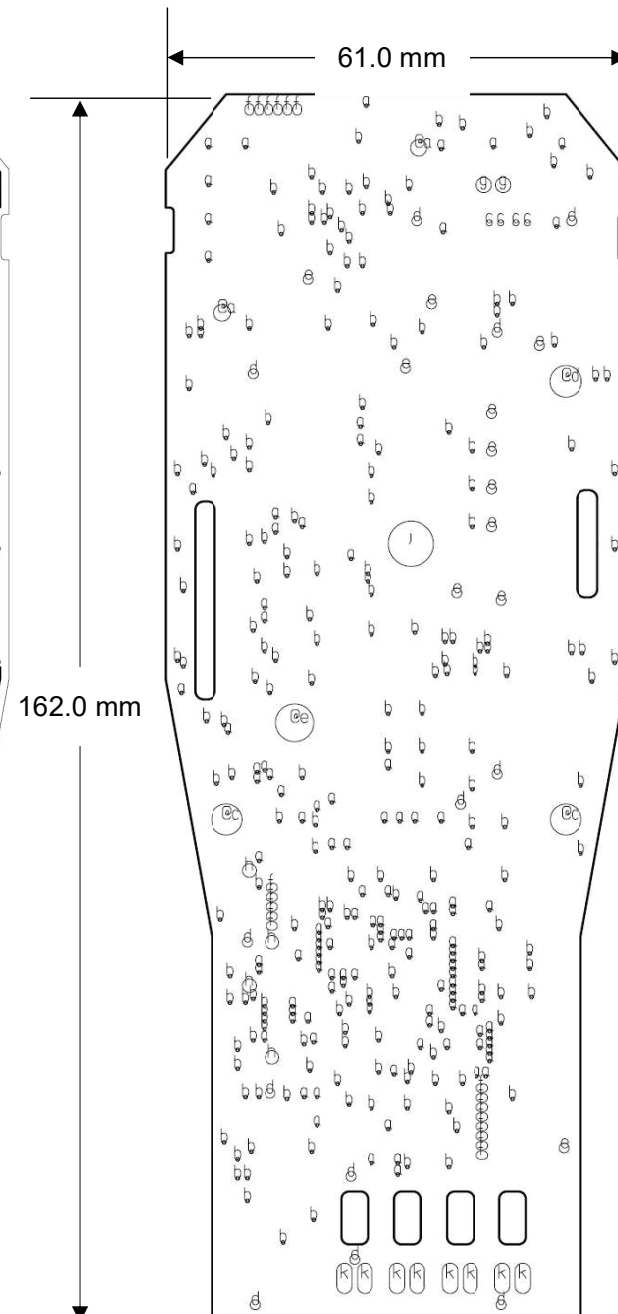
SILK PRINT FOR PARTS SIDE



PARTS SIDE



INNER LAYER (2nd LAYER)



THROUGH HOLE FOR PARTS SIDE

MARK	DIAGRAM	HOLE	MEMO
a	φ0.3	TH	
b	φ0.3	TH	BVH1-2
c	φ0.4	TH	
d	φ0.7	TH	
e	φ0.7	TH	BVH1-2
f	φ0.85	TH	
g	φ0.9	TH	
h	φ1.2	TH	
j	φ4.1	TH	
k	φ0.4 x 2.4	TH	
@a	φ2.2	NTH	
@b	φ4.1	NTH	
@d	φ4.2	NTH	
@e	φ5	NTH	

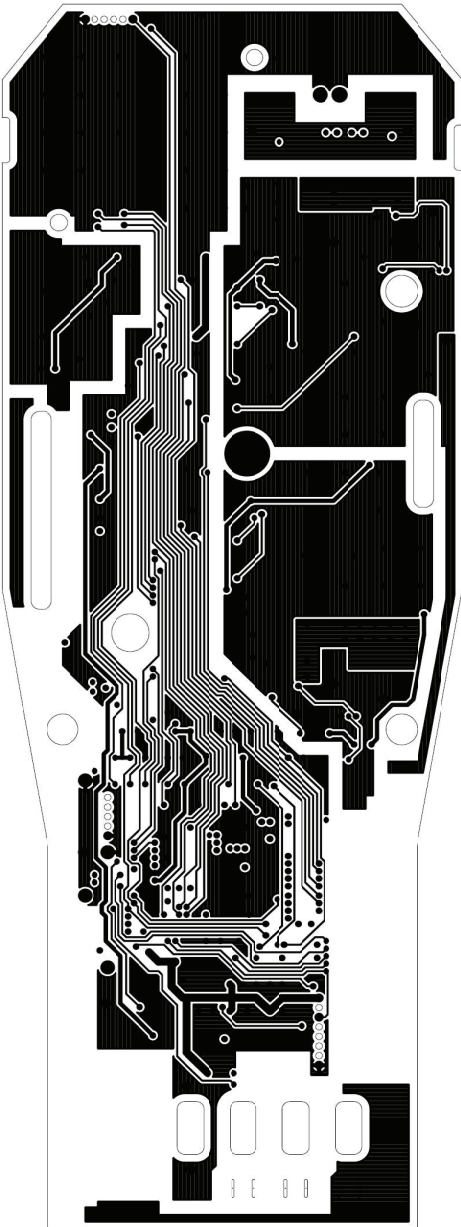
SPECIFICATION FOR PCB

- PCB No. : RKP-92963P
- Material : Glass epoxy
- Thickness : 1.6mm
- Layer number : 4 (2+2 BVH , Between layer#2 and #3 is 0.6mm.)
- Thickness copper film : Surface : 35um , Inner : 35um
- Copper thickness of the via's : 35um above.
- Minimum conductor width : 0.2mm
- CTI : 100 above

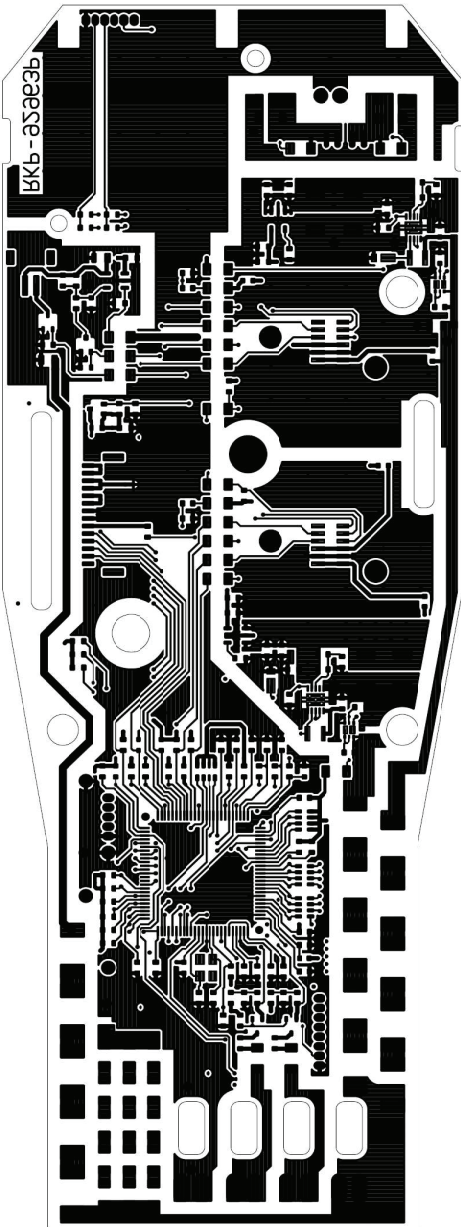
All drawings are view of parts side

SCALE 1:1

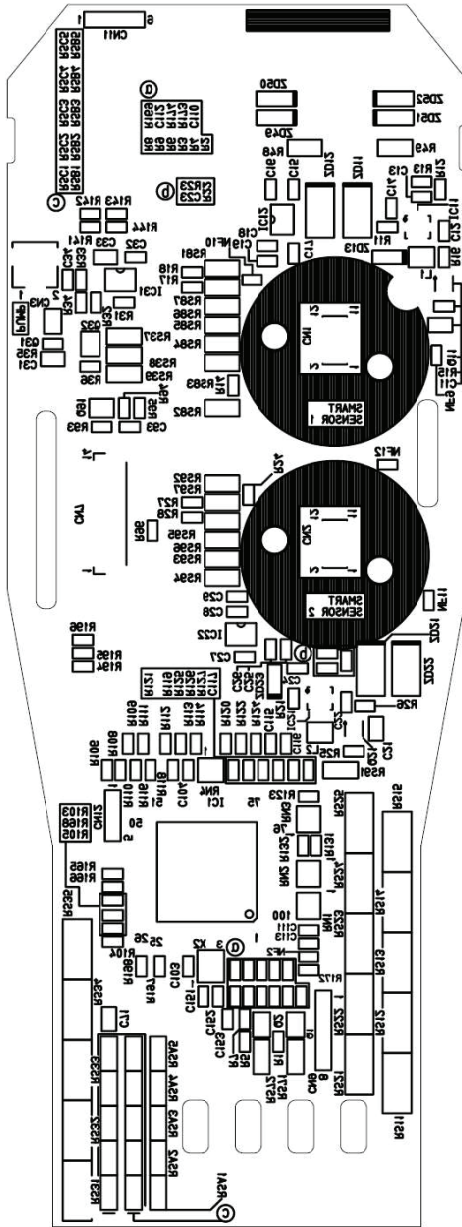
注 記 NOTES		改版担当者 REV. BY	改版日 REVISED	名 称 NAME MAIN PCB FOR MODEL GX-6100
改版回数 REV.	0	総頁数 PAGES	2	
承認 APPROVED	検 討 CHECKED	製 図 DRAWN	作成日 DATE	図 番 DWG. NO.
山田和則	小野圭	木村司	2022.7.7	E 3 - 6 9 9 1 - 6 3 6 4 - 1 0 - 0 1 A
RIKEN KEIKI		理研計器株式会社		機密情報 / CONFIDENTIAL



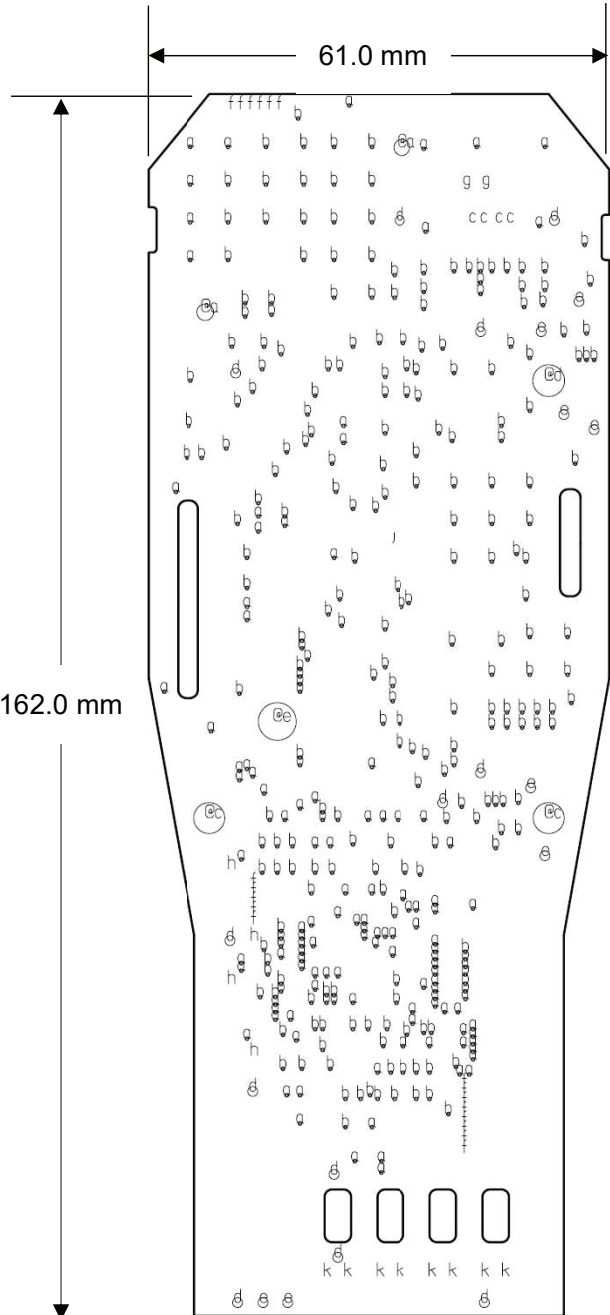
INNER LAYER (3rd LAYER)



SOLDERING SIDE



SILK PRINT FOR SOLDERING SIDE



THROUGH HOLE FOR PARTS SIDE

MARK	DIAGRAM	HOLE	MEMO
a	φ0.3	TH	
b	φ0.3	TH	BVH3-4
c	φ0.4	TH	
d	φ0.7	TH	
e	φ0.7	TH	BVH3-4
f	φ0.85	TH	
g	φ0.9	TH	
h	φ1.2	TH	
j	φ4.1	TH	
k	φ0.4 x 2.4	TH	
@a	φ2.2	NTH	
@b	φ4.1	NTH	
@d	φ4.2	NTH	
@e	φ5	NTH	

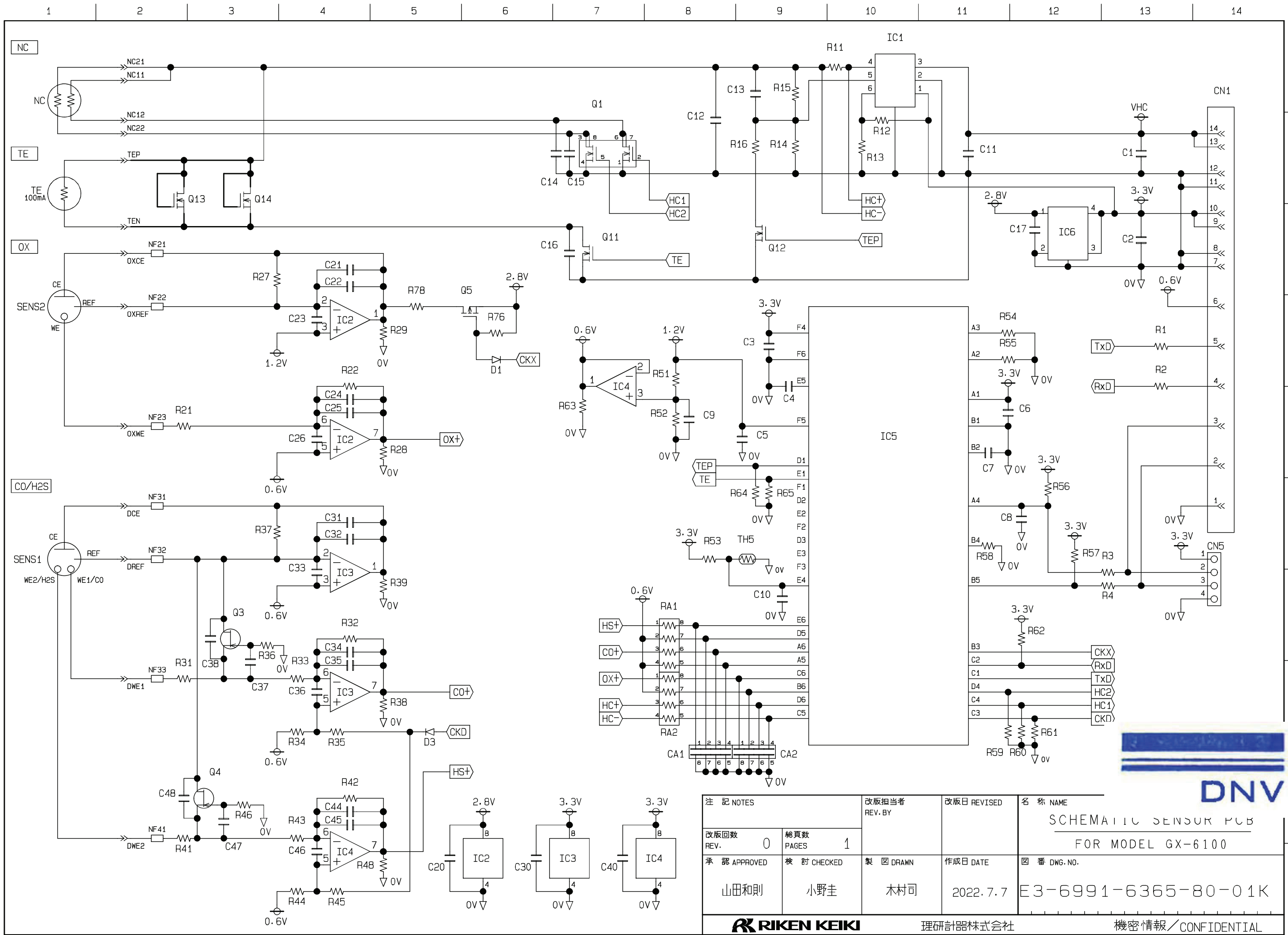
SPECIFICATION FOR PCB


- PCB No. : RKP-92963P
- Material : Glass epoxy
- Thickness : 1.6mm
- Layer number : 4 (2+2 BVH , Between layer#2 and #3 is 0.6mm.)
- Thickness copper film : Surface : 35um , Inner : 35um
- Copper thickness of the via's : 35um above.
- Minimum conductor width : 0.2mm
- CTI : 100 above

All drawings are view of parts side

SCALE 1:1

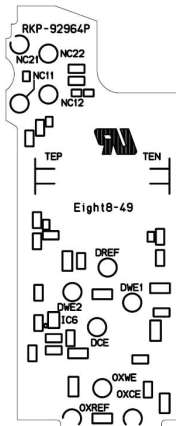
注 記 NOTES		改版担当者 REV. BY	改版日 REVISED	名 称 NAME
改版回数 REV.	0	総頁数 PAGES	2	MAIN PCB
承認 APPROVED	検 討 CHECKED	製 図 DRAWN	作成日 DATE	図 番 DWG. NO.
山田和則	小野圭	木村司	2022.7.7	E 3 - 6 9 9 1 - 6 3 6 4 - 1 0 - 0 2 A
RIKEN KEIKI		理研計器株式会社		機密情報 / CONFIDENTIAL



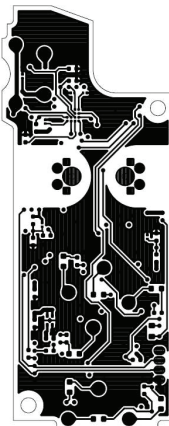
Mark of drawing	Kind of parts	Rating/Model of parts	Remarks
IC1	IC (VLDO)	LTC3025EDC [AD]	m
IC2	IC (OPAMP)	LPV812DGK [TI]	m
IC3, IC4	IC (OPAMP)	LTC2064IMS8 [AD]	m
IC5	IC (CPU)	R5F11CCCGBG [RENESAS]	m
IC6	IC (Voltage regulator)	S-1335A28-A4T2U3 [ABLIC]	m
Q1	Nch + Nch MOS FET	UT6K3TCR [ROHM]	m
Q3, Q4	Nch MOS FET	2SK880-Y [TOSHIBA]	m
Q5	Pch MOS FET	SSM6J212FE [TOSHIBA]	m
Q11	Nch MOS FET	SSM3K123TU [TOSHIBA]	m
Q12	Nch MOS FET	RU1C001UN [ROHM]	m
Q13, Q14	Nch MOS FET	SiS410DN [VISHAY]	m
D1	Diode	RRE02VSM4S [ROHM]	m
D3	Schottky Barrier Diode	RB751VM-40 [ROHM]	m
R1-R4,R12-R16,R21, R27-R29,R31,R33-R36, R38,R39,R41,R43-R46, R48,R51-R65,R76,R78	Chip metal film fixed resistor or Chip jumper	10 - 10M ohm / 1%, 0.1W or 50m ohm max, 1A (1005)	m
R11, R22, R32, R42	Chip metal film fixed resistor or Chip jumper	10 - 10M ohm / 1%, 0.1W or 50m ohm max, 1A (1608)	m
R37	Chip metal film fixed resistor or Chip jumper	11M - 30M ohm / 5%, 0.05W or 50m ohm max, 1A (1005)	m
RA1, RA2	Chip fixed resistor array	10 - 1M ohm x4 / 5%, 0.031W	m
TH5	Thermistor or Chip metal film fixed resistor or Chip jumper	Rt25 = 1k - 470k ohm / 1%, B = 3000K - 5000K or 10 - 10M ohm / 1%,0.063W or 50m ohm max,1A(1608)	m
C1-C17,C20-C26, C30-C38,C40,C44-C48, CA1, CA2	Chip multilayer capacitor	Total capacitance 21.7uFmax	m
NF21,NF22,NF23, NF31,NF32, NF33, NF41	Chip Ferrite Beads or Chip metal film fixed resistor or Chip jumper	BLM18HD102SN1 or 10 - 10M ohm / 1%, 0.1W or 50m ohm max 1A (1608)	m
NOTE	<p>* marked parts are Safety Components. m marked parts are mounted or not. D marked parts, refer to datasheet. [] Parts manufacturer and () Parts size code. Non-Safety Components may be replaced with equivalent components or may not be mounted.</p> 		
REV.	0	NAME	PARTS LIST OF SENSOR PCB FOR MODEL GX-6100
DATE	2022.7.7	DWG.No.	PLT-6991-6365-80 (1/1)
RIKEN KEIKI CO., LTD.		機密情報 / CONFIDENTIAL	

1 2 3 4 5 6 7 8 9 10 11 12 13 14

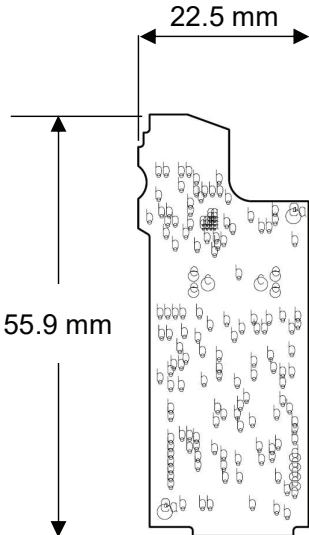
A
B
C
D
E
F
G
H
I
J



SILK PRINT FOR PARTS SIDE

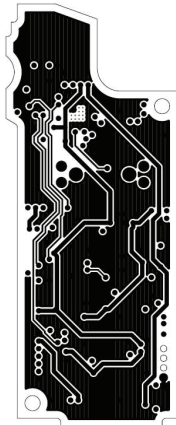


PARTS SIDE

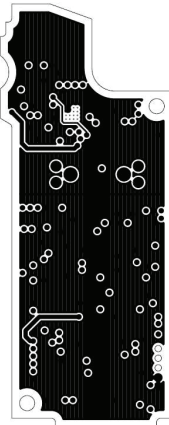


THROUGH HOLE FOR PARTS SIDE

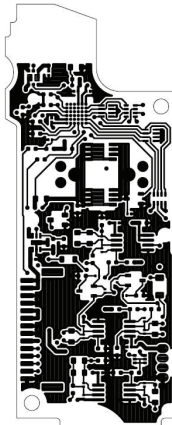
MARK	DIAGRAM	HOLE	MEMO
a	φ0.15	TH	
b	φ0.3	TH	
c	φ0.8	TH	
d	φ0.85	TH	
e	φ0.9	TH	
@a	φ2	NTH	



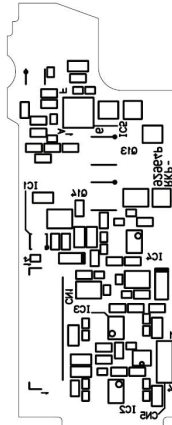
INNER LAYER (2nd LAYER)



INNER LAYER (3rd LAYER)



SOLDERING SIDE



SILK PRINT FOR SOLDERING SIDE




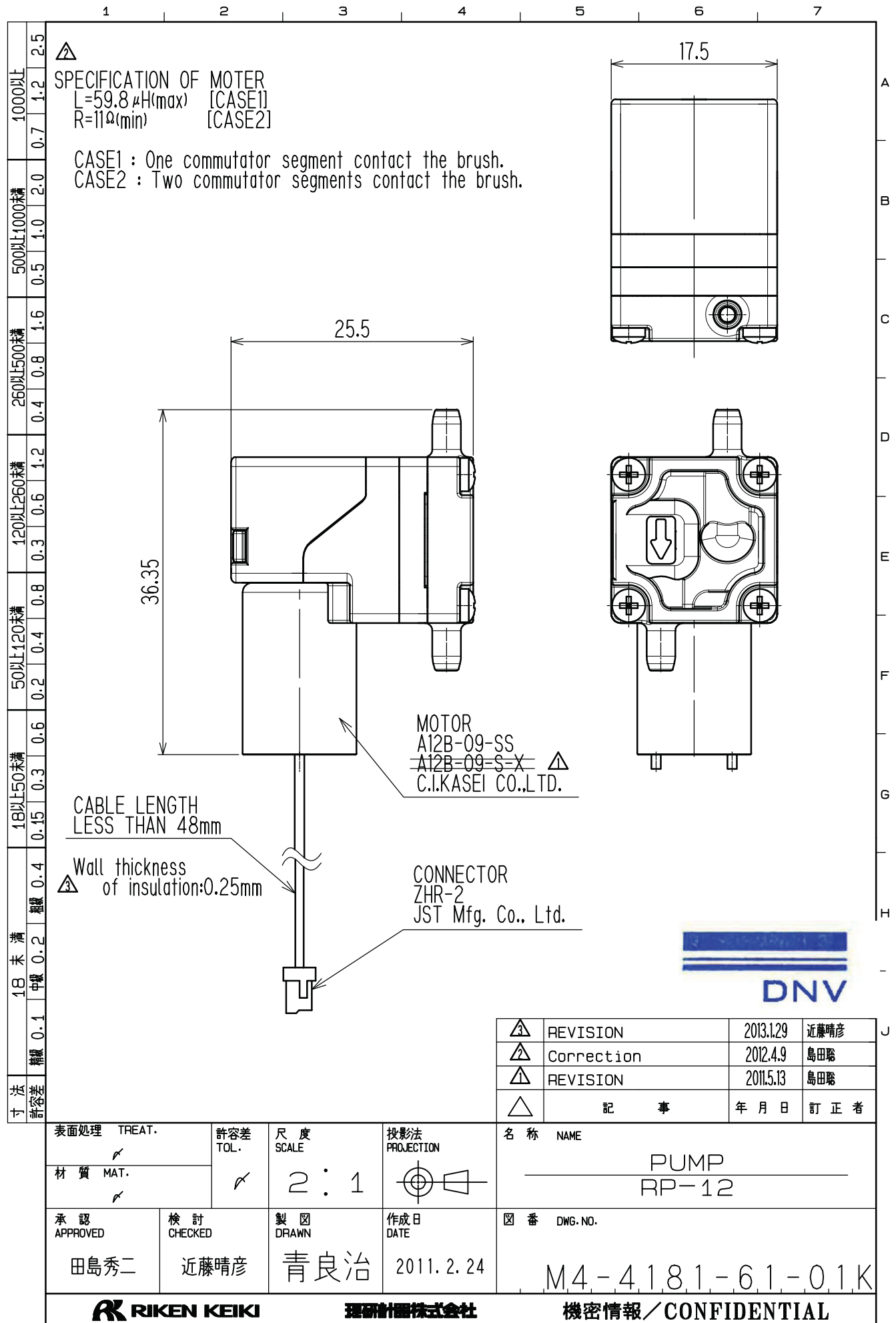
SPECIFICATION FOR PCB

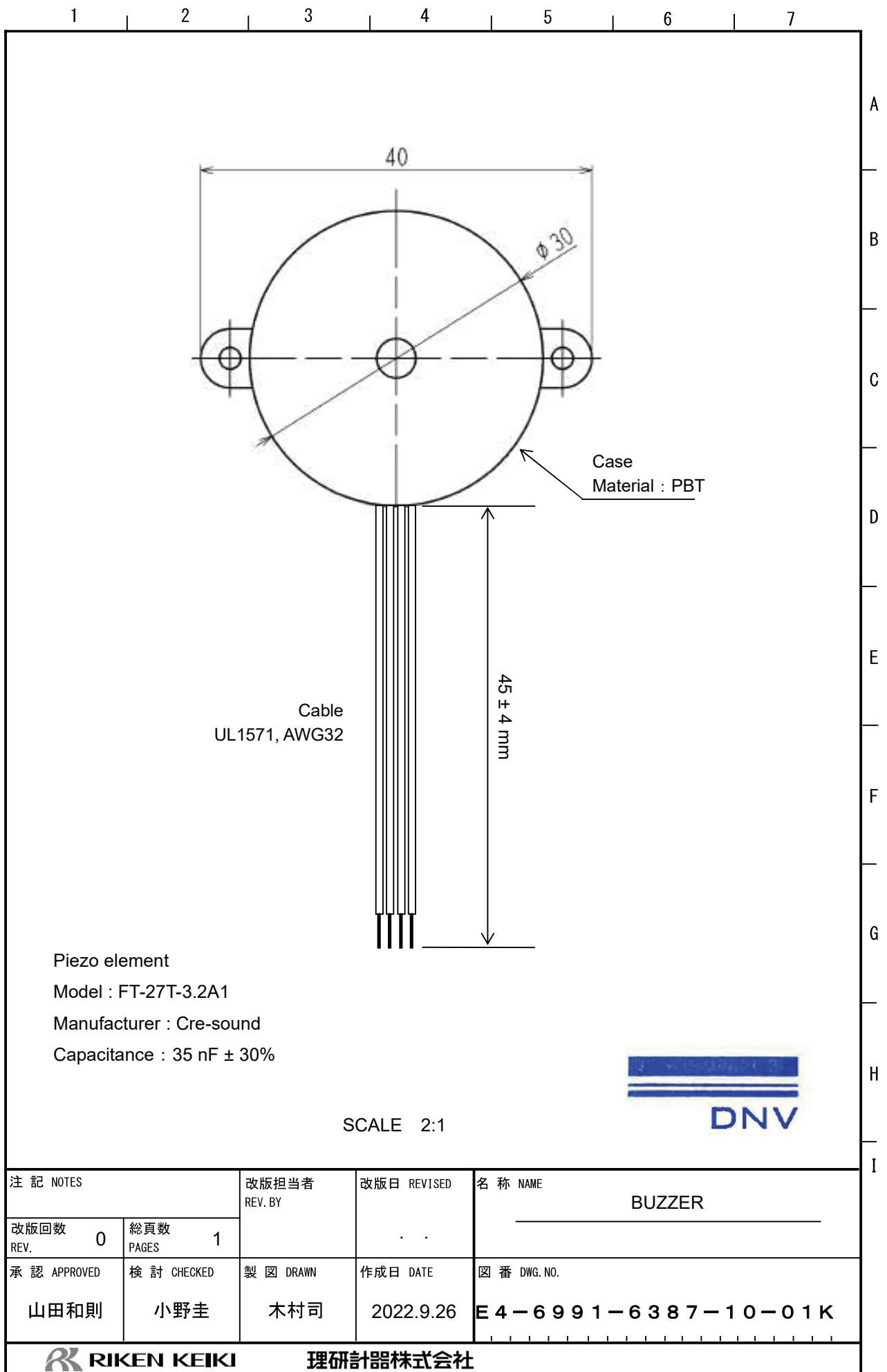
- PCB No. : RKP-92964P
- Material : Glass epoxy
- Thickness : 1.0mm
- Layer number : 4
- Thickness copper film : Surface : 35um , Inner : 35um
- Copper thickness of the via's : 35um above.
- Minimum conductor width : 0.2mm
- CTI : 100 above

All drawings are view of parts side
SCALE 1:1

注 記 NOTES		改版担当者 REV. BY	改版日 REVISED	名 称 NAME SENSOR PCB FOR MODEL GX-6100
改版回数 REV. 0	総頁数 PAGES 1		.	
承認 APPROVED 山田和則	検討 CHECKED 小野圭	製 図 DRAWN 木村司	作成日 DATE 2022.7.7	図 番 DWG. NO. E 3 - 6 9 9 1 - 6 3 6 5 - 8 0 - 0 1 A
RIKEN KEIKI		理研計器株式会社		機密情報 / CONFIDENTIAL

1	2	3	4	5	6	7	
							A
							B
							C
							D
							E
							F
							G
							H
							I
<div><div><div>CN1</div><div>CONNECTOR</div><div>Model : NSHR-14V-S</div><div>Manufacturer : JST</div></div><div><div>CN2</div><div>CONNECTOR</div><div>Model : NSHR-14V-S</div><div>Manufacturer : JST</div></div><div><div><div>1</div><div>14</div></div><div><div>1</div><div>14</div></div></div></div> <div>Wire : UL1571 AWG30 Maximum wire length : 40mm</div> <div></div>							
注 記 NOTES		改版担当者 REV. BY	改版日 REVISED	名 称 NAME			
改版回数 REV.	0			総頁数 PAGES	1	SENSOR to MAIN WIRE FOR MODEL GX-6000	
承認 APPROVED	検 討 CHECKED	製 図 DRAWN	作成日 DATE	図 番 DWG. NO.			
石橋勝	北村正英	小野圭	2014.7.14	E 4 - 6 9 9 1 - 5 3 8 2 - 7 0 - 0 1 K			
RIKEN KEIKI		理研計器株式会社		機密情報 / CONFIDENTIAL			





注 記 NOTES		改版担当者 REV. BY	改版日 REVISED	名 称 NAME
改版回数 REV.	0			BUZZER
総頁数 PAGES	1	製 図 DRAWN	作成日 DATE	図 番 DWG. NO.
承認 APPROVED	検 討 CHECKED			
山田和則	小野圭	木村司	2022.9.26	E 4 - 6 9 9 1 - 6 3 8 7 - 1 0 - 0 1 K



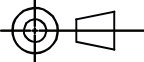
表面処理 TREAT.		許容差 TOL.	尺 度 SCALE	投影法 PROJECTION	名 称 NAME COMBUSTIBLE GAS SENSOR NCR-6309
材 質 MAT.			5 : 1		
承認 APPROVED	検 討 CHECKED	製 図 DRAWN	作成日 DATE	図 番 DWG. NO.	
青良治	海野裕作	河原井英樹	2017. 8. 31	M3-4463-10-02K	
RIKEN KEIKI		理研計測株式会社		機密情報 / CONFIDENTIAL	

Diagram showing the side view of the sensor body. The sensor body material is labeled as PP. The top cap material is also labeled as PP. The height of the sensor body is dimensioned as 6.9.

Diagram showing the top view of the sensor body. The diameter is dimensioned as $\phi 15$. The distance from the center to the terminals is dimensioned as A.

Diagram showing the A-A section view of the sensor body. The terminals are labeled as TERMINAL. The diagram indicates that the sensor body does not contain PCB or electronic components.

A-A SECTION

DOES NOT CONTAIN PCB
NOR ELECTRONIC COMPONENTS.

No Inductors
No Capacitors
No Resistors are contained.

~~△
CAPACITANCE ≈ 0
INDUCTANCE ≈ 0~~

DNV logo

△	REVISION	2018.3.29	武井康典
△	REVISION	2018.3.19	武井康典
△	記 事	年 月 日	訂 正 者

1991. 9. CAD A4

TOP CAP MATERIAL: PP

SENSOR BODY MATERIAL: PP

6.9

Ø 15

A

TERMINAL

△

A-A SECTION

DOES NOT CONTAIN PCB
NOR ELECTRONIC COMPONENTS.

No Inductors
No Capacitors
No Resistors are contained.

CAPACITANCE ≈ 0

INDUCTANCE ≈ 0

△	REVISION	2018.3.29	武井康典
△	REVISION	2018.3.19	武井康典
△	記 事	年 月 日	訂 正 者
名 称 NAME 3EC SENSOR TYPE-ESR			
図 番 DWG. NO. M4-4482-02-01K			

表面処理 TREAT.	許容差 TOL.	尺 寸 SCALE	投 影 法 PROJECTION
材 質 MAT.		2 : 1	
承認 APPROVED	検 討 CHECKED	製 図 DRAWN	作成日 DATE
青良治	近藤晴彦	海野裕作	2017. 8. 21

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機密情報 / CONFIDENTIAL

TOXIC GAS SENSOR
M4-4084-30-08K

28.6

SENSOR BODY
MATERIAL : ABS

ESS SENSOR PCB

ø 24.5

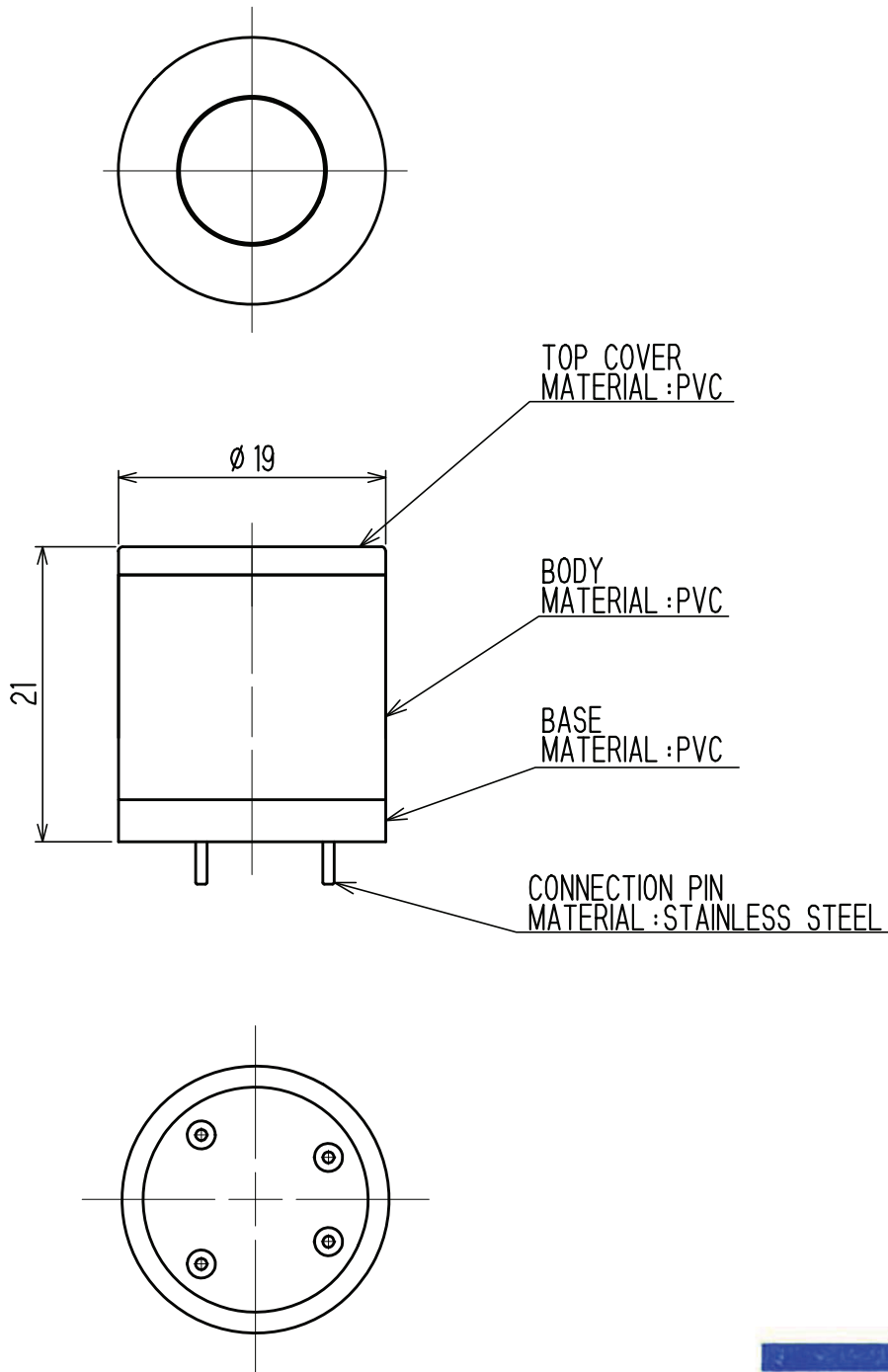
CAP
MATERIAL : ABS

DNV

Technical drawing of a Toxic Gas Sensor (M4-4084-30-08K) showing three views: top, side, and bottom. The top view shows a circular sensor body with a central hole. The side view shows the sensor body (ABS) and the ESS sensor PCB, with a height dimension of 28.6 and a diameter dimension of ø 24.5. The bottom view shows the sensor body with a central hole and four mounting holes, with a label indicating the cap material is ABS. The DNV logo is present in the bottom right corner.

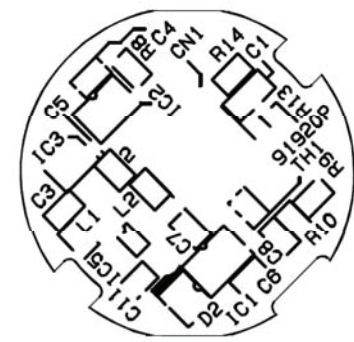
1991. 9. CAD A4

寸法	18未満	18以上50未満	50以上120未満	120以上260未満	260以上500未満	500以上1000未満	1000以上
許容差	中 0.1 粗 0.2	粗 0.4 中 0.15 細 0.3	0.2 0.4 0.6	0.3 0.6 1.2	0.4 0.8 1.6	0.5 1.0 2.0	0.7 1.2 2.5

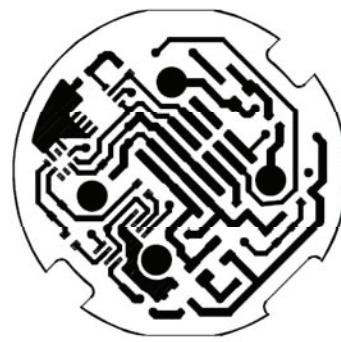


Output specification
 ・Open circuit voltage : 0.4V(max)
 ・Short circuit current : 0.1mA(max)

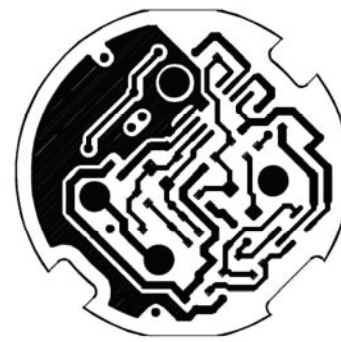
表面処理 TREAT.		許容差 TOL.	尺 度 SCALE	投影法 PROJECTION	名 称 NAME
材 質 MAT.			2 : 1		TOXIC GAS SENSOR
承認 APPROVED	検 討 CHECKED	製 図 DRAWN	作成日 DATE	図 番 DWG. NO.	
青良治	近藤晴彦	武井康典	2014. 7. 30	M4-4084-30-08K	
RIKEN KEIKI		理研計測株式会社		機密情報 / CONFIDENTIAL	



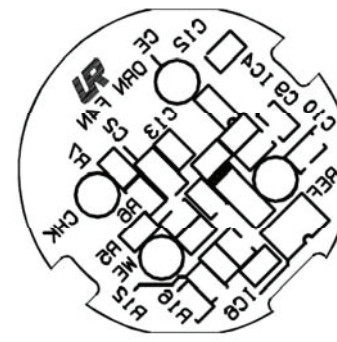
SILK PRINT FOR PARTS SIDE



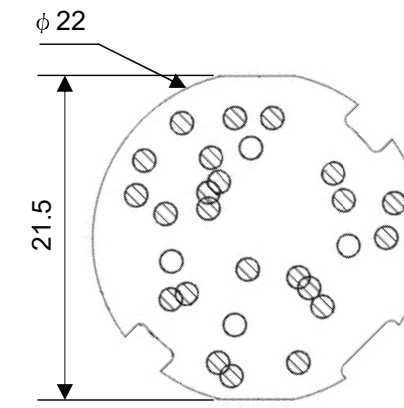
PARTS SIDE



SOLDERING SIDE



SILK PRINT FOR SOLDERING SIDE



THROUGH HOLE DATA

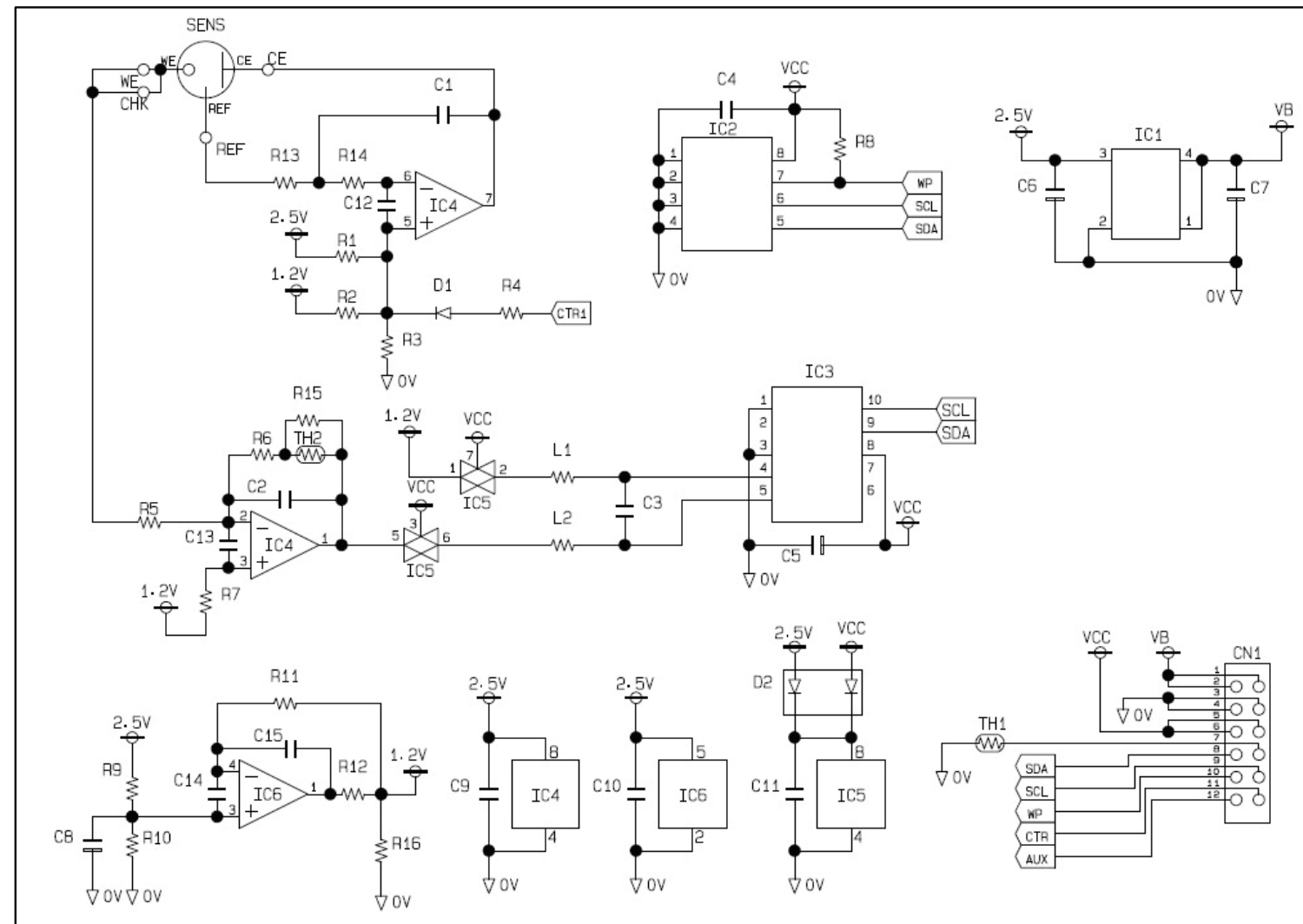
MARK	DIAGRAM	HOLE
⊕	φ 0.3	TH
○	φ 1.0	TH

SPECIFICATION FOR PCB

- PCB No. : RKP-91920P
- Material : Glass epoxy
- Thickness : 1.2mm
- Layer number : 2
- Thickness copper film : 18um
- Minimum conductor width : 0.2mm
- CTI : 100 above

All drawings are view of parts side

SCALE 2:1



SCHEMATIC

PARTS LIST

Mark of drawing	Kind of parts	Rating / Model of parts	Remarks
IC1	IC (Voltage regulator)	S-1313D25-N4T1	m
IC2	IC (EEPROM)	S-24C16CI-I8T1	m
IC3	IC (A/D Converter)	ADS1114IRU	m
IC4	IC (OPAMP)	LT6004CMS8	m
IC5	IC (Logic)	HD74ALVC2G66	m
IC6	IC (OPAMP)	AD8500AKS	m
D1	Diode	1SS355	m
D2	Diode array	RB480Y (2elements)	m
TH1	Chip thermistor	Rt25 = 470 ohm -100 k ohm / 5%, B=3000K-5000K (1005)	m
R1-16	Chip fixed resistor or Chip jumper	10 ohm - 1M ohm / 1%, 0.063W or 50m ohm max, 1A (1005)	m
C1,2	Chip multilayer capacitor	10uF / 10%, 6.3V	m
C4,5,6,7,9,10,11	Chip multilayer capacitor	0.1uF / 10%, 16V	m
C3,8,12,13,14	Chip multilayer capacitor	10pF-1000pF / 10%, 50V	m
C15	Chip multilayer capacitor	1uF / 10%, 10V	m
L1,2	Chip fixed resistor or Chip jumper or Noise filter	10 ohm - 1M ohm / 1%, 0.063W or 50m ohm max, 1A (1005) or BLM15HD182	m

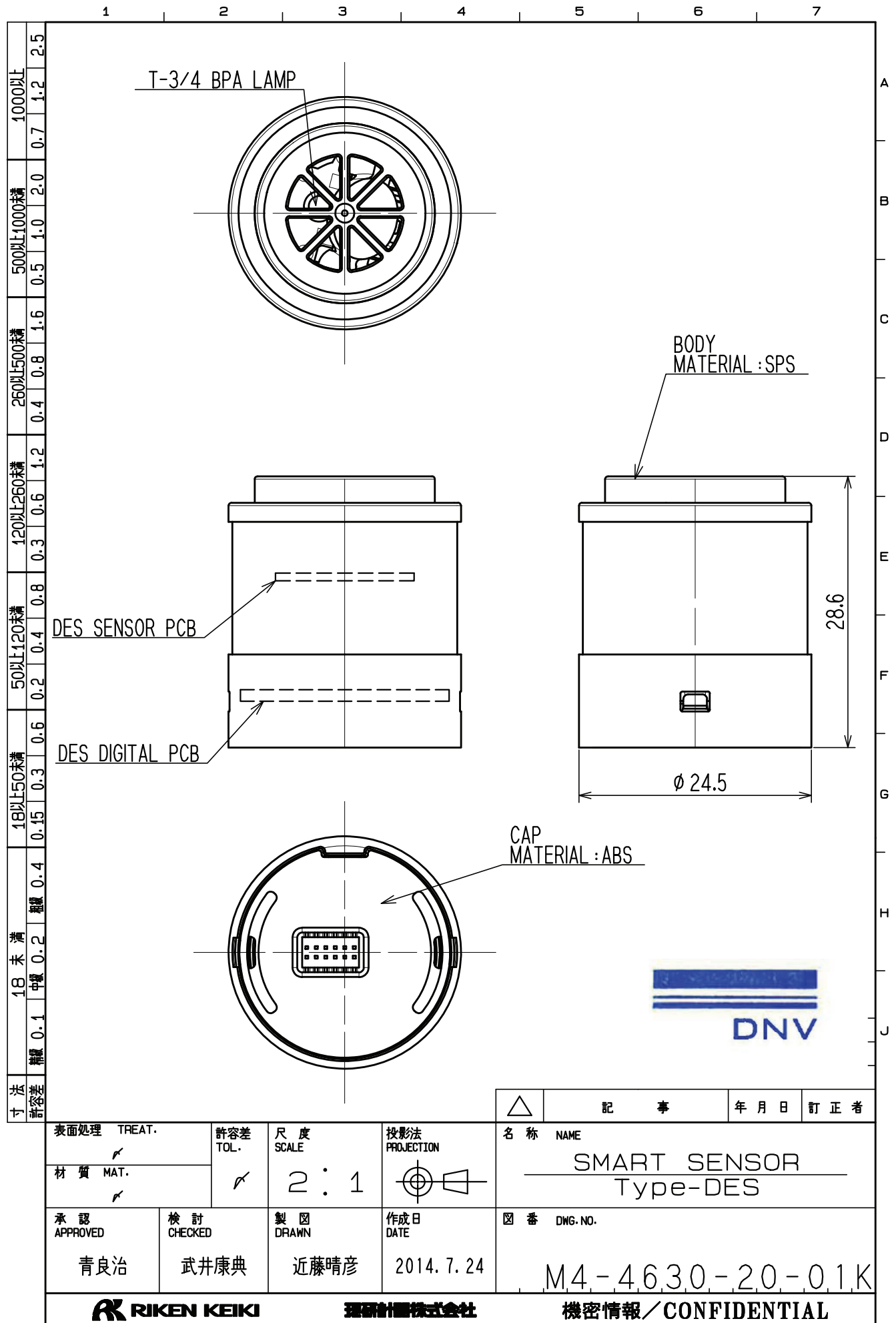
m marked parts are mounted or not

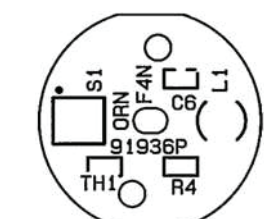
注 記 NOTES		改版担当者 REV. BY	改版日 REVISED	名称 NAME ESS SENSOR PCB
改版回数 REV.	0	総頁数 PAGES	1	
承認 APPROVED	検 討 CHECKED	製 図 DRAWN	作成日 DATE	図 番 DWG. NO.
石橋勝	北村正英	小野圭	2014.7.14	E 3 - 6 9 9 1 - 5 3 8 4 - 1 0 - 0 1 K

RIKEN KEIKI

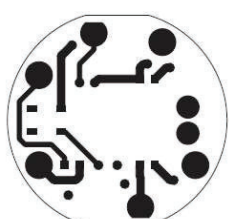
理研計器株式会社

機密情報 / CONFIDENTIAL





SILK PRINT
FOR PARTS SIDE



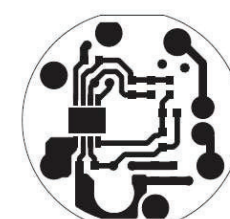
PARTS SIDE



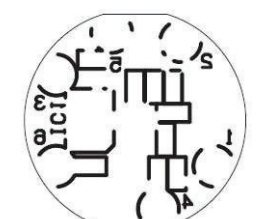
Lay.2



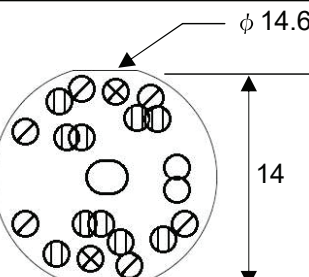
Lay.3



SOLDERING SIDE



SILK PRINT FOR
SOLDERING SIDE

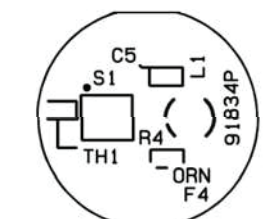


THROUGH HOLE
DATA

MARK	DIAGRAM	HOLE
①	φ 0.3	TH
○	φ 0.5	TH
⊙	φ 0.8	TH
⊗	φ 1.7	NTH

SPECIFICATION FOR PCB
•PCB No. : RKP-91936P
•Material : Glass epoxy
•Thickness : 0.8mm
•Layer number : 4
•Thickness copper film : 18um
•Minimum conductor width : 0.2mm
•CTI : 100 above

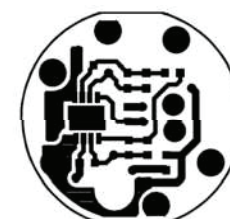
or



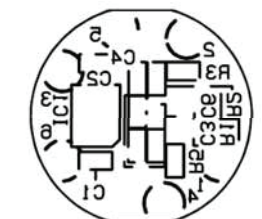
SILK PRINT
FOR PARTS SIDE



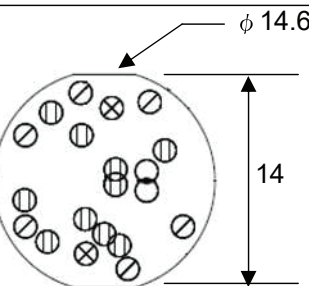
PARTS SIDE



SOLDERING SIDE



SILK PRINT FOR
SOLDERING SIDE



THROUGH HOLE
DATA

MARK	DIAGRAM	HOLE
①	φ 0.3	TH
○	φ 0.5	TH
⊙	φ 0.8	TH
⊗	φ 1.7	NTH

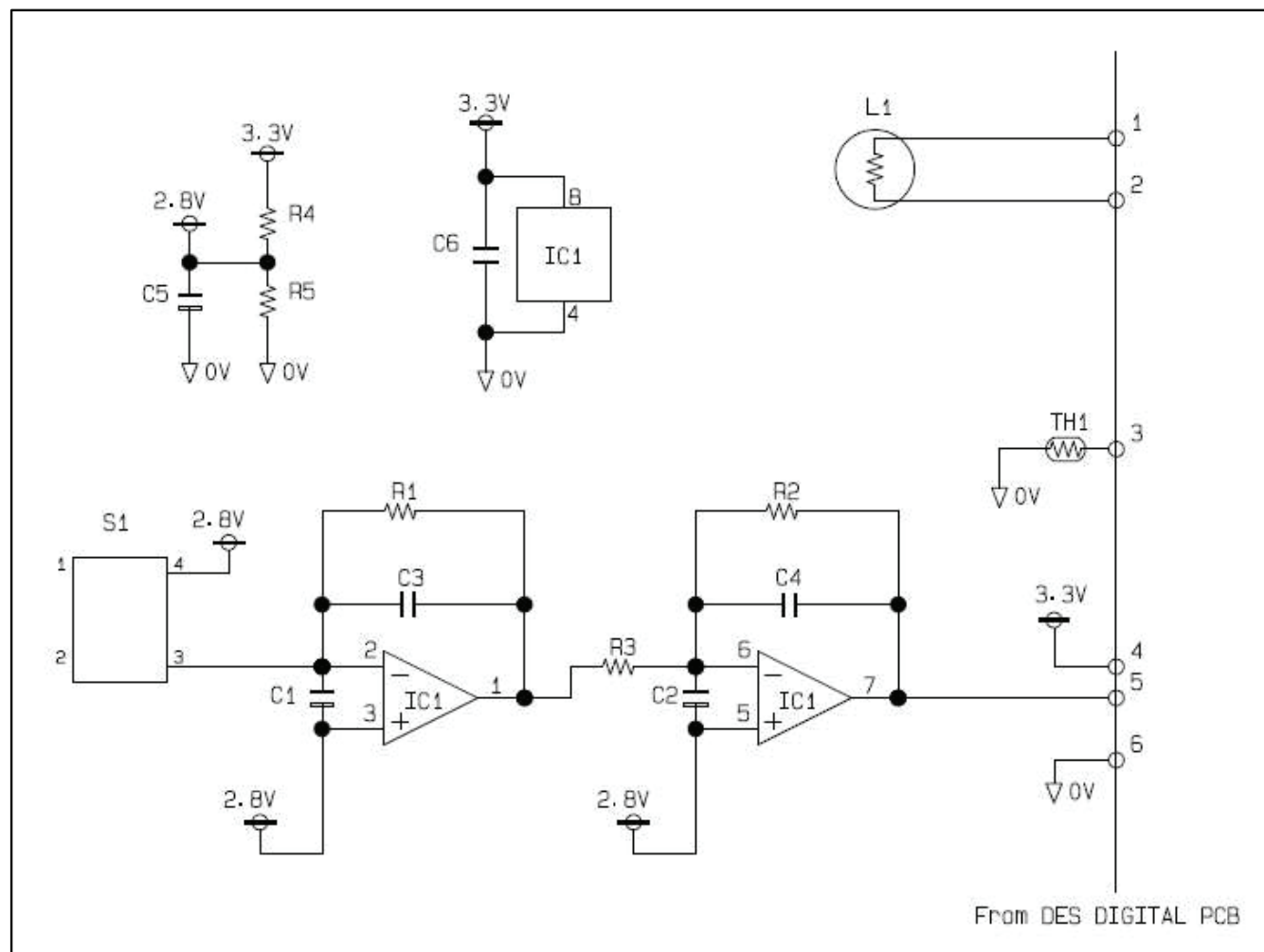
SPECIFICATION FOR PCB
•PCB No. : RKP-91834P
•Material : Glass epoxy
•Thickness : 0.8mm
•Layer number : 2
•Thickness copper film : 18um
•Minimum conductor width : 0.2mm
•CTI : 100 above

All drawings are view of parts side
SCALE 2:1

PARTS LIST

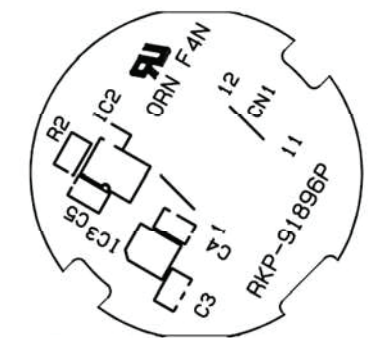
Mark of drawing	Kind of parts	Rating / Model of parts	Remarks
S1	IR Sensor	IR1011	
IC1	IC (OPAMP)	LTC2055HDD	m
TH1	Chip thermistor	Rt25 = 470 ohm -100 k ohm / 5%, B=3000K-5000K (1005)	m
R1,2,3,4,5	Chip fixed resistor or Chip jumper	10 ohm – 1M ohm / 1%, 0.063W or 50m ohm max, 1A (1005)	m
C1,2	Chip multilayer capacitor	10pF-1000pF / 10%, 50V	m
C3	Chip multilayer capacitor	0.01uF / 10%, 25V	m
C4,5,6	Chip multilayer capacitor	0.1uF / 10%, 25V	m
L1	T-3/4 BPA LAMP	OL-8270BPA refer to E4-6991-5129-60-01K	

m marked parts are mounted or not



SCHEMATIC

注 記 NOTES		改版担当者 REV. BY	改版日 REVISED	名 称 NAME
Add RKP-91936P		小野圭	2015.5.25	DES SENSOR PCB
改版回数 REV.	1	総頁数 PAGES	1	
承認 APPROVED	検 討 CHECKED	製 図 DRAWN	作成日 DATE	図 番 DWG. NO.
石橋勝	北村正英	小野圭	2014.7.14	E 3 - 6 9 9 1 - 5 3 8 5 - 9 0 - 0 1 K
RIKEN KEIKI 理研計器株式会社 機密情報 / CONFIDENTIAL				



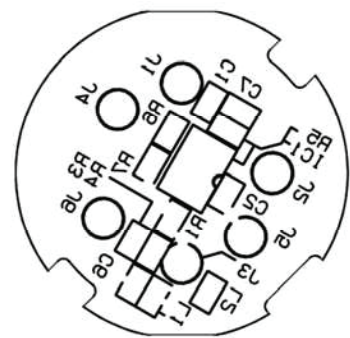
SILK PRINT FOR PARTS SIDE



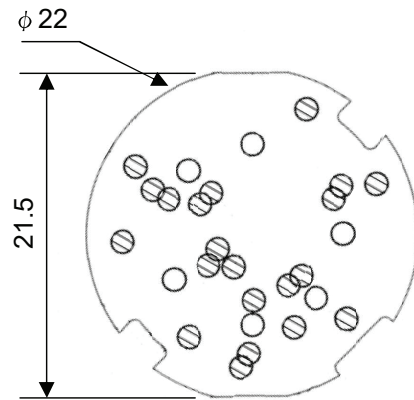
PARTS SIDE



SOLDERING SIDE



SILK PRINT FOR SOLDERING SIDE



THROUGH HOLE DATA

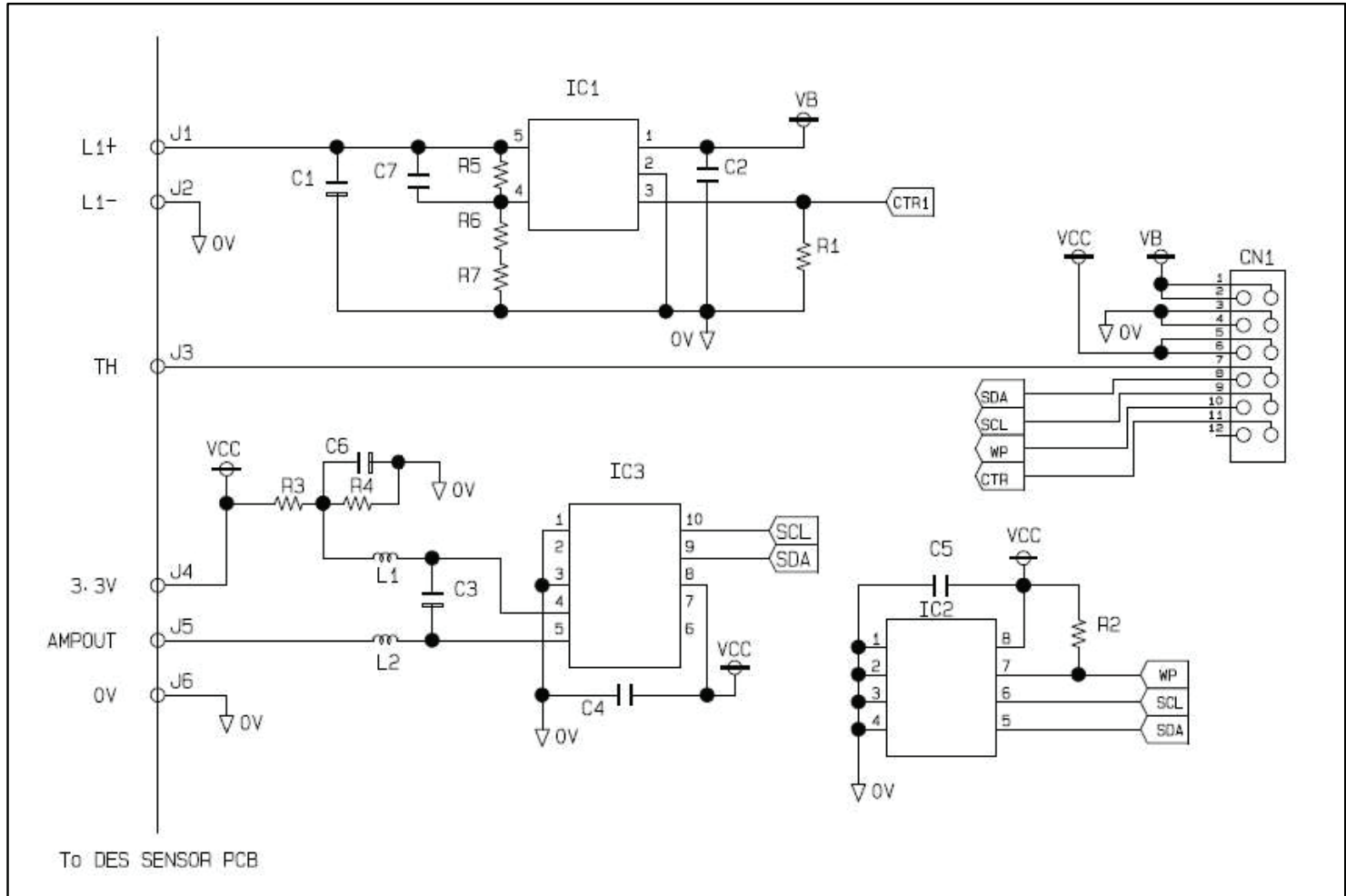
MARK	DIAGRAM	HOLE
①	φ 0.3	TH
○	φ 0.9	TH

SPECIFICATION FOR PCB

- PCB No. : RKP-91896P
- Material : Glass epoxy
- Thickness : 1.2mm
- Layer number : 2
- Thickness copper film : 35um
- Minimum conductor width : 0.3mm
- CTI : 100 above

All drawings are view of parts side

SCALE 2:1



SCHEMATIC

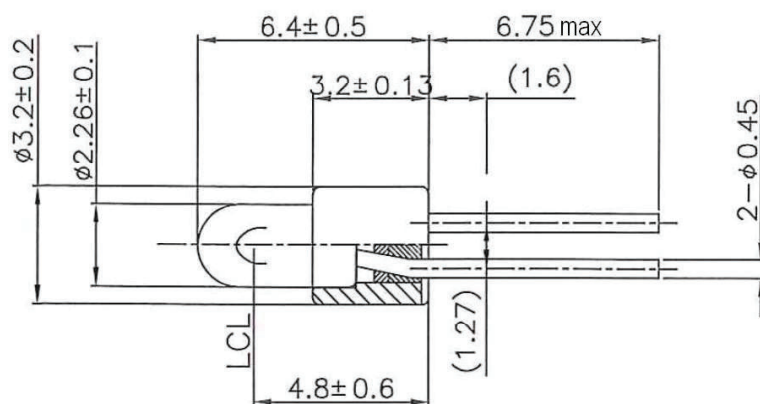
PARTS LIST

Mark of drawing	Kind of parts	Rating / Model of parts	Remarks
IC1	IC (Voltage regulator)	TPS73201DBV	m
IC2	IC (EEPROM)	S-24C16CI-I8T1	m
IC3	IC (A/D Converter)	ADS1114IRU	m
R1,2,3,4,5,6,7	Chip fixed resistor or Chip jumper	10 ohm – 1M ohm / 1%, 0.063W or 50m ohm max,1A (1005)	m
C1,2	Chip multilayer capacitor	4.7uF / 20%, 6.3V	m
C3,4,5,6	Chip multilayer capacitor	0.1uF / 10%, 25V	m
C7	Chip multilayer capacitor	1uF / 10%, 10V	m
L1,2	Chip fixed resistor or Chip jumper or Noise filter	10 ohm – 1M ohm / 1%, 0.063W or 50m ohm max,1A (1005) or BLM15HD182	m

m marked parts are mounted or not



注 記 NOTES	C1、C2 change	改版担当者 REV. BY	改版日 REVISED	名 称 NAME
改版回数 REV.	1	小野圭	2015.2.24	DES DIGITAL PCB
承認 APPROVED	検 討 CHECKED	製 図 DRAWN	作成日 DATE	図 番 DWG. NO.
石橋勝	北村正英	小野圭	2014.7.14	E 3 - 6 9 9 1 - 5 3 8 6 - 6 0 - 0 1 K



SCALE : 5/1 UNIT : mm

Model : OL-8270BPA
 Design Voltage : 5V
 Design Current : 115mA±10%
 Brightness (MSCP): 0.15MSCP±25%
 Filament Shape : C-2R
 Base color : WHITE
 Manufacturer : Oshino Lamps Limited



注 記 NOTES		改版担当者 REV. BY	改版日 REVISED	名 称 NAME
改版回数 REV.	0			T- 3/4 BPA LAMP OL-8270BPA
承認 APPROVED	検 討 CHECKED	製 図 DRAWN	作成日 DATE	図 番 DWG. NO.
石橋勝	北村正英	小野圭	2012. 2. 24	E 4 - 6 9 9 1 - 5 1 2 9 - 6 0 - 0 1 K

VOC GAS SENSOR
 MINI PID 3PIN
 Ion Science Ltd.
 IDENTIFICATION
 Ⓢ II 1G Ex ia IIC T4 (-40℃≤T_a≤+55℃)
 0.1W limitation
 CERTIFICATE
 Baseefa 07ATEX0060U
 IECEx BAS 07.0030U

SENSOR BODY MATERIAL: ABS

△
 PIS SENSOR PCB

minimum 2.5

EPOXY RESIN

△
 PIS DIGITAL PCB

28.6

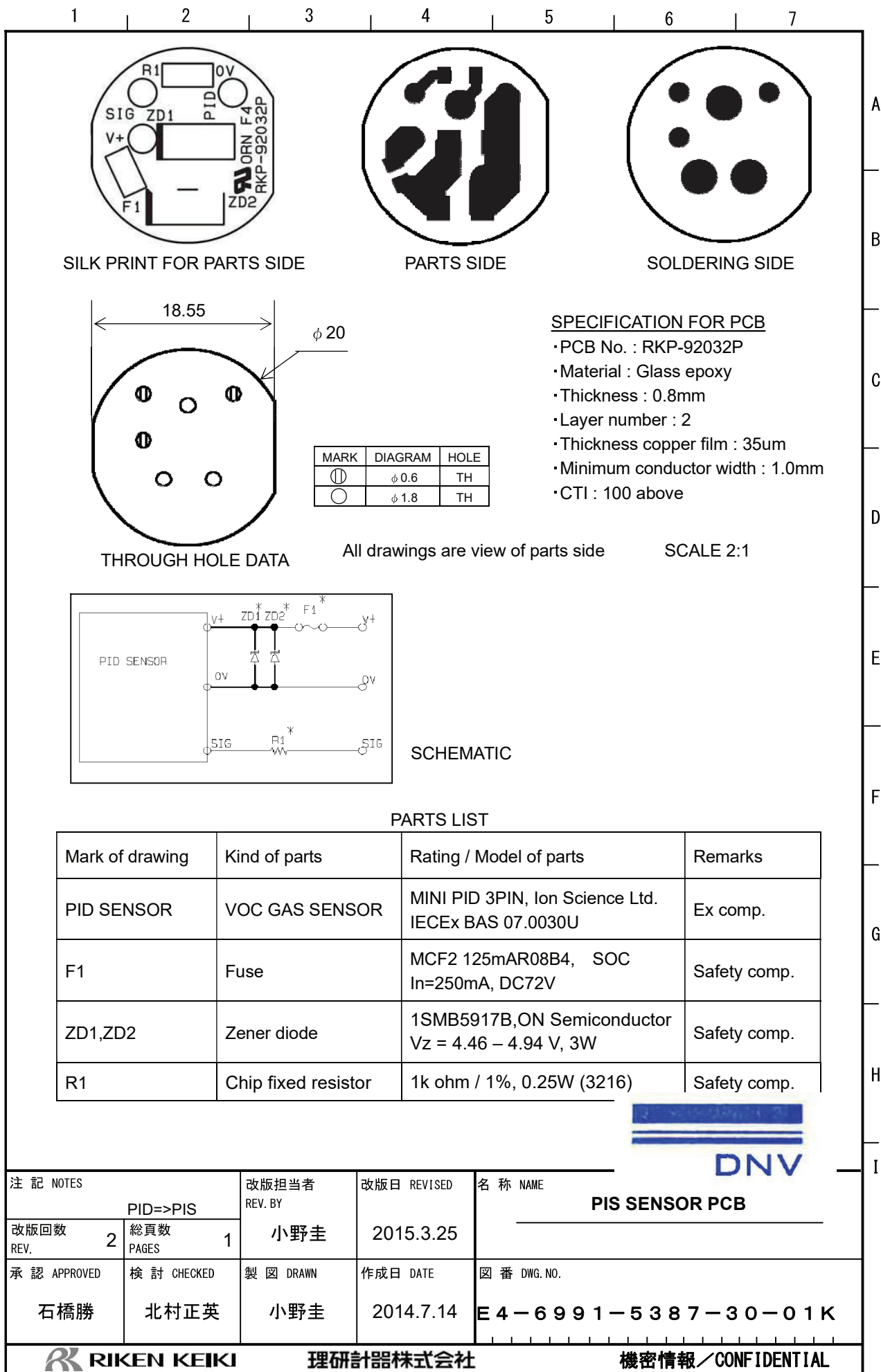
ø 24.5

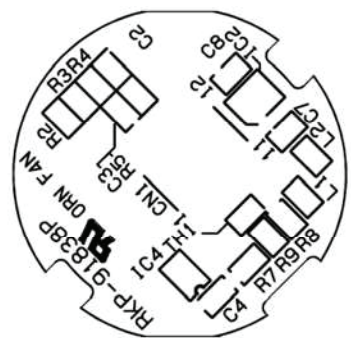
CAP MATERIAL: ABS

DNV

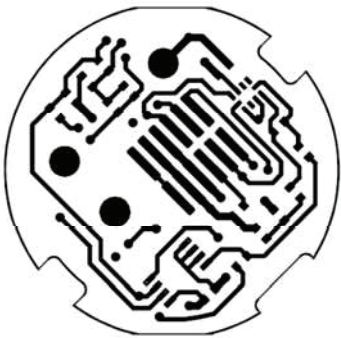
△	REVISION	2015.3.25	武井康典
△	記 事	年 月 日	訂 正 者

1991. 9. CAD A4





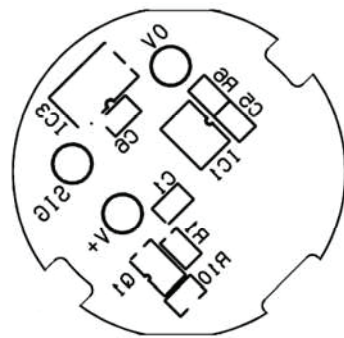
SILK PRINT FOR PARTS SIDE



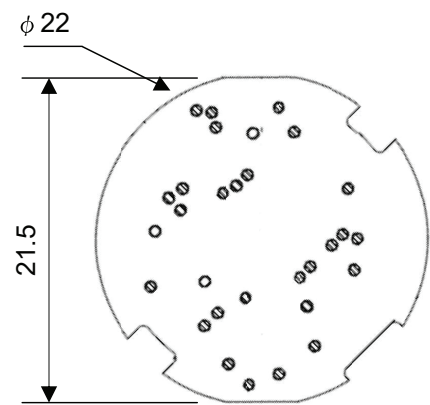
PARTS SIDE



SOLDERING SIDE



SILK PRINT FOR SOLDERING SIDE



THROUGH HOLE DATA

MARK	DIAGRAM	HOLE
⊕	φ 0.3	TH
○	φ 1.0	TH

SPECIFICATION FOR PCB

- PCB No. : RKP-91838P
- Material : Glass epoxy
- Thickness : 1.2mm
- Layer number : 2
- Thickness copper film : 18um
- Minimum conductor width : 0.3mm
- CTI : 100 above

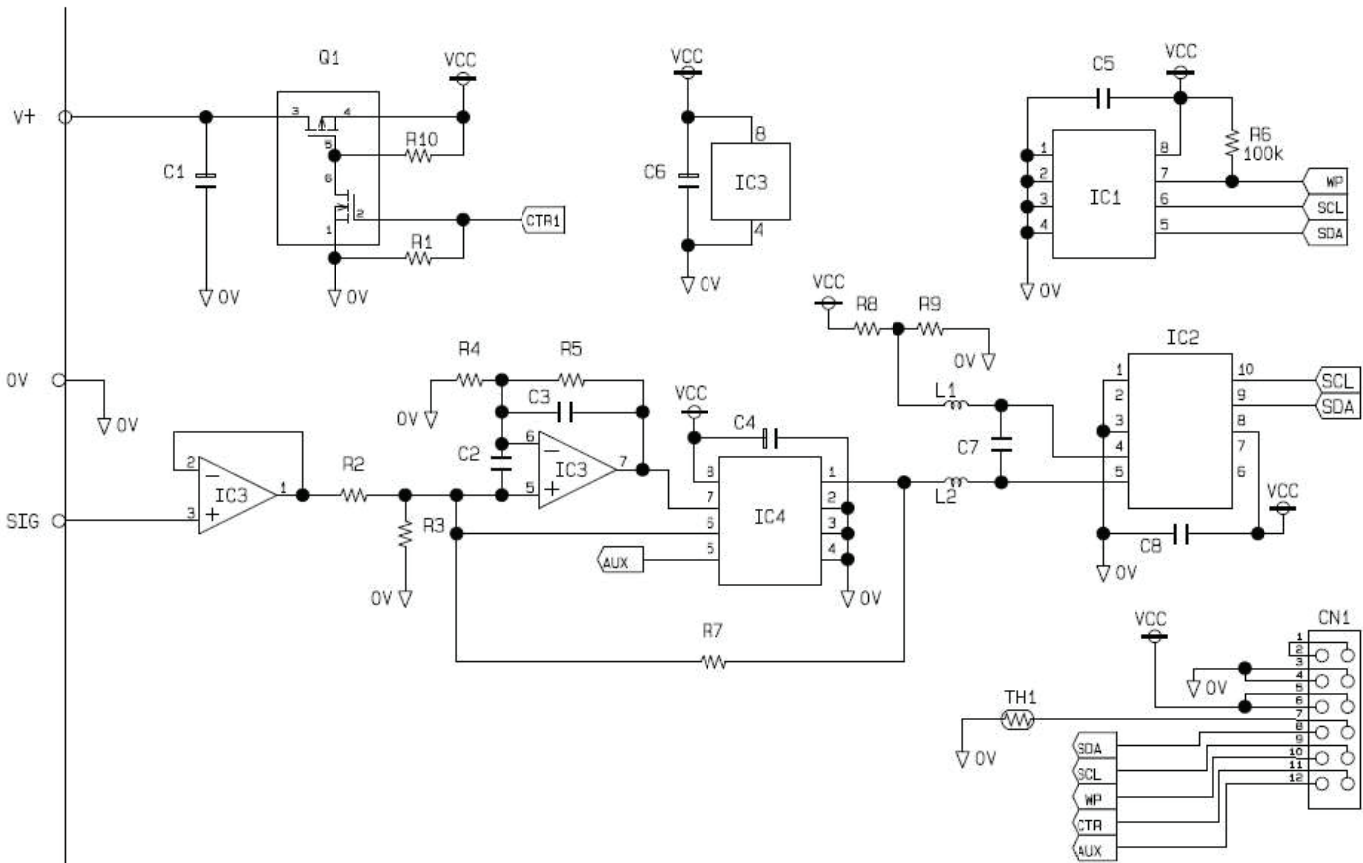
All drawings are view of parts side

SCALE 2:1

PARTS LIST

Mark of drawing	Kind of parts	Rating / Model of parts	Remarks
IC1	IC (EEPROM)	S-24C16CI-I8T1	m
IC2	IC (A/D Converter)	ADS1114IRU	m
IC3	IC(OPAMP)	OPA2378AIDCN	m
Q1	N+P-ch FET	EM6M2	m
TH1	Chip thermistor	Rt25 = 470 ohm -100 k ohm / 5%, B=3000K-5000K (1005)	m
R1-10	Chip fixed resistor or Chip jumper	10 ohm – 1M ohm / 1%, 0.063W or 50m ohm max,1A (1005)	m
C1,2,4,5,6,7,8	Chip multilayer capacitor	0.1uF / 10%, 16V	m
C3	Chip multilayer capacitor	10pF-1000pF / 10%, 50V	m
L1,2	Chip fixed resistor or Chip jumper or Noise filter	10 ohm – 1M ohm / 1%, 0.063W or 50m ohm max,1A (1005) or BLM15HD182	m

m marked parts are mounted or not

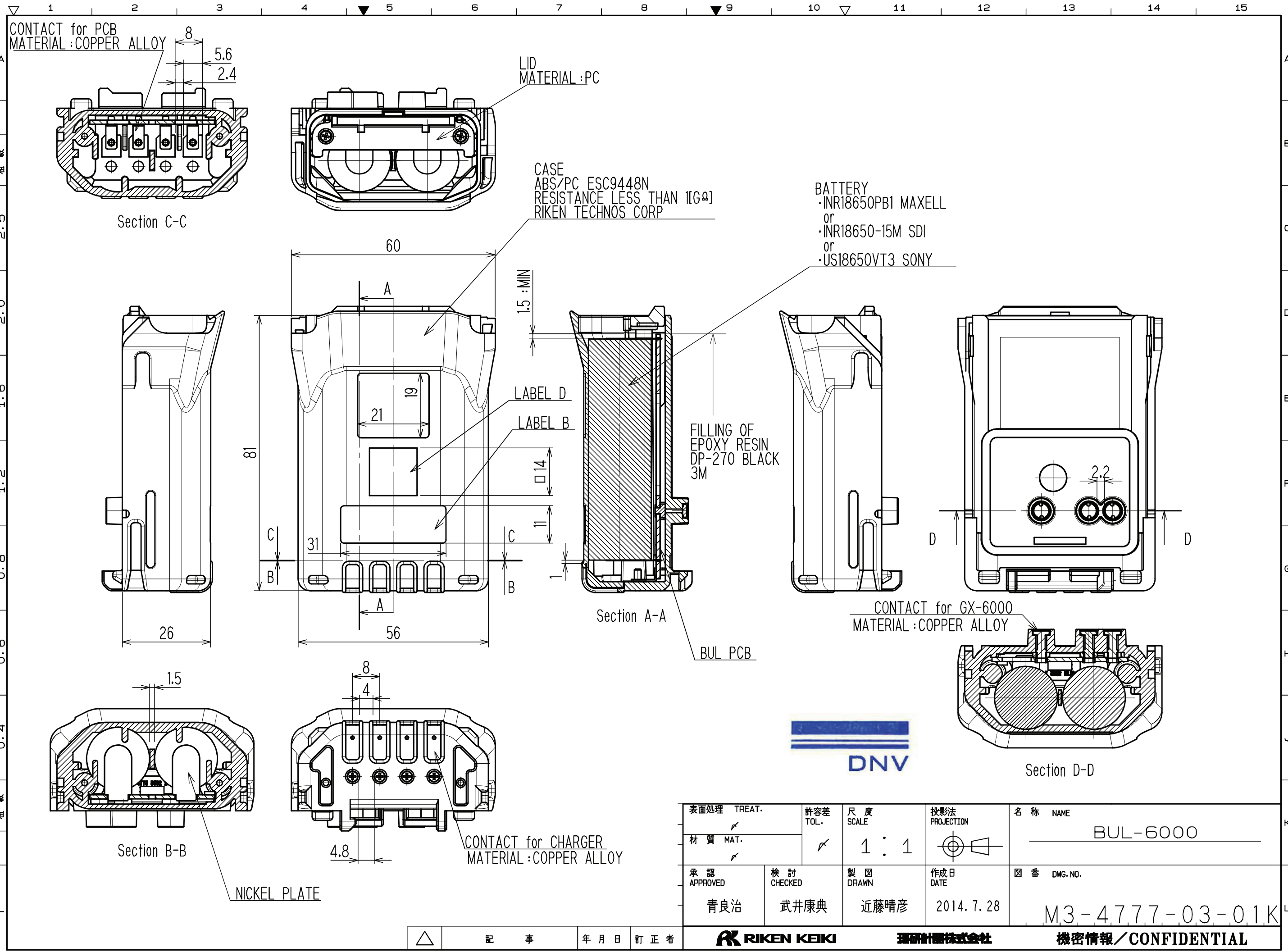


To PID SENSOR PCB

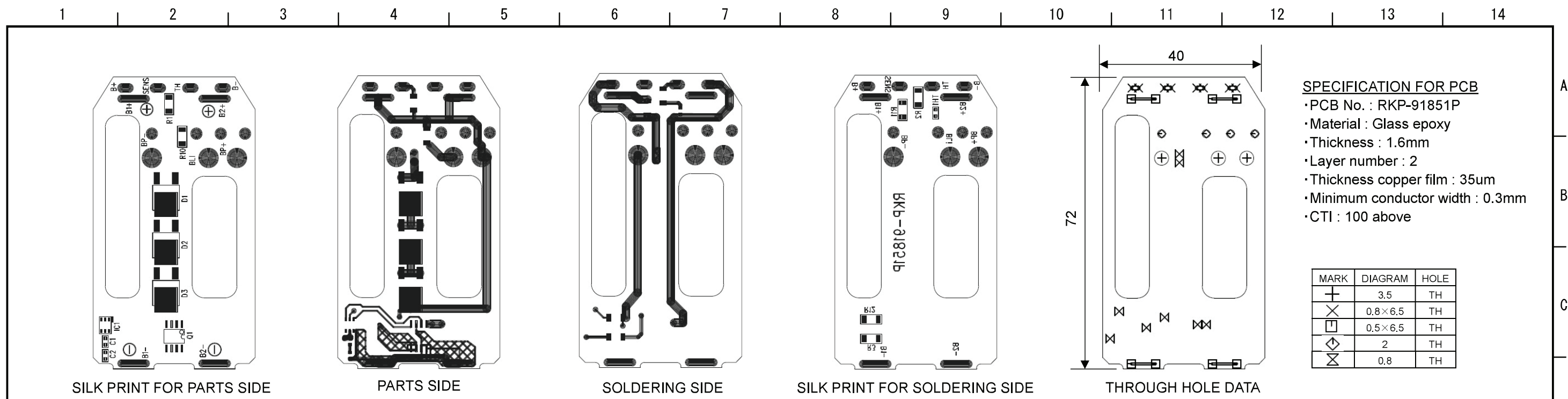
SCHEMATIC

注 記 NOTES		改版担当者 REV. BY	改版日 REVISED	名 称 NAME
PID=>PIS		小野圭	2015.3.25	PIS DIGITAL PCB
改版回数 REV.	0			
承認 APPROVED	検 討 CHECKED	製 図 DRAWN	作成日 DATE	図 番 DWG. NO.
石橋勝	北村正英	小野圭	2014.7.14	E 3 - 6 9 9 1 - 5 3 8 8 - 1 0 - 0 1 K

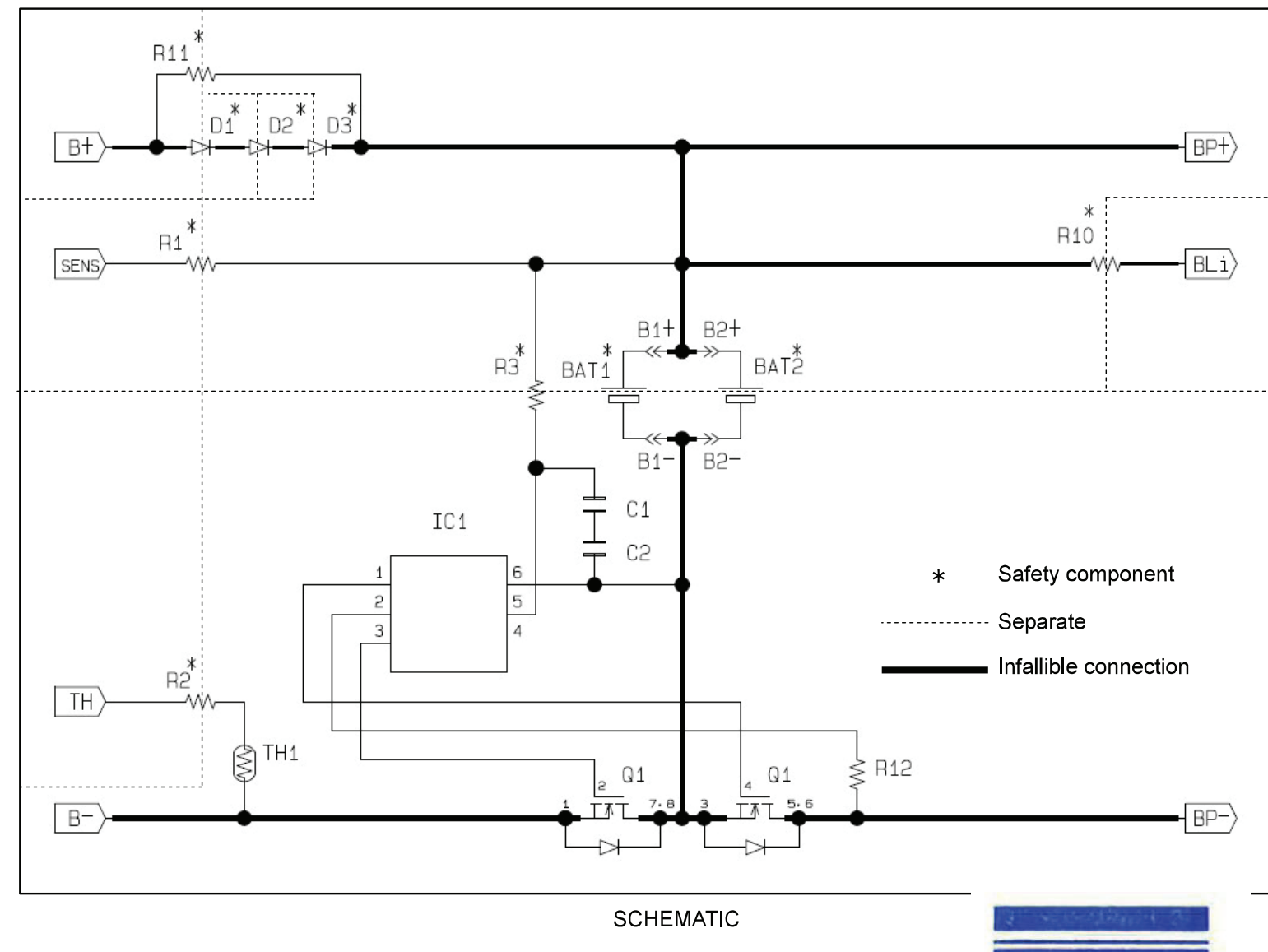
寸法	18以下	18以上50未満	50以上120未満	120以上260未満	260以上500未満	500以上1000未満	1000以上
精度	0.1	0.15	0.2	0.3	0.4	0.5	0.7
中級	0.2	0.3	0.4	0.6	0.8	1.0	1.2
粗級	0.4	0.6	0.8	1.2	1.6	2.0	2.5



表面处理 TREAT. 材 質 MAT.	許容差 TOL.	尺 度 SCALE 1 : 1	投影法 PROJECTION 	名 称 NAME BUL-6000
承認 APPROVED 青良治	検 討 CHECKED 武井康典	製 図 DRAWN 近藤晴彦	作成日 DATE 2014. 7. 28	図 番 DWG. NO. M3-4777-03-01.K



All drawings are view of parts side
SCALE 1:1



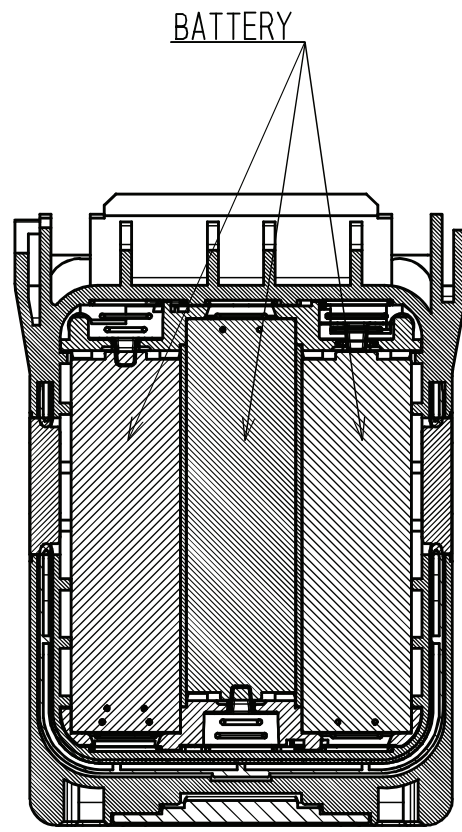
PARTS LIST

Mark of drawing	Kind of parts	Rating / Model of parts	Remarks
IC1	IC (Protection IC)	S-8261	
Q1	FET	FDS6961A	
D1,2,3	Schottky barrier diode	MBRD1045, On semiconductor Vr = 45V, If = 10A	*
R1,2	Chip fixed resistor	MCR18EZP_2000, ROHM or RK73H2BT_2000, KOA 200ohm / 1% , 0.25W	*
R3	Chip fixed resistor	MCR18EZP_4700, ROHM or RK73H2BT_4700, KOA 470ohm / 1% , 0.25W	*
R10	Chip fixed resistor	MCR18EZP_1002, ROHM or RK73H2BT_1002, KOA 10k ohm / 1% , 0.25W	*
R11	Chip fixed resistor	MCR18EZP_1002, ROHM or RK73H2BT_1002, KOA 2.2k ohm / 1% , 0.25W	*
R12	Chip fixed resistor	200Ω-10kΩ / 1% , 0.25W (3216)	
C1,2	Chip multilayer capacitor	0.1uF / 10%, 50V	m
TH1	Chip thermistor	Rt25 = 470 ohm -100 k ohm / 5%, B=3000K-5000K (1005)	

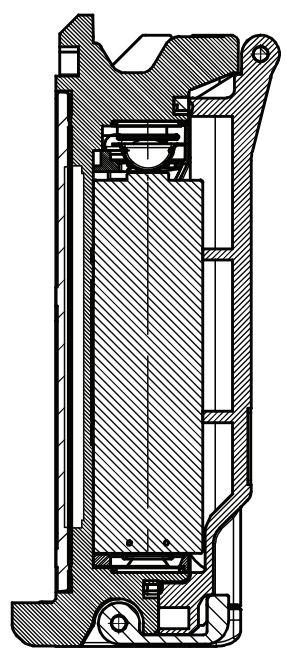
m marked parts are mounted or not

注 記 NOTES		改版担当 REV. BY	改版日 REVISED	名 称 NAME
改版回数 REV.	1	小野圭	2014.9.5	BUL PCB
承認 APPROVED	検 討 CHECKED	製 図 DRAWN	作成日 DATE	図 番 DWG. NO.
石橋勝	北村正英	小野圭	2014.7.14	E 3 - 6 9 9 1 - 5 3 8 9 - 8 0 - 0 1 K
RIKEN KEIKI		理研計器株式会社		機密情報 / CONFIDENTIAL

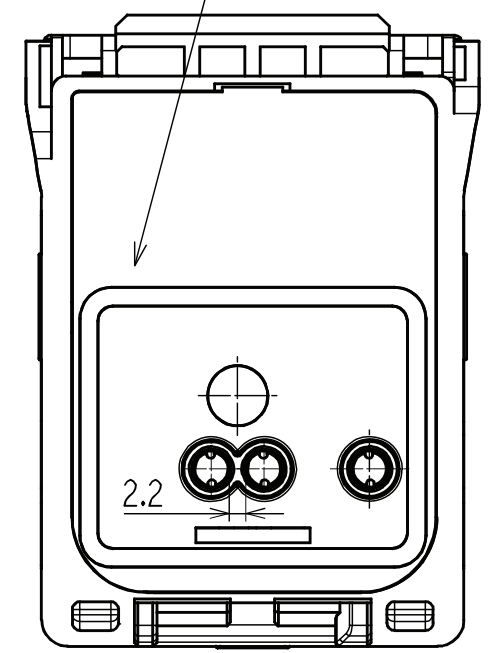
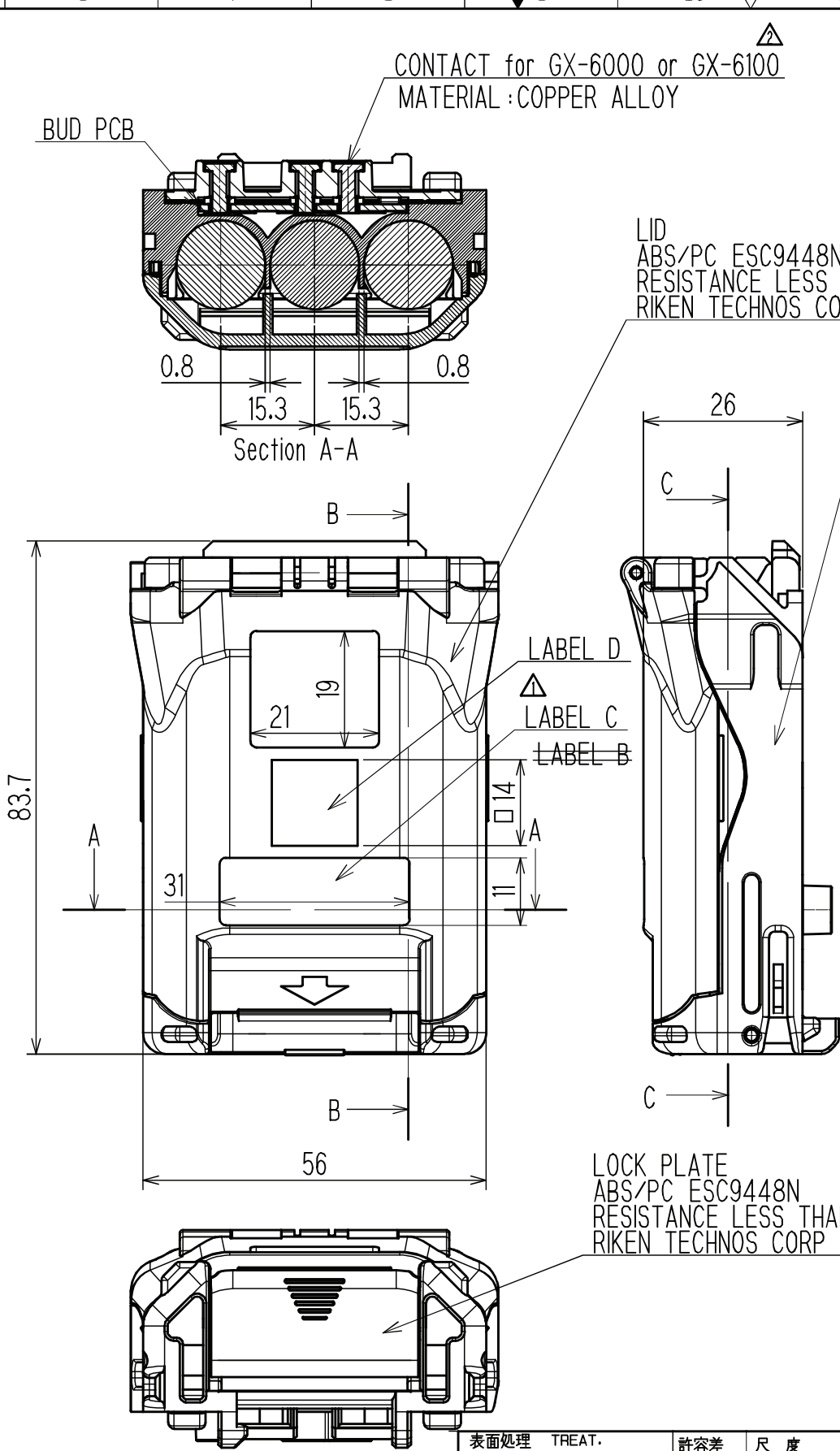
寸 法	C		I		G		T		M		D		C	
	18未満		18以上50未満		50以上120未満		120以上260未満		260以上500未満		500以上1000未満		1000以上	
	0.1	0.15	0.15	0.2	0.2	0.3	0.3	0.4	0.4	0.5	0.7	0.7	1.0	1.2
	0.2	0.3	0.3	0.4	0.4	0.6	0.6	0.8	0.8	1.0	1.2	1.2	1.6	2.0
	0.4	0.6	0.6	0.8	0.8	1.2	1.2	1.6	1.6	2.0	2.5	2.5	2.5	粗 級




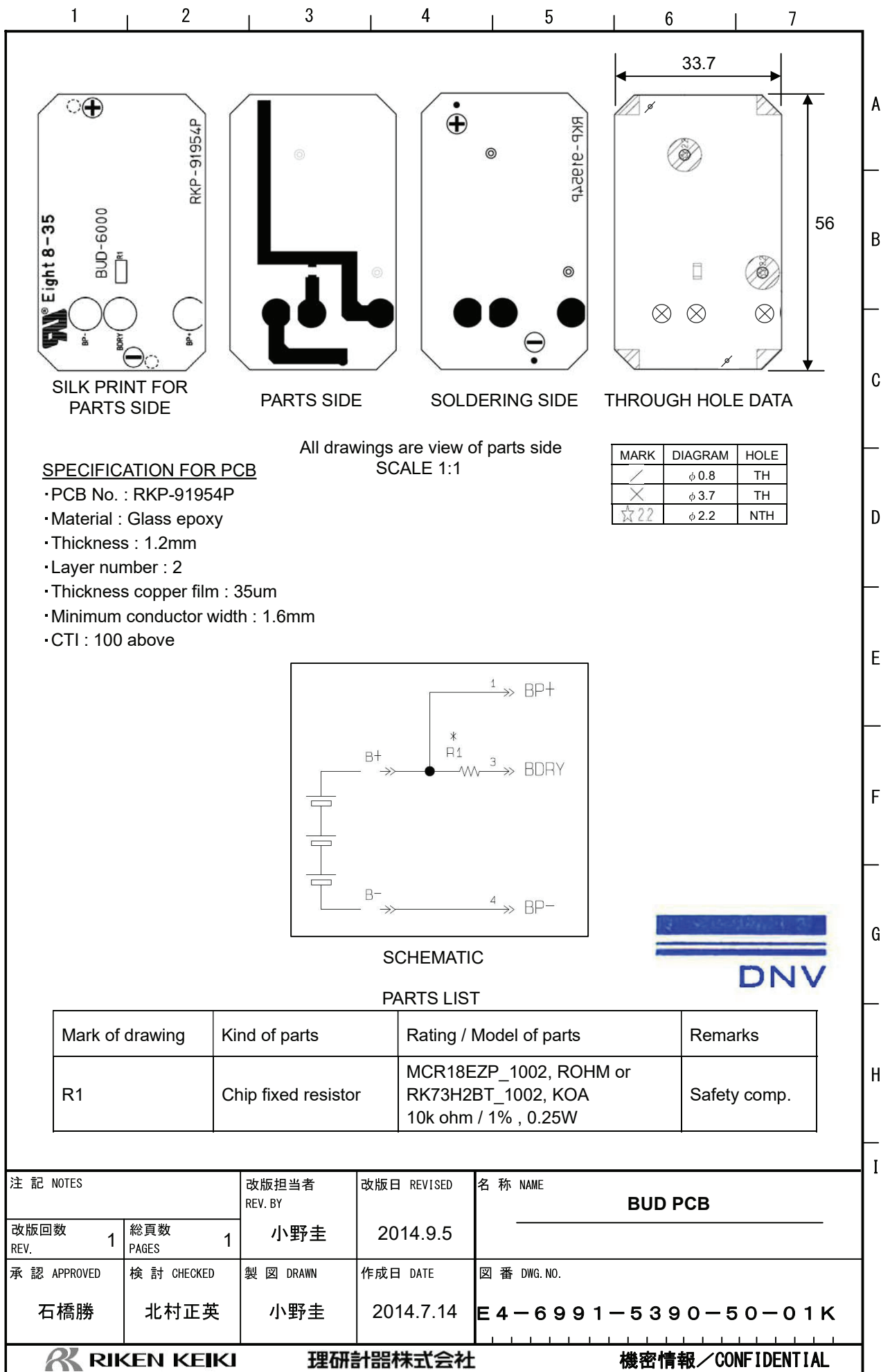
Section C-C



Section B-B

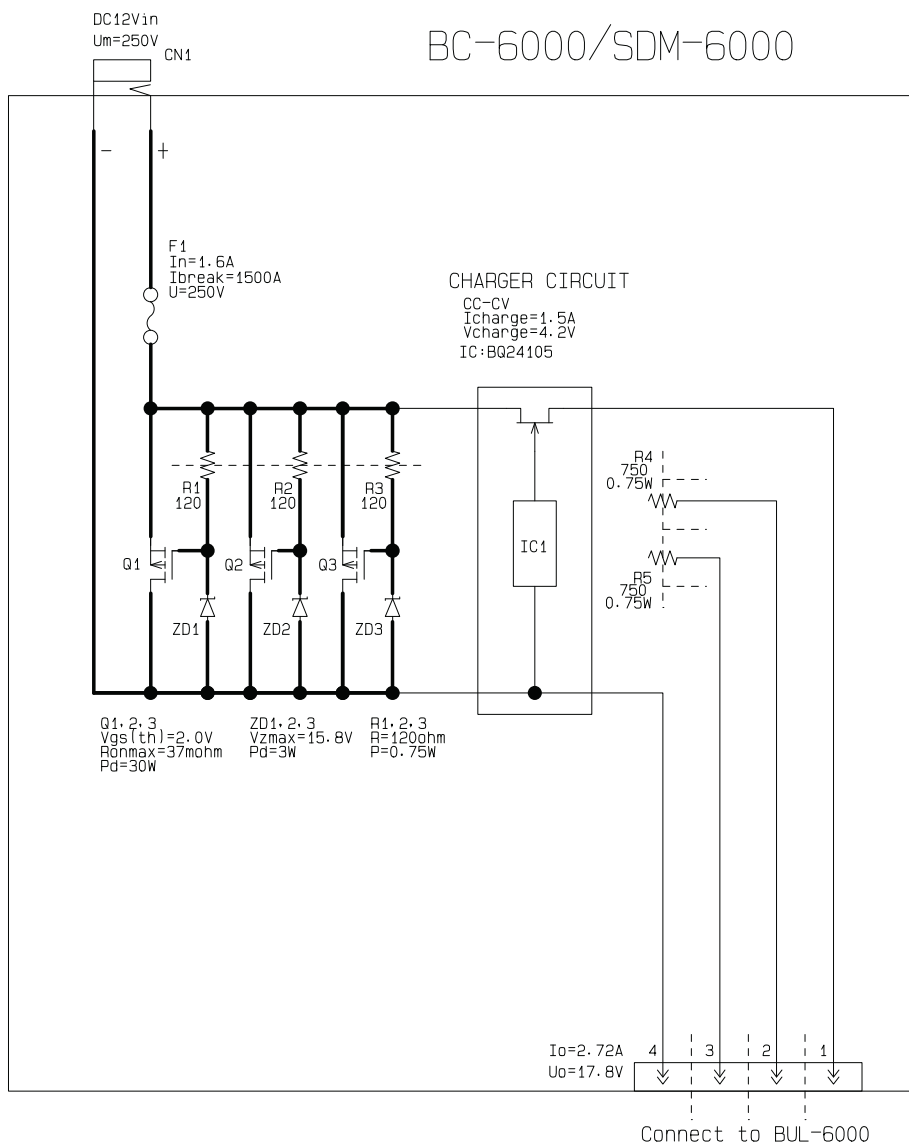


				表面処理 TREAT.		許容差 TOL.	尺 度 SCALE	投影法 PROJECTION	名 称 NAME
				材 質 MAT.					
				承認 APPROVED		検 討 CHECKED	製 図 DRAWN	作成日 DATE	図 番 DWG. NO.
青良治		武井康典	近藤晴彦	2014. 7. 30	M3-4777-04-01				
REVISION A10		2023.1.20	伊藤周						
REVISION E9		2015.3.6	海野裕作						
記 事		年 月 日	訂 正 者	理研計測株式会社					
				機密情報 / CONFIDENTIAL					



BATTERY CHARGER

BC-6000/SDM-6000



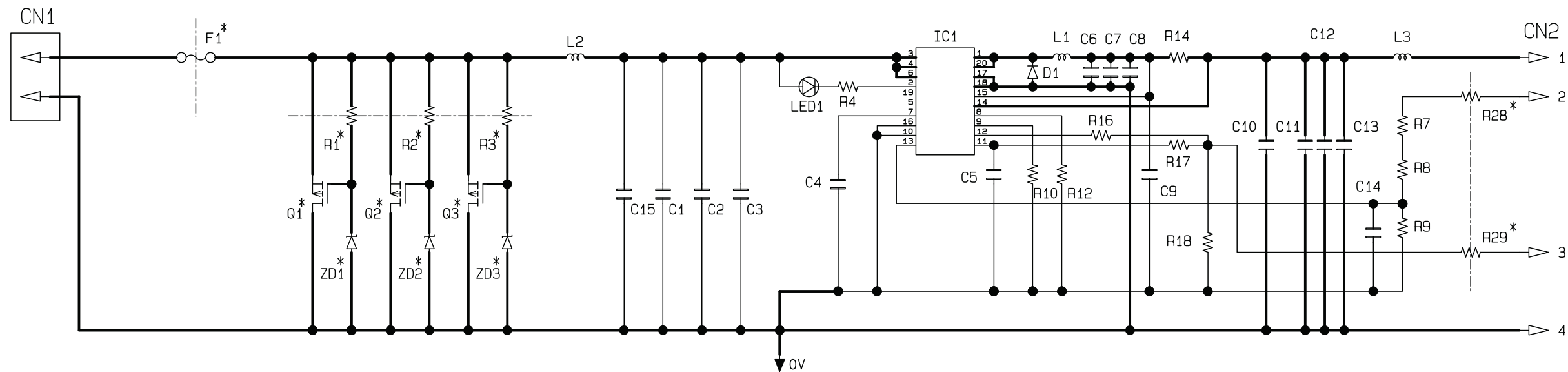
(MEMO)

1. - - - - marks means SEPARATE

2. ——— marks means INFALLIBLE CONNECTION



注 記 NOTES		改版担当者 REV. BY	改版日 REVISED	名 称 NAME
改版回数 REV.	1	小野圭	2014. 9. 5	DIAGRAM FOR I. S. KEEP FOR MODEL BC-6000/SDM-6000
総頁数 PAGES	1			
承認 APPROVED	検討 CHECKED	製 図 DRAWN	作成日 DATE	図 番 DWG. NO.
石橋勝	北村正英	小野圭	2014. 7. 30	E4-6991-5395-80-01K



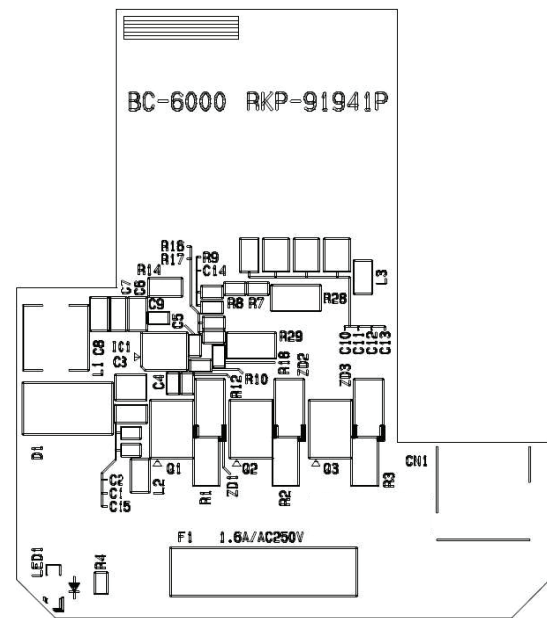
* marks means safety components

----- marks means separate

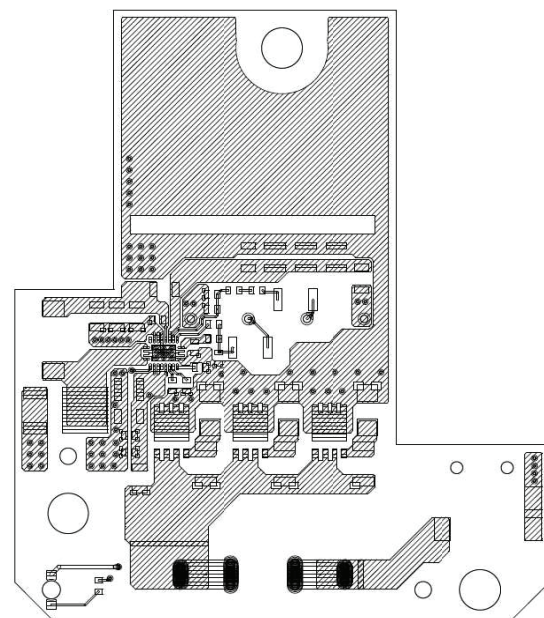
———— marks means infallible connection



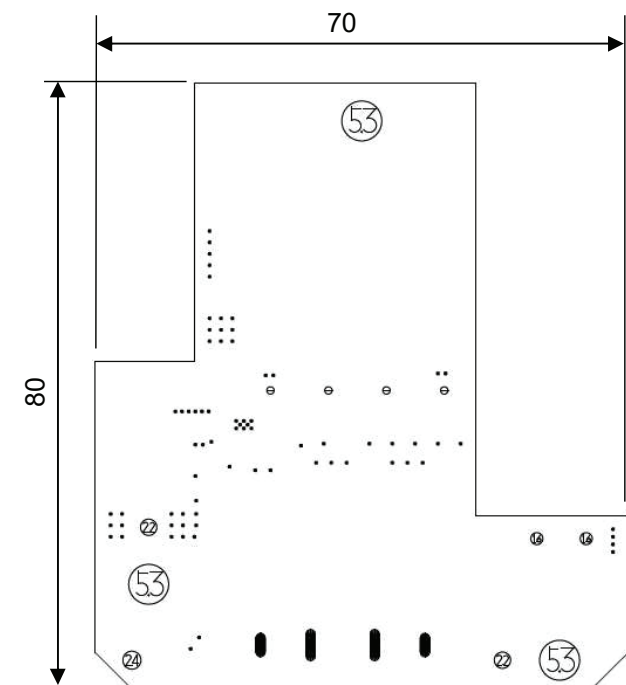
注 記 NOTES		改版担当者 REV. BY	改版日 REVISED	名 称 NAME	
改版回数 REV.	総頁数 PAGES			SCEHMATIC CHARGER PCB FOR MODEL BC-6000	
0	1				
承認 APPROVED	検討 CHECKED	製 図 DRAWN	作成日 DATE	図 番 DWG. NO.	
石橋勝	北村正英	小野圭	2014. 12. 16	E3-6991-5255-80-01K	
RIKEN KEIKI		理研計器株式会社		機密情報 / CONFIDENTIAL	



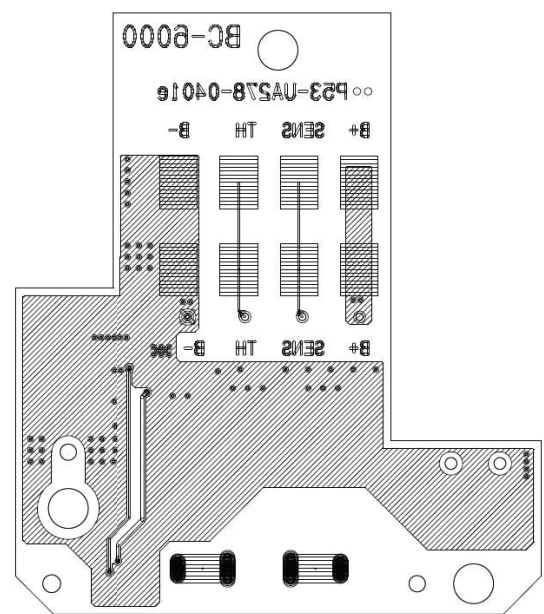
SILK PRINT FOR PARTS SIDE



PARTS SIDE



VIA HOLES



SOLDERING SIDE

All drawings are view of parts side
SCALE 1:1

MARK	DIAGRAM	HOLE
⊗	Φ0.3	TH
⊖	Φ1.0	TH
⊕	Φ1.2	TH
⑬	Φ1.6	NTH
⑫	Φ2.2	NTH
⑭	Φ2.4	NTH
⑮	Φ5.3	NTH

SPECIFICATION FOR PCB

- PCB No. : RKP-91941P
- Material : Glass epoxy
- Thickness : 1.6mm
- Layer number : 2
- Thickness copper film : 35um
- Copper thickness of the via's : 35um above.
- Minimum conductor width : 0.3mm
- CTI : 175 above

PARTS LIST

Mark of drawing	Kind of parts	Rating / Model of parts	Remarks
IC1	IC (Battery charger)	BQ24105RHLR	
D1	Schottky barrier diode	MBRD1045	
F1	Fuse	021601.6P Littelfuse In=1.6A, Ibreak=1500A@250Vac	*
Q1,Q2,Q3	P-ch MOSFET	TPCA8507-H TOSHIBA Ron_max=37mΩ , Pd=30W	*
ZD1,ZD2,ZD3	1SMB5929B	1SMB5929B ON Semiconductor Vz= 14.25V -15.75V ,Pd=3W	*
R1,R2,R3	Chip fixed resistor	RK73HW2H_1200F KOA 120Ω/1% ,0.75W	*
R4,R7,R8,R9,R10, R12,R16,R17,R18	Chip fixed resistor or Chip jumper	100Ω - 1MΩ/1% , 0.1W (1608) or 50mΩ max ,1A	m
R14	Chip fixed resistor	0.068Ω - 0.2Ω/1% , 0.25W (3216)	
R28,R29	Chip fixed resistor	RK73HW2H_7500F KOA 750Ω/1% ,0.75W	*
C1	Chip multilayer capacitor	1uF / 10% , 50V	m
C2,C6,C7,C8,C10	Chip multilayer capacitor	10uF / 10% , 25V	m
C3	Chip multilayer capacitor	22uF / 10% , 25V	m
C4	Chip multilayer capacitor	0.068uF / 10% , 50V or 0.22uF / 10% , 25V	m
C5,C9,C15	Chip multilayer capacitor	0.1uF / 10% , 50V	m
C1,C12,C13	Chip multilayer capacitor	47uF / 10% , 16V	m
C14	OPEN	OPEN	
L1	Inductor	10uH / 20%	
L2,L3	Chip ferrite beads	BLM31PG391	m
LED1	LED Lamp	SML-811U	m

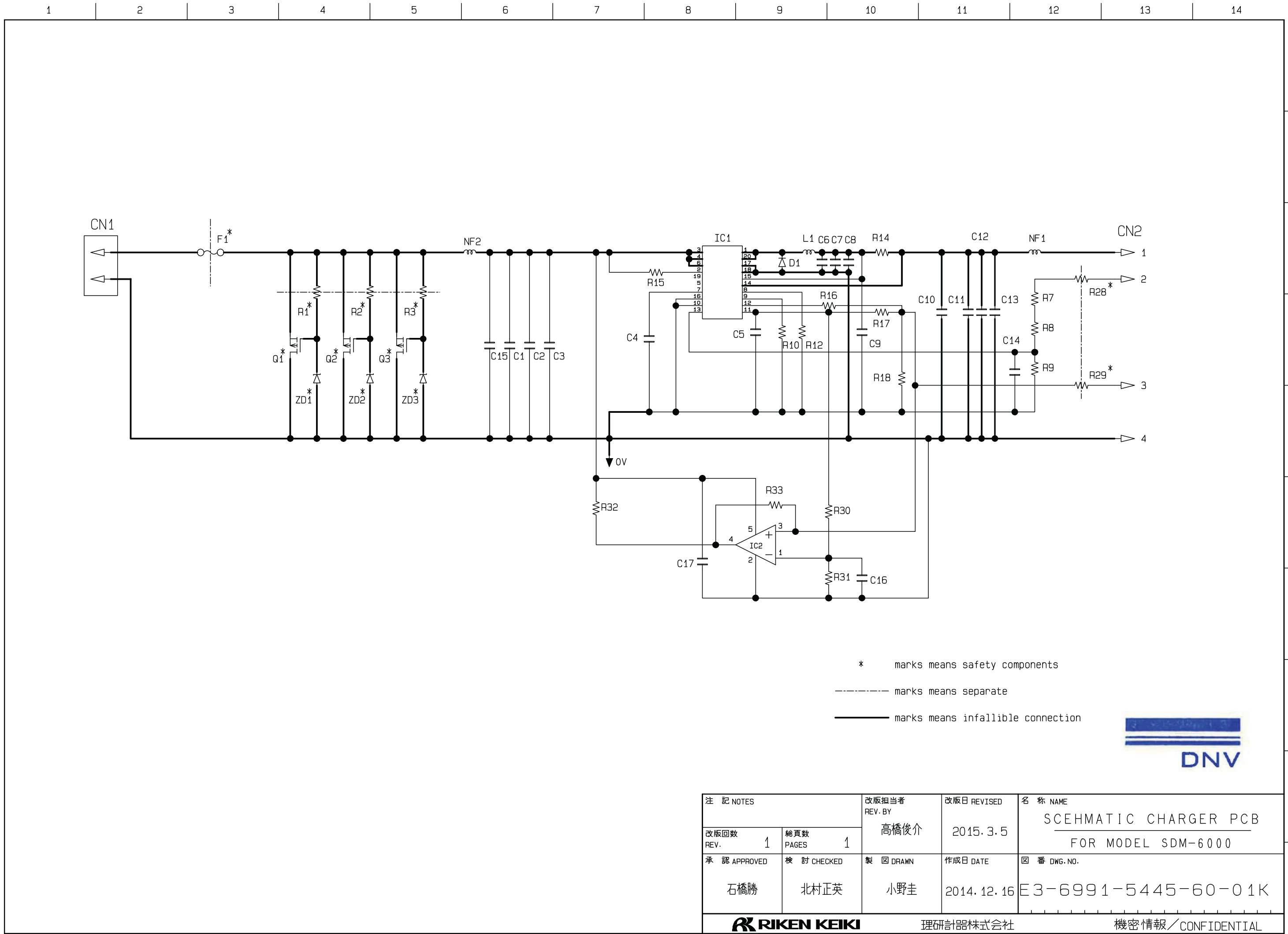
* marked parts are for safety

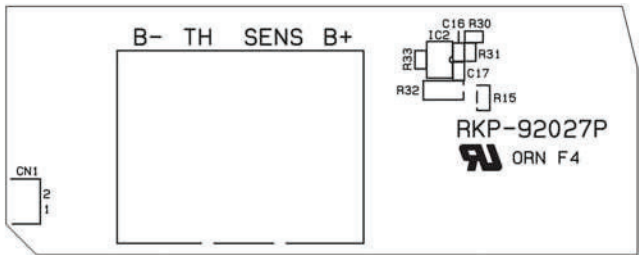
m marked parts are mounted or not

Non-Safety Components may be replaced with equivalent components.

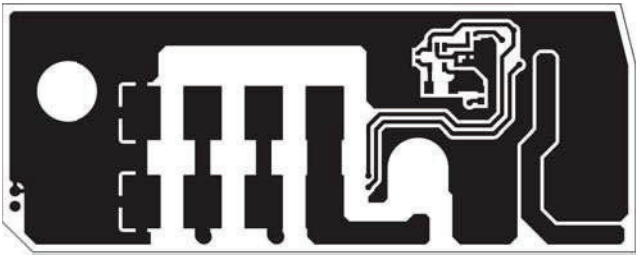


注 記 NOTES		改版担当者 REV. BY	改版日 REVISED	名 称 NAME
Add.C4 value Add.second source		小野圭	2023.3.8	CHARGER PCB FOR MODEL BC-6000
改版回数 REV.	1 総頁数 PAGES			
承認 APPROVED	検 討 CHECKED	製 図 DRAWN	作成日 DATE	図 番 DWG. NO.
石橋勝	北村正英	小野圭	2014.12.16	E 3 - 6 9 9 1 - 5 2 5 5 - 8 0 - 0 1 A

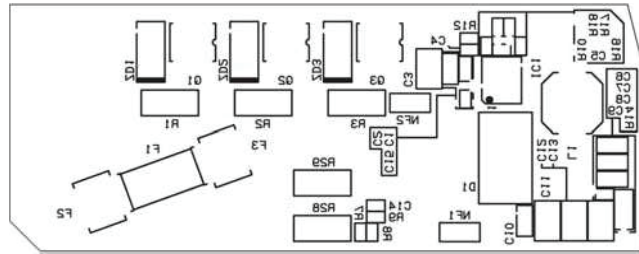




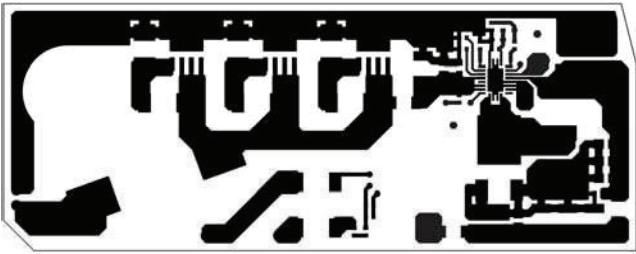
SILK PRINT FOR SOLDERING SIDE



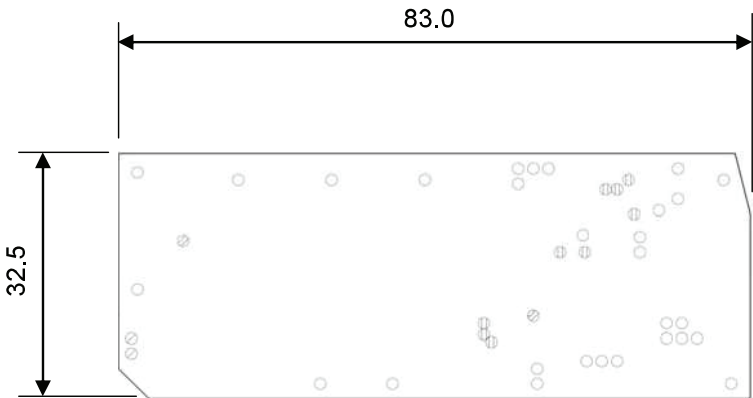
SOLDERING SIDE



SILK PRINT FOR PARTS SIDE



PARTS SIDE



All drawings are view of soldering side

SCALE 1:1

VIA HOLES

MARK	DIAGRAM	HOLE
⊙	Φ0.4	TH
○	Φ0.7	TH
⊗	Φ0.8	TH
⊘	Φ5.6	NTH

SPECIFICATION FOR PCB

- PCB No. :RKP-92027P
- Material : Glass epoxy
- Thickness : 1.6mm
- Layer number : 2
- Thickness copper film : 35um
- Copper thickness of the via's : 35um above.
- Minimum conductor width : 0.3mm
- CTI : 175 above

PARTS LIST

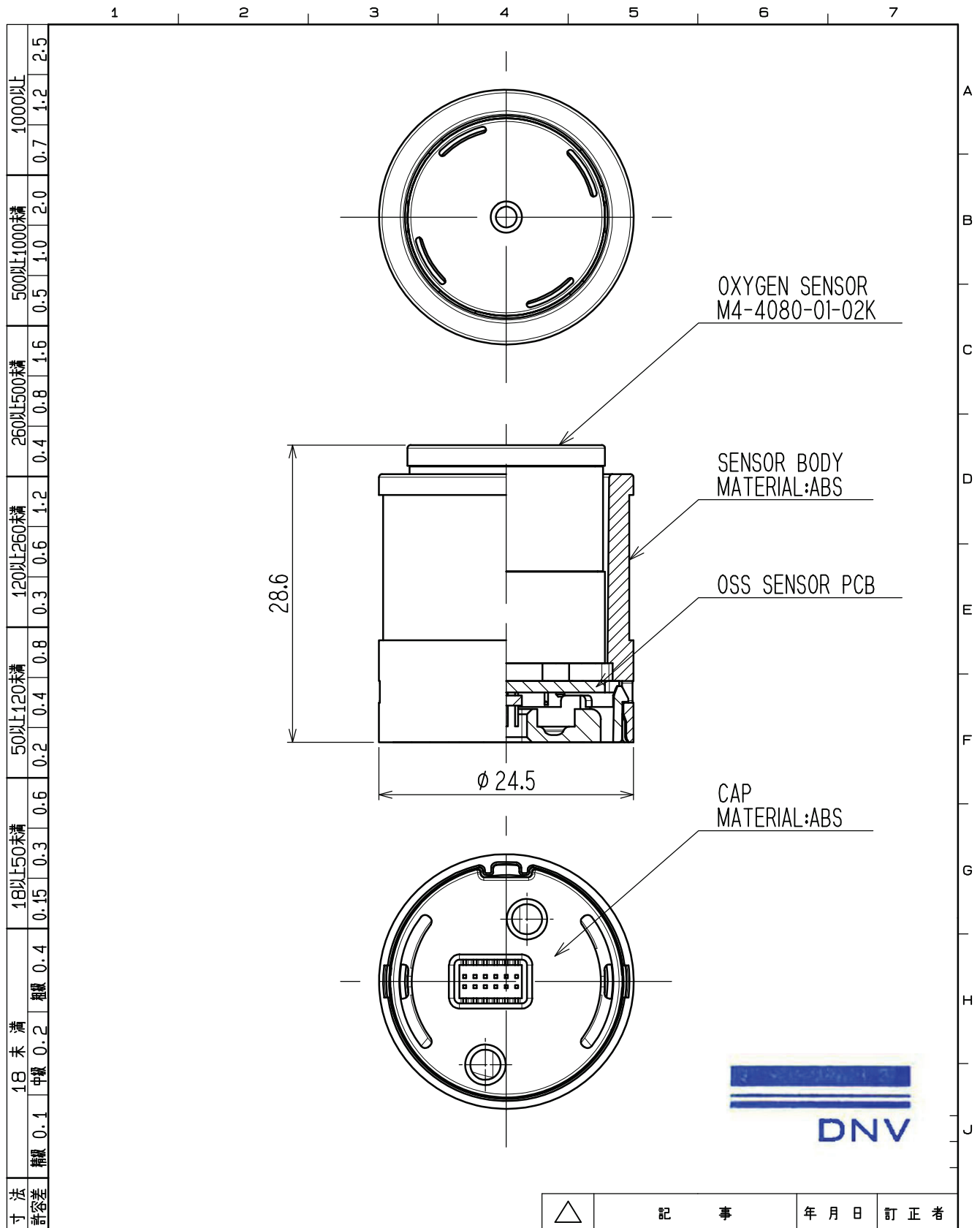
Mark of drawing	Kind of parts	Rating / Model of parts	Remarks
IC1	IC (Battery charger)	BQ24105RHLLR	
IC2	IC(Comparator)	TL331	
D1	Schottky barrier diode	MBRD1045	
F1	Fuse	021601.6P Littelfuse In=1.6A, Ibreak=1500A@250Vac	*
Q1,Q2,Q3	P-ch MOSFET	TPCA8507-H TOSHIBA Ron_max=37mΩ , Pd=30W	*
ZD1,ZD2,ZD3	1SMB5929B	1SMB5929B ON Semiconductor Vz= 14.25V -15.75V ,Pd=3W	*
R1,R2,R3	Chip fixed resistor	RK73HW2H_1200F KOA 120Ω/1% ,0.75W	*
R7,R8,R9,R10,R12, R16,R17,R18,R30, R31,R33	Chip fixed resistor or Chip jumper	100Ω- 4.7MΩ/1% , 0.063W (1005) or 50mΩ max ,1A	m
R14	Chip fixed resistor	0.068Ω - 0.2Ω/1% , 0.25W (3216)	
R15	Chip fixed resistor or Chip jumper	100Ω- 1MΩ/1% , 0.1W (1608) or 50mΩ max ,1A	m
R28,R29	Chip fixed resistor	RK73HW2H_7500F KOA 750Ω/1% ,0.75W	*
R32,	Chip fixed resistor or Chip jumper	100Ω- 1MΩ/1% , 0.125W (3216) or 50mΩ max ,1A	m
C1,	Chip multilayer capacitor	1uF / 10%,25V	m
C3,	Chip multilayer capacitor	22uF / 10% 25V	m
C11,C12,C13	Chip multilayer capacitor	47uF / 10%,16V	m
C5,C9, C14,C15, C16,C17	Chip multilayer capacitor	0.1uF / 10%, 25V	m
C2,C6,C7,C8,C10	Chip multilayer capacitor	10uF / 10%, 16V	m
C4,	Chip multilayer capacitor	0.22uF / 10%, 10V	m
L1	Inductor	10uH / 20%	
NF1,NF2	Chip ferrite beads	BLM31PG391	m

* marked parts are for safety

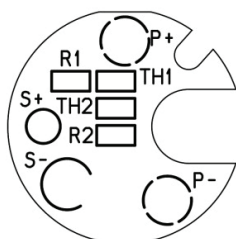
m marked parts are mounted or not



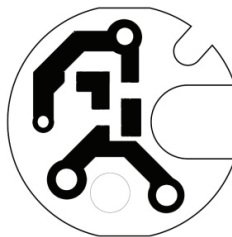
注 記 NOTES		改版担当者 REV. BY	改版日 REVISED	名 称 NAME
C4,C14		小野圭	2015.6.12	CHARGER PCB FOR MODEL SDM-6000
改版回数 REV.	2			
承認 APPROVED	検 討 CHECKED	製 図 DRAWN	作成日 DATE	図 番 DWG. NO.
石橋勝	北村正英	小野圭	2014.12.15	E 3 - 6 9 9 1 - 5 4 4 5 - 6 0 - 0 1 A



表面処理 TREAT.		許容差 TOL.	尺 度 SCALE	投影法 PROJECTION	名 称 NAME
材 質 MAT.			2 : 1		SMART SENSOR Type-OSS
承認 APPROVED	検 討 CHECKED	製 図 DRAWN	作成日 DATE	図 番 DWG. NO.	
青良治	武井康典	武田直樹	2015. 2. 24	M4-4080-01-01K	
RIKEN KEIKI		理研計器株式会社		機密情報 / CONFIDENTIAL	



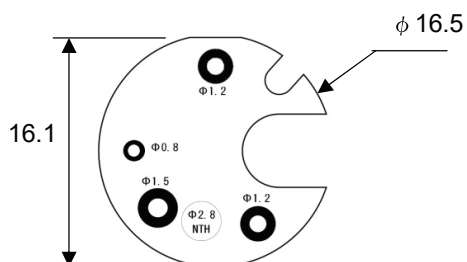
SILK PRINT FOR PARTS SIDE



PARTS SIDE



SOLDERING SIDE



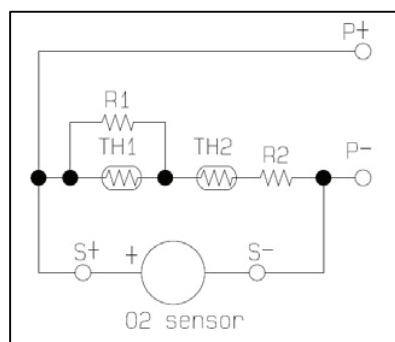
THROUGH HOLE DATA

SPECIFICATION FOR PCB

- PCB No. : RKP-91989P
- Material : Glass epoxy
- Thickness : 0.8mm
- Layer number : 2
- Thickness copper film : 35um
- Minimum conductor width : 0.5mm
- CTI : 100 above

All drawings are view of parts side

SCALE 2:1



SCHEMATIC

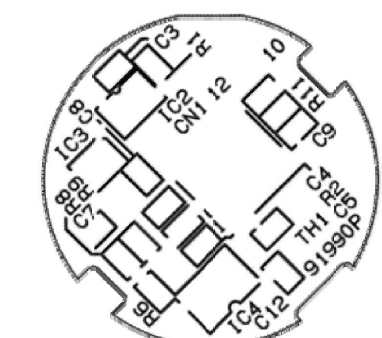
PARTS LIST

Mark of drawing	Kind of parts	Rating / Model of parts	Remarks
O2 SENSOR	OXYGEN SENSOR	Refer to M4-4080-01-01K	
R1,2	Chip fixed resistor or Chip jumper	10 ohm – 1M ohm / 1%, 0.1W or 50m ohm max, 1A (1608)	m
TH1,2	Chip thermistor	Rt25 = 470 ohm -100 k ohm / 5%, B=3000K-5000K (1608)	m

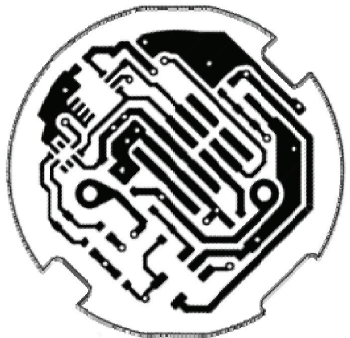
m marked parts are mounted or not



注 記 NOTES		改版担当者 REV. BY	改版日 REVISED	名 称 NAME OSS SENSOR PCB	
改版回数 REV. 0	総頁数 PAGES 1				
承認 APPROVED 石橋勝	検討 CHECKED 北村正英	製 図 DRAWN 小野圭	作成日 DATE 2015.2.24	図 番 DWG. NO. E 4 - 6 9 9 1 - 5 4 5 7 - 0 0 - 0 1 K	



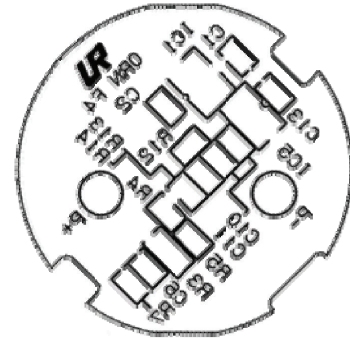
SILK PRINT FOR PARTS SIDE



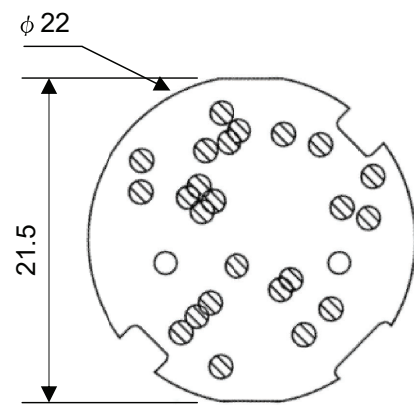
PARTS SIDE



SOLDERING SIDE



SILK PRINT FOR SOLDERING SIDE



THROUGH HOLE DATA

MARK	DIAGRAM	HOLE
①	φ 0.3	TH
○	φ 1.0	TH

SPECIFICATION FOR PCB

- PCB No. : RKP-91990P
- Material : Glass epoxy
- Thickness : 1.2mm
- Layer number : 2
- Thickness copper film : 18um
- Minimum conductor width : 0.3mm
- CTI : 100 above

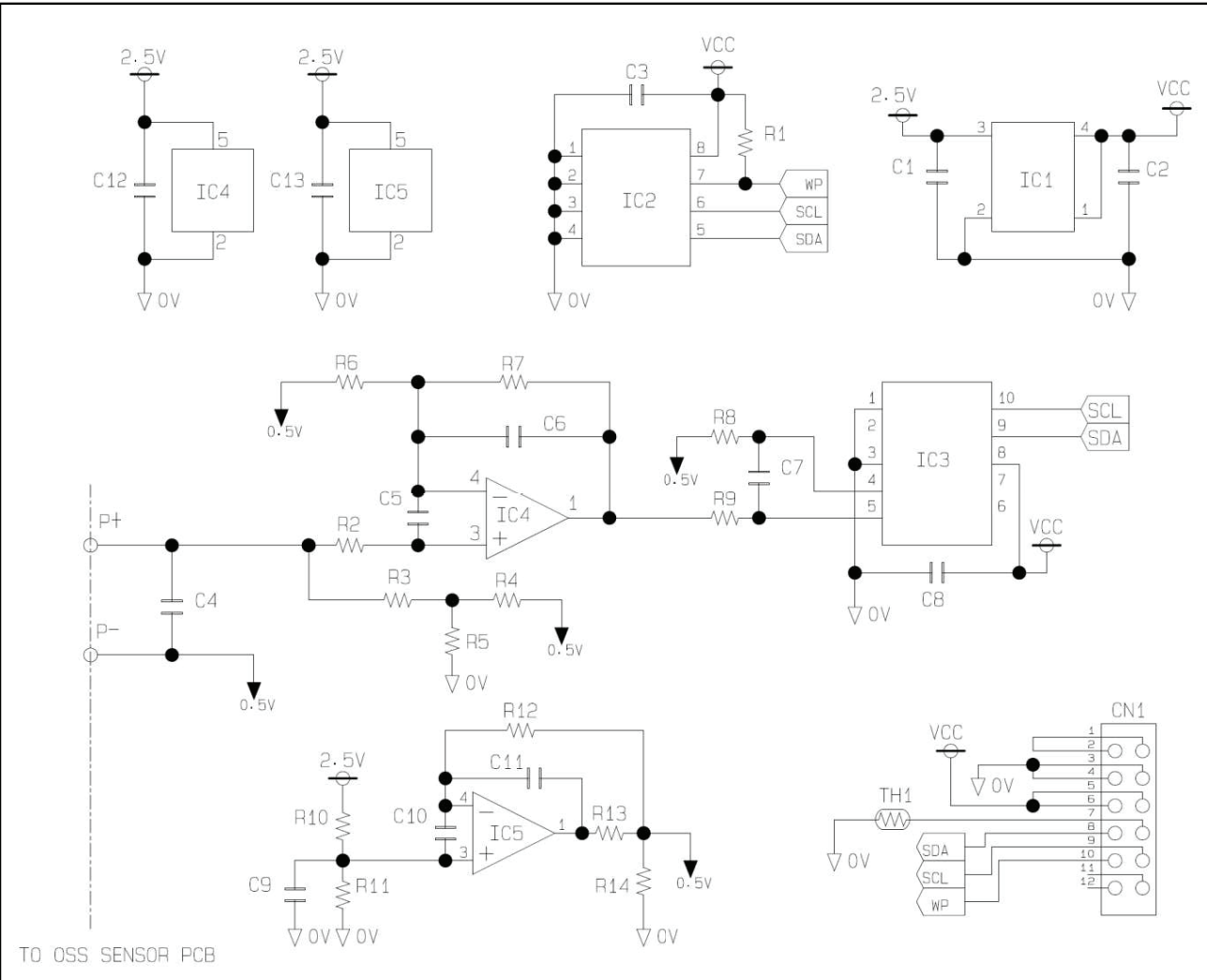
All drawings are view of parts side

SCALE 2:1

PARTS LIST

Mark of drawing	Kind of parts	Rating / Model of parts	Remarks
IC1	IC (Voltage regulator)	S-1313D25-N4T1	m
IC2	IC (EEPROM)	S-24C16CI-I8T1	m
IC3	IC (A/D Converter)	ADS1114IRU	m
IC4	IC(OPAMP)	OPA333AIDBV	m
IC5	IC(OPAMP)	AD8500AKS	m
TH1	Chip thermistor	Rt25 = 470 ohm -100 k ohm / 5%, B=3000K-5000K (1005)	m
R1-14	Chip fixed resistor or Chip jumper	10 ohm – 1M ohm / 1%, 0.063W or 50m ohm max,1A (1005)	m
C1,2,3,8,12,13,	Chip multilayer capacitor	0.1uF / 10%, 25V	m
C4	Chip multilayer capacitor	0.01uF / 10%, 25V	m
C5,7,10	Chip multilayer capacitor	10pF-1000pF / 10%, 50V	m
C6,11	Chip multilayer capacitor	1uF / 10%, 10V	m
C9	Chip multilayer capacitor	100pF-6800pF / 10%, 50V	m

m marked parts are mounted or not



SCHEMATIC



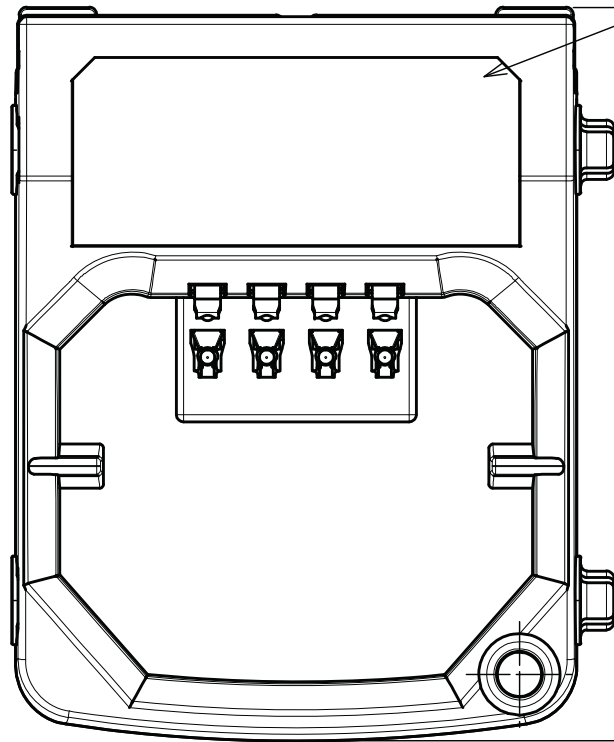
注 記 NOTES		改版担当者 REV. BY	改版日 REVISED	名 称 NAME OSS DIGITAL PCB
改版回数 REV.	0	総頁数 PAGES	1	
承認 APPROVED	検 討 CHECKED	製 図 DRAWN	作成日 DATE	図 番 DWG. NO.
石橋勝	北村正英	小野圭	2015.2.24	E 3 - 6 9 9 1 - 5 4 5 8 - 7 0 - 0 1 K

RIKEN KEIKI

理研計器株式会社

機密情報 / CONFIDENTIAL

寸法	1日未満	18日以下	50日以下	120日以下	260日以下	500日以下	1000日以下	1000日以上	寸法
精度	0.1	0.15	0.2	0.3	0.4	0.8	1.2	2.0	精度
中級	0.2	0.3	0.4	0.6	0.8	1.6	2.0	2.5	中級
粗級	0.4	0.6	0.8	1.2	1.6	2.0	2.5	2.5	粗級

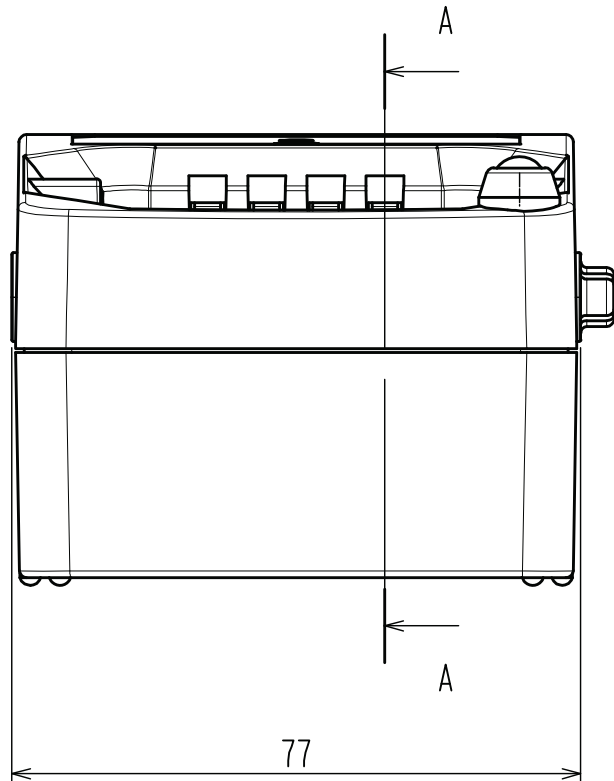


LABEL

WARNING

- ・Not for use in hazardous area.
 - ・Use only with exclusive AC adaptor.
- Um=250V

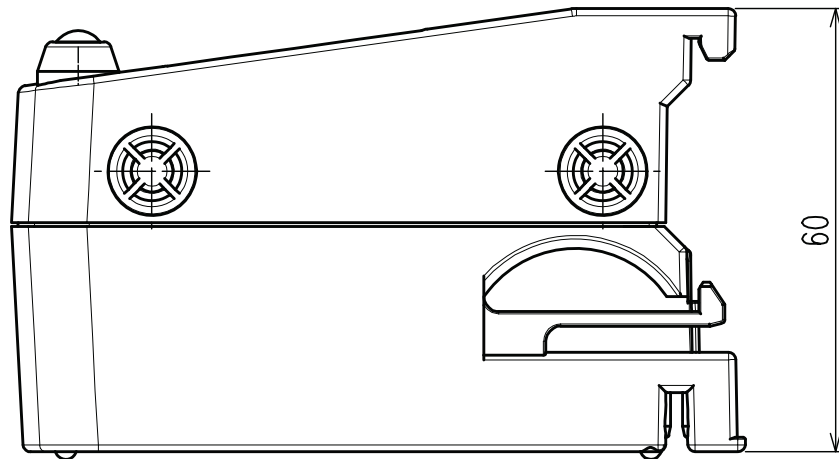
100



A

A

77



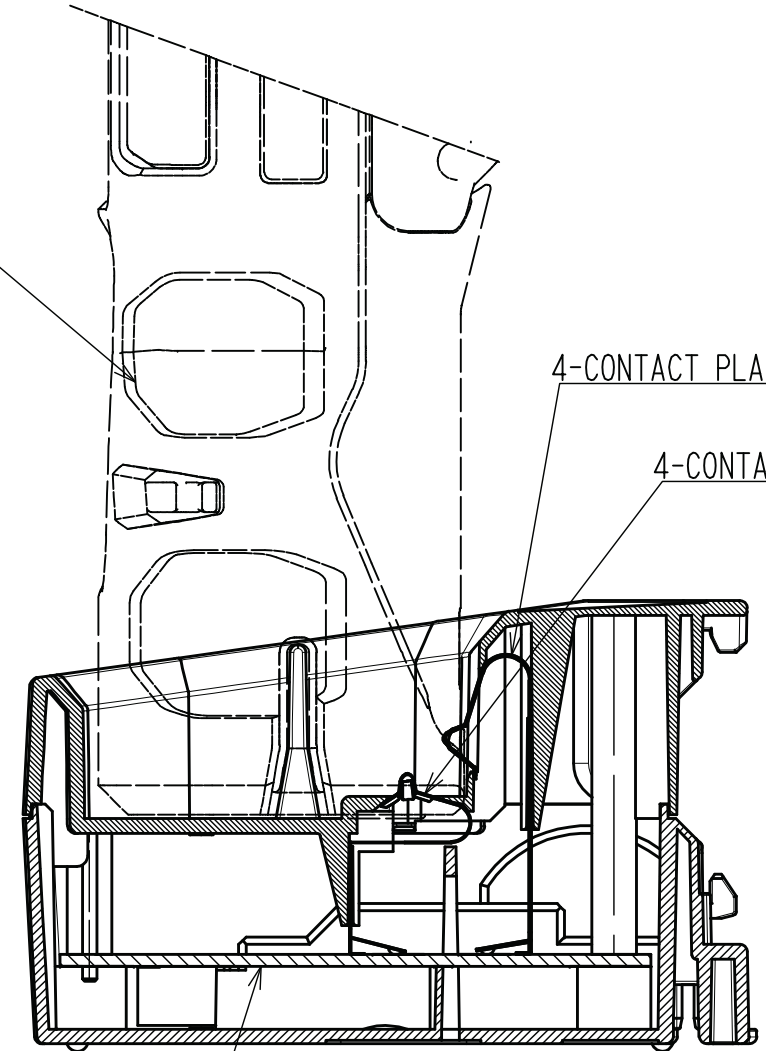
60



GX-6000

4-CONTACT PLATE(B)

4-CONTACT PLATE(A)



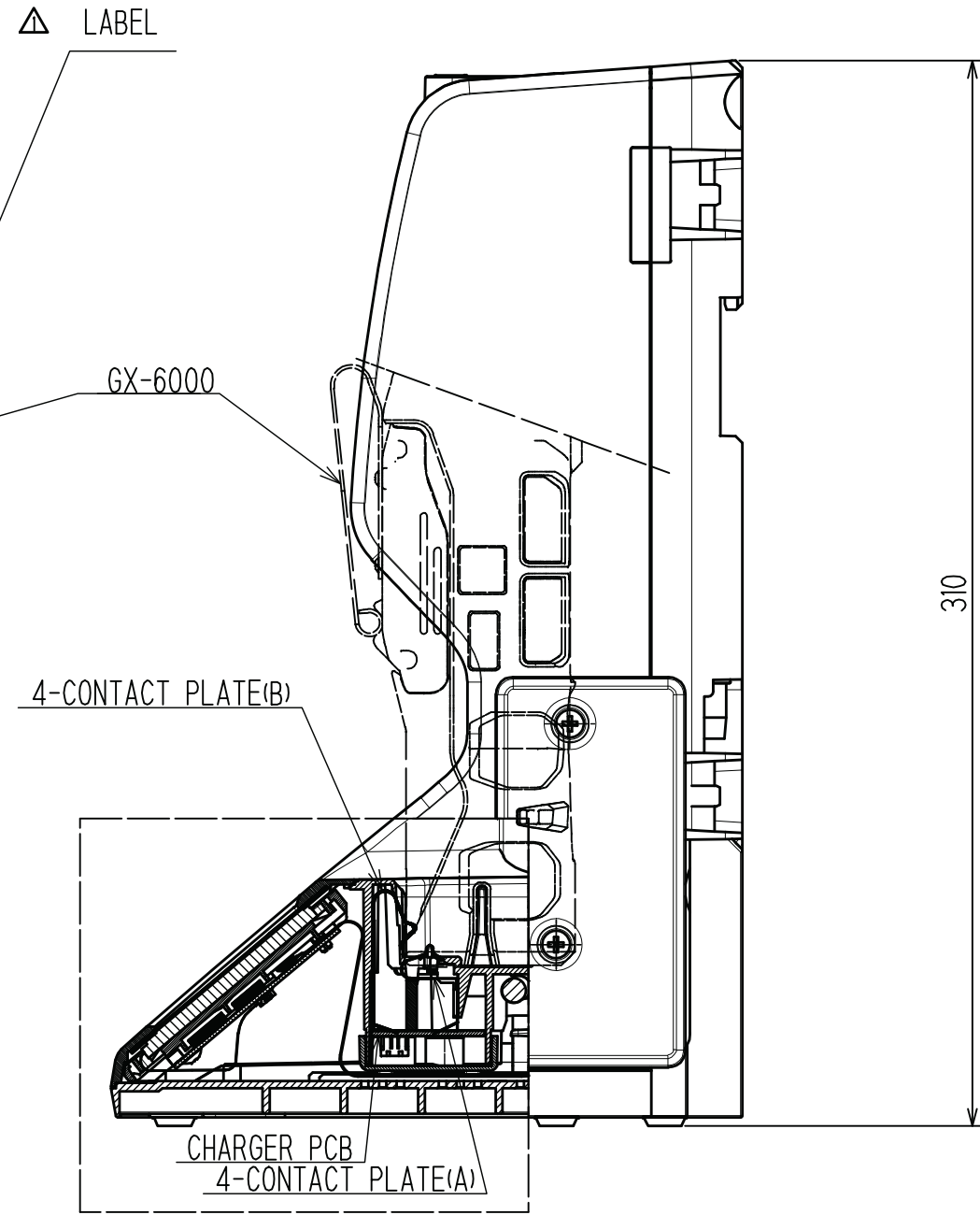
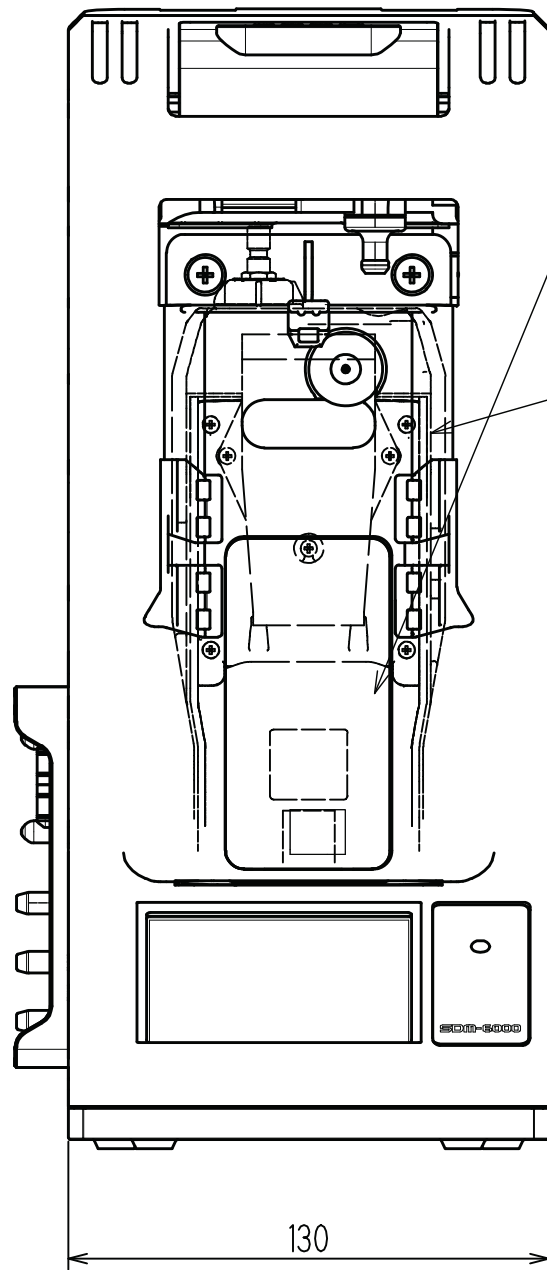
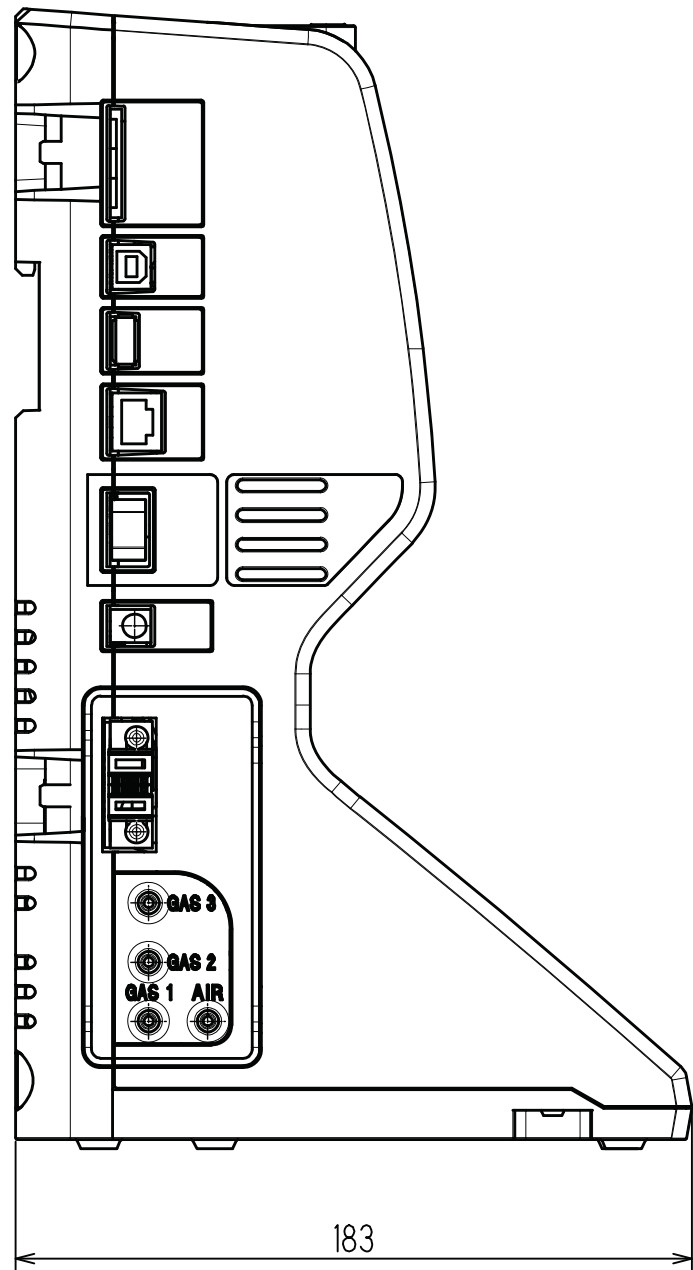
CHARGER PCB

断面 A-A

表面处理 TREAT.	許容差 TOL.	尺度 SCALE	投影法 PROJECTION	名称 NAME
材質 MAT.		1 : 1		BC-6000
承認 APPROVED	検討 CHECKED	製図 DRAWN	作成日 DATE	図番 DWG. NO.
青良治	海野裕作	近藤晴彦	2015. 3. 24	M3-4777-02-01K
RIKEN KEIKI 理研計器株式会社 機密情報/CONFIDENTIAL				

△	ADD LABEL	2015.3.27	近藤晴彦
△	記事	年月日	訂正者

寸法	18以下	18以上50未満	50以上120未満	120以上260未満	260以上500未満	500以上1000未満	1000以上	寸法	精度	中級	粗級
精度	0.1	0.15	0.2	0.3	0.4	0.5	0.7	精度	0.7	1.2	2.5
中級	0.2	0.3	0.4	0.6	0.8	1.0	1.2	中級	1.2	2.0	2.5
粗級	0.4	0.6	0.8	1.2	1.6	2.0	2.5	粗級	2.0	2.5	2.5



WARNING

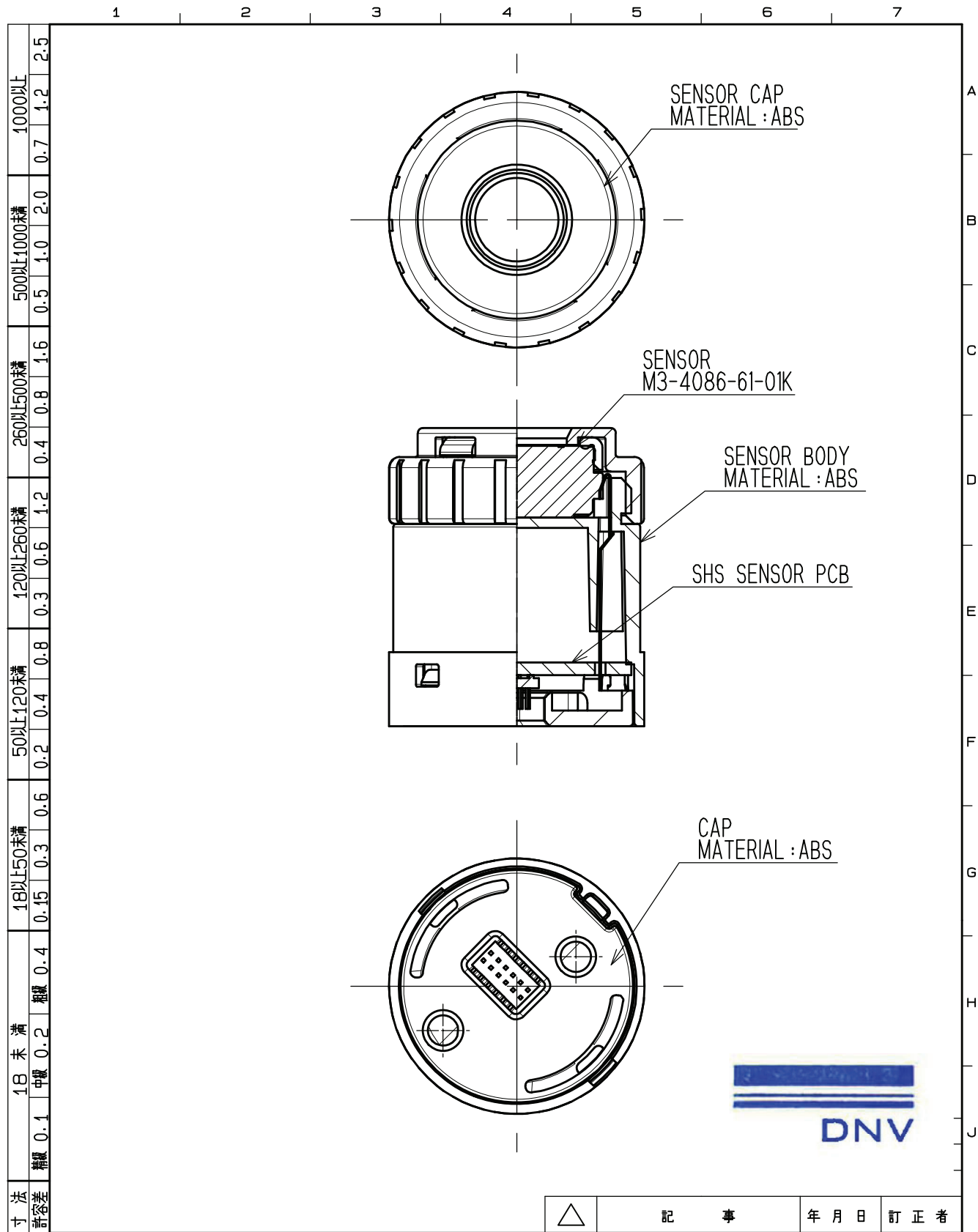
- ・Not for use in hazardous area.
- ・Use only with exclusive AC adaptor.

Um=250V



表面処理 TREAT.	許容差 TOL.	尺度 SCALE	投影法 PROJECTION	名称 NAME
材質 MAT.		1 : 2		SDM-6000
承認 APPROVED	検討 CHECKED	製図 DRAWN	作成日 DATE	図番 DWG. NO.
青良治	海野裕作	近藤晴彦	2015. 3. 23	M3-4395-23-01K
RIKEN KEIKI 理研計器株式会社 機密情報/CONFIDENTIAL				

△ ADD LABEL	2015.3.27	近藤晴彦
△ 記事	年月日	訂正者

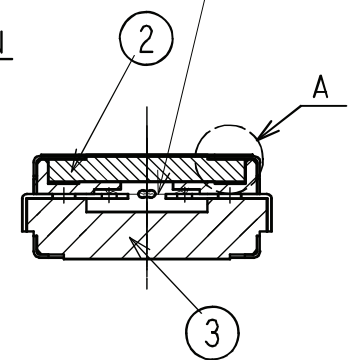
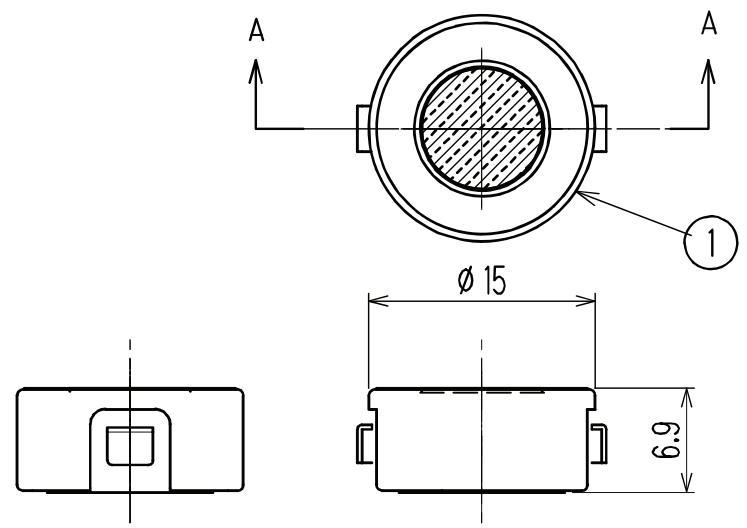


表面処理 TREAT.		許容差 TOL.	尺 度 SCALE	投影法 PROJECTION	名 称 NAME
材 質 MAT.			2 : 1		SMART SENSOR Type-SHS
承認 APPROVED	検 討 CHECKED	製 図 DRAWN	作成日 DATE	図 番 DWG. NO.	
武井康典	河原井英樹	伊藤周	2022. 7. 28	M4-4777-33-02K	
RIKEN KEIKI		理研計測株式会社		機密情報 / CONFIDENTIAL	

寸法	精級	中級	粗級
1000以上	0.7	1.2	2.5
500以上1000未満	0.5	1.0	2.0
260以上500未満	0.4	0.8	1.6
120以上260未満	0.3	0.6	1.2
50以上120未満	0.2	0.4	0.8
18以上50未満	0.15	0.3	0.6
18未満	0.1	0.2	0.4
寸法	精級	中級	粗級

INSIDE SPACE
CAPACITY 0.1CC

A-A SECTION

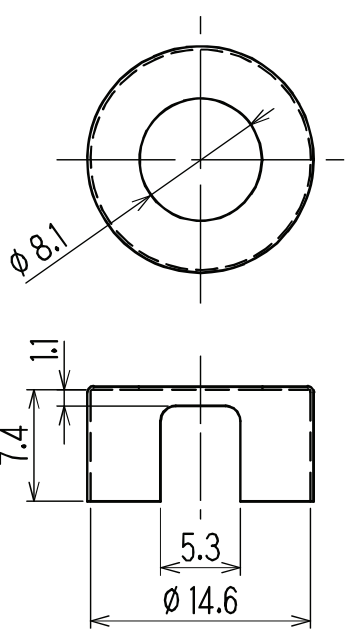


DETAIL DRAWING

3^{+0.4}₀
EPOXY RESIN POTTED



① CAP



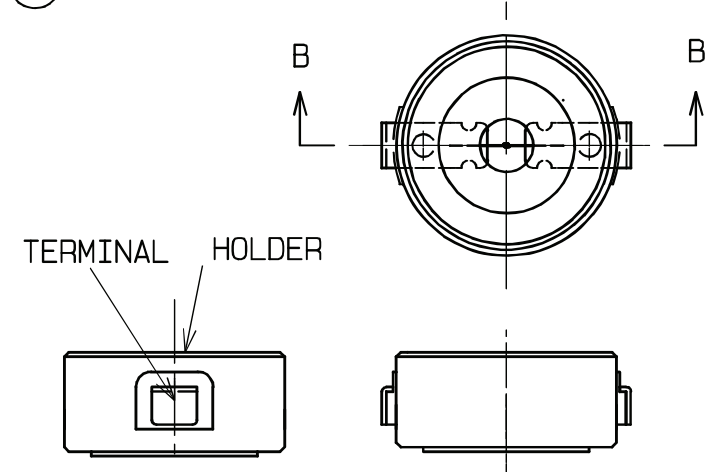
MATERIAL: STAINLESS STEEL (SUS304) t0.2
CHEMICAL COMPOSITIONS:

	UNIT %
C	0.08 or less
Si	1.00 or less
Mn	2.00 or less
P	0.045 or less
S	0.030 or less
Ni	8.00~10.50
Cr	18.00~20.00

② SINTERED METAL

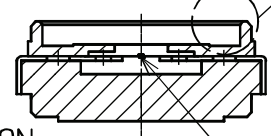


③ ELEMENT HOLDER



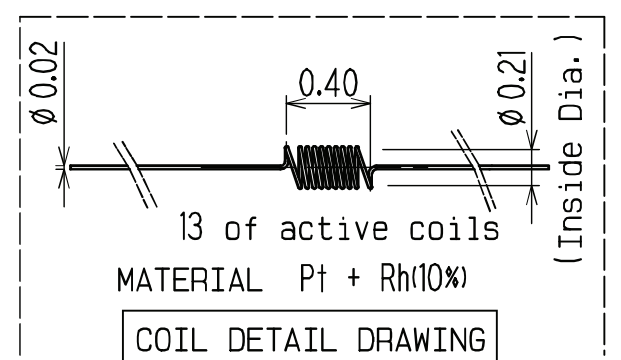
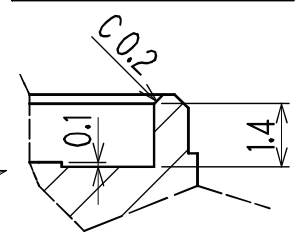
TERMINAL HOLDER

B-B SECTION



COIL

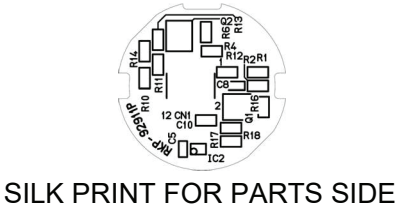
DETAIL DRAWING



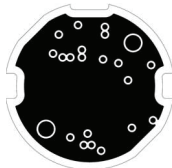
COIL DETAIL DRAWING

表面处理 TREAT.	許容差 TOL.	尺 度 SCALE	投影法 PROJECTION	名 称 NAME
材 質 MAT.		2 : 1		COMBUSTIBLE GAS SENSOR
承認 APPROVED	検 討 CHECKED	製 図 DRAWN	作成日 DATE	図 番 DWG. NO.
青良治	山田健太郎	河原井英樹	2015. 2. 3	M3-4086-6.1-0.1K
RIKEN KEIKI 理研計測株式会社				機密情報 / CONFIDENTIAL

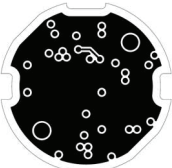
△	記 事	年 月 日	訂 正 者
---	-----	-------	-------



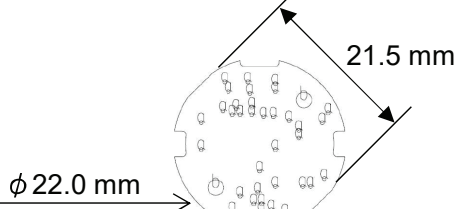
SILK PRINT FOR PARTS SIDE



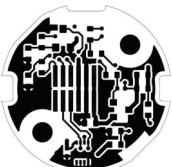
INNER LAYER (2nd LAYER)



SOLDERING SIDE



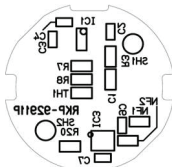
THROUGH HOLE FOR PARTS SIDE



PARTS SIDE



INNER LAYER (3rd LAYER)



SILK PRINT FOR SOLDERING SIDE

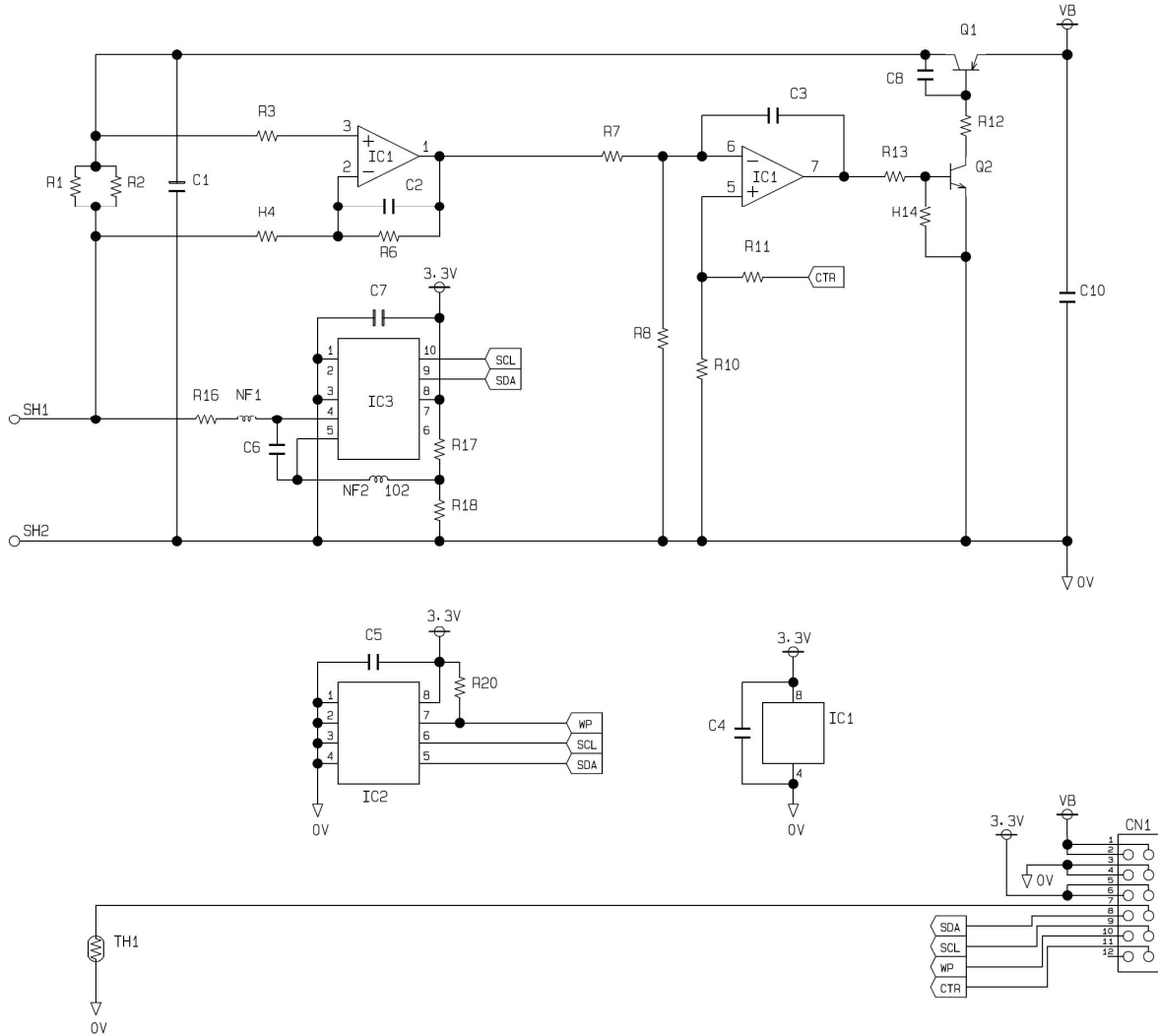
MARK	DIAGRAM	HOLE	MEMO
a	φ0.3	TH	
b	φ1	TH	

SPECIFICATION FOR PCB

- PCB No. : RKP-92911P
- Material : Glass epoxy
- Thickness : 1.2mm
- Layer number : 4
- Thickness copper film : 18um
- Copper thickness of the via's : 18um above.
- Minimum conductor width : 0.2mm
- CTI : 100 above

All drawings are view of parts side

SCALE 1:1



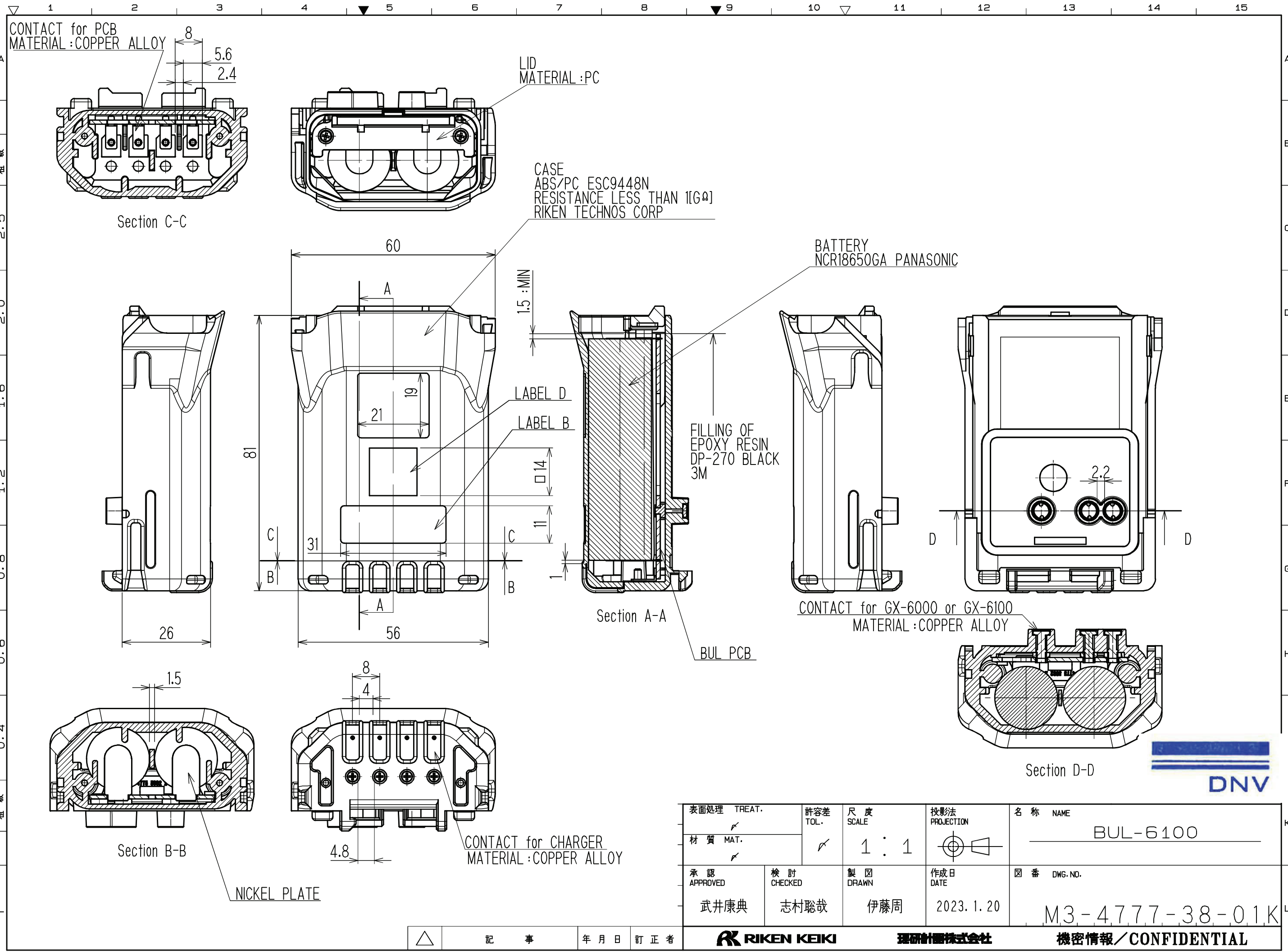
SCHEMATIC

Mark of drawing	Kind of parts	Rating/Model of parts	Remarks
IC1	IC (OPAMP)	S-89713B-K8T2U [ABLIC]	m
IC2	IC (EEPROM)	S-24C16CI-I8T1U3 [ABLIC]	m
IC3, IC4	IC (A/D Converter))	ADS1114IRUGR [TI]	m
Q1	PNP Transistor	NSS12200LT1G [Onsemi]	m
Q2	NPN Transistor	2SC2712Y [Toshiba]	m
R1 - R4, R6 - R8, R10 - R14, R16 - R18, R20	Chip metal film fixed resistor or Chip jumper	10 - 10M ohm / 1%, 0.1W or 50m ohm max, 1A (1608)	m
TH1	Thermistor or Chip metal film fixed resistor or Chip jumper	Rt25 = 1k - 470k ohm / 1%, B = 3000K - 5000K or 10 - 10M ohm / 1%, 0.063W or 50m ohm max, 1A (1608)	m
C1 - C8, C10	Chip multilayer capacitor	Total capacitance 17uFmax	m
NF1, NF2	Chip Ferrite Beads or Chip metal film fixed resistor or Chip jumper	BLM18HD102SN1 or 10 - 10M ohm / 1%, 0.1W or 50m ohm max, 1A (1608)	m
NOTE	* marked parts are Safety Components. m marked parts are mounted or not. D marked parts, refer to datasheet. [] Parts manufacturer and () Parts size code. Non-Safety Components may be replaced with equivalent components or may not be mounted.		

PARTS LIST

注記 NOTES		改版担当者 REV. BY	改版日 REVISED	名称 NAME SHS DIGITAL PCB
改版回数 REV.	0	総頁数 PAGES	1	
承認 APPROVED	検討 CHECKED	製図 DRAWN	作成日 DATE	図番 DWG. NO.
山田和則	小野圭	木村司	2022.7.7	E3-6991-6366-50-01A
RIKEN KEIKI 理研計器株式会社 機密情報 / CONFIDENTIAL				

寸法	精級	中級	粗級	1000以上	500以上1000未満	260以上500未満	120以上260未満	50以上120未満	18以上50未満	18未満	18未満
				0.7	0.5	0.4	0.3	0.2	0.15	0.1	0.1
1000以上	0.7	1.2	2.5								
500以上1000未満	0.5	1.0	2.0								
260以上500未満	0.4	0.8	1.6								
120以上260未満	0.3	0.6	1.2								
50以上120未満	0.2	0.4	0.8								
18以上50未満	0.15	0.3	0.6								
18未満	0.1	0.2	0.4								



表面处理 TREAT.	許容差 TOL.	尺 度 SCALE	投影法 PROJECTION	名 称 NAME
材 質 MAT.		1 : 1		BUL-6100
承認 APPROVED	検 討 CHECKED	製 図 DRAWN	作成日 DATE	図 番 DWG. NO.
武井康典	志村聡哉	伊藤周	2023. 1. 20	M3-4777-38-01.K

△

記 事

年 月 日

訂 正 者

RIKEN KEIKI

理研計器株式会社

機密情報 / CONFIDENTIAL