ConvenientPower

MPP Module User's Guide

Version: V1.2

06/15/2023

Revision History

Version	Date	Author	Comments
1.0	2023-03-16	Yiyong Zhao	Initially released.
1.1	2023-04-26	Yiyong Zhao	Update pin and connection guidance and pad assignment diagram.
1.2	2023-06-15	Yiyong Zhao	Add structure drawings, electrical specifications, I2C register table, etc.

Approved By

Catalog

1. Overview 4
2. Mechanical 5
2.1 Module exploded figure 6
2.2 Coil Specification 7
2.3 Magnet Specification 9
3. Electrical 11
3.1 Pinout and connection guidance 12
3.2 Electrical specification 12
3.3 Power allocation 13
3.4 I2C Interface 14
3.4.1 I2C specification 14
3.4.2 I2C instruction 14
3.4.3 Control register configuration 15
3.4.4 Function enable configuration 16
3.4.5 input protection configuration 16
3.4.6 OTP configuration 17
3.4.7 OCP configuration 17
3.4.8 Power of input & output 17
3.4.9 Alert indication 17
3.4.10 Working information 18

1. Overview

This document specifies the technical specification of the CPS magnetic power profile (MPP) wireless power transmitter (PTx) module.

CPS MPP PTx module is a highly integrated wireless transmitter based on WPC Qi2.0 MPP specification, which supports MPP wireless power receiver (PRx) up to 15W and Qi1.3.3 BPP to 5W. Meanwhile, the module is Qi2.0 EPP protocol and PPDE protocol compatible.

CPS MPP PTx module supports PD3.1, QC3.0, BC1.2 and DC5V/9V input. The module also supports power allocation via I2C with minimum BOM for different kinds of applications such as single pad, X-in-1, MPP powerbank etc.

CPS MPP PTx module is designed to fit the current applications with Apple MagSafe module. It has the same diameter as MagSafe module. Its thickness is about 7mm without top cover, and the reference thickness of the top cover is 0.85mm. The detailed size can be found in the appendix. CPS MPP PTx module can replace Apple MagSafe module directly without any EE change and can charge up to 15W when working with MPP PRx device. The module consists of an MPP specified coil, a magnet ring, an integrated PCBA and film-coated aluminum (5052) holder.

There are three types of MPP charger modules:.

- CPS MPP PTx module (CPS812x) with 700gf magnet force.
- CPS MPP PTx module (CPS822x) with 700gf magnet force, which can replace apple C222x directly without EE and housing re-design.
- CPS MPP PTx module (CPS823x) with 1100gf magnet force.

Fig.1 CPS CPS812x Module Overview

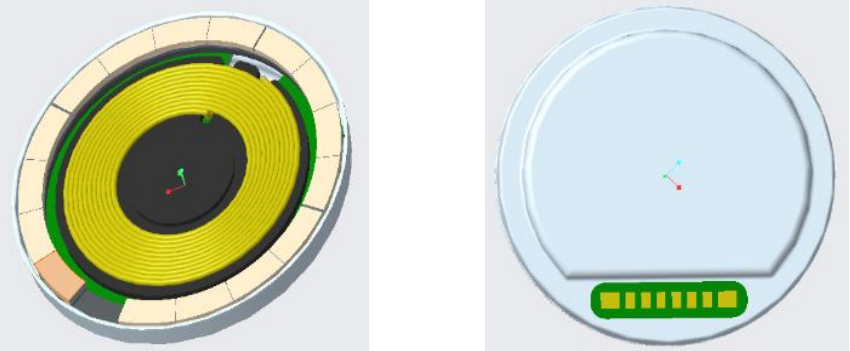


Fig.2 CPS CPS822x Module Overview

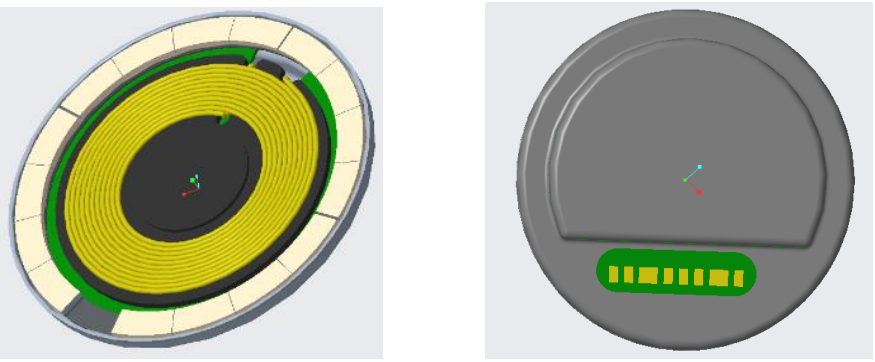
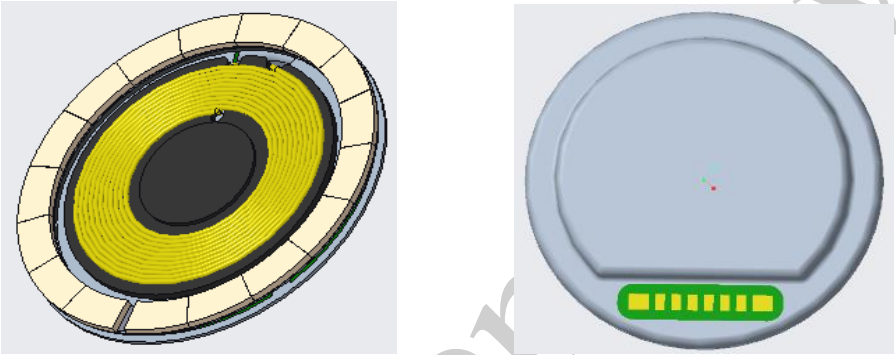


Fig.3 CPS CPS823x Module Overview



2. Mechanical

See the following for dimensional drawings:

- CPS CPS812x Module Dimensions 1 of 2 (page 20)
- CPS CPS812x Module Dimensions 2 of 2 (page 21)
- CPS CPS822x Module Dimensions 1 of 2 (page 22)
- CPS CPS822x Module Dimensions 2 of 2 (page 23)
- CPS CPS823x Module Dimensions 1 of 2 (page 24)
- CPS CPS823x Module Dimensions 2 of 2 (page 25)

There is no housing limitation when CPS MPP PTx Module is used, but need to make sure there is no interference with other part of the whole product. It is highly suggested to consider the thermal dissipation during the housing design. Better thermal design will improve the charging performance.

Attention, top enclosure is not integrated in CPS MPP PTx Module. Customers need to design their own top enclosure based on the product ID. The recommended thickness of the top enclosure thickness is 0.85±0.05 mm. In order to achieve a better magnet force and better compatibility, must

make sure the top enclosure is within the specification. And the top enclosure material cannot be metal or ferromagnetic materials.

2.1 Module exploded figure

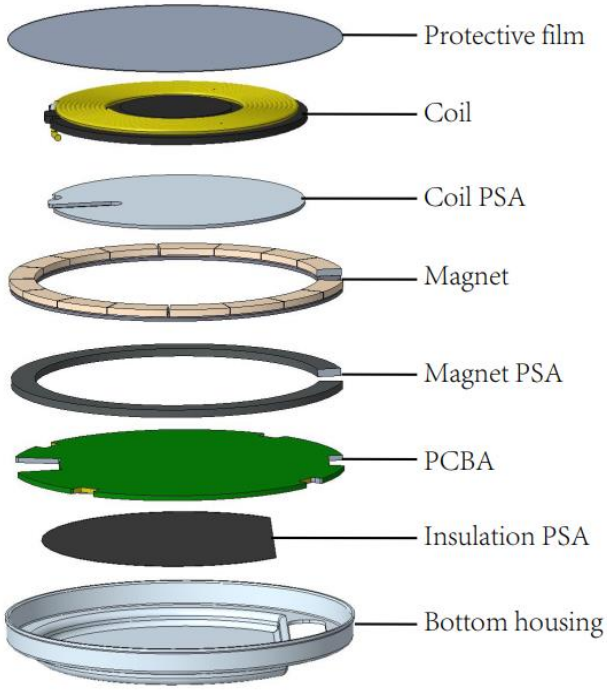


Fig.4 CPS CPS812x module exploded figure

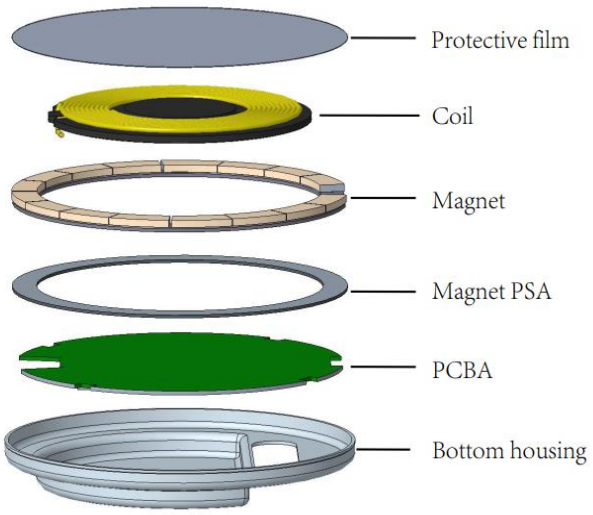


Fig.5 CPS CPS822x module exploded figure

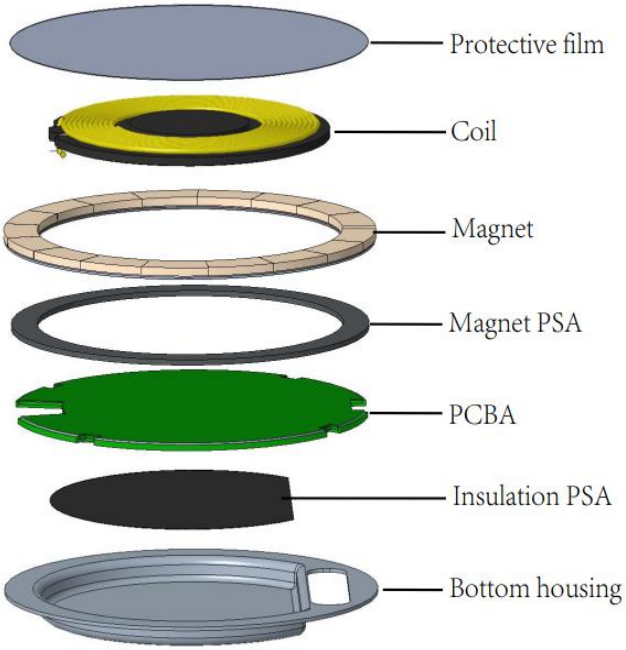
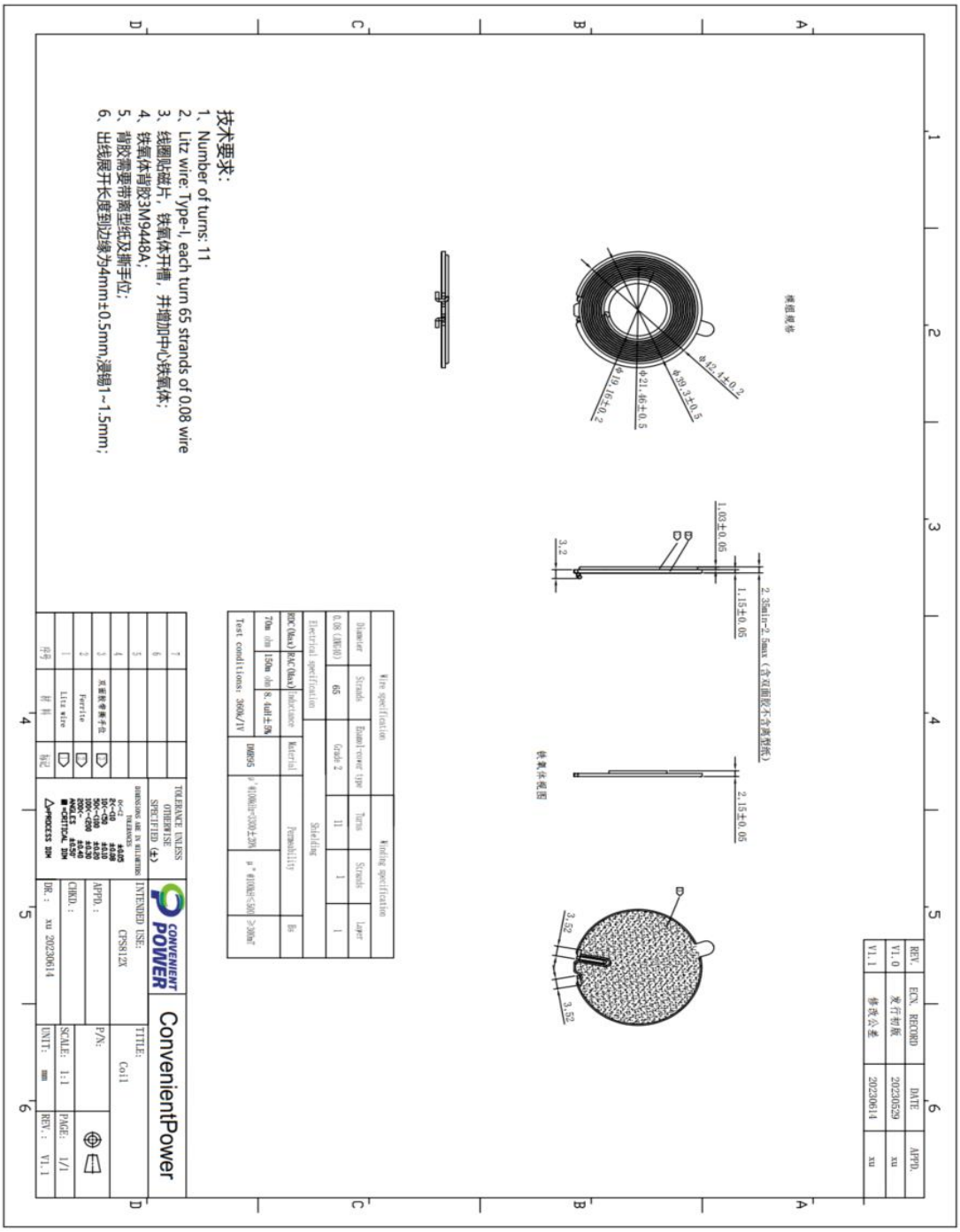


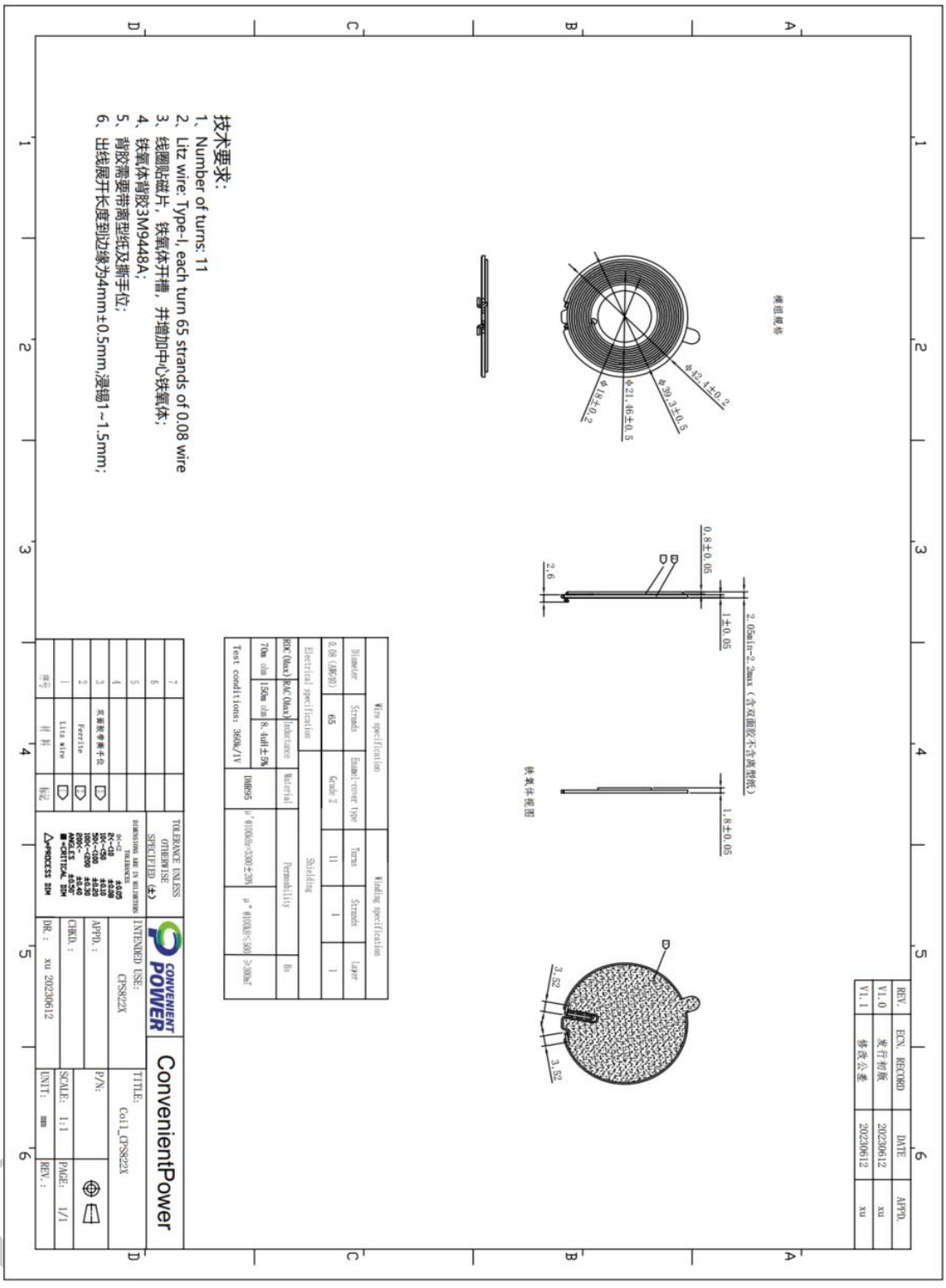
Fig.6 CPS CPS823x module exploded figure

2.2 Coil Specification

2.5mm COIL (CPS812x and CPS823x COIL)	Inductance	8.4uH +/-5%
	DC resistance	≤70mΩ
	AC resistance	≤150mΩ



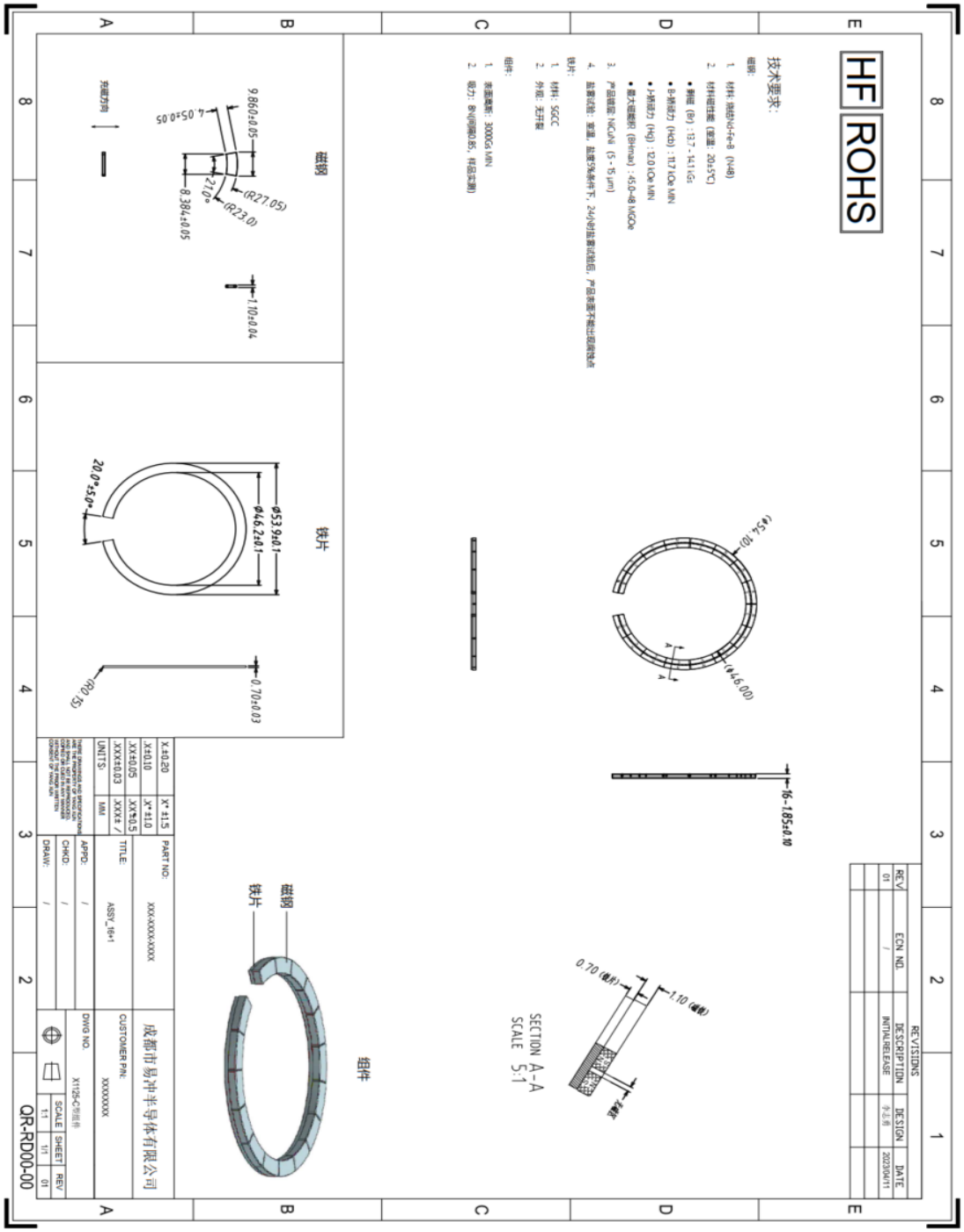
2.2mm COIL (CPS822x COIL)	Inductance	8.4uH +/-5%
	DC Resistance	≤70mΩ
	AC Resistance	≤150mΩ



2.3 Magnet Specification

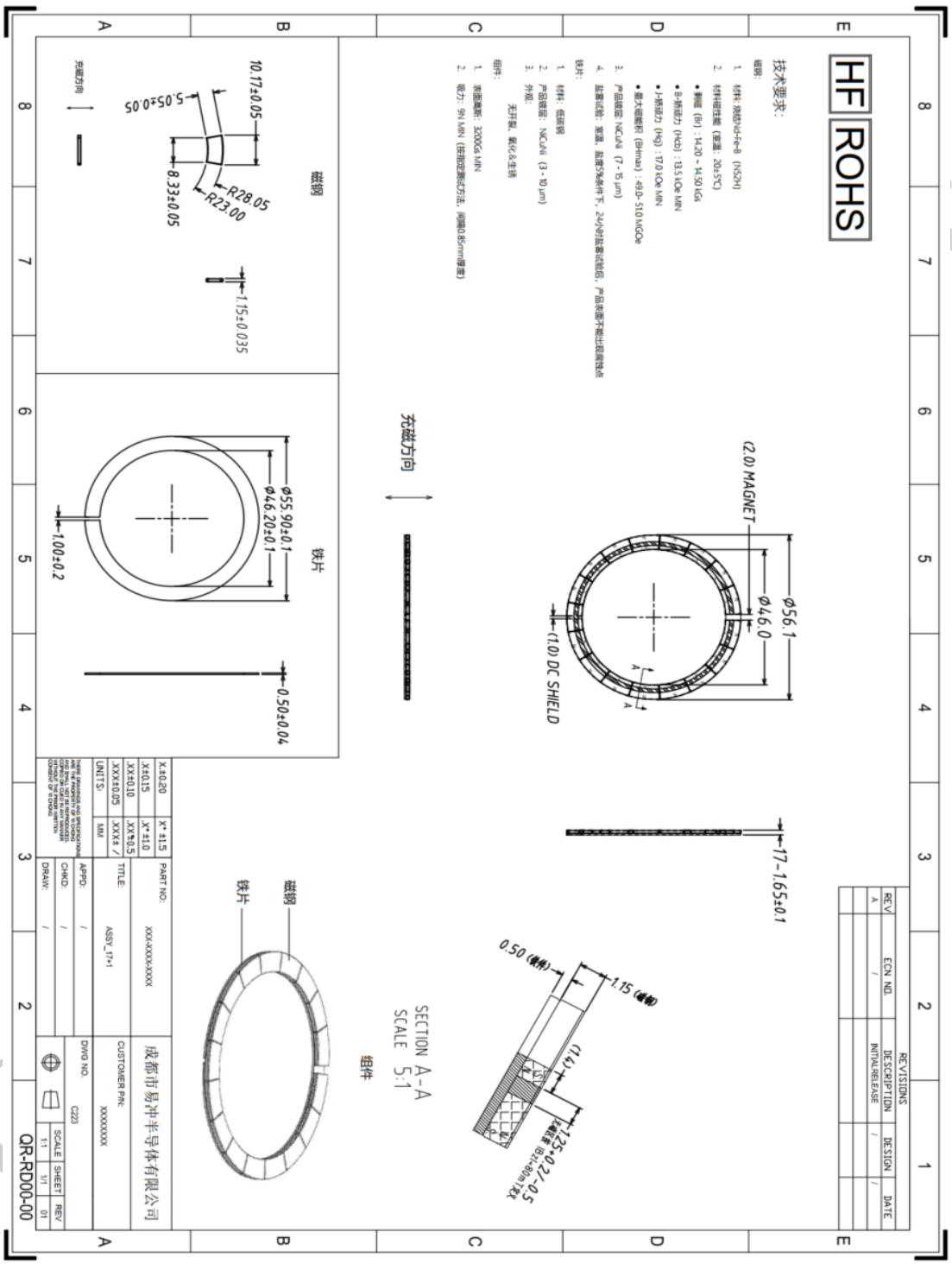
1.85mm magnet	Magnet steel material	Nd-Fe-B (N48)

(CPS812x and CPS822x magnet)	Magnet steel plating	NiCuNi
	Material of iron sheet	SGCC



1.65mm magnet (CPS823x Magnet)	Magnet steel material	Nd-Fe-B (N52H)
	Magnet steel plating	NiCuNi

	Material of iron sheet	Low carbon steel



3. Electrical

The products that integrate CPS MPP PTx module shall follow the electrical requirements in this section.

3.1 Pinout and connection guidance

The CPS MPP PTx module aims to make the total BOM minimum for different kinds of applications such as single pad, X-in-1, MPP powerbank etc. Customers can choose the protocol they want to support in their products and make sure the connections are correct. Must make sure that the wire will not short to the housing and the cable current carrying capacity can meet the requirement. Shielded cable is recommended to achieve better EMI performance. The reference connection can be found in table.1 and table.2.

Table.1 CPS812X/CPS823X pinout and connection guidance

PIN	CPS812X CPS823X	USBC Cable Connection	USBA Connection	DC Jack Connection
1	VBUS	USB VBUS	USB VBUS	VBUS
2	USB CC1	USB CC1	NC	NC
3	USB CC2	NC	NC	NC
4	USB D+	USB D+ (optional)	USB D+	NC
5	USB D-	USB D- (optional)	USB D-	NC
6	I2C_SDA	NC	NC	NC
7	I2C_SCK	NC	NC	NC
8	GND	GND	GND	GND

Table.2 CPS822X pinout and connection guidance

PIN	CPS822X	USBC Cable Connection	USBA Connection	DC Jack Connection
1	USB D-	USB D- (optional)	USB D-	NC
2	USB D+	USB D+ (optional)	USB D+	NC
3	VBUS	VBUS	VBUS	VBUS
4	USB CC1	USB CC1	NC	NC
5	I2C_SCK	NC	NC	NC
6	I2C_SDA	NC	NC	NC
7	GND	GND	GND	GND
8	USB CC2	NC	NC	NC

NOTE: USB CC2 has been used as NTC function, keep this pin float in the applications. If customers want to use this pin for other functions, please contact CPS. All pads support assembling up to 20 AWG wire.

3.2 Electrical specification

The electrical specification is shown in Table.3.

Table.3 Electrical specification

Items	specification
Input voltage	5V/9V +/-5%
Rated input current	3A@5V,2.22A@9V
Required input ripple voltage	<150mVp-p
Input protocol	DC,BC1.2,QC2.0,PD3.1
Standby power	< 0.35W
Output protocol	Qi-BPP5W/Qi-MPP15W/7.5W apple fast charging Note：PPDE and EPP are compatible
Maximum output power	15W(14V/1.07A)
Efficiency	81% max @15W (PRX: CPS4041 MPP PRX tester)
Effective charging height(Z)	Max 4mm with magnetic phone (from Tx-surface to Rx-surface) Max 6mm with non-magnetic phone (from Tx-surface to Rx-surface)
Effective charging area(X&Y)	+/-4 mm with magnetic phone (from coil center) +/-6 mm with non-magnetic phone (from coil center)
Protections	UVP/OVP/OTP
Input OVP Threshold[Note2]	Trigger: 10V/Recover: 9.5V @9V input Trigger: 6V/Recover: 5.5V @5V input
Input UVP Threshold[Note2]	Trigger: 8V/Recover: 8.5V @9V input Trigger: 4V/ Recover: 4.5V @5V input
OTP Threshold	Trigger: 70℃/Recover: 50℃
FOD Detection Radius	10mm (for 1RMB coin)
Operating temperature	0 to 35°C
Storage Temperature	-20 to +70°C
Certification	QI2 MPP/CE/FCC/UL

3.3 Power allocation

The CPS MPP PTx module adjusts the maximum output power dynamically according to the capability of the PSU. Details are shown in Table.4.

Table.4. the maximum output power for different PSUs

PSU type	Output protocol and power
BC1.2 5V (1.5A=<Iin<2.1A)	BPP5W
BC1.2 5V (2.1A=<Iin<=2.4A)	BPP5W, AFC7.5W
DC 5V (2.1A<=Iin)	BPP5W, AFC7.5W
DC 9V (2.22A<=Iin)	BPP5W, AFC7.5W, MPP15W
QC 5V (Iin=3A)	BPP5W, AFC7.5W
QC 9V (Iin=1.67A)	BPP5W, AFC7.5W, MPP10W
QC 9V (Iin=2A)	BPP5W, AFC7.5W, MPP12W
PD 5V (Iin<2.1A)	BPP5W

PD 5V (2.1A=<Iin<=3A)	BPP5W, AFC7.5W
PD 9V (Iin<2A)	BPP5W, AFC7.5W
PD 9V (2A=<Iin<2.22A)	BPP5W, AFC7.5W, MPP12W
PD 9V (2.22A<=Iin)	BPP5W, AFC7.5W, MPP15W

Note：PPDE and EPP are compatible, if customers want to support these two protocols, they need to do PPDE and EPP certification. And the power allocation can be adjusted according to the input power level.

3.4 I2C Interface

Users can get CPS MPP PTx Module status or control the module working state through I2C.

3.4.1 I2C specification

CPS MPP PTx module is configured to be a slave in default. If customers want to use it as a master, the module should be customized according to the application. When the I2C function is used, customers only need to connect the I2C SDA and SCL to the module, and there is no need to pull up with extra resister. The SDA and SCL have been internally pulled up to 3.3V with 1k resistors. The maximum communication frequency is up to 400kHz.

Table.5 I2C Pin voltage specification

Parameter	Min	Type	Max	Unit	Note
VIH	1.4			V	Input high voltage
VIL			0.7	V	Input low voltage

3.4.2 I2C instruction

Customers can control the working state of the module through I2C. But if customers need to modify POWER_INFO register to do power allocation according to the system requirement, WORK_MODE (0x20000170 bit0) must be set to 1 in 500ms after the module is powered on. Once this bit is written to 1, the module will stop ping until the PING_EN (0x20000170 bit1) is set to 1. If WORK_MODE is not set to 1, writing POWER_INFO will be ignored.

The I2C address is 0x30. Before accessing and configuring CPS MPP Charger Module, the first step is to enable the function of register-accessing, please follow the procedure:

- Step1: Write the data 0x0000 000E to register address 0xFFFF FF00, please see Fig.7.

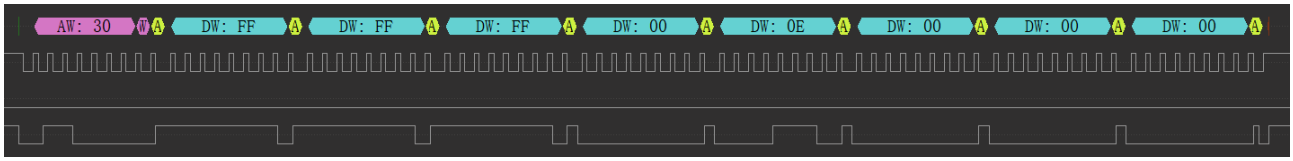


Fig.7 step1

- Step2: Read the data from register address 0xFFFF FF00, and check if the read value equals 0x0000 000E or not. The correct data is 0x0000 000E. See Fig.8.

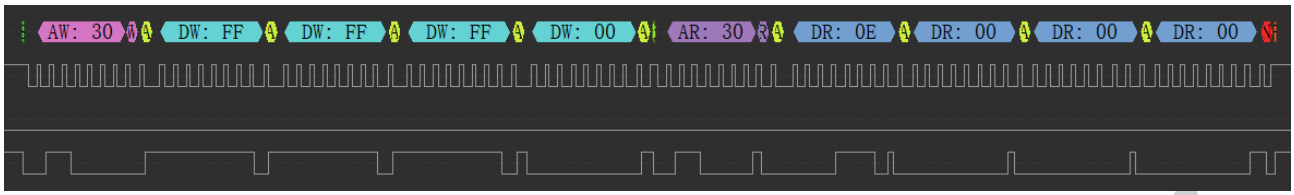


Fig.8 step2

- Step3: Write the data 0x0000 1250 to register address 0x4001 40FC, please see Fig.9.

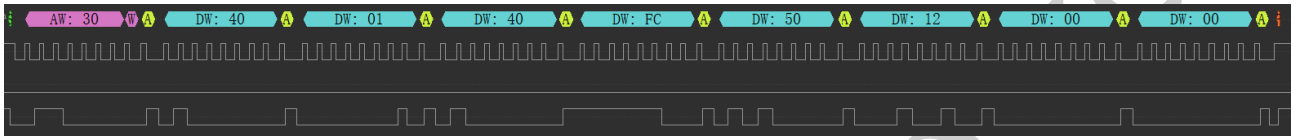


Fig.9 step3

After complete the procedure successfully, configure the registers of the module is allowed.

Register map

The I2C address is 0x30.

Table.6 Register Map

Register Address	Register Name	Type	Default
0x2000 003C	FUNC_EN	RW	0x0000 0AFF
0x2000 0044	OV_UV_THR_5V	RW	0x050A 050A
0x2000 0048	OV_UV_THR_9V	RW	0x050A 050A
0x2000 0058	OTP_THR	RW	0x0360 0261
0x2000 005C	OCP_THR	RW	0x0000 3C17
0x2000 0130	ADC_TEMP	RO	/
0x2000 0144	RP_POWER	RO	/
0x2000 0148	PA_POWER	RO	/
0x2000 015C	ALERT_INFO	RO	/
0x2000 0160	HEARTBEAT	RO	/
0x2000 0170	CONTROL	RW	0x0000 0000
0x2000 0174	POWER_INFO	RW	0x0000 0000
0x2000 0178	PA_LIMIT	RW	0x0000 0000

3.4.3 Control register configuration

Address	Register Name	Bit	Function	description
0x20000170	CONTROL	0	WORK_MODE	0: Disable extended function 1: Enable extended function(I2C Control)
		1	PING_EN	0: Disable digital ping

				1: Enable digital ping
		2	RESET_PT	0:NA 1: Restart power transfer, Auto reset to 0
		3	Q_CALI	0:NA 1: Do Q calibration, Auto reset to 0
		4	STA_CLR_DIS	0: Clear PT status when protection triggered 1: Do not clear PT status when protection triggered
		31:5	Reserved	

3.4.4 Function enable configuration

Address	Register Name	Bit	Function	description
0x2000003C	FUNC_EN	0	Reserved	
		1	OPP_EN	0: OPP disabled 1: OPP enabled
		2	OTP_EN	0: OTP disabled 1: OTP enabled
		3	Reserved	
		4	OCP_EN	0: OCP disabled 1: OCP enabled
		5	UVP EN	0: UVP disabled 1: UVP enabled
		6	OVP_EN	0: OVP disabled 1: OVP enabled
		7	FOD EN	0: FOD disabled 1: FOD enabled
		8	SAMG_FC_EN	SAMSUNG Fast Charging Enable. 0: Disable 1: Enable
		9	APPLE_FC_EN	APPLE Fast Charging Enable. 0: Disable 1: Enable
		10	EPP_EN	EPP Enable. 0: Disable 1: Enable
		11	MPP_EN	MPP Enable. 0: Disable 1: Enable
		31:12	Reserved	

3.4.5 input protection configuration

Address	Register Name	Bit	Function	description
0x20000044	OV_UV_THR_5V	7:0	OVP_TRIGGER_OFFSET_5V	OVP trigger value offset at 5V.

				100mV/step
		15:8	OVP_RESTORE_OFFSET_5V	OVP testore value offset at 5V. 100mV/step
		23:16	UVP_TRIGGER_OFFSET_5V	UVP trigger value offset at 5V. 100mV/step
		31:24	UVP_RESTORE_OFFSET_5V	UVP restore value offset at 5V. 100mV/step
0x20000048	OV_UV_THR_9V	7:0	OVP_TRIGGER_OFFSET_9V	OVP trigger value offset at 9V. 100mV/step
		15:8	OVP_RESTORE_OFFSET_9V	OVP restore value offset at 9V. 100mV/step
		23:16	UVP_TRIGGER_OFFSET_9V	UVP trigger value offset at 9V. 100mV/step
		31:24	UVP_RESTORE_OFFSET_9V	UVP restore value offset at 9V. 100mV/step

3.4.6 OTP configuration

Address	Register Name	Bit	Function	description
0x20000058	OTP_THR	15:0	OTP_TRIGGER_VAL_NTC	OTP trigger value of NTC. mV/step
		31:16	OTP_RESTORE_VAL_NTC	OTP restore value of NTC.mV/step

Address	Register Name	Bit	Function	description
0x20000130	ADC_TEMP	23:0	ADC_TEMP	NTC sampling value, mV
		31:24	TEMP_CHECKSUM	Checksum of temp value(Bit0:23)

3.4.7 OCP configuration

Address	Register Name	Bit	Function	description
0x2000005C	OCP_THR	7:0	OCP_THRSH	OCP trigger threshold.100mA/step
		31:8	Reserved	

3.4.8 Power of input & output

Address	Register Name	Bit	Function	description
0x20000144	RP_POWER	23:0	RP_POWER	Current RP power value, mW
		31:24	RP_CHECKSUM	Checksum of RP value(Bit0:23)
0x20000148	PA_POWER	23:0	PA_POWER	Current PA power value, mW
		31:24	PA_CHECKSUM	Checksum of PA value(Bit0:23)

3.4.9 Alert indication

Address	Register	Bit	Function	description

	Name			
0x2000015C	ALERT_INFO	2:0	CURRENT_PROTOCOL	0: STANDBY 1: BPP(Max 7000mW) 2: APL(Max 11000mW) 3: SFC(Max 13500mW) 4: EPP(Max 22500mW) 5: MPP(Max 22500mW) 6~7:Reserved
		3	RX_EXISTED	1: RX placed 0: RX absented
		4	QFOD_STATUS	1: Triggered QFOD 0: No QFOD
		5	OCP/OPP_STATUS	1: Triggered OCP or OPP 0: No OCP and no OPP
		6	OVP_STATUS	1: Triggered OVP 0: No OVP
		7	UVP_STATUS	1: Triggered UVP 0: No UVP
		8	OTP_STATUS	1: Triggered OTP 0: No OTP
		13:9	RX_NEGO_POWER	Negotiation Power, W
		14	PT_STATE	0-Not in PT phase 1-In PT phase
		15	PFOD_STATUS	1: Triggered PFOD 0: No PFOD
		23:16	CHARGE_STATUS	RX Battery Status
		31:24	ALERT_CHECKSUM	Checksum of alert info(Bit0:23)
0x20000160	HEARTBEAT	31:0	HEARTBEAT_CNT	Check if PTx is functioning properly

3.4.10 Working information

Address	Register Name	Bit	Function	description
0x20000174	POWER_INFO	0	POWER_INFO_SYSC	0:NA 1-Synchronize power information, Auto reset to 0
		14:1	POWER_INFO_VOLT	Supply voltage, mV
		26:15	POWER_INFO_CURR	Supply current, mA
		31:27	GUAR_POWER	Negotiable power level, W
0x20000178	PA_LIMIT	0	LIMIT_EN	0: Disable pa power limit 1: Enable pa power limit
		15:1	LIMIT_PA_VAL	Power limit value, mW
		31:16	Reserved	

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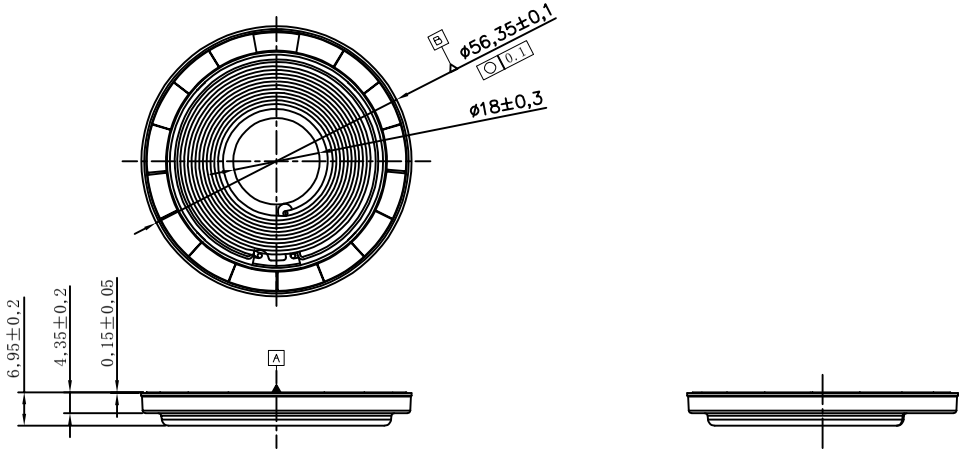
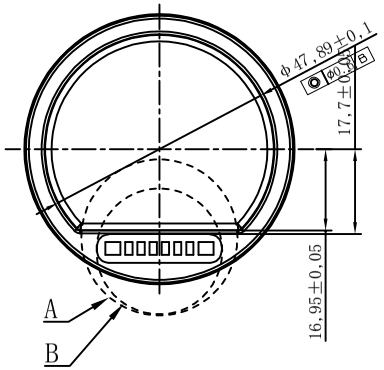
REV.	ECN. RECORD	DATE	APPD.
V1.0			

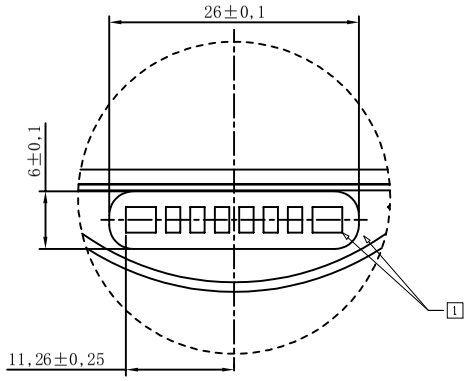
NOTES: (UNLESS OTHERWISE SPECIFIED)

1. NO ELECTRICAL SHORTS BETWEEN GND PAD AND SURROUNDING METAL.
2. ENCLOSURE REFERS TO ANY PART SURROUNDING THE MODULE. OUTER SURFACE OF ENCLOSURE AREA REPRESENTS MAX MATERIAL CONDITION FOR EXTERIOR ENCLOSURE SURFACE. ENCLOSURE GEOMETRY MUST BE CONTAINED WITHIN AREA SHOWN
3. FOR NON AXISYMMETRIC APPLICATIONS, ENCLOSURE AREA REPRESENTS MAX MATERIAL CONDITION WHEN VIEWED ALONG A HORIZONTAL AXIS FOR AXISYMMETRIC APPLICATIONS, A REVOLUTION OF THE ENCLOSURE AREA AROUND THE Z AXIS THROUGH THE CENTER POINT OF THE MODULE REPRESENTS THE MAX MATERIAL CONDITION
4. ANY CURVATURE DEVIATING OUTWARD OF ENCLOSURE AREA TO EXIST BEYOND 5MM Z CLEARANCE FROM TOP OF MODULE



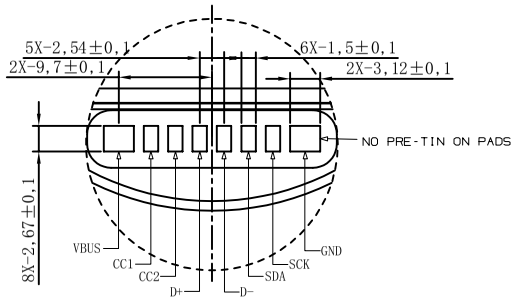


HOT BAR OPENING



DETAIL A
SCALE 2:1

PAD DETAILS

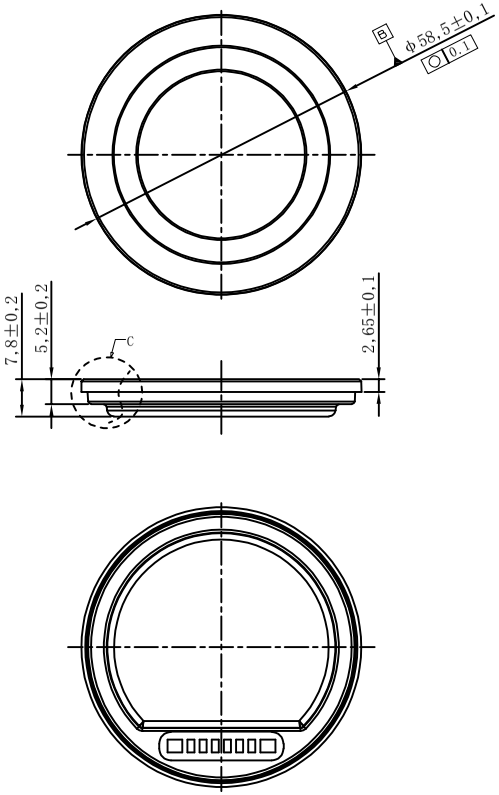


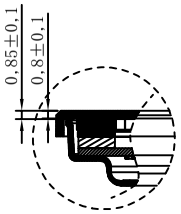
DETAIL B
SCALE 2:1

TOLERANCE UNLESS OTHERWISE SPECIFIED (±)	CONVENIENT POWER	Convenient Power
DIMENSIONS ARE IN MILIMETERS TOLERANCES 0<-<2 ±0.05 2<-<10 ±0.08 10<-<50 ±0.10 50<-<100 ±0.20 100<-<200 ±0.30 200<- ±0.40 ANGLES ±0.50° ■=CRITICAL DIM △=PROCESS DIM	INTENDED USE: CPS812X	TITLE:
	APPD. :	P/N:
	CHKD. :	SCALE: 1:1 / PAGE: 1/2
	DR. :	UNIT: mm / REV. : V1.0

REV.	ECN. RECORD	DATE	APPD.
V1.0			

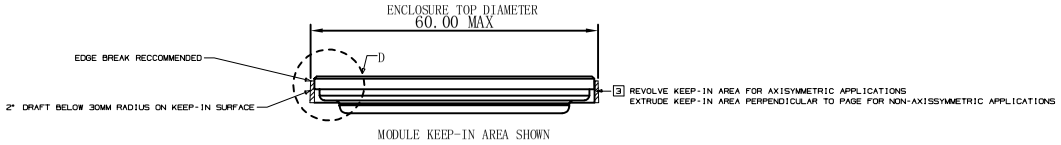
These dimensions are CPS recommended for reference

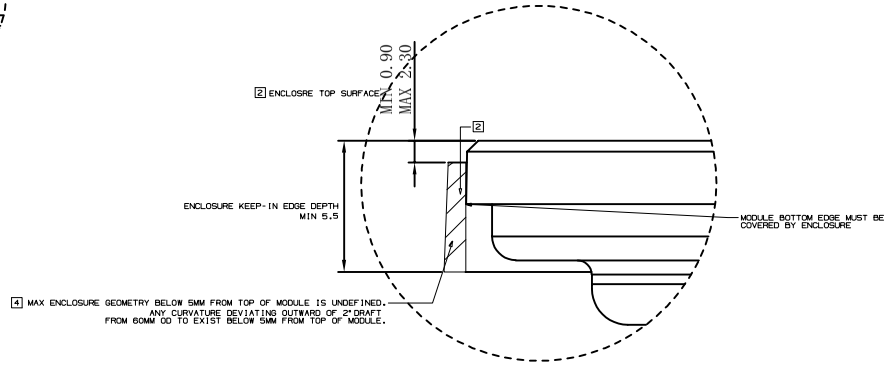




DETAIL C
SCALE 2:1

ENCLOSURE INTEGRATION





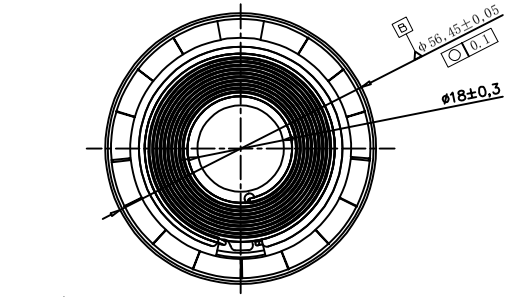
DETAIL D
SCALE 5:1

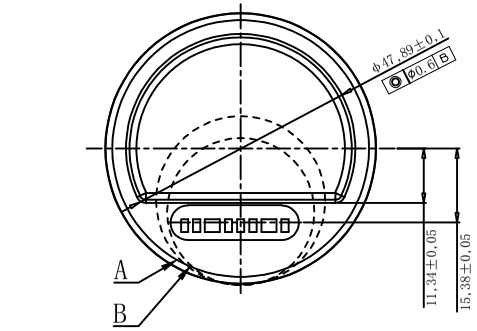
TOLERANCE UNLESS OTHERWISE SPECIFIED (±)	CONVENIENT POWER	Convenient Power
DIMENSIONS ARE IN MILIMETERS TOLERANCES 0<=<2 ±0.05 2<-<10 ±0.08 10<-<50 ±0.10 50<-<100 ±0.20 100<-<200 ±0.30 200<- ±0.40 ANGLES ±0.50° ■ =CRITICAL DIM △=PROCESS DIM	INTENDED USE: CPS812X	TITLE:
	APPD.:	P/N:
	CHKD.:	SCALE: 1:1 / PAGE: 2/2
	DR.:	UNIT: mm / REV.: V1.0

REV.	ECN. RECORD	DATE	APPD.
V1.0			

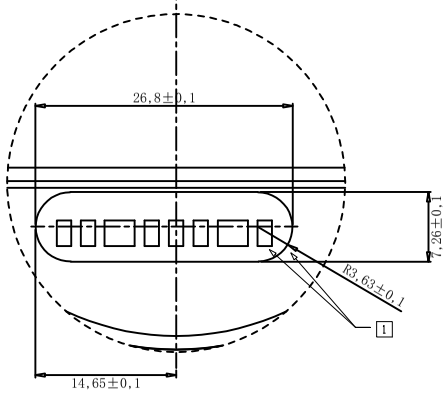
NOTES: (UNLESS OTHERWISE SPECIFIED)

1. NO ELECTRICAL SHORTS BETWEEN GND PAD AND SURROUNDING METAL.
2. ENCLOSURE REFERS TO ANY PART SURROUNDING THE MODULE. OUTER SURFACE OF ENCLOSURE AREA REPRESENTS MAX MATERIAL CONDITION FOR EXTERIOR ENCLOSURE SURFACE. ENCLOSURE GEOMETRY MUST BE CONTAINED WITHIN AREA SHOWN
3. FOR NON AXISYMMETRIC APPLICATIONS, ENCLOSURE AREA REPRESENTS MAX MATERIAL CONDITION WHEN VIEWED ALONG A HORIZONTAL AXIS. FOR AXISYMMETRIC APPLICATIONS, A REVOLUTION OF THE ENCLOSURE AREA AROUND THE Z AXIS THROUGH THE CENTER POINT OF THE MODULE REPRESENTS THE MAX MATERIAL CONDITION
4. ANY CURVATURE DEVIATING OUTWARD OF ENCLOSURE AREA TO EXIST BEYOND 5MM Z CLEARANCE FROM TOP OF MODULE



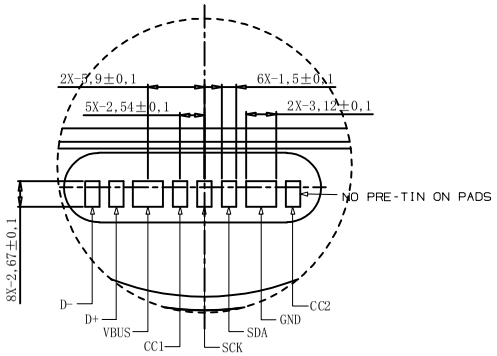


HOT BAR OPENING



DETAIL A
SCALE 2:1

PAD DETAILS



DETAIL B
SCALE 2:1

TOLERANCE UNLESS OTHERWISE SPECIFIED (±)	CONVENIENT POWER	Convenient Power	
DIMENSIONS ARE IN MILLIMETERS TOLERANCES 0<-<2 ±0.05 2<-<10 ±0.08 10<-<50 ±0.10 50<-<100 ±0.20 100<-<200 ±0.30 200<- ±0.40 ANGLES ±0.50° ■=CRITICAL DIM △=PROCESS DIM	INTENDED USE: CPS822X	TITLE:	
	APPD.:	P/N:	
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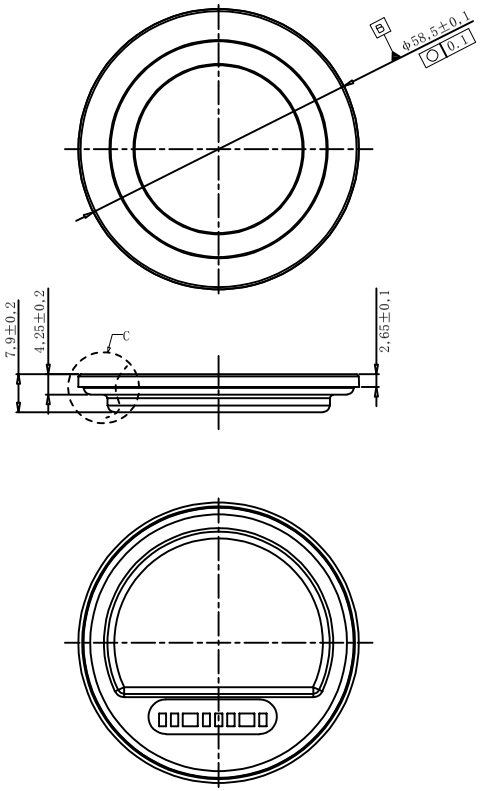
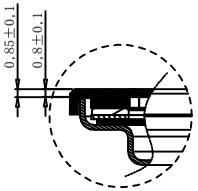
	DR.:	UNIT: mm	REV.: V1.0

REV.	ECN. RECORD	DATE	APPD.
V1.0			

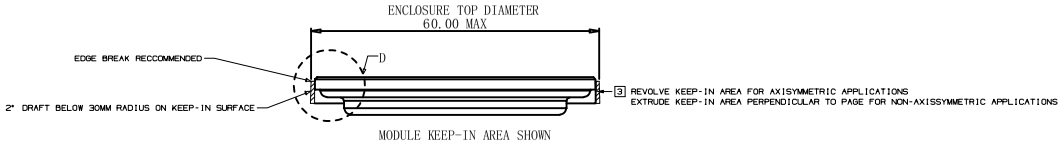
These dimensions are CPS recommended for reference



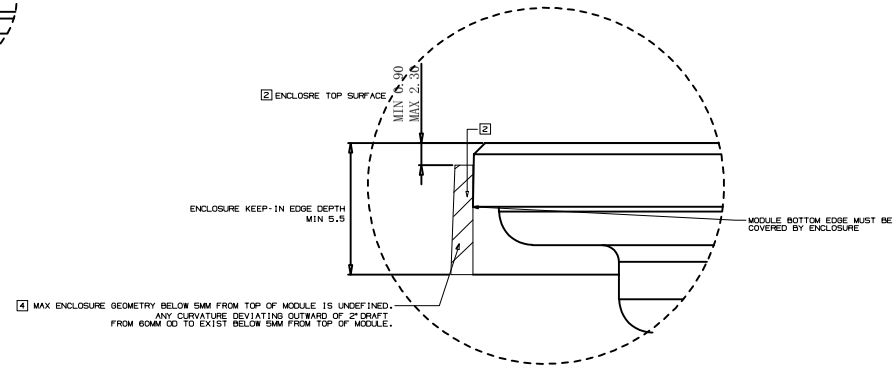


DETAIL C
SCALE 2:1

ENCLOSURE INTEGRATION



MODULE KEEP-IN AREA SHOWN



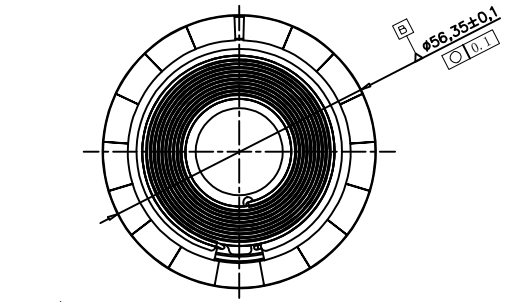
DETAIL D
SCALE 5:1

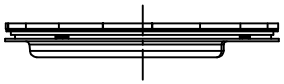
TOLERANCE UNLESS OTHERWISE SPECIFIED (±)	CONVENIENT POWER	Convenient Power
DIMENSIONS ARE IN MILIMETERS TOLERANCES 0<~<2 ±0.05 2<~<10 ±0.08 10<~<50 ±0.10 50<~<100 ±0.20 100<~<200 ±0.30 200<~ ±0.40 ANGLES ±0.50° ■=CRITICAL DIM △=PROCESS DIM	INTENDED USE: CPS822X	TITLE:
	APPD.:	P/N:
	CHKD.:	SCALE: 1:1 / PAGE: 2/2
	DR.:	UNIT: mm / REV.: V1.0

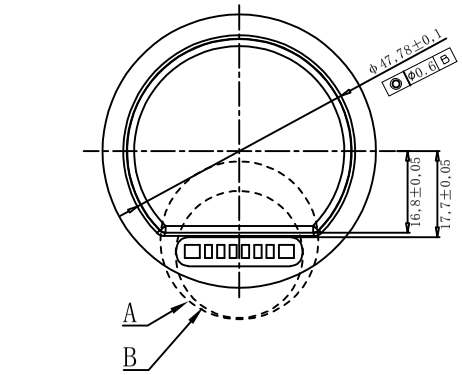
REV.	ECN. RECORD	DATE	APPD.
V1.0			

NOTES: (UNLESS OTHERWISE SPECIFIED)

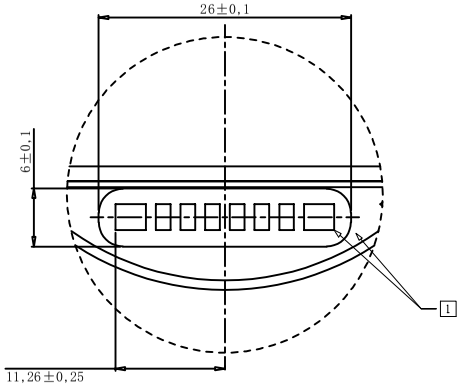
1. NO ELECTRICAL SHORTS BETWEEN GND PAD AND SURROUNDING METAL.
2. ENCLOSURE REFERS TO ANY PART SURROUNDING THE MODULE. OUTER SURFACE OF ENCLOSURE AREA REPRESENTS MAX MATERIAL CONDITION FOR EXTERIOR ENCLOSURE SURFACE. ENCLOSURE GEOMETRY MUST BE CONTAINED WITHIN AREA SHOWN
3. FOR NON AXISYMMETRIC APPLICATIONS, ENCLOSURE AREA REPRESENTS MAX MATERIAL CONDITION WHEN VIEWED ALONG A HORIZONTAL AXIS FOR AXISYMMETRIC APPLICATIONS, A REVOLUTION OF THE ENCLOSURE AREA AROUND THE Z AXIS THROUGH THE CENTER POINT OF THE MODULE REPRESENTS THE MAX MATERIAL CONDITION
4. ANY CURVATURE DEVIATING OUTWARD OF ENCLOSURE AREA TO EXIST BEYOND 5MM Z CLEARANCE FROM TOP OF MODULE





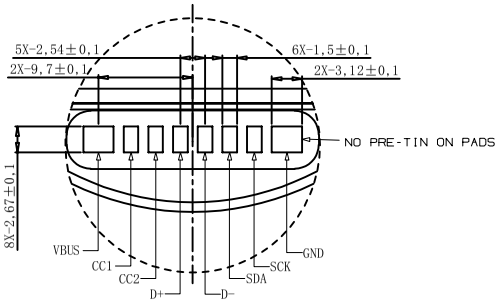


HOT BAR OPENING



DETAIL A
SCALE 2:1

PAD DETAILS



DETAIL B
SCALE 2:1

TOLERANCE UNLESS OTHERWISE SPECIFIED (±)		Convenient Power
DIMENSIONS ARE IN MILIMETERS TOLERANCES 0<-<2 ±0.05 2<-<10 ±0.08 10<-<50 ±0.10 50<-<100 ±0.20 100<-<200 ±0.30 200<- ±0.40 ANGLES ±0.50° ■=CRITICAL DIM △=PROCESS DIM	INTENDED USE: CPS823X	TITLE:
	APPD.:	P/N:
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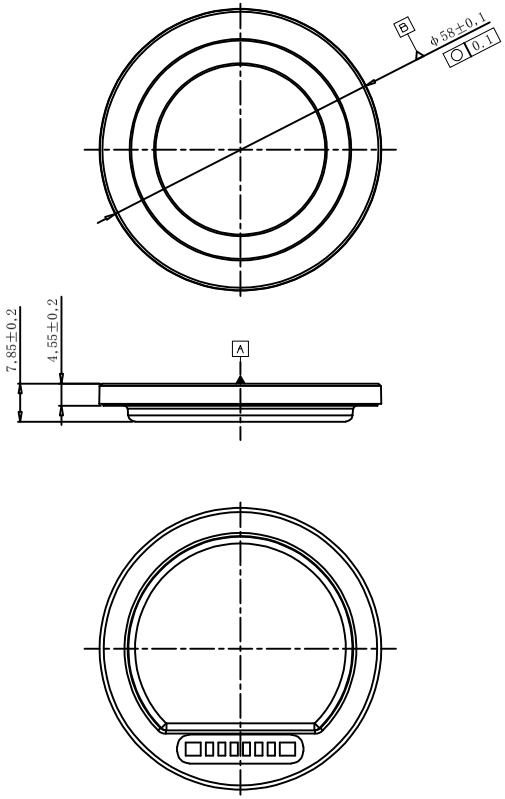
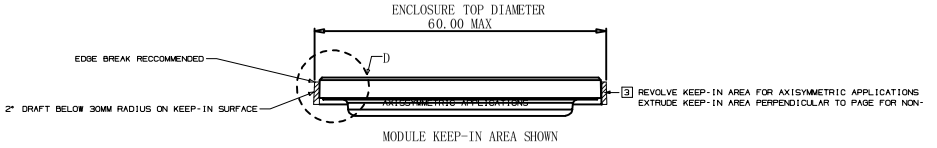
REV.	ECN. RECORD	DATE	APPD.
V1.0			

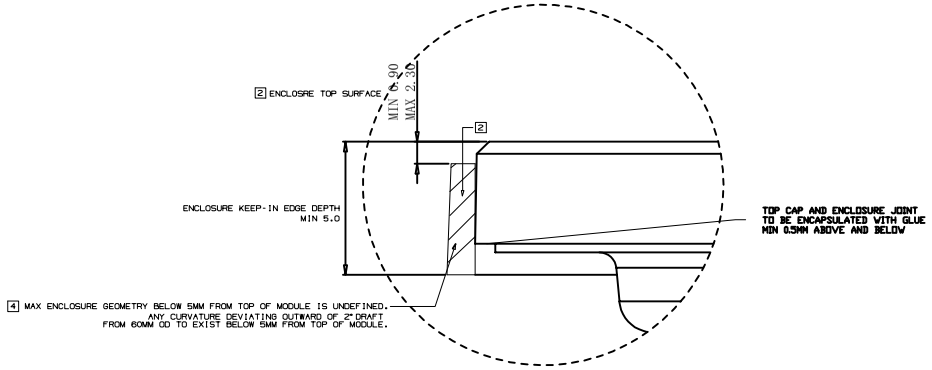
These dimensions are CPS recommended for reference



ENCLOSURE INTEGRATION



MODULE KEEP-IN AREA SHOWN



DETAIL D
SCALE 5:1

TOLERANCE UNLESS OTHERWISE SPECIFIED (±)		Convenient Power
DIMENSIONS ARE IN MILIMETERS TOLERANCES 0<-<2 ±0.05 2<-<10 ±0.08 10<-<50 ±0.10 50<-<100 ±0.20 100<-<200 ±0.30 200<- ±0.40 ANGLES ±0.50° ■=CRITICAL DIM △=PROCESS DIM	INTENDED USE: CPS823X	TITLE:
	APPD.:	P/N:
	CHKD.:	SCALE: 1:1 / PAGE: 2/2
	DR.:	UNIT: mm / REV.: V1.0