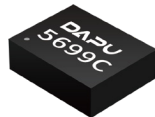


DAPU

Sync with you!



Product Catalog

COMPANY PROFILE

DAPU Telecom was established in 2005 and headquartered in Dongguan, China. Through sustainable investment in R&D, DAPU has grown into a leading company in Clock, Timing and RF fields, delivering Frequency & Timing (Crystal, SPXO, TCXO, VCXO, OCXO, Clock Module, Clock Board, Timing Server), Clock Chips (ASIC, RTC, Clock Buffer, IEEE1588 chip, All-Silicon XO, PHY Chip, PLL), RF (Circulator, Isolator, Microstrip) to more than 1,700 customers across 20 countries in the world.

Now, more than 500 employees are contributing their talents for DAPU, 25% of them are R&D engineers. We have been striving for the impossible and continuously inspired by our customers' innovations, keeping no less than 15% of yearly sales revenue into research and development. By the end of 2021, totally 171 patents have been rewarded.

Chip



Real Time Clock



All-Silicon XO



Buffer



PHY



1588/PTP



PLL

Clock



Crystal



SPXO



TCXO



OCXO



Clock Module



Clock Card

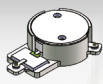


Timing Server

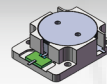
RF



Circulator/Isolator
(SMD)



Circulator/Isolator
(Drop in)



Circulator/Isolator
(Low Power)



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Timing Server

DP series timing server can support multi-mode and high-accuracy timing. It allows rapidly track and lock. The product is suitable for different application scenarios such as indoor, outdoor, master clock, slave clock and boundary clock.



Application

Communication network: Base station, Wire network.

Rail transit: Subway, High-speed train and Private network communication.

Electricity: Operation & Scheduling, Fault location, Power communication network, etc.

Others: Taxation, Bank, Hospital, Security, Postal, Airport, Weather, Automatic Pilot, AR/VR, Industrial automation, etc.

Outdoor

Type	Model	Power Supply (V)	Operating Temp (°C)	Power Consumption (W)	IEEE1588v2 & SyncE	GNSS	Frequency Accuracy (@24h)	Sync Accuracy (ns)	Holdover (µs@24h)	Slave Clock Support (pcs)	Dimension (mm)	Protection Class
Master Clock	DPM1000	AC: 100~240	-40 ~ 65	30	Support	GPS Beidou GLONASS Galileo QZSS	±1.0E-12 (Tracking satellites)	±20	±1.5	128	250*190*75	IP65

Indoor

Type	Model	Power Supply (V)	Operating Temp (°C)	Power Consumption (W)	IEEE1588v2 & SyncE	GNSS	Frequency Accuracy (@24h)	Sync Accuracy (ns)	Holdover (µs@24h)	Slave Clock Support (pcs)	Dimension (mm)
Master Clock (Interface can be customized)	DP5100	AC: 85~264 DC: 18~75	-20 ~ 65	30	Support	GPS Beidou GLONASS Galileo	±1.0E-12 (Tracking satellites)	±20	±1.5	256	432 *230 *44
Master Clock	DP3000E	AC: 96 ~ 265 DC: 48	-20 ~ 65	20	Support	GPS Beidou GLONASS Galileo	±1.0E-12 (Tracking satellites)	±20	±1.5	128	220 *146 *44
Master Clock	DP3100	AC: 96 ~ 265 DC: 48	-20 ~ 65	20	Support	GPS Beidou GLONASS Galileo	±1.0E-12 (Tracking satellites)	±20	±1.5	128	432 *146 *44
Frequency Source	DP2000	AC: 220	-20 ~ 65	7	Not support	GPS Beidou GLONASS Galileo	±1.0E-12 (Tracking satellites)	±50	±1.5	N/A	438*220 * 44

Boundary Clock

Type	Model	Power Supply (V)	Operating Temp (°C)	Power Consumption (W)	IEEE1588v2 & SyncE	GNSS	Frequency Accuracy (@24h)	Max TE (ns)	Holdover (µs@24h)	Dimension (mm)
Boundary Clock	DPB1000	AC: 100 ~ 240 DC: 48	-20 ~ 65	50	Support	N/A	±5.0E-8 (Free-run)	70	N/A	440*403 *44

Clock Board

Type	Operating Temp (°C)	IEEE1588v2 & SyncE	GNSS	Frequency Accuracy (@24h)	Synch Accuracy (ns)	Holdover (µs@24h)	Interface	Dimension (mm)
Clock Board	-40 ~ 65	Support	GPS Beidou GLONASS Galileo	$\pm 1.0E-12$ (Tracking satellites)	± 20	± 1.5	Customized	Customized

Outdoor Timing Server

DPM1000 is a robust and durable outdoor master clock device, which has IP65 protection class. It can provide accurate frequency, phase and time synchronization solutions for packet networks.

Key Features

- Support GNSS, GPS/Beidou/GLONASS/Galileo/QZSS
- Support IEEE1588v2、NTP、SyncE
- Meet PRTC-B standard
- Frequency Accuracy: $\pm 1.0E-12$ (Tracking satellites)
- Phase Accuracy: $\pm 20ns$ (Tracking satellites)
- Holdover Ability: $1.5\mu s/24$ hours ($\Delta T = \pm 10^\circ C$)
 $1.1\mu s/24$ hours ($25^\circ C \pm 1^\circ C$)
- Support up to 128 slave clocks in unicast mode
- 2 PTP optical ports
- Operating Temperature: $-40^\circ C \sim 65^\circ C$
- Operating Voltage: 100~240V AC
- Power Consumption (Typical) : 30W
- Protection Class: IP65



Indoor Timing Server



DP5100



DP3000E



DP3100



DP2000

Indoor timing device includes master clock, frequency source, etc., Which can provide a high-accuracy frequency and time reference for applications such as telecommunication network and power grid.

Key Features

- Support IEEE1588v2 and SyncE
- Second-level multicast, third-level unicast.
- Synchronization Accuracy: $\pm 70ns$ (G.8273.2Class B)
- Frequency Accuracy: $\pm 1.0E-8$ (Free-run)
- Support port numbers: 4xSFP, 28XRJ45, 16XSTM-1, 32xE1
- Switching Capacity: 64Gbps full-duplex switching capacity
- Support E-LINE, E-LAN and E-Tree services
- Layered MPLS-TP OAM and Ethernet OAM
- Operating Temperature: $-20^\circ C \sim 65^\circ C$
- Power Consumption (Typical) : 50W

Boundary Clock Server

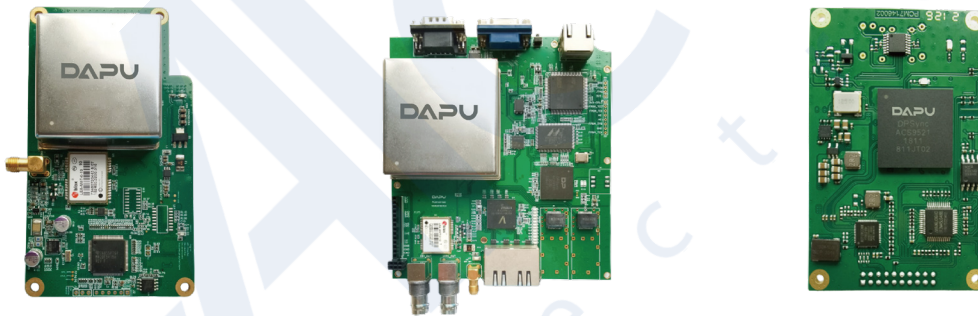


DPB1000 is a high-performance boundary clock device that can support IEEE1588v2 and SyncE. It can be deployed throughout the packet networks, which helps to improve the accuracy of end-to-end network synchronization.

Key Features

- Support IEEE1588v2 and SyncE
- Second-level multicast, third-level unicast.
- Synchronization Accuracy: $\pm 70\text{ns}$ (G.8273.2 Class B)
- Frequency Accuracy: $\pm 1.0\text{E-}8$ (Free-run)
- Support Port Numbers: 4xSFP, 28XRJ45, 16XSTM-1, 32xE1
- Switching Capacity: 64Gbps full-duplex switching capacity
- Support E-LINE, E-LAN and E-Tree services
- Layered MPLS-TP OAM and Ethernet OAM
- Operating Temperature: $-20^{\circ}\text{C}\sim 65^{\circ}\text{C}$
- Power Consumption (Typical) : 50W

Clock Board

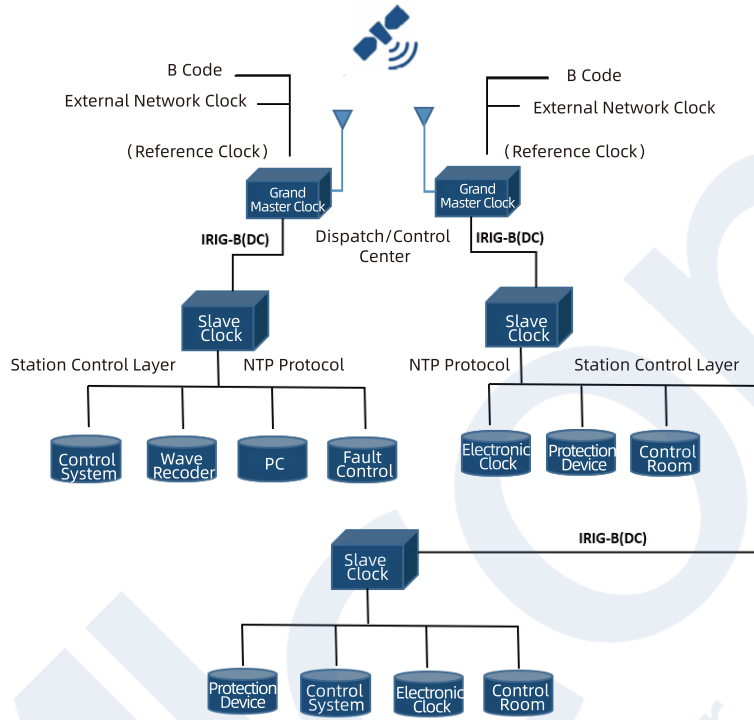


The clock board adopts ACS952X series PTP/NTP single-chip solution, which Dapu possesses independent intellectual property rights. It collocates with CMXX series clock module as needed to achieve high-performance PTP/NTP timing and keeping solution to meet the different requirements of customers.

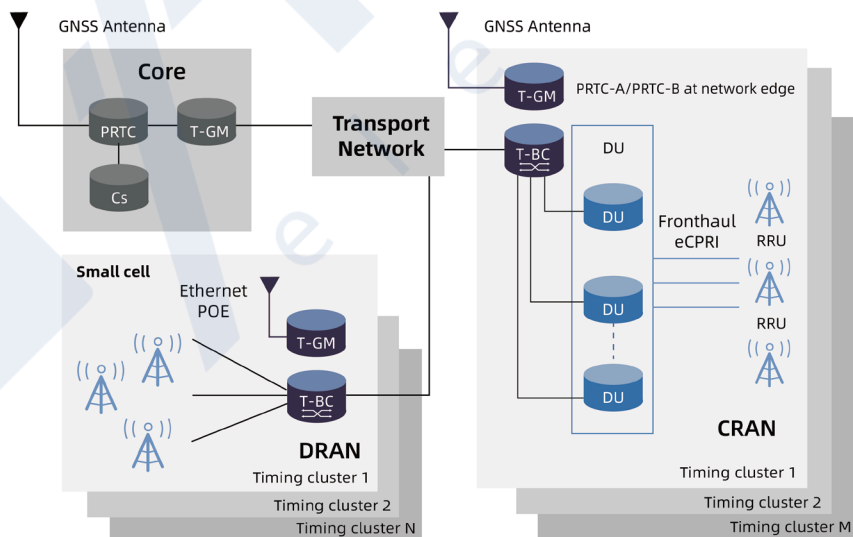
Key Features

- Support IEEE1588v2, 1PPS, Frequency Input and other reference sources.
- Full IEEE1588v2 protocol support
- Support PTP Master, Slave, BC
- Support NTP Server, Client function
- Support 1PPS+TOD
- Support SyncE
- Support customization

Time synchronization solution for smart grid

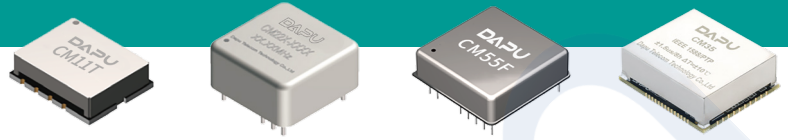


Time synchronization solution for 5G distributed cluster



Clock Module

CMXX series is a highly integrated clock module product which integrates compensation algorithm. Through external reference clock source to discipline the local clock, it enables rapid frequency and phase synchronization calibrating. And enables holdover mode after the reference source lost.



Key Features

High synchronization accuracy, High holdover ability, High temperature stability, High frequency accuracy, High short stability performance.

Application

Wired and Wireless Communication
 Power Grid Network
 Industrial Control
 Instruments etc.

Built-in TCXO, Ultra-wide Operating Temperature Series

Model	Sync Accuracy (ns)	Holdover	Temp Stability (ppb)	Phase Noise (dBc/Hz@1K)	Operating Temp (°C)	Dimension (mm)
CM11T	±50	±5us/1hour ($\Delta T = \pm 2^\circ\text{C}$)	±50	-138	-40 ~ +105	SMD 10.0*10.0*2.2

Built-in OCXO, Ultra-high accuracy Series

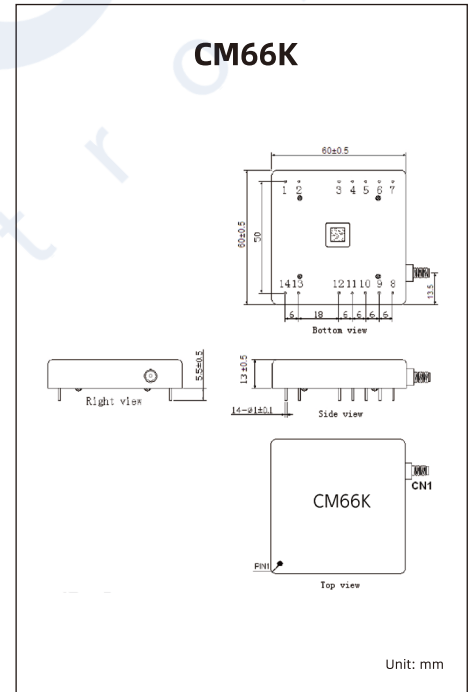
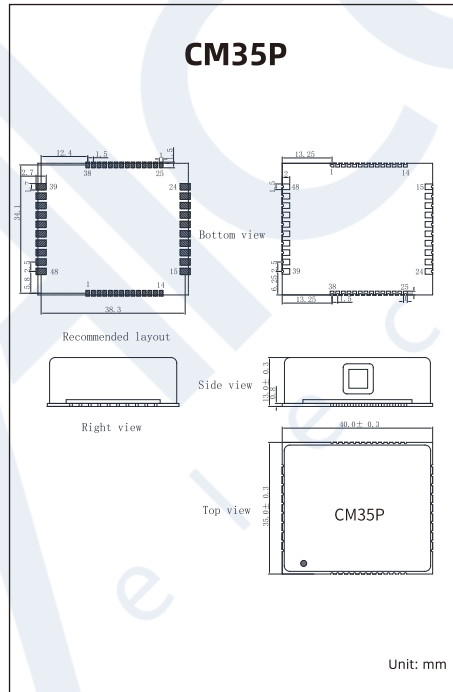
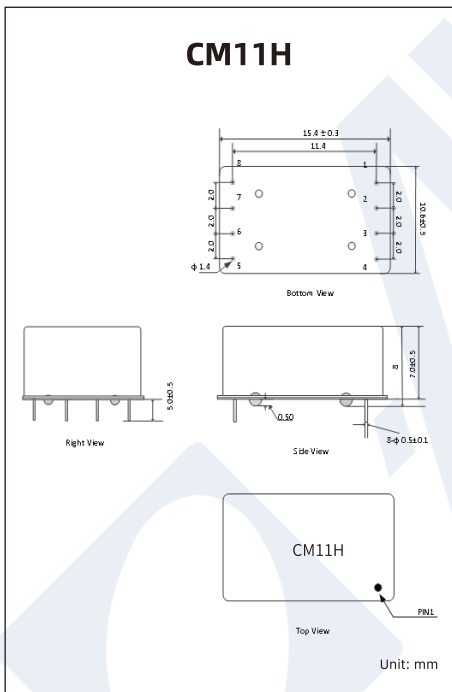
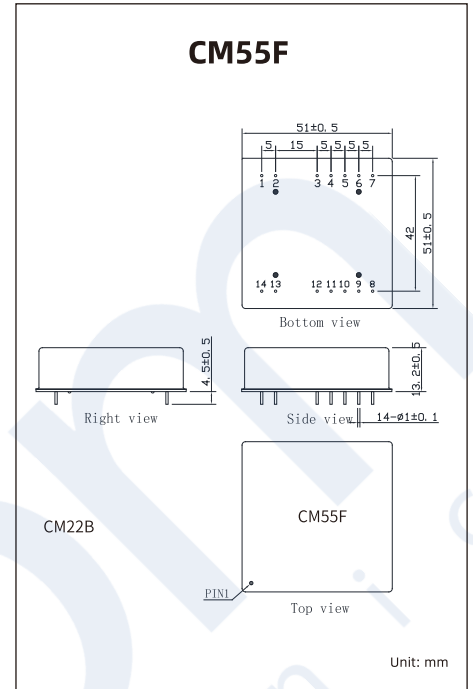
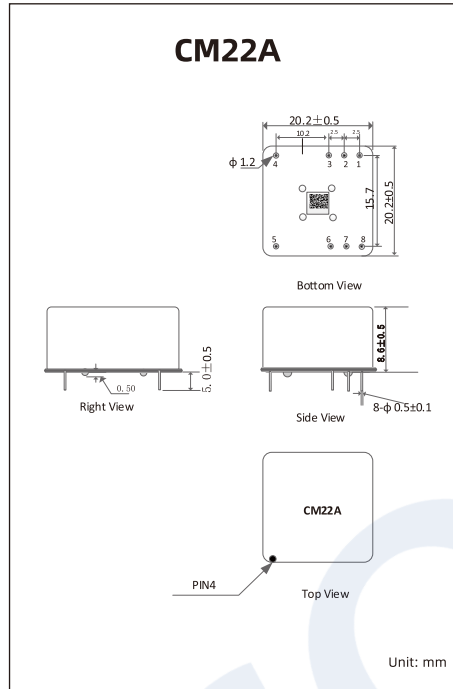
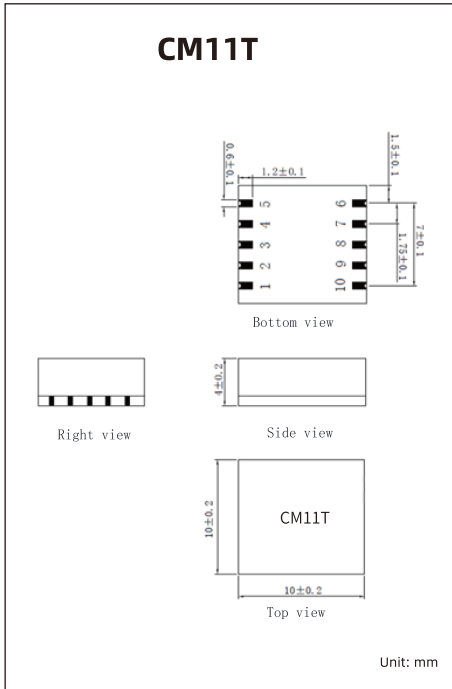
Model	Sync Accuracy (ns)	Holdover	Temp Stability (ppb)	Phase Noise (dBc/Hz@1K)	Operating Temp (°C)	Dimension (mm)
CM22	±50	±1.5us/8 hours ($\Delta T = \pm 10^\circ\text{C}$)	±0.3	-155	-40 ~ +85	DIP 20.2*20.2*9.0
CM55	±30	±1.5us/24 hours ($\Delta T = \pm 15^\circ\text{C}$)	±0.1	-155	-40 ~ +85	SMD 51.0*51.0*13.0
CM11H	±50	±80us/24 hours ($\Delta T = \pm 40^\circ\text{C}$)	±0.5	-160	-40 ~ +85	SMD 15.4x10.6x7.0

Built-in OCXO and support 1588/PTP

Model	Sync Accuracy (ns)	Holdover	Interface	Input Reference	Frequency Output	Dimension (mm)
CM35P	±50	±1.5us/8 hours ($\Delta T = \pm 5^\circ\text{C}$)	2-way SGMII	3-way seamless switchover	4-way any frequency	SMD 40.0*35.0*13.0

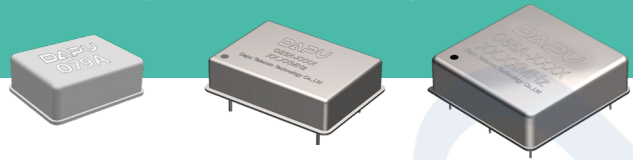
- Support NTP Server and Client configuration
- Support PTP GM, Slave, BC configuration
- Meet IEEE1588v2 standard
- Support SyncE+ PTP

Package drawing



OCXO

OCXO is crystal oscillator that uses a thermostatic chamber to keep the oven temperature constant and minimize the changes of output frequency caused by the changes of ambient temperature.



Key Features

Ultra-high stability, Wide operating temperature, Low phase noise, Low power consumption, Miniaturization.

Application

Wired and Wireless Communication
Base Station
Power Grid Network

Industrial Control
Instruments

Ultra-high Stability

Model	Temp Stability (ppb)	Aging	Phase Noise (dBc/Hz@1K)	Operating Temp (°C)	Dimension (mm)	Recommended Frequency (MHz)
O55A	±0.01	±0.05ppb/day ±0.01ppm/year	-150	-40 ~ +85	50.8*50.8*19	10
O23B	±0.1	±0.2ppb/day ±0.02ppm/year	-150	-40 ~ +85	36*27*12.7	10
O22S	±0.5	±0.5ppb/day ±0.05ppm/year	-158	-40 ~ +85	25*22*12	10

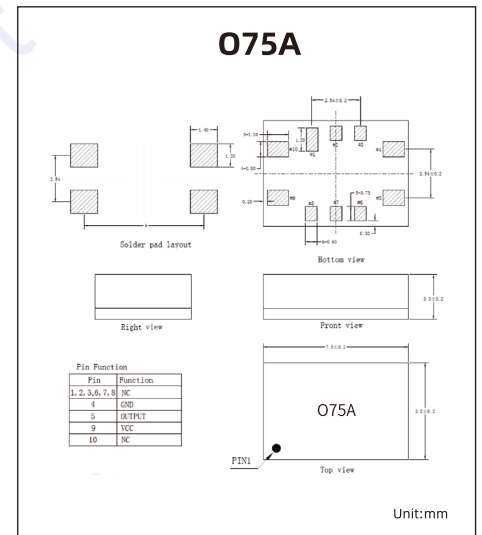
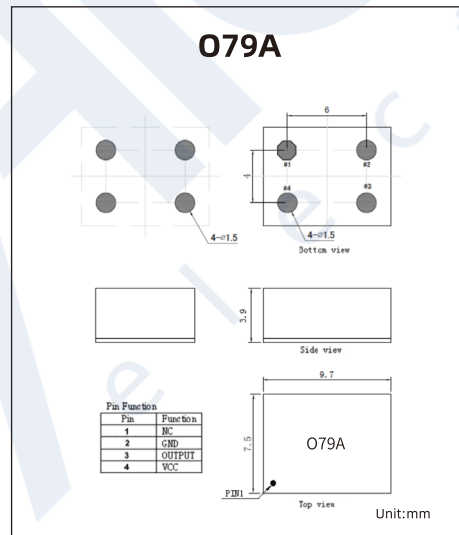
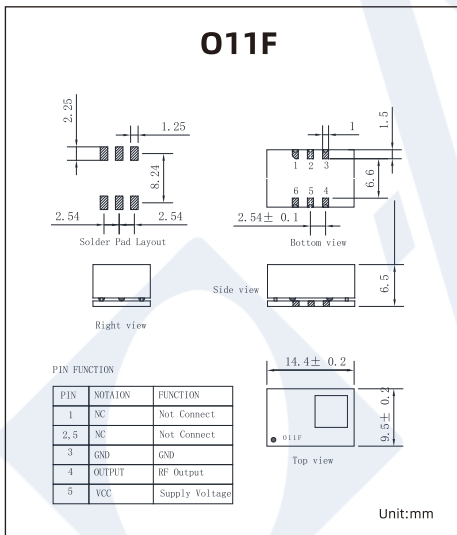
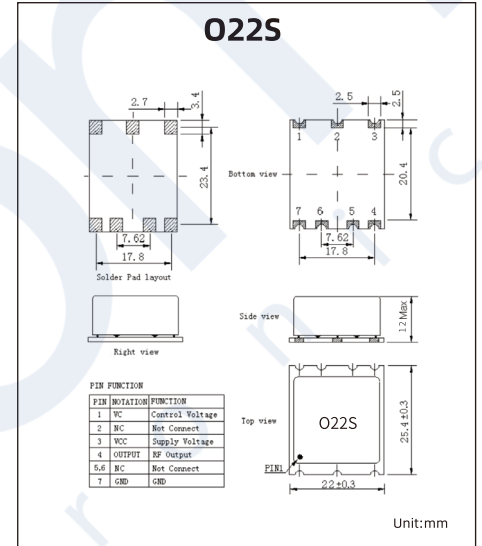
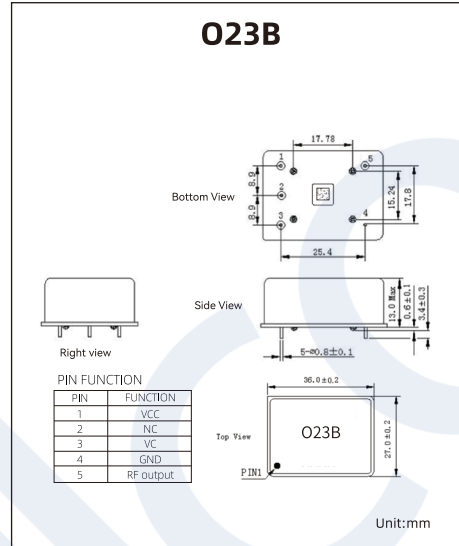
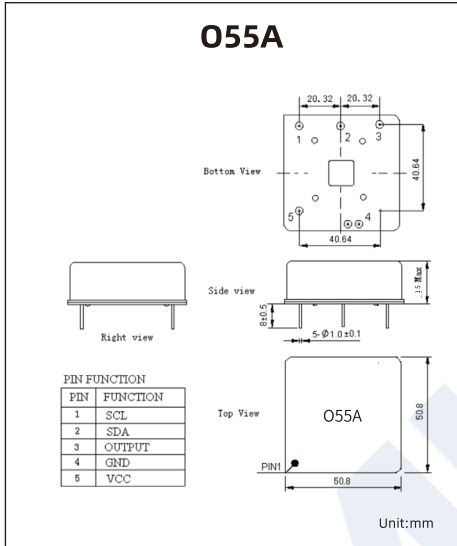
Wide operating temperature, Low phase noise, Low power consumption, Small size

Model	Temp Stability (ppb)	Aging	Phase Noise (dBc/Hz@1K)	Operating Temp (°C)	Dimension (mm)	Recommended Frequency (MHz)
O11F	±1.0/ ±5.0	±1ppb/day ±0.1ppm/year	-160	-55 ~ +95	14.4*9.5*6.5	10/12.8/19.20/20/38.88
O79A	±10	±1ppb/day ±0.1ppm/year	-160	-55 ~ +95	9.7*7.5*3.9	10/19.20/20/25.6/38.88
O75A	±20	±1ppb/day ±0.3ppm/year	-160	-55 ~ +95	7.5*5.5*3.3	10/12.8/19.20/20/38.88

Low Phase Noise

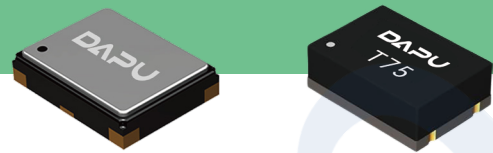
Model	Temp Stability (ppb)	Aging	Phase Noise (dBc/Hz@1K)	Operating Temp (°C)	Dimension (mm)	Recommended Frequency (MHz)
O22B	±0.05	±1ppb/day ±0.1ppm/year	-165	-40 ~ +85	25.4*25.4*12.7	100.00
O79A	±0.1	±1ppb/day ±0.1ppm/year	-143	-55 ~ +85	9.7*7.5*3.9	100.00

Package drawing



TCXO

TCXO is an oscillator that through a temperature compensation circuit to offset the frequency drifting which due to the changes in ambient temperature to achieve high accuracy frequency output.



Key Features

High stability, Ultra-wide operating temperature, Low phase noise, Ultra-low power consumption.

Application

Communication network: Transmission network, Access network, Datacom products, BBU/RRU/AAU, Base station, etc.

Private network equipment: Rail transportation, Trunking communication, Navigation system, etc.

Industrial Control : Robot, CNC machine, Signal acquisition, etc.

Instrumentation: Precision instrumentation, Testing equipment, Industrial metering (water, electricity, gas, etc.)

Consumer Electronics: Kid's watches, Elderly cell phones, BLE/WIFI modules, etc.

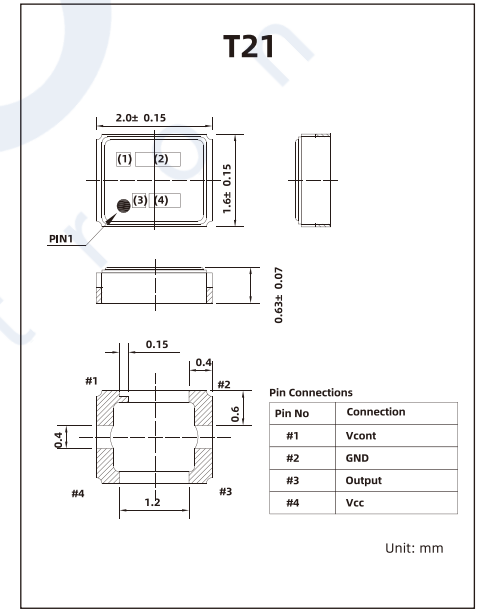
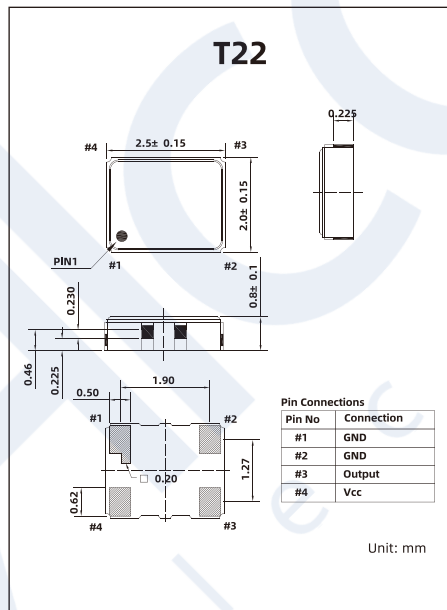
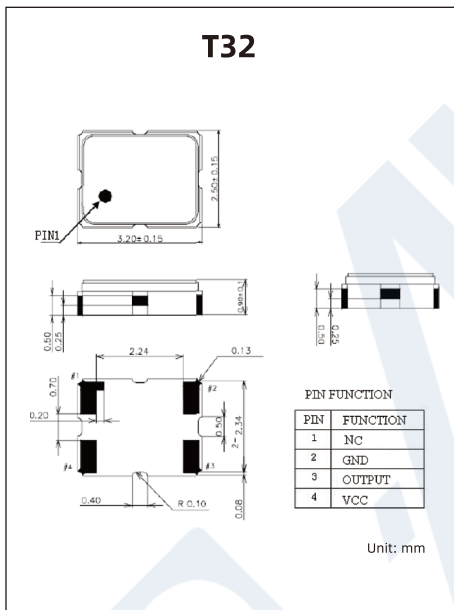
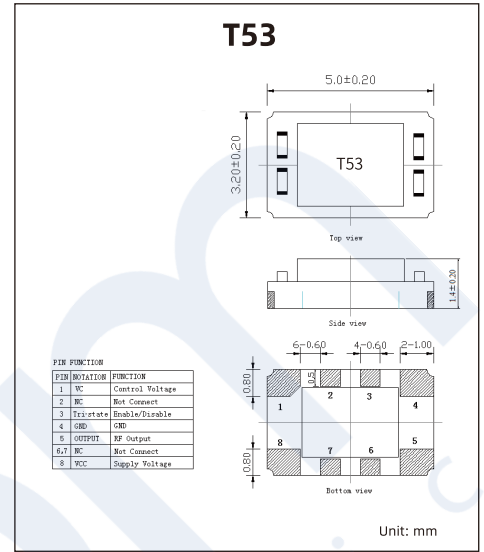
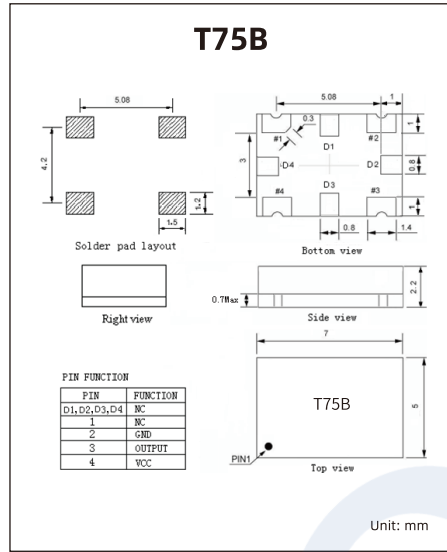
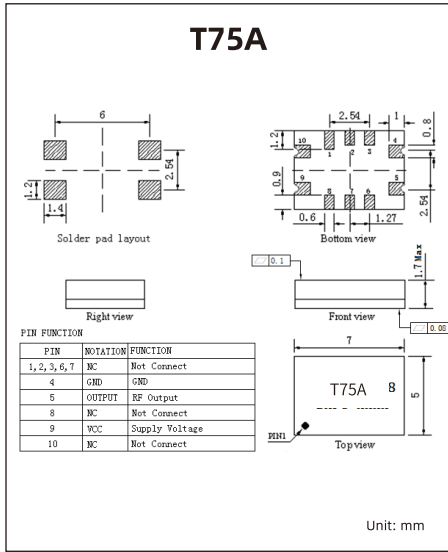
High stability, Ultra-wide operating temperature, Low phase noise

Model	Temp Stability (ppb)	Aging	Phase Noise (dBc/Hz@1K)	Operating Temp (°C)	Dimension (mm)	Recommended Frequency (MHz)
T75A	±0.05	±20ppb/day ±1ppm/year	-145	-55 ~ +85 -40 ~ +105	7.0*5.0*1.7	9.6/10/12.8/13/15.36/ 16.384/19.20/20/25/ 26/30.72/32.768/ 38.88/40/50
T75B	±0.05	±20ppb/day ±1ppm/year	-145	-55 ~ +85 -40 ~ +105	7.0*5.0*2.2	
T53	±0.05	±20ppb/day ±1ppm/year	-145	-55 ~ +85 -40 ~ +105	5.0*3.2*1.4	

Small size package, Ultra-low power consumption

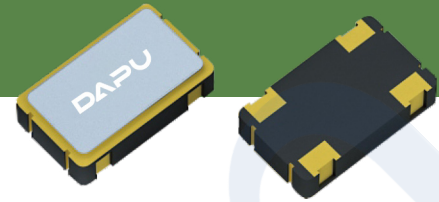
Model	Temp Stability (ppb)	Aging	Phase Noise (dBc/Hz@1K)	Operating Temp (°C)	Dimension (mm)	Recommended Frequency (MHz)
T32	±0.28	±20ppb/day ±1ppm/year	-140	-40 ~ +85	3.2*2.5*0.9	9.6/10/12.8/13/15.36/ 16.384/19.20/20/25/ 26/30.72/32.768/ 38.88/40/50
T22	±0.28	±20ppb/day ±1ppm/year	-140	-40 ~ +105	2.5*2.0*0.8	
T21	±0.28	±20ppb/day ±1ppm/year	-140	-40 ~ +105	2.0*1.6*0.7	10/19.20/20/25/26/ 38.4/38.88

Package drawing



SPXO

SPXO is an active device that integrates crystal resonator and oscillating circuit, which can output CMOS or differential frequency signals to provide circuit reference clock source.



Key Features

Full range of standard package size, Wide operating temperature, High Stability.

Application

Automotive electronics: Audio, Navigation, GPS, Clocks, IPC, etc.

Smart terminals: Digital cameras, Pad, PC, etc.

Smart appliances: Air conditioning, Fridge, Washing machine, Rice cooker, Water heater, etc.

Industrial control equipment: Robot, Instrumentation, etc.

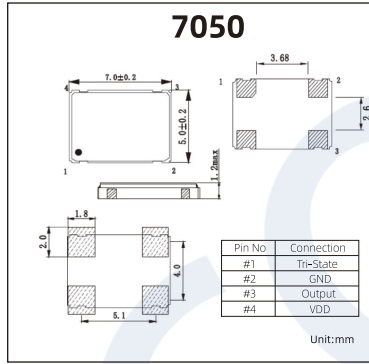
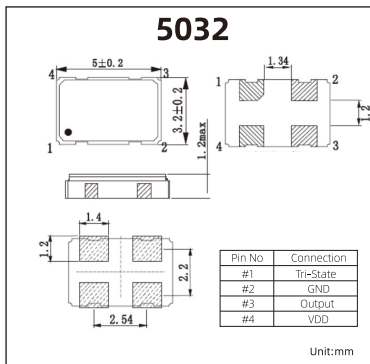
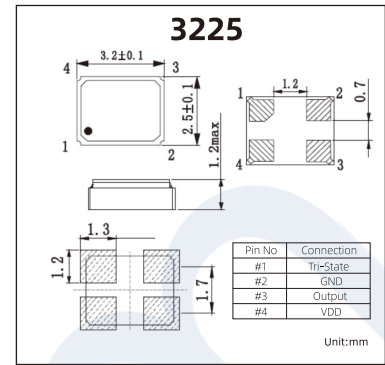
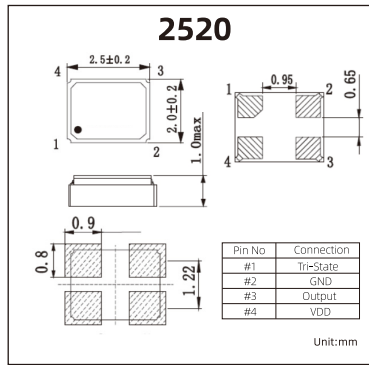
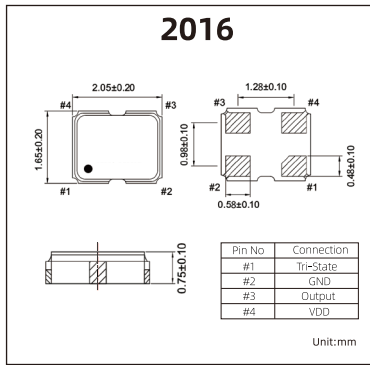
Communication equipment: Small cell, Intercoms, etc.

Datacom products: Optical modules, Routers, Optical communications, Switches, etc.

SPXO(CMOS Output)

Model	Dimension (mm)	Frequency Range (MHz)	Accuracy (ppm)	Operating Temp (°C)	Supply Voltage (V)	Recommended Frequency (MHz)
DPZ2016	2.05*1.65*0.30	32.768KHz* 1~125	±25/50	-20 ~ +70 -40 ~ +85	1.8 ~ 3.3	32.768kHz* 24.0000
						1.0000 24.5760
						1.8432 25.0000
						2.0000 26.0000
						2.0480 27.0000
DPZ2520	2.50*2.00*0.90	32.768KHz* 1~125	±25/50	-20 ~ +70 -40 ~ +85	1.8 ~ 3.3	3.0000 27.1200
						3.6864 30.0000
						4.0000 32.7680
						4.0960 33.0000
						4.9152 33.3333
DPZ3225	3.20*2.50*1.00	32.768KHz* 1~125	±25/50	-20 ~ +70 -40 ~ +85	1.8 ~ 3.3	7.6800 38.4000
						8.0000 40.0000
						8.1920 48.0000
						10.0000 49.1520
						11.0592 50.0000
DPZ5032	5.00*3.20*1.20	32.768KHz* 1~125	±25/50	-20 ~ +70 -40 ~ +85	1.8 ~ 3.3	12.0000 54.0000
						12.2880 60.0000
						14.3180 64.0000
						16.0000 66.6666
						16.3840 70.0000
DPZ7050	7.00*5.00*1.30	32.768KHz* 1~160	±25/50	-20 ~ +70 -40 ~ +85	1.8 ~ 3.3	18.4320 80.0000
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						20.0000 125.0000
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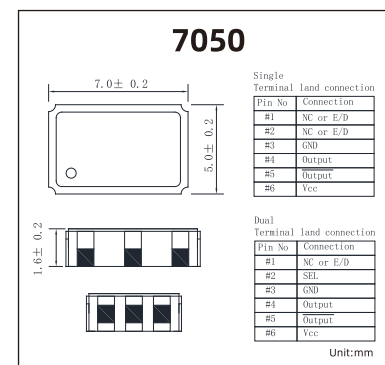
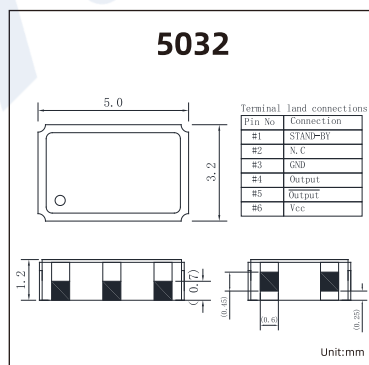
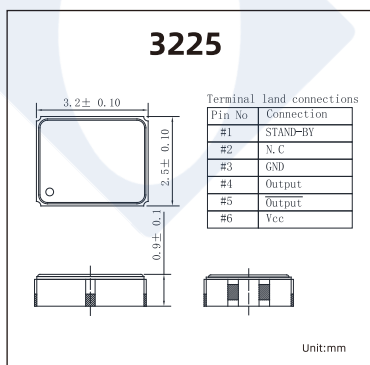
Package drawing



SPXO(Differential Output)

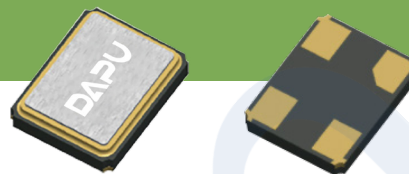
Model	Dimension (mm)	Frequency Range (MHz)	Accuracy (ppm)	Operating Temp (°C)	Output	Recommended Frequency (MHz)
DPD3225	3.2*2.5*0.9	50~220	±25/50/100	-40 ~ +85	LVPECL/LVDS /HCSL	100
DPD5032	5.0*3.2*1.2	100~170	±25/50/100	-40 ~ +85	LVPECL/LVDS /HCSL	125
DPD7050	7.0*5.0*1.7	62.5~220	±25/50/100	-40 ~ +85	LVPECL/LVDS	156.25

Package drawing



MHz Crystals

Crystal resonator (MHz Crystals) is a passive electronic component that uses the piezoelectric effect of quartz crystals to generate high-accuracy oscillating frequency, mainly used to provide circuit reference clock source.



Key Features

Ultra-small and ultra-thin, Low power consumption, Wide temperature, High accuracy, Automotive spec.

Application

Automotive electronics: Central control instrument, Multimedia entertainment system, Driving recorder, T-BOX, Tire pressure monitor, etc.

Smart terminals: Wearable electronics, Mobile phones, Digital cameras, Pad, PC, Multi-function calculators, Blue-tooth headsets, etc.

Smart appliances: Air conditioning, Fridge, Washing machine, Rice cooker, Water heater, Sweeping robots, etc.

Smart home: smart lock, etc.

Smart office: Time attendance machine, POS machine, etc.

Communication equipment: Intercoms, Server, etc.

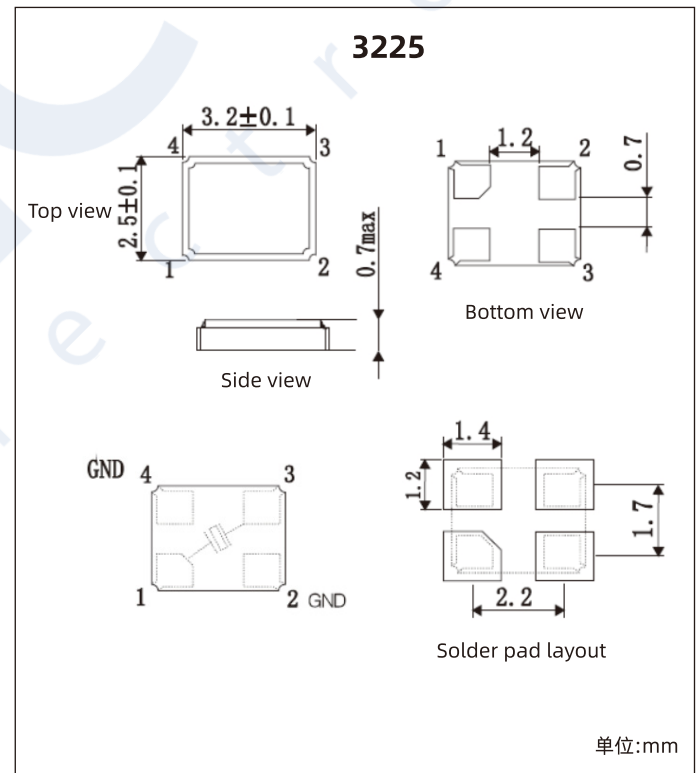
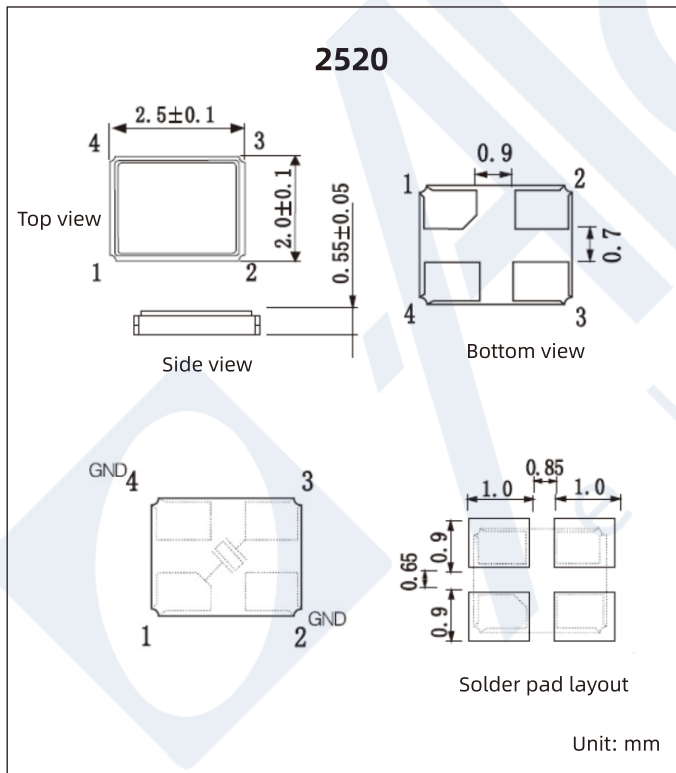
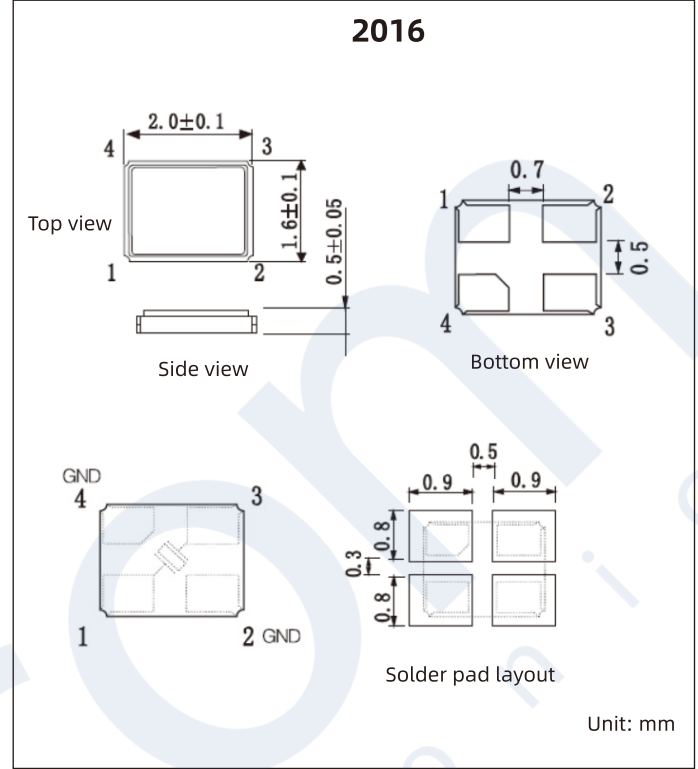
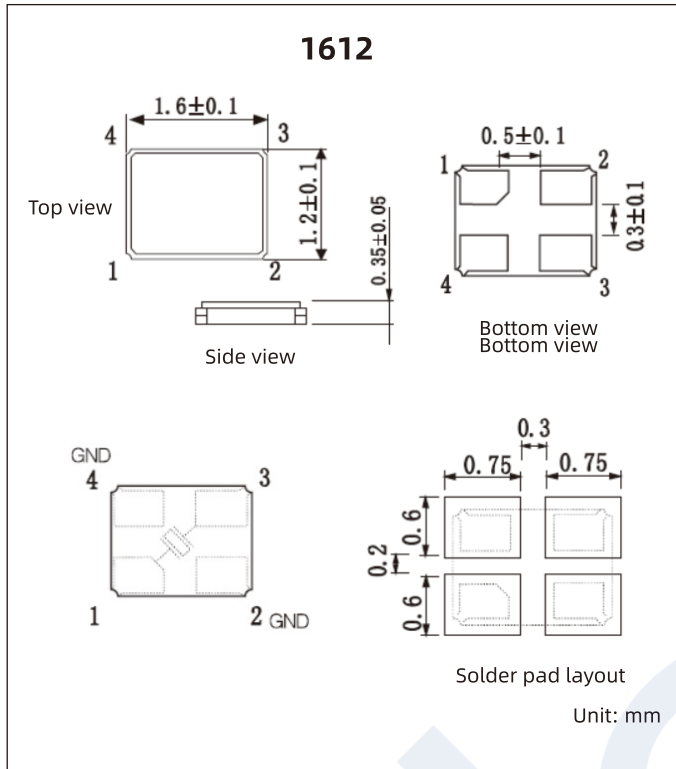
Security buildings: IPC, Access control, Smoking detector, etc.

Metering: Water meter, Electricity meter, Gas meter, etc.

Crystals (MHz Frequency Range)

Model	Dimension (mm)	Frequency Range (MHz)	Frequency Tolerance@25°C (ppm)	Accuracy (ppm)	Operating Temp (°C)	Load Capacitance (pF)	Recommended Frequency (MHz)
DPX1612	1.60*1.20*0.30	24 ~ 54	±10/20	±10/20/30/50	-20 ~ +70 -40 ~ +85 -40 ~ +125	8/10/12/ 15/18/20 or customized	12.0000 12.2880 13.0000 13.5000 14.7456 16.0000
DPX2016	2.00*1.60*0.45	16 ~ 96	±10/20	±10/20/30/50	-20 ~ +70 -40 ~ +85 -40 ~ +125	8/10/12/ 15/18/20 or customized	19.2000 20.0000 24.0000 24.5760 25.0000
DPX2520	2.50*2.00*0.55	12 ~ 54	±10/20	±10/20/30/50	-20 ~ +70 -40 ~ +85 -40 ~ +125	8/10/12/ 15/18/20 or customized	26.0000 27.0000 27.1200 30.0000 32.0000
DPX3225	3.20*2.50*0.70	8 ~ 54	±10/20	±10/20/30/50	-20 ~ +70 -40 ~ +85 -40 ~ +125	8/10/12/ 15/18/20 or customized	36.0000 38.4000 40.0000 48.0000 50.0000

Package drawing



Crystal Resonator(32.768KHz)

32.768KHz crystal resonator is a passive electronic component that uses the piezoelectric effect of quartz crystals to generate high-accuracy oscillating frequency, mainly used in timing circuits.



Key Features

Small Size, high accuracy, SMD package.

Application

Automotive electronics: Central control instrument, Multimedia entertainment system, Driving recorder, T-BOX, Tire pressure monitor, etc.

Smart terminals: Wearable electronics, Mobile phones, Digital cameras, Pad, PC, Multi-function calculators, Blue-tooth headsets, etc.

Smart appliances: Air conditioning, Fridge, Washing machine, Rice cooker, Water heater, Sweeping robots, etc.

Smart home: smart lock, etc.

Smart office: Time attendance machine, POS machine, etc.

Communication equipment: Intercoms, Server, etc.

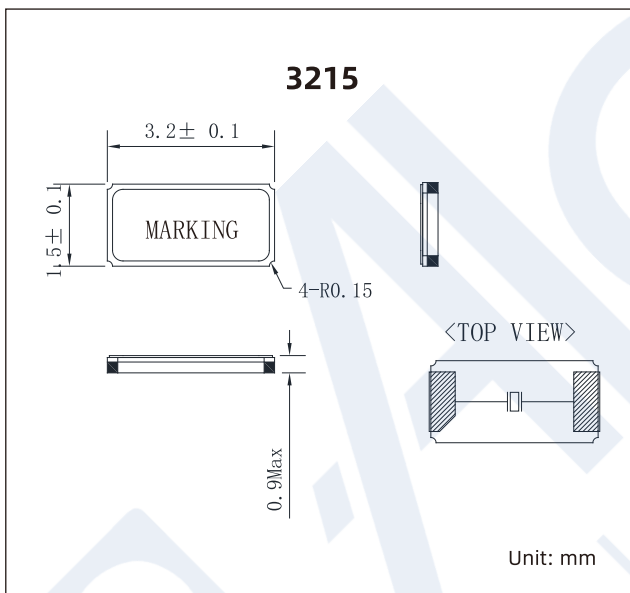
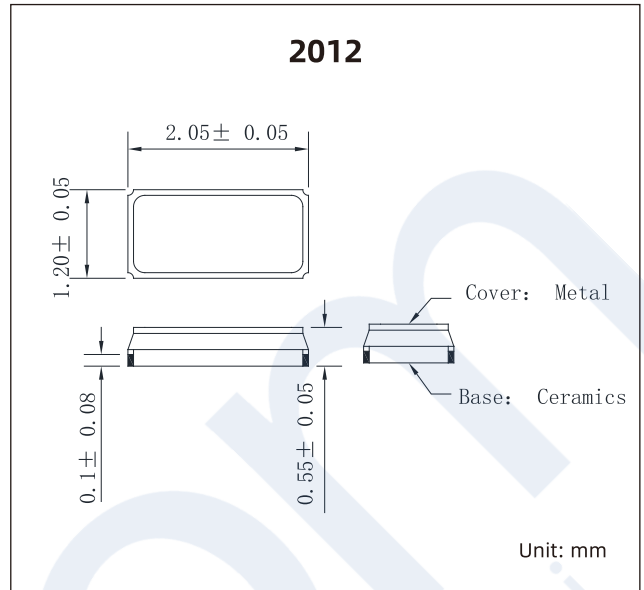
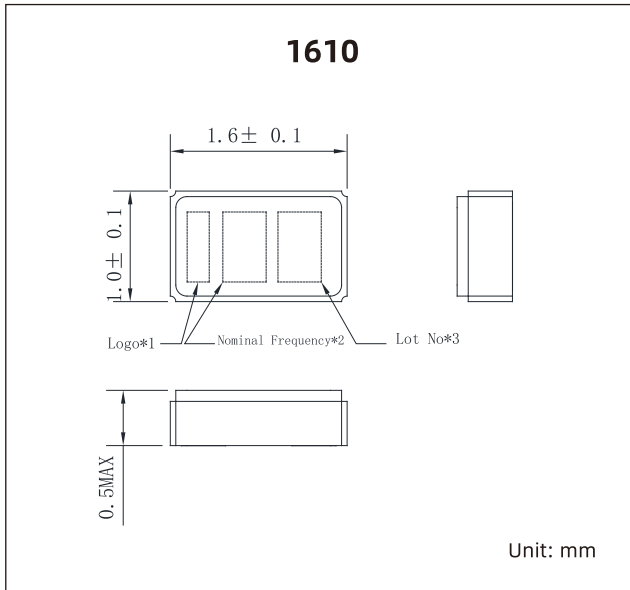
Security buildings: IPC, Access control, Smoking detector, etc.

Metering: Water meter, Electricity meter, Gas meter, etc.

Crystals (32.768KHz)

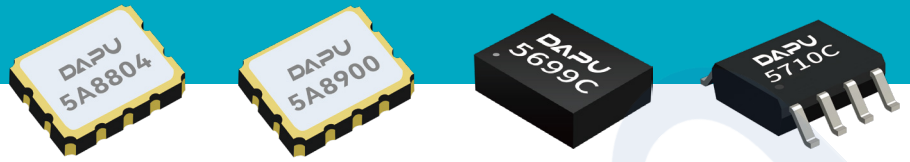
Model	Dimension (mm)	Frequency Range (KHz)	Accuracy @25°C (ppm)	Operating Temp (°C)	Load Capacitance (pF)
KHz Crystal Series	1.60*1.00*0.45	32.768	±20	-40 ~ +85	4.0/6.0/7.0/9.0/12.5
	2.00*1.20*0.55	32.768	±20	-40 ~ +85 -40 ~ +125	6.0/9.0/12.5
	3.20*1.50*0.80	32.768	±20	-40 ~ +85 -40 ~ +125	6.0/9.0/12.5

Package drawing



Real Time Clock (RTC)

RTC is an integrated circuit chip that provides accurate time for electronic products or provides accurate time reference for electronic systems.



Key Features

Built in 32.768KHz crystal, Accuracy up to $\pm 2\text{ppm}$, Multiple functions of I2C bus interface, Calendar function (year, month, week, day, hour, minute, second, 1/16 second), Leap years autocorrection, Backup battery, Power auto switchover, Timer, Frequency output.

Applications

Security monitoring/Security: IPC, DVR, NVR, Smart lock, Access control system, etc.

Consumer Electronics: Notebook, Pad, PC, etc.

Communication network: Base stations, Switch/PBX, etc.

Automotive electronics: T-BOX, Commercial vehicle IPC, Taxi meter, Driving recorder, Vehicle instrument, etc.

Meter: Electric meter, Water meter, Gas meter, etc.

Smart home: HEMS home energy management system, Smart thermostat, Sweeper, Water heater, Smart socket, etc.

Industrial automation: Robotic arm, PLC motor servo, Human-machine interface HMI, Servo controller, etc.

Medical/Office appliance/Testing and measurement: Oximeter, Medical monitor, Endoscope, Attendance machine, Multifunction printer (MFP), etc.

High Accuracy RTC

MPN	Feature	Accuracy	Current	Dimension	Backup Power Support
INS5699C	I2C-Bus Built-in 32.768KHz High Stability	$\pm 3.4\text{ppm}@-40^{\circ}\text{C to }+85^{\circ}\text{C}$	1.0 μA	3.2*2.5*1.0mm	Yes
INS5699S	I2C-Bus Built-in 32.768KHz	$\pm 5\text{ppm}@-40^{\circ}\text{C to }+85^{\circ}\text{C}$	1.0 μA	3.2*2.5*1.0mm	Yes
INS5710C	I2C-Bus Built-in 32.768KHz	$\pm 20\text{ppm}@-20^{\circ}\text{C to }+70^{\circ}\text{C}$	1.0 μA	Sop8	No
INS5T8025	I2C-Bus Built-in 32.768KHz High Stability	$\pm 3.4\text{ppm}@-40^{\circ}\text{C to }+85^{\circ}\text{C}$	1.0 μA	10.1* 7.4*3.2mm (SOP14)	No

Low Power RTC

MPN	Feature	Accuracy	Current	Dimension	Backup Power Support
INS5830B	I2C-Bus Built-in 32.768KHz	5 $\pm 23\text{ppm}@25^{\circ}\text{C}$ -120~10ppm@-20 $^{\circ}\text{C to }+70^{\circ}\text{C}$	0.85 μA	3.2*2.5*1.0mm	Yes
INS5710B	I2C-Bus Built-in 32.768KHz	5 $\pm 23\text{ppm}@25^{\circ}\text{C}$ -120~10ppm@-20 $^{\circ}\text{C to }+70^{\circ}\text{C}$	0.8 μA	Sop8	No

RTC for Automotive

MPN	Feature	Accuracy	Current	Dimension	Backup Power Support
INS5A8900	I2C-Bus Built-in 32.768KHz High Stability	$\pm 3.4\text{ppm}@-40^{\circ}\text{C to }+85^{\circ}\text{C}$ $\pm 5\text{ppm}@-40^{\circ}\text{C to }+105^{\circ}\text{C}$	1.0uA	3.2*2.5*1.0mm	Yes
INS5A8804	I2C-Bus Built-in 32.768KHz High Stability	$\pm 3.4\text{ppm}@-40^{\circ}\text{C to }+85^{\circ}\text{C}$ $\pm 5\text{ppm}@-40^{\circ}\text{C to }+105^{\circ}\text{C}$	1.0uA	3.2*2.5*1.0mm	No

Anti-shock RTC

MPN	Feature	Accuracy	Current	Package	Backup Power Support
INS5S8563	I2C-Bus Built-in 32.768KHz	$\pm 100\text{ppm}@-55^{\circ}\text{C to }+125^{\circ}\text{C}$	0.8 μA	Sop8	No

External Crystal RTC

MPN	Feature	Accuracy	Current	Package	Backup Power Support
INS5101	I2C-Bus External 32.768KHz Built-in 128bit RAM	$-40^{\circ}\text{C to }+85^{\circ}\text{C}$	0.8 μA	Sop8	No

Package

SMD 3225

Dimension	Typ.
A	3.2
B	2.5
C	1.0
E	0.35
F	0.4
G	0.6
H	1.3
F1	0.50
F2	0.30

Dimension	Max
A	0.9
B	1.1
C	0.4
D	0.3
E	0.7

uint:mm

SOP8

Dimension	Min	Nom	Max
A	4.8	4.9	5.0
B	3.8	3.9	4.0
C	5.8	6.0	6.2
D	0.356	--	0.456
E	--	1.27	--
F	1.3	--	1.6
G	0.203	--	0.233
H	0.4	0.6	0.8

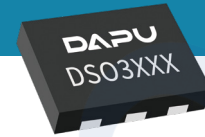
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SOP14

Pin Number	Pin Name
1	T1
2	SCL
3	FOUT
5	T2
6	VDD
7	FOE
10	/INT
11	GND
12	T3
13	SDA
4,8,9,14	NC

All Silicon Oscillator

All Silicon Oscillator uses pure silicon LC oscillating source. Through frequency synthesis and unique compensation technology, it generates single or differential output frequency signals without quartz and MEMS components, providing clock reference to the electric circuit.



Key Features

Full IC manufacturing process, Strong anti-shock capability, Flexible configuration of output frequency, Support a various output formats.

Application

Communication: Server, Computer, Storage, Switches, Router, High-speed optical module, Network interface card, etc.
Industry: Video broadcasting, Audio processors, Test equipment, etc.

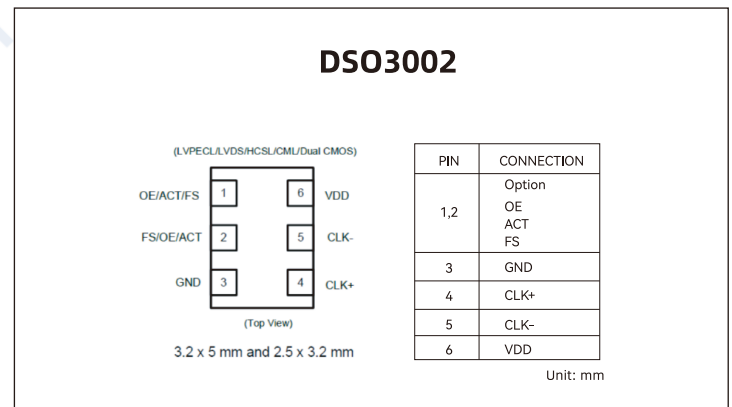
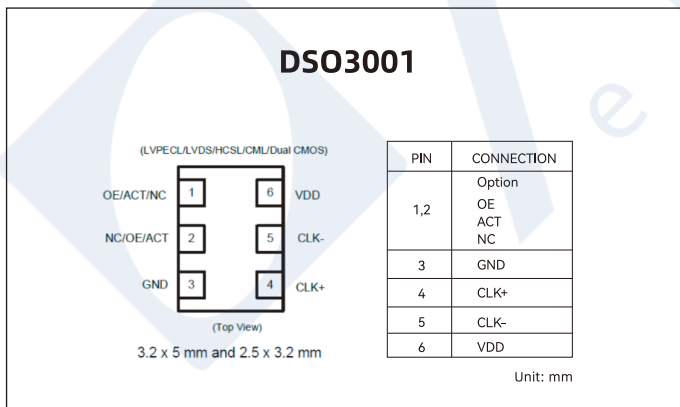
Differential/Single-ended Series

Model	Dimension (mm)	Frequency Range	Frequency Accuracy (ppm)	Operating Temp (°C)	Output Waveform	Jitter RMS (12 KHz ~20 MHz)
DSO3001 DSO3002	3.2*2.5*0.8 5.0*3.2*0.8	Differential: 10KHz~350MHz Single-ended: 10KHz~212.5MHz	±50	-40 ~ +85	LVDS, LVPECL, HCSL, CML, LVCMOS or dual CMOS	350fs

Note:

- DSO3001 Customized configurations is available before delivery
- DSO3002 Multiple configurations is available by switching pins after delivery

Package drawing



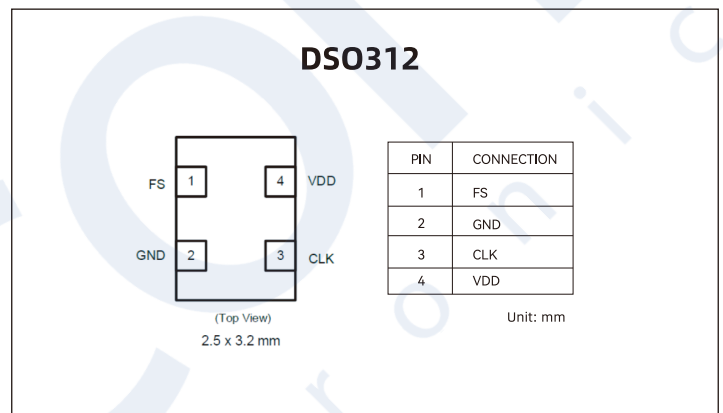
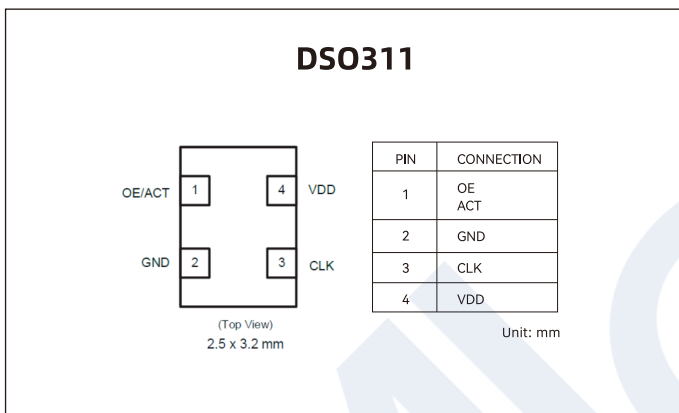
Single output series

Model	Dimension (mm)	Frequency Range	Frequency Accuracy (ppm)	Operating Temp (°C)	Output Waveform	Jitter RMS (12 KHz -20 MHz)
DSO311 DSO312	3.2*2.5*0.8	Single-ended: 10KHz~212.5MHz	±50	-40 ~ +85	CMOS	350fs

Note:

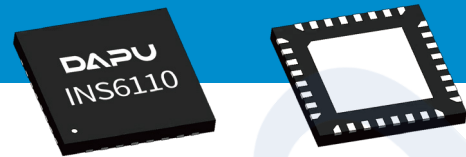
- DSO311 Customized configurations is available before delivery
- DSO312 Multiple configurations is available by switching pins after delivery

Package drawing



Clock Buffer

Buffer is a device that buffers, fan-out, distributes or multiplexes the input clock signal.



Key Features

INS56XXX series Buffer has low additional jitter, low power consumption, supports multiple clock fan-out, multiple input clock level signals, and I/O voltage configurable.

Application

Communication equipment: Switches, Routers, MSAN, DSLAM, PON, SONET, SDH, etc.

Industrial Control: High-speed data acquisition card, Servo motor, etc.

Instrumentation: Signal generator, etc.

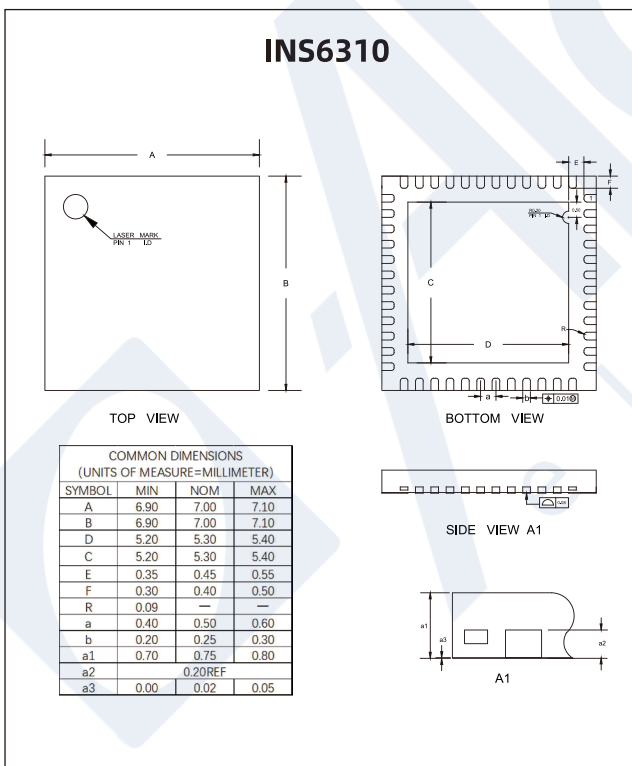
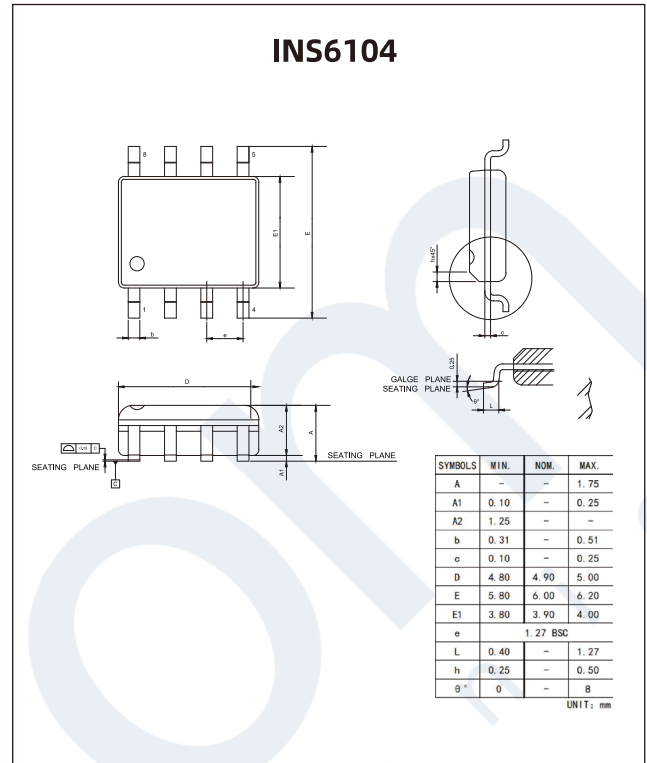
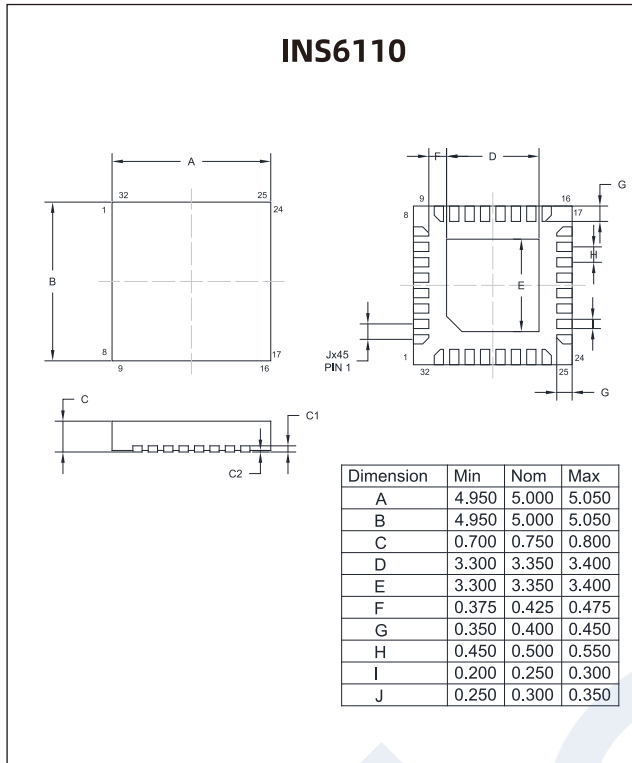
Single-ended Buffer

Model	Output Channel	Output	Output IO Voltage (V)	Output Frequency (MHz)	Additional Jitter (fs)	Input	Supply Voltage
INS6110	10	LVC MOS	1.5/1.8/2.5/3.3	DC ~ 200	<30	LVDS/LVPECL/LVC MOS/Crystal	2.5/3.3
INS6105	5	LVC MOS	1.5/1.8/2.5/3.3	DC ~ 200	<30	LVDS/LVPECL/LVC MOS/Crystal	2.5/3.3
INS6104	4	LVC MOS	2.5/3.3	DC ~ 100	<30	LVC MOS	2.5/3.3

Differential Buffer

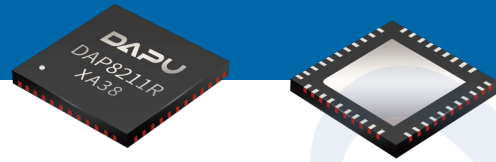
Model	Output Channel	Output	Output IO Voltage (V)	Output Frequency (MHz)	Additional Jitter (fs)	Input	Supply Voltage
INS6310	10	LVDS/HCSL/LVPECL	2.5/3.3	DC ~ 2500	<80	LVDS/LVPECL/LVC MOS/Crystal	2.5/3.3

Package drawing



PHY

The ethernet PHY chip is an ethernet physical layer transceiver, used to modulate and demodulate the optoelectronic signal, and synchronize clock information. It is the MAC layer data transceiver channel.



Key Features

Compliant with 1000BASE-T/100BASE-TX/10BASE-Te IEEE 802.3 specification, Support MAC interfaces RGMII and RMI&MII.

Application

Smart appliances: Smart TV, set-top box, etc.

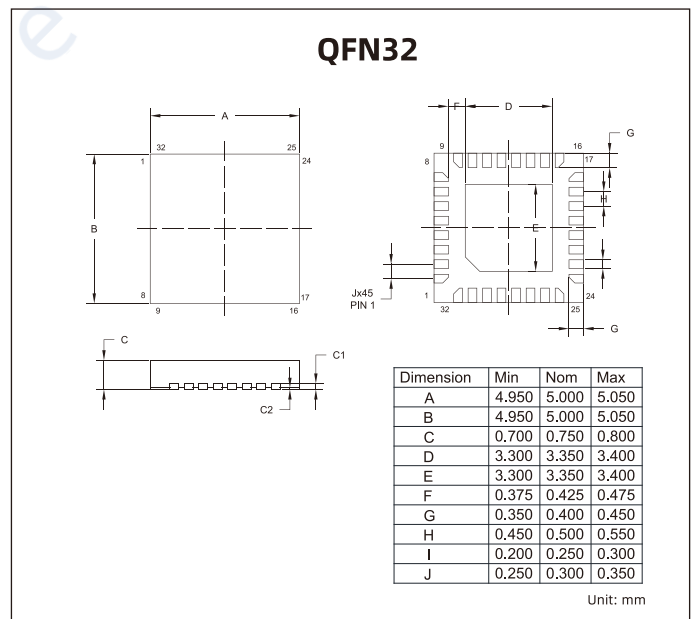
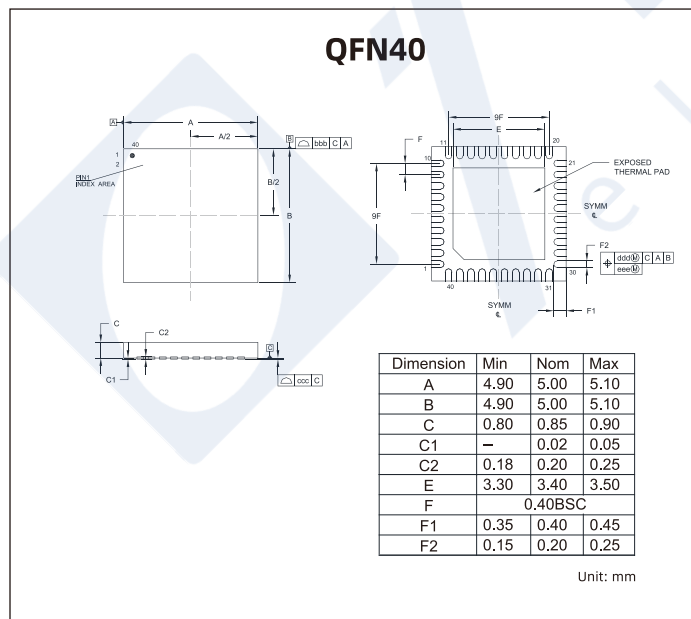
Communication equipment: Business single board, Main control board, BBU, AAU, Router, Optical cat, Set-top box, etc.

Security surveillance: IPC, DVR, NVR, Face recognition, Access control system, etc.

Industry: Industrial robot, Test instrument, Outdoor display, etc.

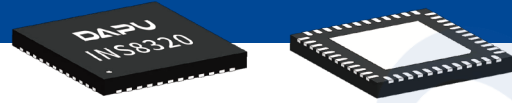
Model	MAC Interface	Physical Interface	Standard	Operating Temperature (°C)	Package (mm)	Remark
DAP8211R(1)	RGMII	Electrical port	1000BASE-T	0°C ~ +70°C -40°C ~ +85°C	QFN 40-pin 5*5	Support SyncE
			100BASE-TX			
			10BASE-Te			
DAP8201M(1)	MII/RMII	Electrical port	100BASE-TX	0°C ~ +70°C -40°C ~ +85°C	QFN 32-pin 5*5	
			10BASE-Te			

Package drawing



PLL

PLL is a feedback control circuit that uses an external input reference signal to control the frequency and phase output of the internal oscillating signal of the loop.



Key Features

INS83XX series PLL chips have extremely low phase noise and jitter characteristics, programmable bandwidth, dual PLL, support random frequency input and output, and clock accuracy better than 0.05ppm in holdover mode.

Application

Base station, Microwave communications, etc.
Data converter clock
Transmission network
Medical, Video, etc.
Instrumentation

PLL

Model	Output Channel	Output Level	Output Frequency (MHz)	Additional Jitter (fs)	Input Channel	Input Level	Supply Voltage
INS8320	14	LVDS/LVPECL/LVCMOS	DC ~ 3000	<125	3	LVDS/LVPECL/LVCMOS/Crystal	2.5/3.3

RFPLL

Model	Integrated VCO	Normalized Phase Noise (dBc/Hz)	Max Output Frequency (GHz)
INS85XX	Yes	-230	10

IEEE1588v2

IEEE1588v2 is an accurate clock synchronization protocol standard for network measurement and control systems. It adopts the PTP protocol and has nanosecond accuracy.



Key Features

Single chip solution

- On chip packet filtering algorithm, BMCA and clock management
- No risk from CPU loading & multi-task
- Seamless integration of all clocks SETS, PTP, SyncE & hybrid
- Flexible Timestamping options (3 Modes)

Easy for Design

- No CPU load, Simple interface used only for control and configuration
- Free API code provided for easy design
- Support for all system architectures

Open SPI interface, Support firmware upgrade, Strong system compatibility

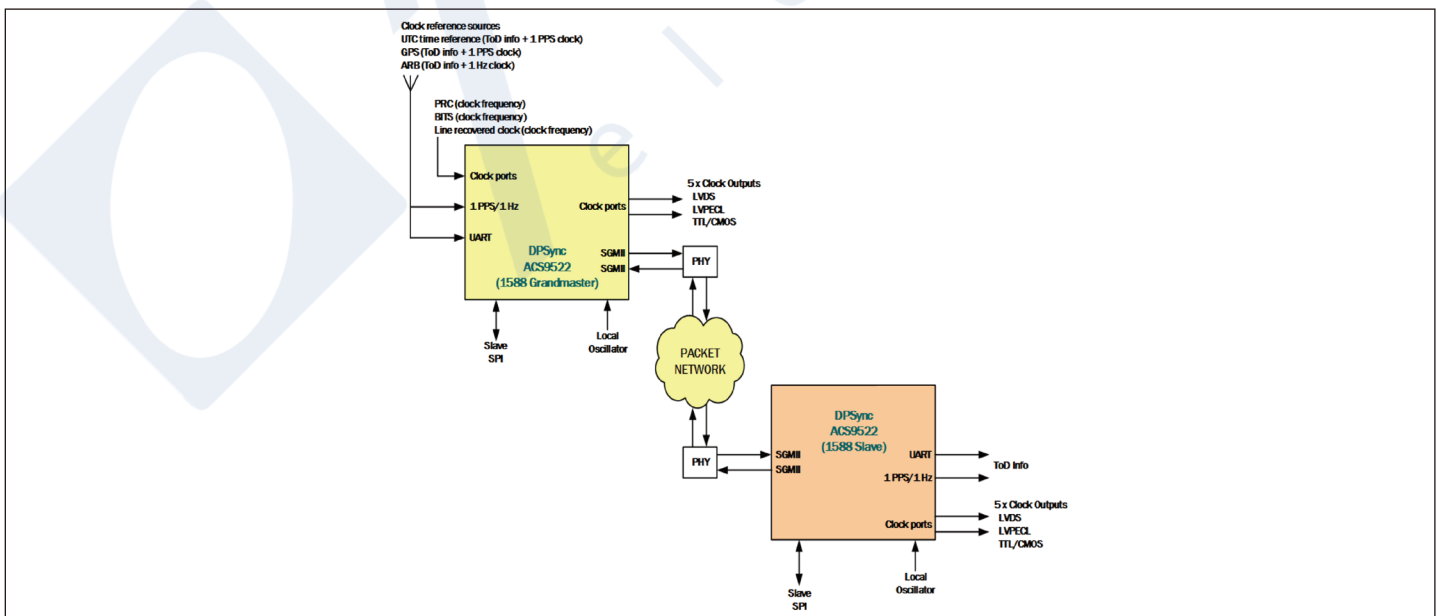
Support multi-standard protocols: G.8261/G.8262/G.8265.1/G.8275.1/G.8273.2

Application

PTN/GPON/EPON/OLT, Small Cell, Power Grid, Instrument, Broadcasting etc

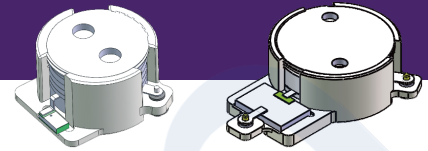
Model	Package (mm)	Characteristics	Operating Temp (°C)
ACS9520	BGA 256 14*14	Support dual master and dual slave configurations	-40 ~ +85
ACS9521	BGA 324 19*19	Support dual master and dual slave configurations, built-in RAM	-40 ~ +85
ACS9522	BGA 324 19*19	Support dual master and dual slave configurations, built-in RAM, built-in SETs	-40 ~ +85
ACS9528	BGA 324 19*19	Support dual master configurations, built-in RAM	-40 ~ +85

Functional block diagram



Circulator/Isolator (SMD)

The main function of the circulator is to ensure the signal lossless passes forward, as well as block of the reflected signal via high isolation. And the isolator is a component adding a high-power load or attenuator in the third port of a circulator.



Key Features

DPXXXXC and DPXXXXS series are featured with low power consumption, low intermodulation, high harmonic rejection, excellent impedance matching consistency.

Application

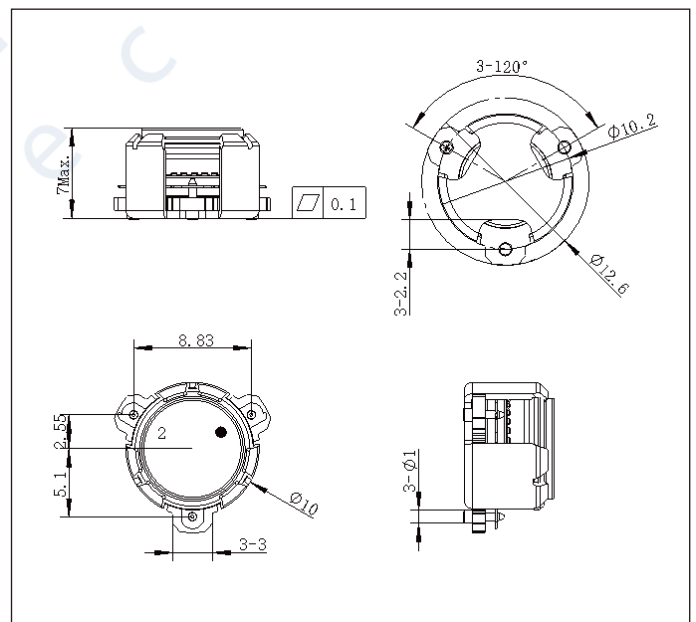
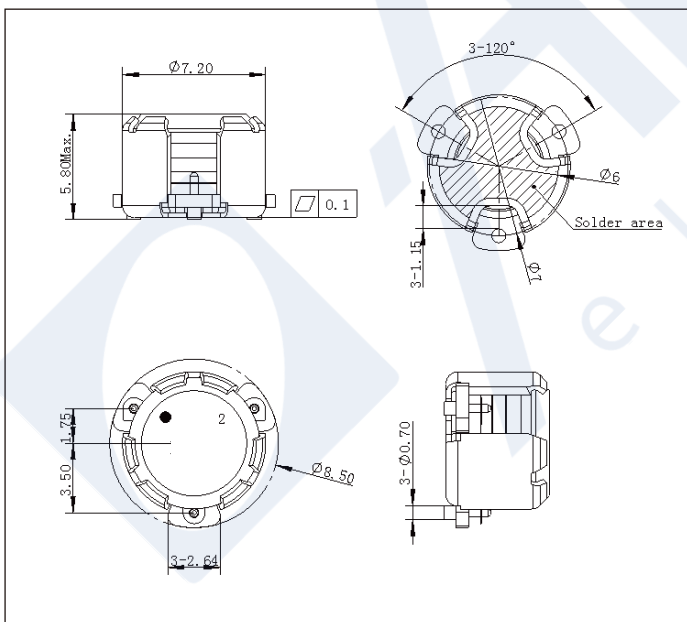
Basestation RRH/RRU/AAU, Small Cell, DAS system, Microwave, Broadcasting, Radar etc.

Circulator/Isolator (SMD)

Product Series	Operating Frequency (MHz)	Dimension (mm)	Power (W)	Return Loss (dB)	Insertion Loss (dB)	Isolation (dB)	Third-order Inter modulation (dBc)
DPxxxxC	100 ~ 10000	Ø7 ~ 35	20 ~ 200	-20 Max.	-0.15 ~ -0.35	-20 Max.	-60 Max.
DPxxxxS	100 ~ 10000	Ø7 ~ 35	20 ~ 200	-20 Max.	-0.15 ~ -0.35	-20 Max.	-60 Max.

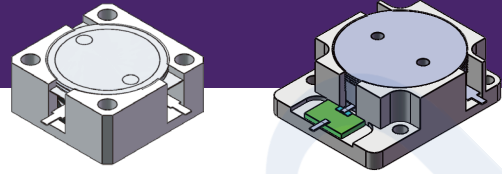
* Customized designs are available

Circulator/Isolator (SMD)



Circulator/Isolator (Drop in)

The main function of the circulator is to ensure the signal lossless passes forward, as well as block of the reflected signal via high isolation. And the isolator is a component adding a high-power load or attenuator in the third port of a circulator.



Key Features

DPXXXXC and DPXXXXS series are featured with low power consumption, low intermodulation, high harmonic rejection, excellent impedance matching consistency.

Application

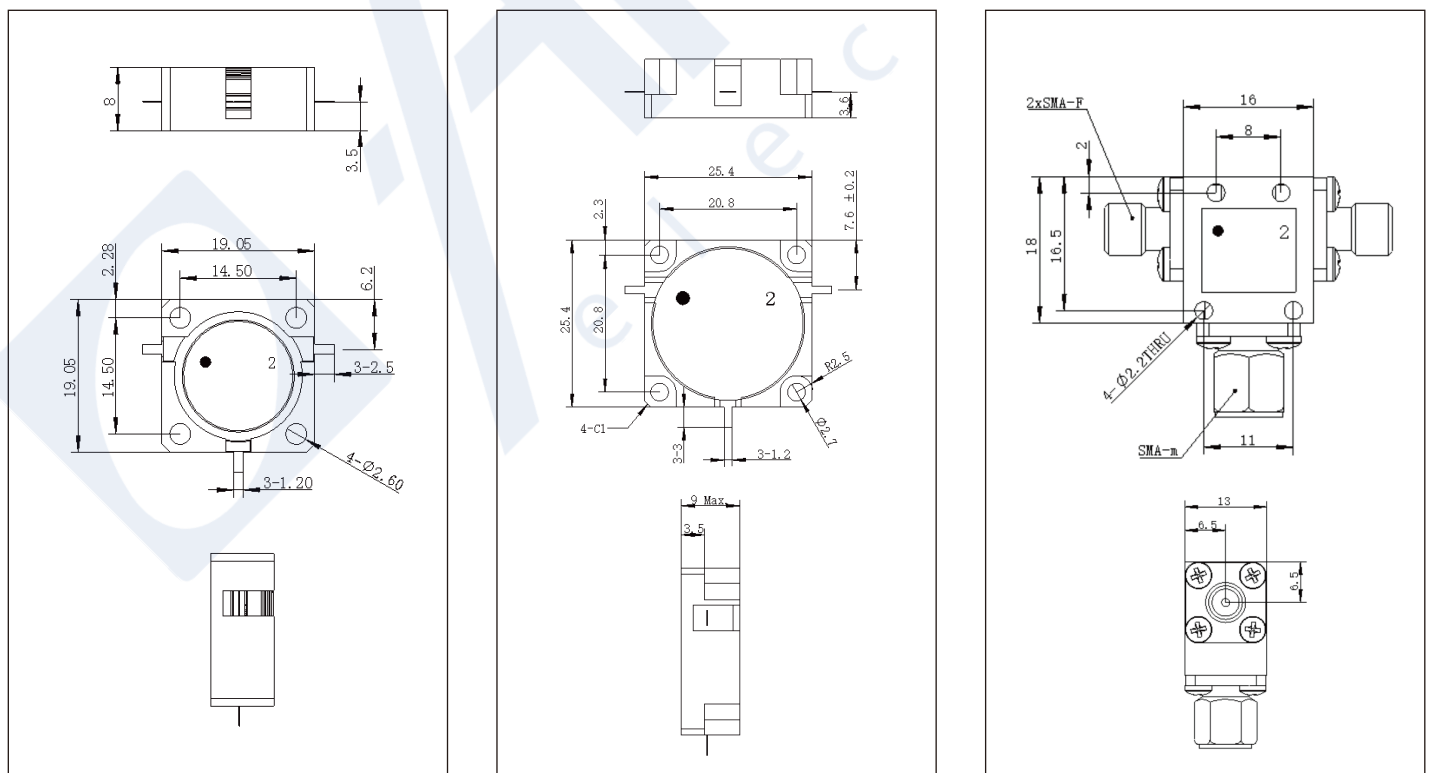
Basestation RRH/RRU/AAU, Small Cell, DAS system, Microwave, Broadcasting, Radar etc.

Circulator/Isolator (Drop in)

Product Series	Operating Frequency (MHz)	Dimension (mm)	Power (W)	Return Loss (dB)	Insertion Loss (dB)	Isolation (dB)	Third-order Inter modulation (dBC)
DPXXXXC	100 ~ 10000	12.7*12.7~88*88	20 ~ 1000	-20 Max.	-0.15 ~ -0.35	-20 Max.	-60 Max.
DPXXXXS	100 ~ 10000	12.7*12.7~88*88	20 ~ 1000	-20 Max.	-0.15 ~ -0.35	-20 Max.	-60 Max.

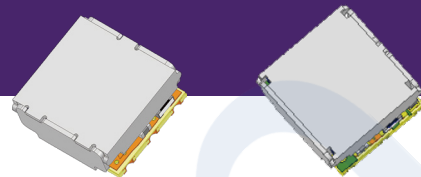
* Customized designs are available

Package drawing



Low Power Circulator/Isolator

The main function of the circulator is to ensure the signal lossless passes forward, as well as block of the reflected signal via high isolation. And the isolator is a component adding a high-power load or attenuator in the third port of a circulator.



Key Features

Low power consumption, low intermodulation, high harmonic rejection, excellent impedance matching consistency.

Application

Small Cell, DAS system etc.

Low Power Circulator/Isolator (SMT)

Product Series	Operating Frequency (MHz)	Dimension (mm)	Power (W)	Return Loss (dB)	Insertion Loss (dB)	Isolation (dB)	Third-order Inter modulation (dBc)
DP-CLxxxxxxxxxx	430 ~ 5000	7*7/5*5 4*4/3*3	5	-12 Max.	-0.6 ~ -0.8	-12 Max.	-50 Max.
DP-ILxxxxxxxxxx	430 ~ 5000	7*7/5*5 4*4/3*3	5	-12 Max.	-0.6 ~ -0.8	-12 Max.	-50 Max.

* Customized designs are available

Package drawing

