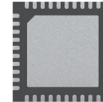
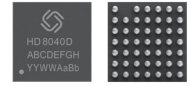


# HD8040 SERIES CYNOSURE III GNSS CHIP



QFN40: 5x5mm



WLCSP: 2.78x2.93mm

## PRODUCT DESCRIPTION

ALLYSTAR HD8040 series is a group of highly integrated GNSS receiver chips. It is the World's 1st multi-band multi-system SoC chip which supports BDS-3. It is capable of tracking all global civil navigation systems (BDS, GPS, GLONASS, Galileo, NavIC, QZSS and SBAS) in all bands (L1, L2, L5, L6).

HD8040 series is based on state of the art CYNOSURE III architecture integrating multi-band multi-system GNSS RF and baseband, making this series chip achieve sub-meter level position accuracy without correction data from ground-based augmentation station.

HD8040 series can be widely used in mobile phones, wearable devices, unmanned aerial vehicle, vehicle management, unmanned driving, car navigation, marine navigation, engineering survey, and other fields.

## HIGHLIGHTS

- Support BDS-3 signal
- Concurrent reception of multi-band multi-system statelite signals
- Support all civil GNSS signals
- Ultra low power RTC mode
- Built-in AES/DES/SM4 data encryption engine
- ARM Cortex-M4F processor with cache controller
- Smart jammer detection and suppression

## APPLICATIONS



Mobile phones



Wearable devices



Unmanned aerial vehicle



Vehicle management

## GENERAL SPECIFICATIONS

### GNSS Engine

Cynosure III GNSS Engine  
136 channels & DSP accelerator

### GNSS Reception

GPS/QZSS: L1 C/A, L1C, L2C, L5, L6  
BDS: B1C, B1I, B2a, B2I, B3I  
GLONASS: G1, G2  
Galileo: E1, E5, E6  
NavIC: L5  
SBAS: WAAS, EGNOS, MSAS, GAGAN, SDCM

### Update Rate

GNSS 5 Hz maximum

### Position Accuracy

GNSS Horizontal: 1.5m (1 $\sigma$ )  
Vertical: 3.5m (1 $\sigma$ )

### Velocity & Time Accuracy

GNSS 0.1 m/s CEP  
1PPS 20 ns

### Time to First Fix (TTFF)

Hot start 1s  
Cold start 27s

### Sensitivity

Cold start -148 dBm  
Hot start -154 dBm  
Reacquisition -155 dBm  
Tracking & Navigation -161 dBm

### Operation Limit

Velocity 515 m/s  
Altitude 18,000m

### Operating Condition

Main voltage 1.8V - 3.6V  
Digital I/O voltage 1.8V - 3.6V  
Backup voltage 1.62V - 3.63V

### Power Consumption

L1 band 34 mA  
L1+L5 band 40 mA  
Standby 9 uA

### Interfaces

USB (FS, 12Mbps) 1  
UART 2  
SPI (master/slave) 2  
SQI (master mode) 1  
I<sup>2</sup>C 1

### Peripheral

PWM 4  
INCP 2  
Ext. interrupt 7  
Digital I/O 16

### Clock

Main clock oscillator TCXO/XTAL (16-40MHz)  
Sub clock oscillator 32.768 kHz XTAL(optional)

## ENVIRONMENT DATA

Operation temperature -40°C to +85°C  
Storage temperature -40°C to +125°C  
Certification RoHS & REACH

## PACKAGE

QFN 5.0×5.0 mm  
WLCSP 2.78 ×2.93 mm

## ORDERING INFORMATION

HD8040D QFN40/WLCSP  
HD8040A QFN40

