CHIPANALOG
川 土 微 电 子

High Performance Analog Semiconductor supplier

Shanghai Chipanalog Microelectronics Co., Ltd.

Ways of Analog Converge in Chips

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01 About Chipanalog

Shanghai Chipanalog Microelectronics Co., Ltd.

High Performance Analog Semiconductor supplier

Shanghai Chipanalog Microelectronics Co., Ltd. is a high-tech company focusing on R&D, design and sales of high-end analog chips. The product portfolio involves isolation, interfaces, high-performance analog, which is used in industrial and general-purpose as well as automotive electronics markets. Adhering to the values of "High Aspirations, Continuous Innovation, Ultimate Perfection, Honesty and Trustworthiness", Chipanalog is committed to provide customers worldwide with high-quality analog chips.

Founded in 2016, Chipanalog has become a well-known domestic supplier in the field of high-end analog chips such as isolation, interfaces after several years development. Chipanalog has cooperated with more than 1000 customers, which are distributed in the fields of industrial control , power supplies and energy, automobile electronics etc..

Development History & Roadmap

2016.5
Chipanalog was Registered

2016.12
Passed ISO9001 Certification

2017.7
Released first IC into market

2018.6
Released Standard Isolator Products

2019.4
Completed Round A Financing

2019.12
Recognized as a High-Tech Company

2020.12
Released Digital Isolators with Integrated DC-DC

2021.1
Won Most Promising China IC Design Companies

2022.2
CAN and Digital Isolators passed AEC-Q100 Qualification

2022.4
Automotive CAN and Isolators put into Mass Production

2022.8
Starting Implementing ISO 26262

2023.3
Release first Functional Safety Certification Part

Patents and Honors

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49
Invention Patents

48
Layout registration

10+
Industry Awards

1500+
Cooperated Partners

Core Team

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Dr. Gu,
HPA Department

PhD, Fudan University

- Worked at Hisilicon for 4 years
- 10 years of high-performance ADC experience

Dr. Sun,
HPA Department

PhD, Southeast University

- Served in well-known chip company for 5 years
- 15 years of analog chip experience

Mingliang,
R&D Department - Interfaces

Master, Shanghai Jiaotong University

- Worked at NXP for 8 years
- Experience in 20+ analog chips

Jishan,
HPA Department

Master, Southeast University

- Served at Maxim for 10years
- Experience in 20+ analog chips

Mr. Pan,
Product Department

- Served at TI
- 15 years of experience in analog chips

Mr. Zheng,
Product Department

MBA, Fudan University

- Served at TI for 10+years
- definition chip experience

Mr. Tian,
Operation Department

Bachelor, Shanghai University

- Worked at STATS ChipPAC for 7 years
- 15 years of experience in the chip industry

Mr. Chen,
Quality Department

Bachelor, Xi 'an Polytechnic University

- Served at Awinic、SMIC
- 15 years of quilty experience

Chen Dongpo, CEO and Chairman

Bachelor, Master and PhD, Zhejiang University

Profile:
He built Analog Microelectronics and led the company to develop rapidly into a leading company in the industry.

Yun Tinghua, CTO and Vice President

PhD, Southeast University

He worked at NXP for 12 years, was responsible for the research and development of the power interface product line. He has experience in mass production of 50+ analog chips, with cumulative sales of hundreds of millions of chips.

Hou Peng, CMO and Vice President
Bachelor, Hefei University of Technology

He worked at Maxim for 12 years, was responsible for marketing and sales in East China. He has a wealth of experience in the marketing and sales of analog chips.

Ding Wanxin,CSO

Master, Zhejiang University

He used to work at Fairchild Semiconductor. He has 15 years of R&D experience in the field of high-end analog chips, and experience in more than 30 analog chips.

Sales Team：

Bob： Master， Southeast University； sales director of East China and Oversaes， Served at Maxim；

Feng： Master， Xi‘an University of Technology， sales director of south China， Served at ZTE；

Phil：Master，Tongji University， sales director of Automotive， served at TI, NXP.

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- **Fab Partner:**

SMIC、DBH、GF 、TSMC

- **Certificate:**

ISO9001, ISO26262, IATF16949, ISO14001

- **Assembly Partner:**

JCET, UNIMOS, HT-Tech, SFA

- **Certificate:**

ISO9001, ISO26262, IATF16949, ISO14001

Chipanalog Microelectronics Product Matrix

CHIPANALOG 川土微电子

01 Isolation

- Digital Isolators
- Isolated Interfaces
- Isolated Amp/ADC
- Isolated Power Supply
- Isolated Drivers

02 Interface

- CAN/LIN/SBC
- RS-485/422/232
- Others

03 Driver & Power

- Motor Driver
- LED Driver
- Gate Driver

04 HPA

- Voltage References
- ADC

Applications

Servo

Inverter

Motion Control

PLC

DCS

HMI

IND Automation

Energy Storage

Communication Power

Industrial Power

Charging (Pile) Station

Solar Inverter

Wind Power Converter

Power & Energy

BMS

EV Motor Driver

On Board Charger

DC/DC module

Air Conditioning

Automotive network

Automotive

Home Appliances

HVAC

Medical Equipment

Building Automation

Communication Equipment

Smart Meters

Others

Core customer——Industrial

Industry

ABB
BECKHOFF
Danfoss
EATON Powering Business Worldwide
EMERSON
HITACHI Inspire the Next
MITSUBISHI ELEVATOR
OTIS
Schneider Electric
SIEMENS
SAMSUNG
Weidmüller
wilo
Rockwell Automation
SAVIO
PR electronics
PHOENIX CONTACT
BOSCH Invented for life
OMRON
Carrier United Technologies
ThermoFisher SCIENTIFIC
VANDEWIELE
DENSO Crafting the Core
solaredge

Core customer——Automotive

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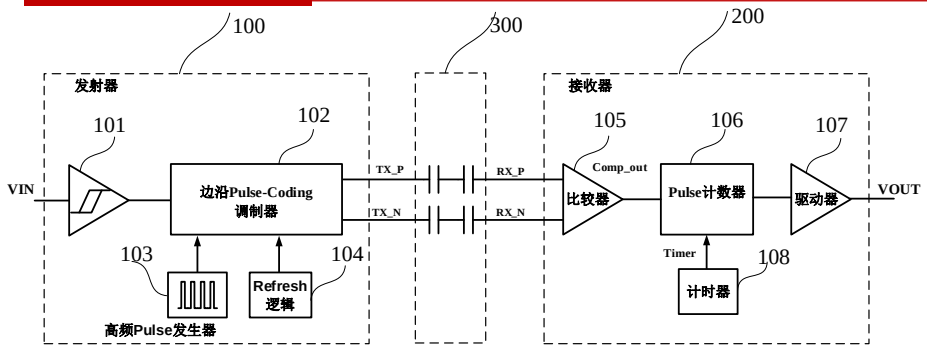
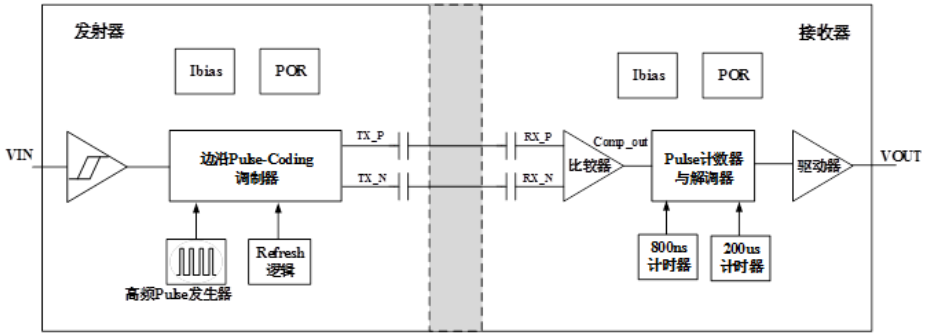
OEM	BYD	GEELY	SAIC 上汽集团 SAIC MOTOR	GAC
	长安汽车 CHANGAN	长城汽车	CHERY	WULING
	中国一汽	NIO	小鹏汽车	LEAPMOTOR
Tier 1	UAES	华域汽车 HUAYU AUTOMOTIVE SYSTEMS	Yanfeng Global Automotive Interiors	伊控动力 E-CON POWER
	CATL	SVOLT 蜂巢能源	EVTECH	恒润科技 HIRAIN TECHNOLOGIES
	APTIV	ATECH	BAOLONG	FORYOU ADAYO

02 Technique

Core technology of isolators—the latest generation of capacitive isolation signal transmission technology (have been patented)





■The innovative capacitive isolation modulation and demodulation technology, which has patent licensed;

■Pulse-coding technology is used for modulation and demodulation, which saves power consumption;

■Very small quiescent and dynamic current (50uA and 100uA) are realized;

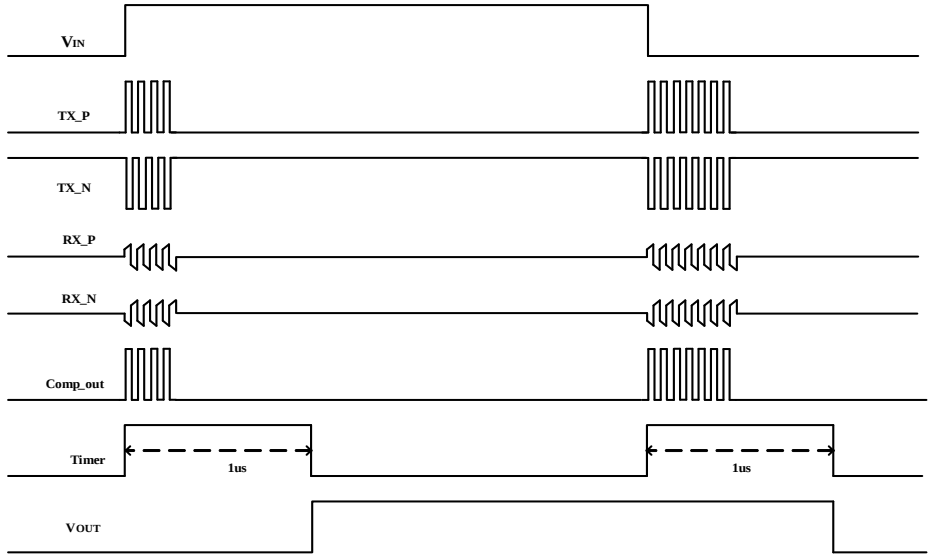
■Multi-pulse technology: high reliability, combining the advantages of OOK modulation and pulse modulation;

■Refresh technology: ensuring that the states of output and input are consistent in all cases;

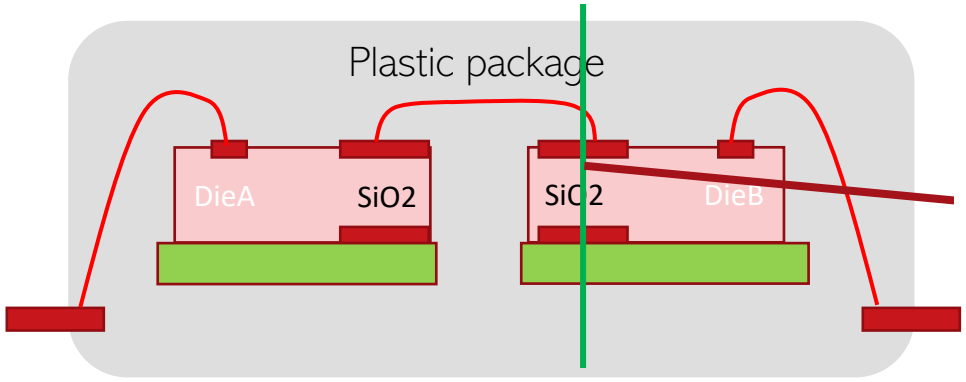
■Fixed demodulation time window: extreme small pulse width distortion (PWD);

■Key performance parameters

- ✓ Power consumption:<150uA @ 100Kbps
- ✓ Rate：DC-500Kbps
- ✓ Withstand:3750 V_{RMS} 1min
- ✓ ESD：±6KV (HBM)
- ✓ CMTI：>200KV/uS



Core technology of isolators — enhanced withstand and ultra-low power signal modulation technology



Cross section structure of isolation capacitances

0.18um Isolator Backend Cross Section Image

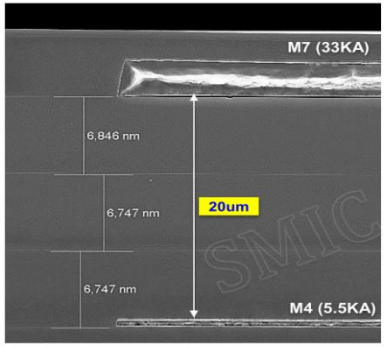


Figure-1

Ultra high voltage capacitor 20um SiO2 between M4 and TM

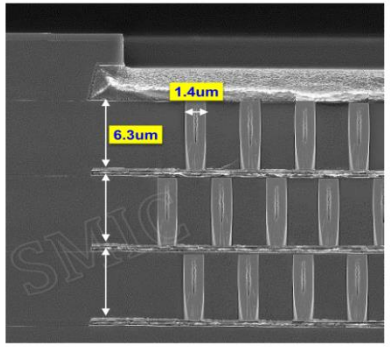
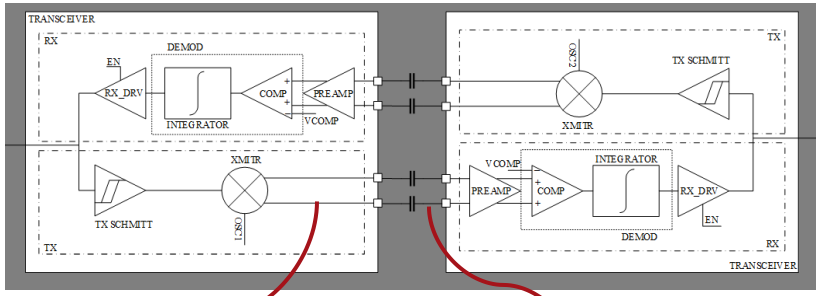
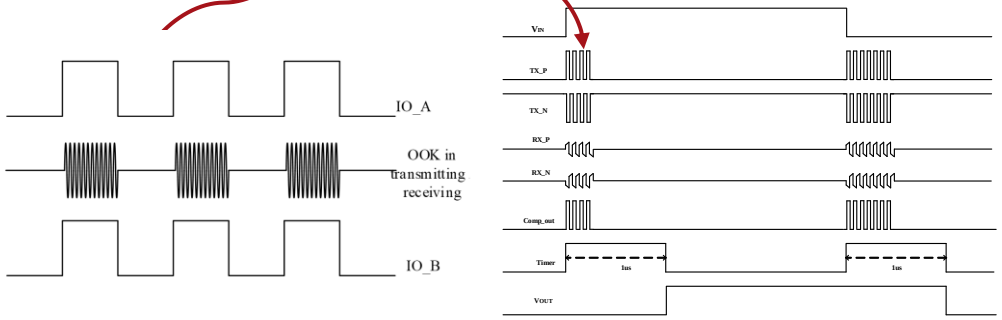


Figure-2

Thick IMD 6.3um per layer, Via4/5/6 design CD 1.4um, circle

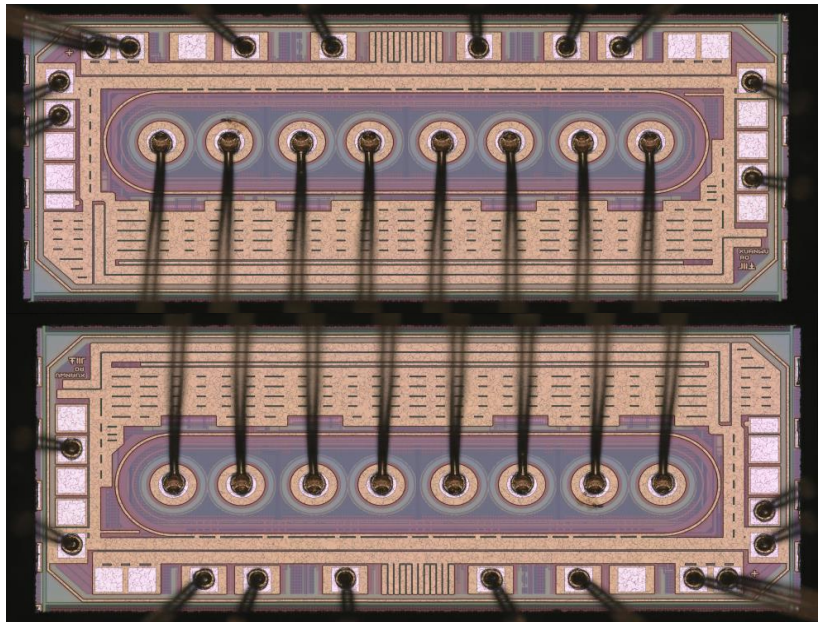
Capacitive isolation based on double isolation barriers



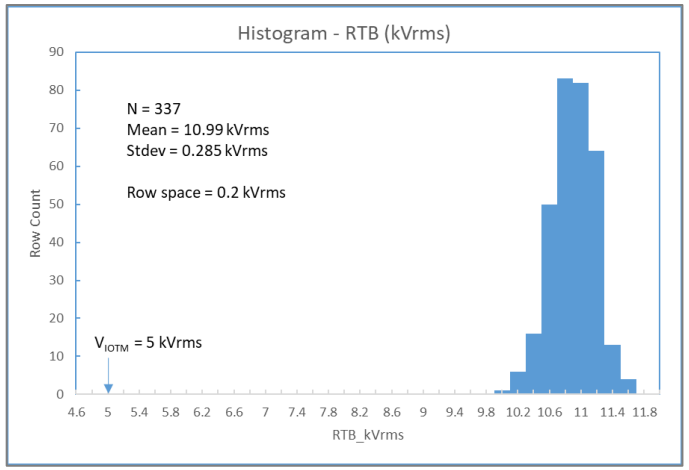


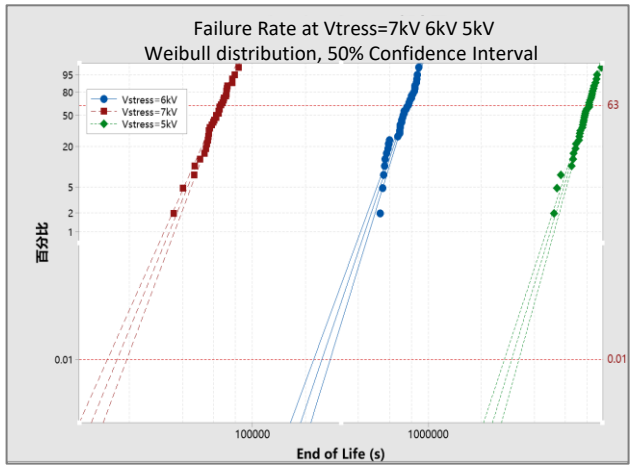
150Mbps signal transmission

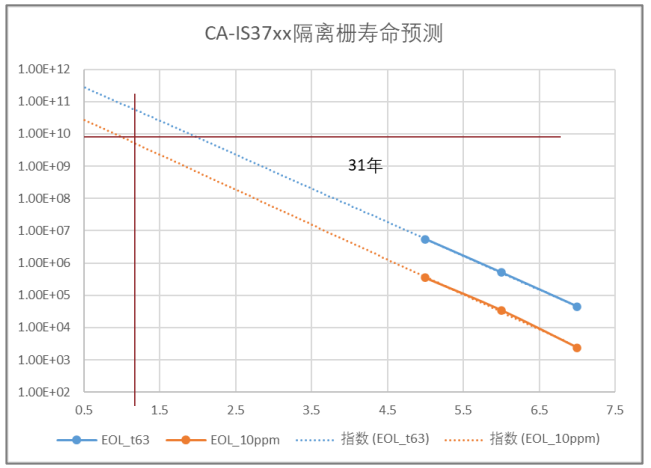
Patent licensed: ultra-low power signal transmission

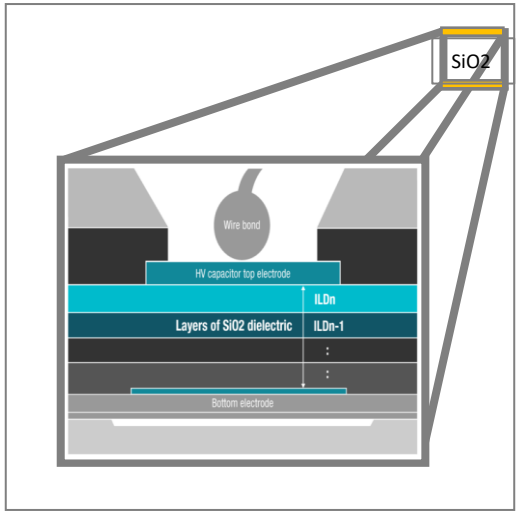


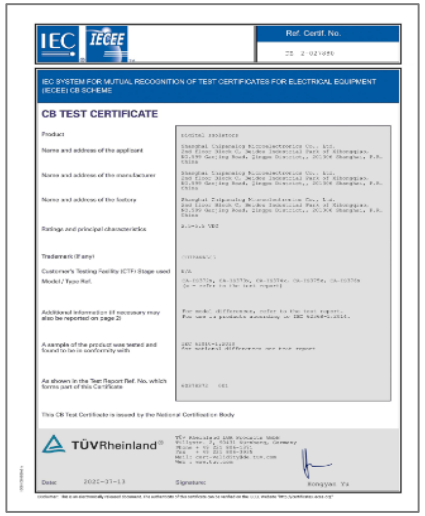
Reinforced Digital Isolator——First Generation Digital Isolator



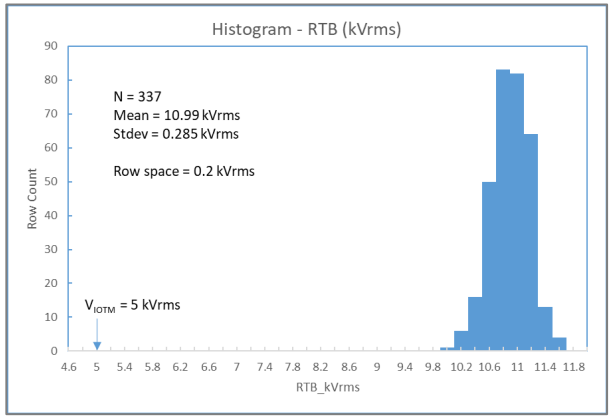


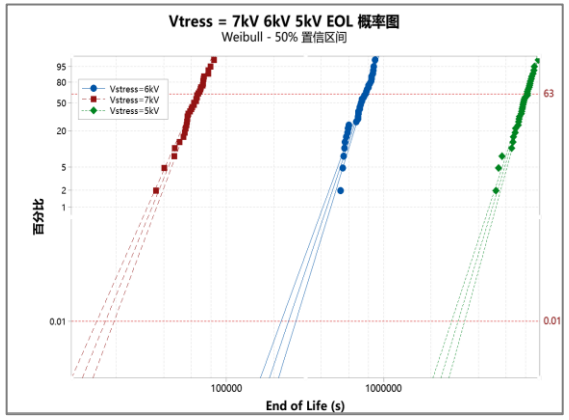


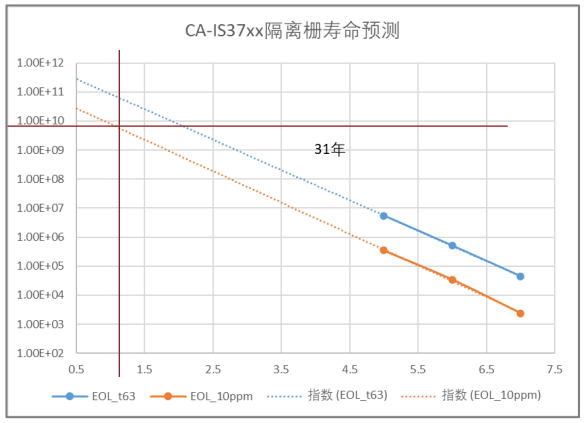


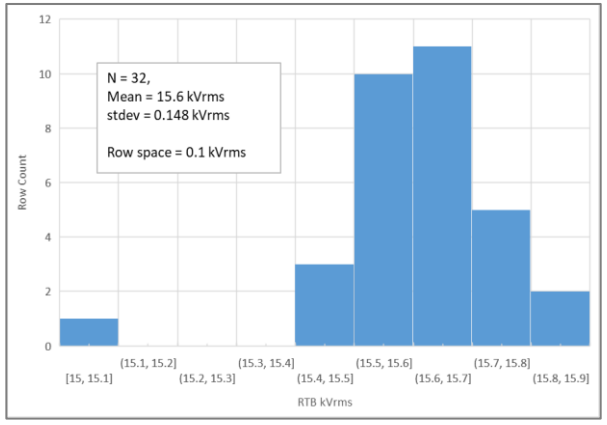


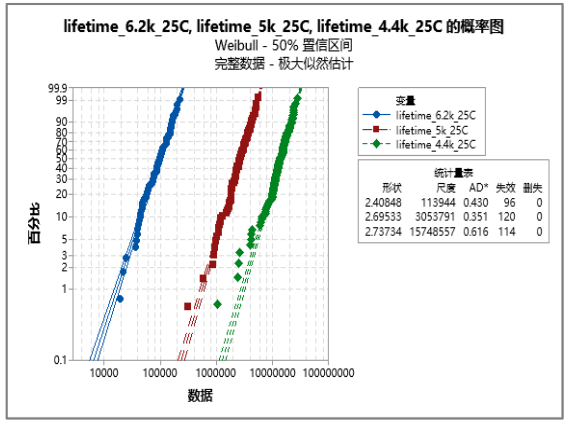
Reinforced Digital Isolator——Second Generation Digital Isolator

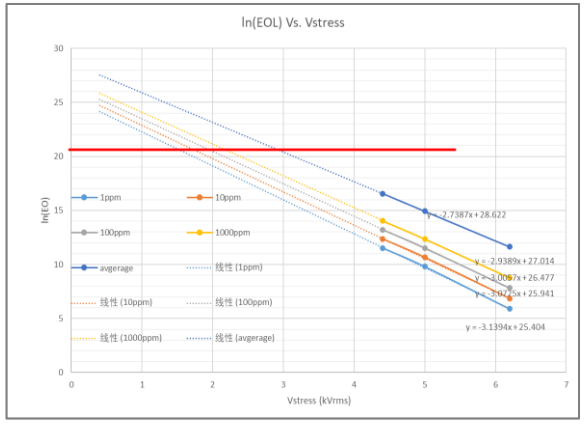












Core technology of Isolators — fully integrated isolated DC-DC

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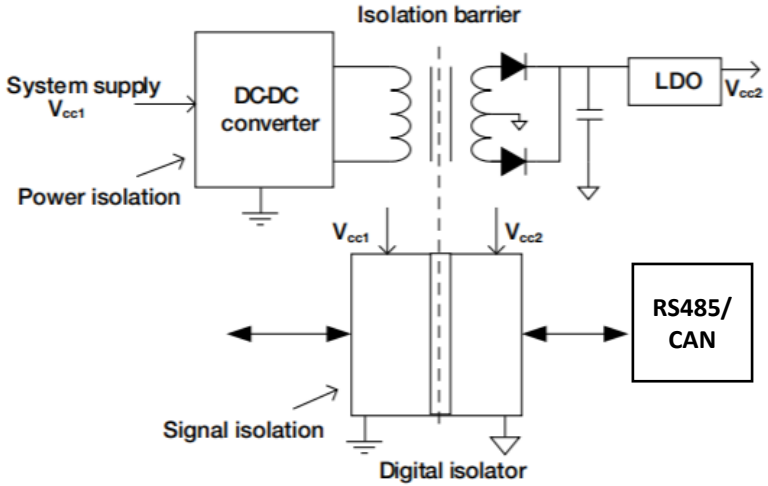
■The first digital isolators family with integrated power supply isolation in China

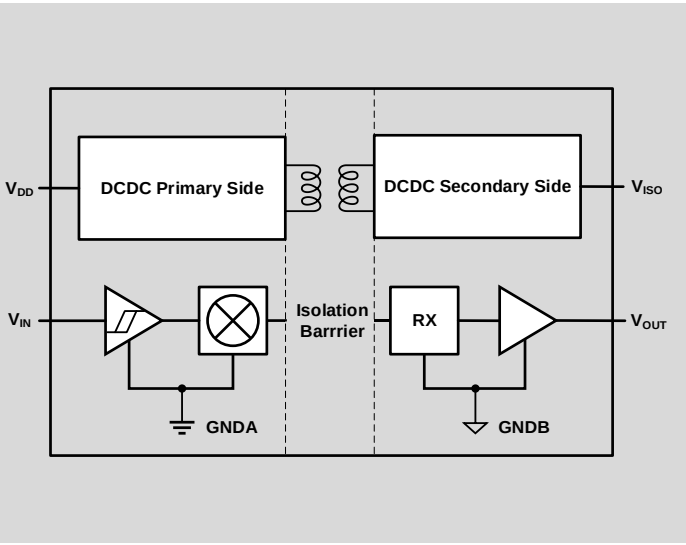
- ✓ Single chip provides signal isolation + power isolation and RS485 or CAN transceivers
- ✓ The smallest package: SOP16-W, POD=10.3mm x 7.5mm x 2.5mm

■Design Challenges

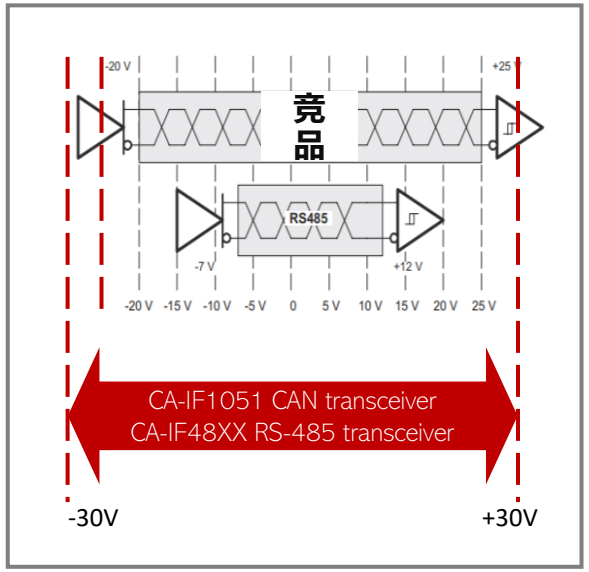
- ✓ On-chip transformer
- ✓ High-Efficiency
- ✓ High-isolation rate, 5kV$_{RMS}$ 1 min

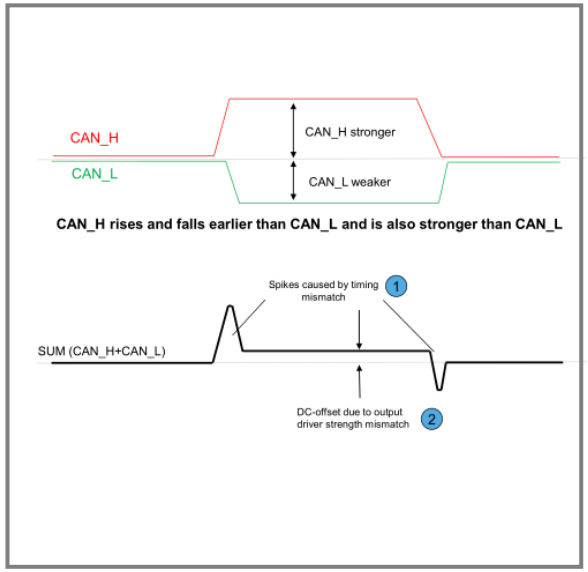
Pout	0.5 Watt	Vs.	0.25 Watt
POD	10.3*7.5*2.5 mm	Vs.	12.70*11.20*7.25mm
Function	Iso-RS485&Power	Vs.	Iso-Power Only
Isolation	5 kV$_{RMS}$	Vs.	2.5 kV$_{RMS}$

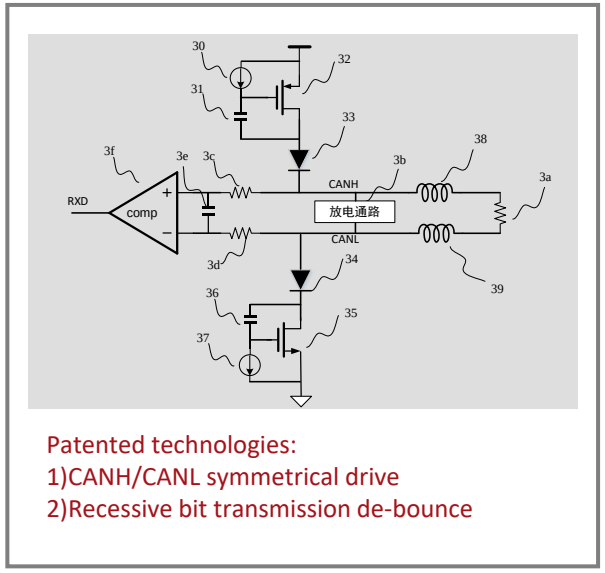




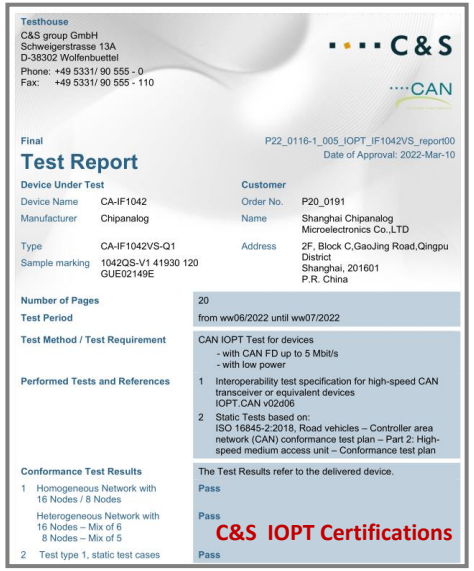
Core technology of interfaces — core interface technology with high reliability



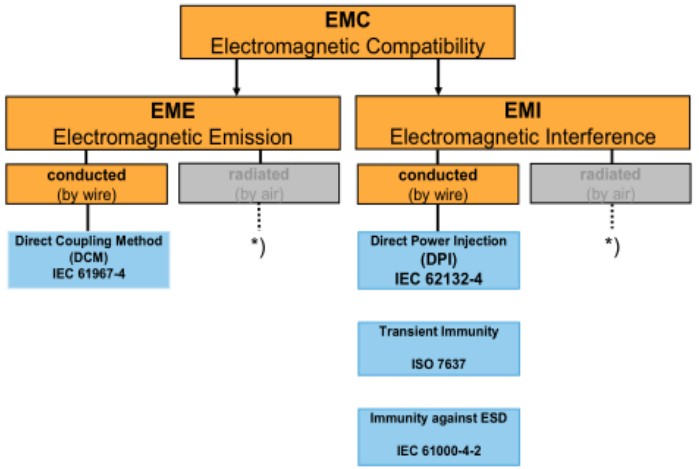




Patented technologies:
1)CANH/CANL symmetrical drive
2)Recessive bit transmission de-bounce



- High-reliability CAN and RS-485 transceivers provide:
  - Bus side protection range of ±70V
  - Bus side receiving common mode range of ±30V
  - Enhanced ESD/EMC protection: **±32kV HBM, ±8kV IEC-Contact**
  - Supports different power supplies on the bus side and control side, eliminating the need for off-chip level shift



Core technology of Analog Signal Isolation Technology

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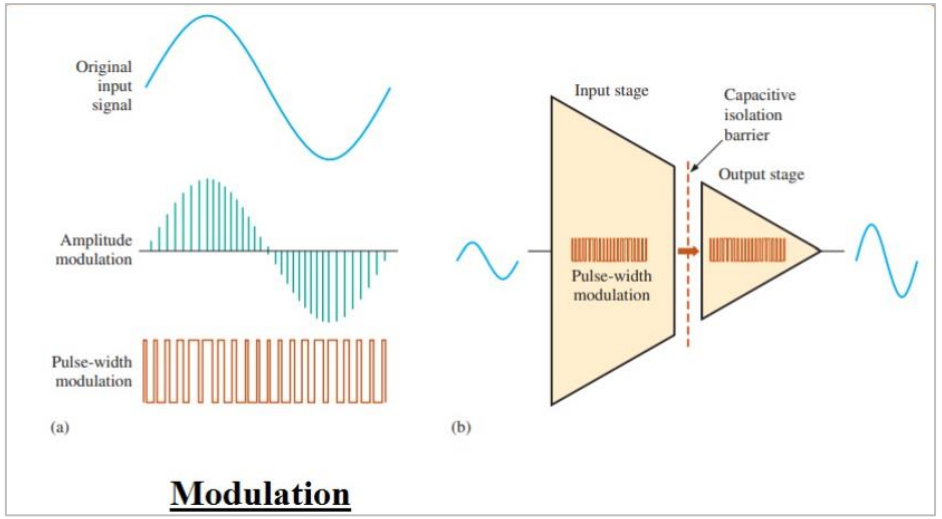
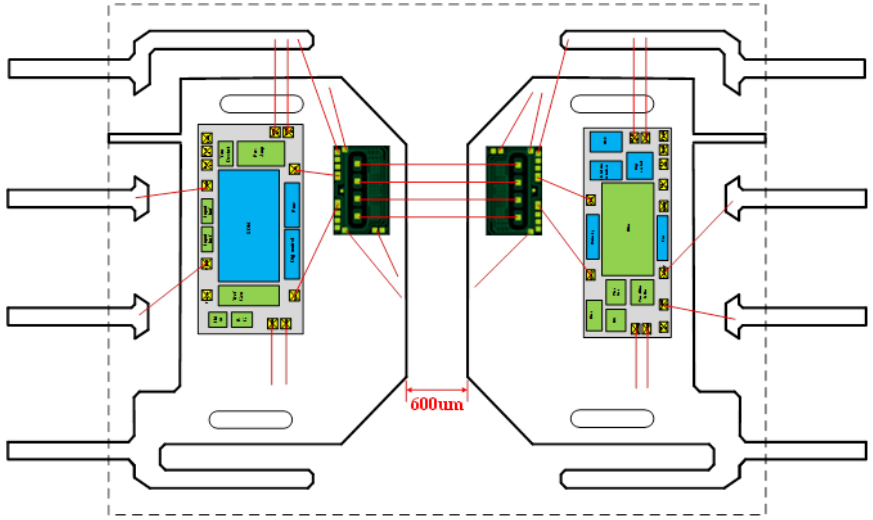
- Ideal Integration of digital isolation and ΔΣ modulation technology to realize high voltage isolation and analog signal transmission
  - ✓ Low input offset, Low Gain Error, Low temper drift, and low Nonlinearity
  - ✓ 150KV/us CMTI, 5000Vrms



- High accuracy front end amplifier with chopper stabilization technology to achieve high accuracy
- High accuracy reference
- 2 phase ΔΣ modulator
  - ✓ Double sampling technology in increase OSR
  - ✓ Chopping technology to improve Vos and smaller 1/f noise
  - ✓ Gain-boosting to increase gain and decrease Nonlinearity



High CMTI (Common-Mode Transient Immunity) technology and low EMI technology

■Fully differential transmitter and receiver architecture technology

Patent-licensed high CMTI receiver circuit

■Equivalent common-mode input impedance control technology

The common-mode level of the receiver circuit can still work normally under CMT

■Digital filtering technology

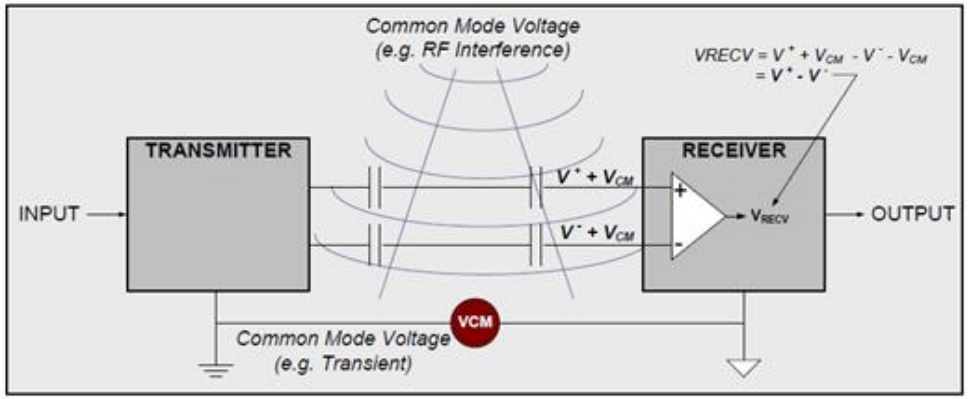
Achieves better CMTI performance at the cost of delay time or lower transmission bit rate

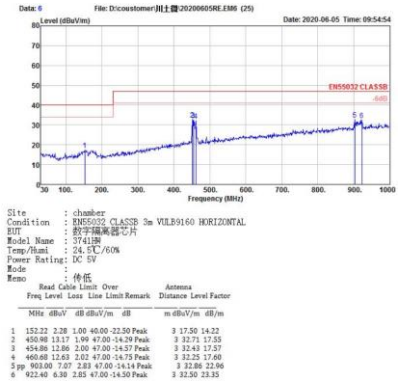
■Frequency jittering technology

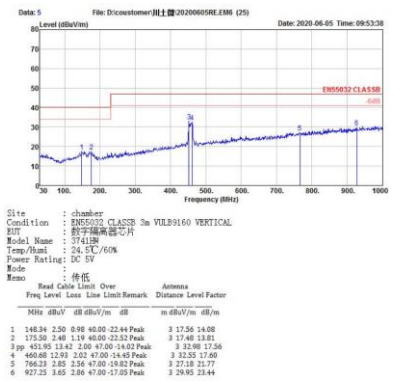
Spreads the internal clock frequency, disperses the spectrum energy, and reduces the peak energy.

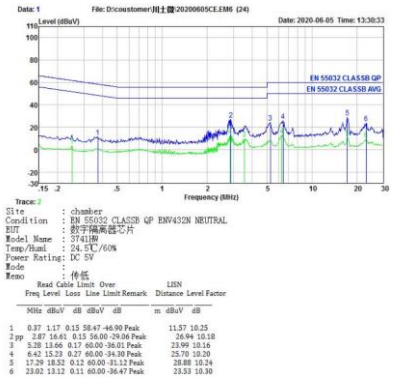
■Metal shields are used on the wafers

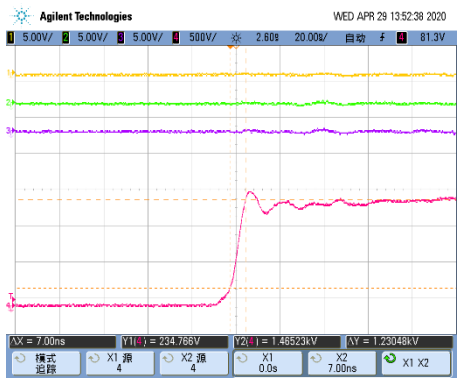
The top layer of the bare die is covered with metal to shield electromagnetic and electric field interference.

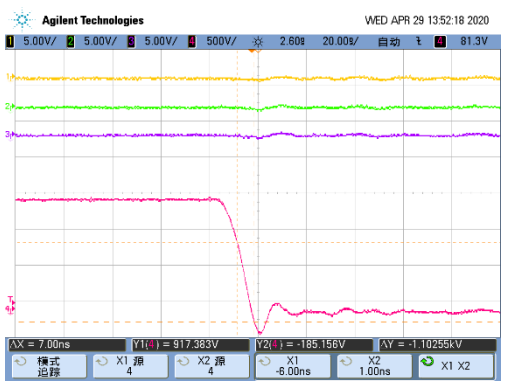




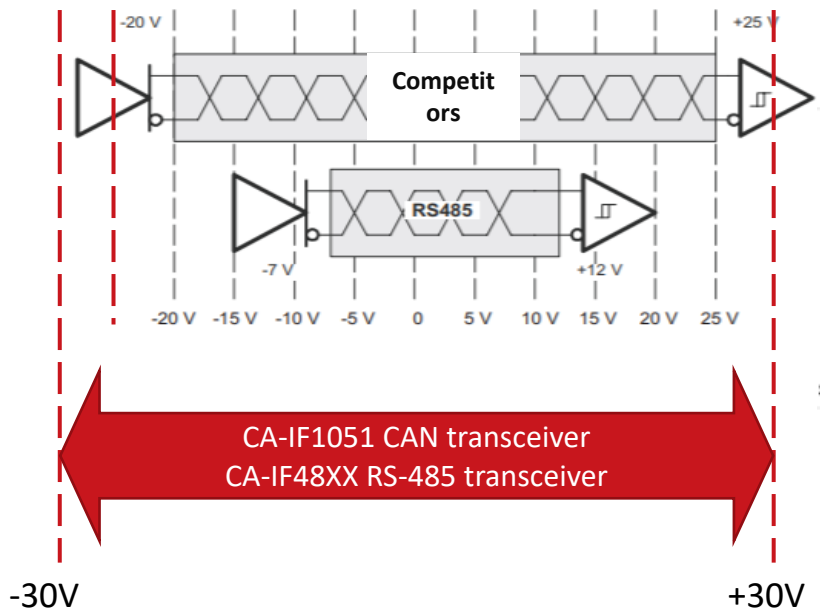


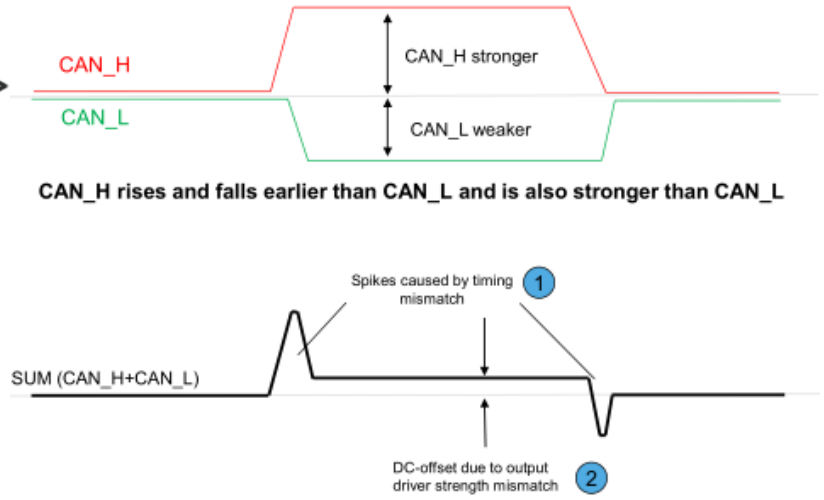


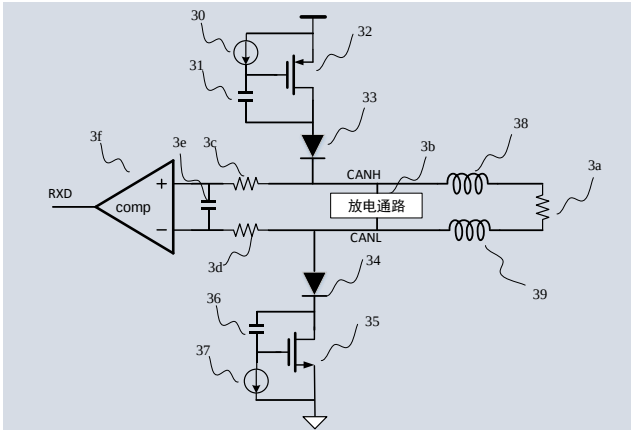




Core technology of Interface







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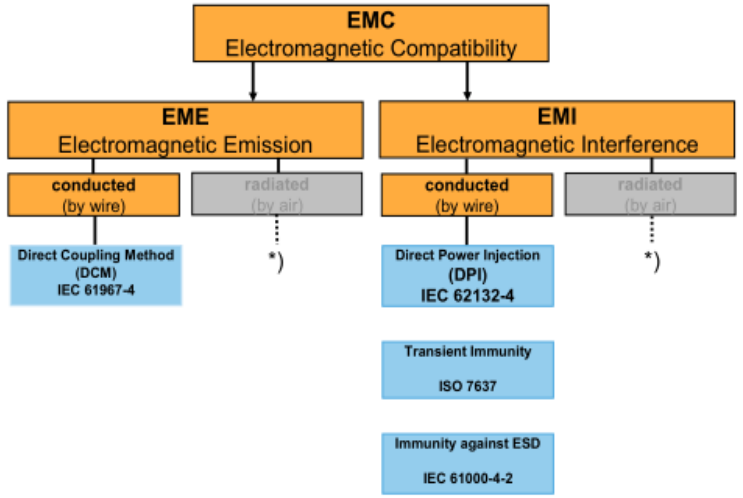
  - Supports different power supplies on the bus side and control side, eliminating the need for off-chip level shift

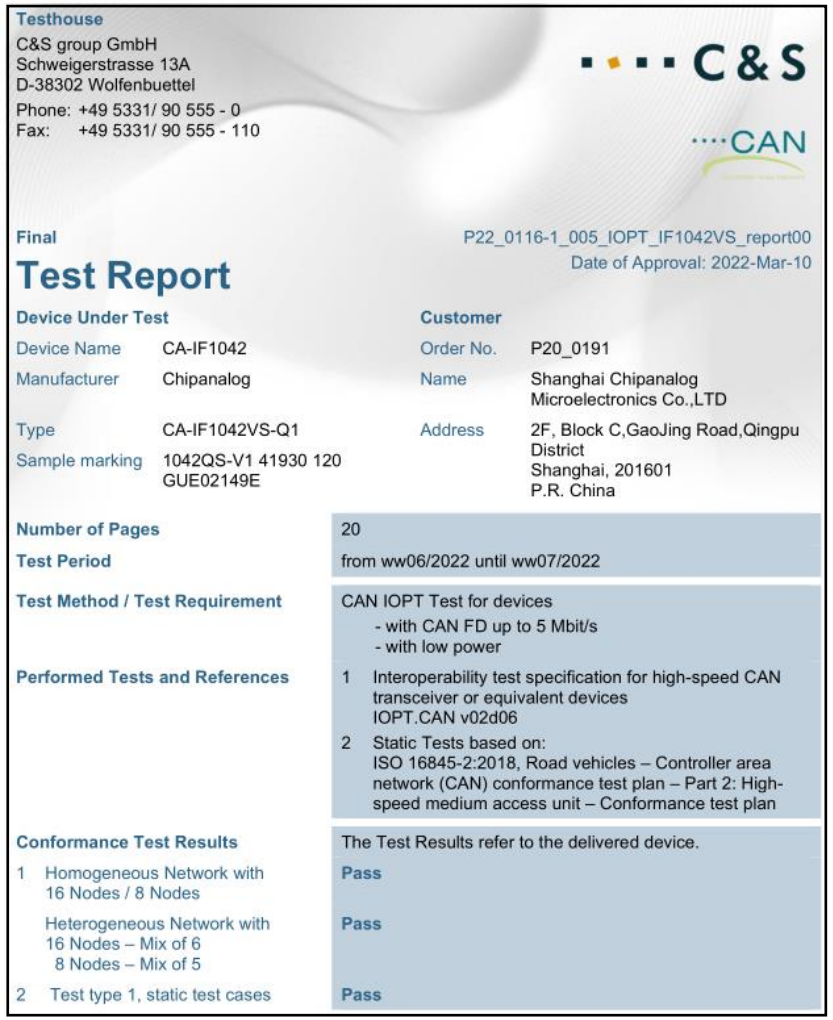


5V CAN-FD Products Comparison

Key Feature	CA-IF1051	TJA1051	TCAN1051/7	CA-IF1042	TJA1042	TCAN1042	CA-IF1044	TJA1044	TCAN1044
Fault Protection voltage CANH and CANL	H version ±70V S version ±58V	±58V	H version ±70V S version ±58V	±70V	±58V	H version ±70V S version ±58V	±58V	±42V	±58V
Common-mode input Voltage	±30V	±27V	±30V	±30V	±27V	±30V	±30V	±27V	±12V
Logic Side Voltage VIO	2.5V~5.5V	2.8V~5.5V	2.8V~5.5V	2.8V~5.5V	2.8V~5.5V	3V~5.5V	1.7V~5.5V	2.95V~5.25V	1.7V~5.5V
Speed	5Mbps (CAN FD)	5Mbps (CAN FD)	5/8Mbps (CAN FD)	5Mbps (CAN FD)	5Mbps (CAN FD)	5Mbps (CAN FD)	5Mbps (CAN FD)	5Mbps (CAN FD)	8Mbps (CAN FD)
ESD (HBM/IEC61000-4-2)	HBM ±15kV IEC ±8kV	HBM ±15kV IEC ±8kV	HBM ±16kV IEC ±15kV	HBM ±15kV IEC ±8kV	HBM ±15kV IEC ±8kV	HBM ±16kV IEC ±15kV	HBM ±15kV IEC ±8kV	HBM ±15kV IEC ±8kV	HBM ±16kV IEC ±15kV
Low Power Mode	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes
ISO 7637 Transient Test	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

CAN Certification

C&S IOPT



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C&S
CAN

Final

P22_0116-1_005_IOPT_IF1042VS_report00
Date of Approval: 2022-Mar-10

Test Report

Device Under Test

Device Name	CA-IF1042
Manufacturer	Chipanalog
Type	CA-IF1042VS-Q1
Sample marking	1042QS-V1 41930 120 GUE02149E

Customer

Order No.	P20_0191
Name	Shanghai Chipanalog Microelectronics Co.,LTD
Address	2F, Block C,GaoJing Road,Qingpu District Shanghai, 201601 P.R. China

Number of Pages	20
Test Period	from ww06/2022 until ww07/2022
Test Method / Test Requirement	CAN IOPT Test for devices - with CAN FD up to 5 Mbit/s - with low power
Performed Tests and References	1 Interoperability test specification for high-speed CAN transceiver or equivalent devices IOPT.CAN v02d06 2 Static Tests based on: ISO 16845-2:2018, Road vehicles – Controller area network (CAN) conformance test plan – Part 2: High-speed medium access unit – Conformance test plan
Conformance Test Results	The Test Results refer to the delivered device.
1 Homogeneous Network with 16 Nodes / 8 Nodes	**Pass**
Heterogeneous Network with 16 Nodes – Mix of 6 8 Nodes – Mix of 5	**Pass**
2 Test type 1, static test cases	**Pass**

IBEE

Standard: IEC62228-3, ed.1

Manufacture: Shanghai Chipanalog Microelectronics Co.,LTD

IC type: **CA-IF1042VS**

Implemented transceiver cells:
- CAN

ASIC operation modes/ tested functions:

IC mode	Tested functions (pins)
Active normal	• CAN communication
Low power - standby	• Wanted wake up • Unwanted wake up

Additional filter network at bus pins:
- CAN: 100 µH CMC ACT1210R-101-2P

Coupling ports:
- CP1: CAN

EMC tests

Emission Frequency domain Time domain
Immunity against RF disturbances - DPI Functional test Damage test Failure diagrams
Immunity against transients Functional test Damage test
Immunity against ESD Damage test (up to damage for each pin)

03 Products

Isolation

01 Digital Isolators	02 Isolated Interface	03 Isolated Power	04 Isolated Amp/ADC	05 Isolated Drivers
Universal Digital Isolator CA-IS37XX、CA-IS34XX	Isolated RS-485 Transceivers CA-IS308X；CA-IS208X	Complete, 0.5W Isolated DC-DC Converter CA-IS3105	Isolated Current Sense Amplifier CA-IS1200.；CA-IS1300	Single-Channel Isolated Driver with Optocoupler Compatible CA-IS3221
Digital Isolator for Power Meter CA-IS35XX	Isolated CAN Transceivers CA-IS305X；CA-IS205X	Complete, 1W Isolated DC-DC Converter CA-IS3110	Isolated Voltage Sense Amplifier CA-IS1311	Dual-Channel Isolated Drivers CA-IS3222
Reinforced Digital Isolator CA-IS38XX	I2C Isolators CA-IS302X	Complete, 3W Isolated DC-DC Converter CA-IS31XX	Isolated ADC Modulator CA-IS130X	Single-Channel Isolated Driver with Extended Protection CA-IS3215
Low-Power Digital Isolator CS817xXX	Isolated Digital I/O CA-IS398X；	Isolated Error Amplifier CA-IS310X	Isolated ADC Modulator CA-IS330X	
Digital Isolator with Integrated Power CA-IS36XX	Isolated RS-485 Transceivers with Integrated Power CA-IS309X；CA-IS209X			
	Isolated CAN Transceivers with Integrated Power CA-IS306X			

Interface

01 CAN/LIN/SBC

CAN Transceivers with CAN FD

CA-IF1051X

CAN Transceivers with Wake-up

CA-IF1042X、CA-IF1043X

CA-IF1044X、CA-IF1145X

CA-IF1462X

CAN Transceiver with Polarity Control

CA-IF4420X

LIN Transceivers

CA-IF1021、CA-IF2021

CA-IF1027, CA-IF2027

Standard SBC

CA-IF1028

02 RS-485/422/232

RS-485/RS-422 Transceivers

CS485XX: ±12V CMR

CA-IF48XX: ±30V Fault Protection

CA-IF49XX: ±70V Fault Protection

RS-232 Transceivers

CA-IF3232E

CA-IF3223E

CA-IF3221E

03 Others

AISG

CA-IF4023

HOME BUS

CA-IF4288

CA-IF4289

04 Future

We will continue to focus on industrial and general applications

Industrial Internet

Perceiving, Link,

Communication, Control

Intelligent Manufacturing

Control, Information,

Drive, Safety

Energy and Transportation

Green, Efficiency, Electric,

Intelligent

Intelligent Building

Energy storage,HVAC,

Elevator

ISOLATION

- Servo/PLC/HMI
- Electric drive and electric control
- Energy conversion

INTERFACE

- Interconnection
- Bus control
- Data interaction

Driver & Power

- High conversion efficiency
- High integration
- High reliability

HPA

- High-precision perceiving
- Environmental monitoring
- Collecting data

We will continue to focus on smart car applications

Electrification	ADAS & Safety	Telematics	Infotainment

ISOLATION	PMIC	CAN&LIN	LIGHTING
■ Motor drivers	■ MMW radars	■ Bus control	■ Head lights and rear lights
■ Electric control	■ Lidars	■ Security modules	■ Ambient lights
■ BMS	■ Camera modules	■ Data interaction	■ Daytime running lights

THANKS

Wechat

Tmall

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