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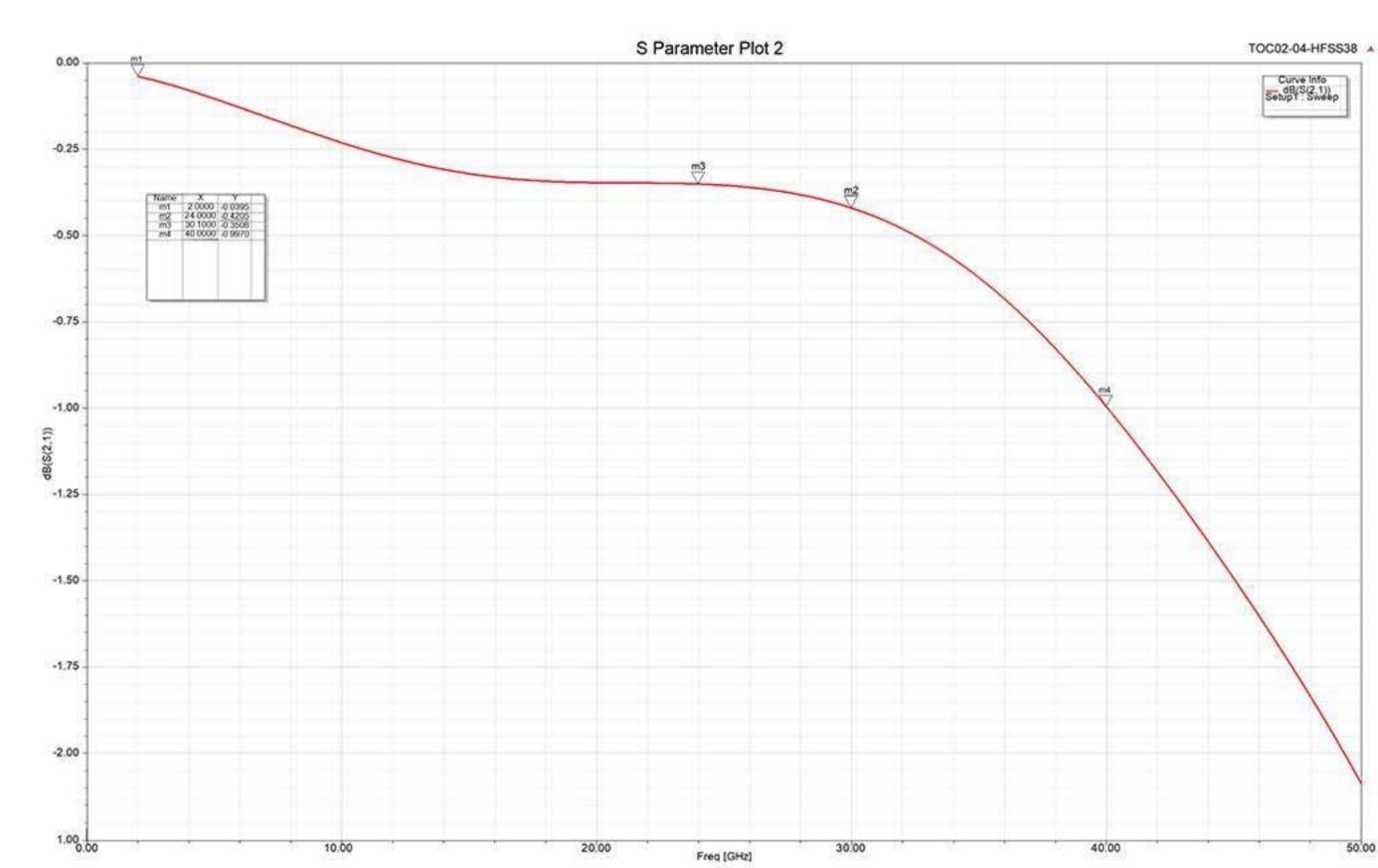
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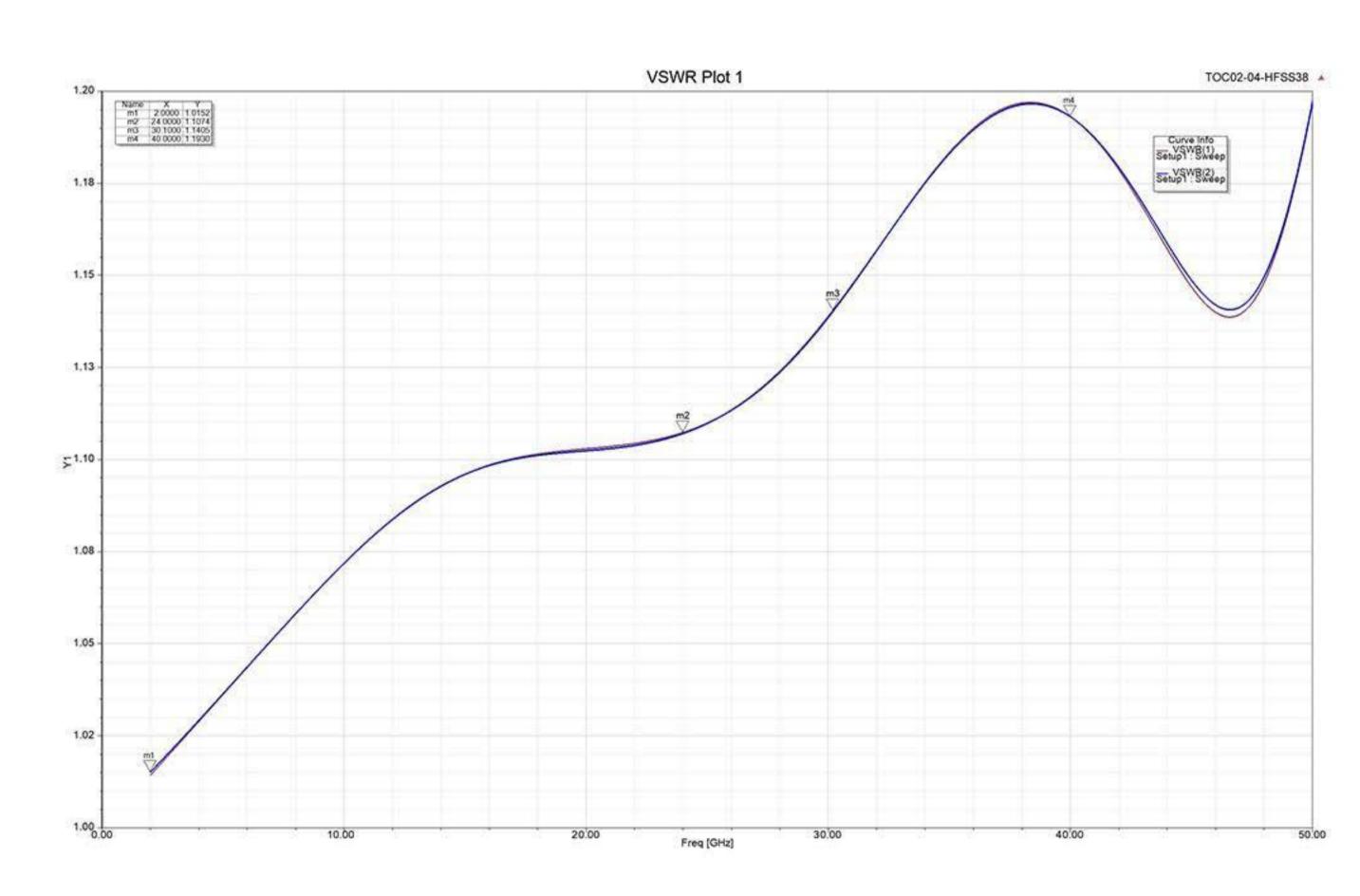
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RF module

Multi-Chip RF Function Module Package

Name	Pin Num	Seal Type	Heat Sink	Cavity Num	Seal Size
2717A0	23	Laser	N	1	26.8X18.2
2717A3	36	Parallel	Υ	3	26.8X18.2
2717A6	54	Laser	Ν	3	26.8X18.2
2717A9	54	Parallel	Υ	3	26.8X18.2
2915A0	6	Parallel	Υ	2	29.2X14.8
2915A1	70	Parallel	Υ	3	29.2X14.8
2915A5	8	Parallel	Υ	3	29.2X14.8
2915A6	12	AuSn Solde	r Y	4	28.8X14.6





Notes

Frame: Fe-Ni-Co Alloy

Finish: Ni+Au

► Heat Sink: W-Cu、Mo-Cu、CPC、CMC

Lead: Fe-Ni-Co Alloy

Insulation Resistance: $\ge 1 \times 10^9 Ω$ (500 V DC)

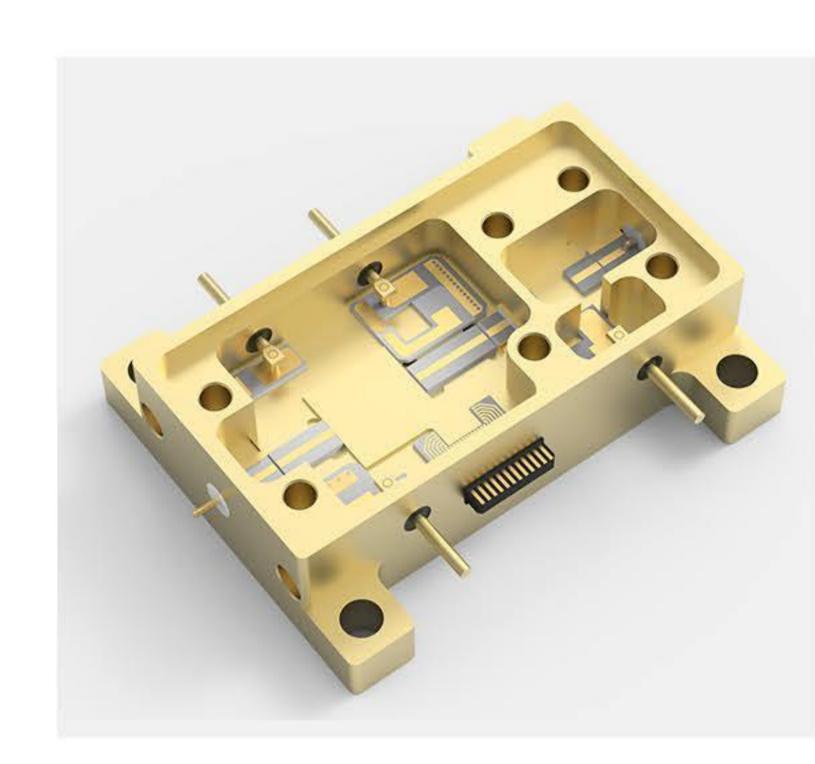
Hermeticity: $\leq 1 \times 10^{-3} \text{Pa} \cdot \text{cm}^3/\text{s}$ (He)

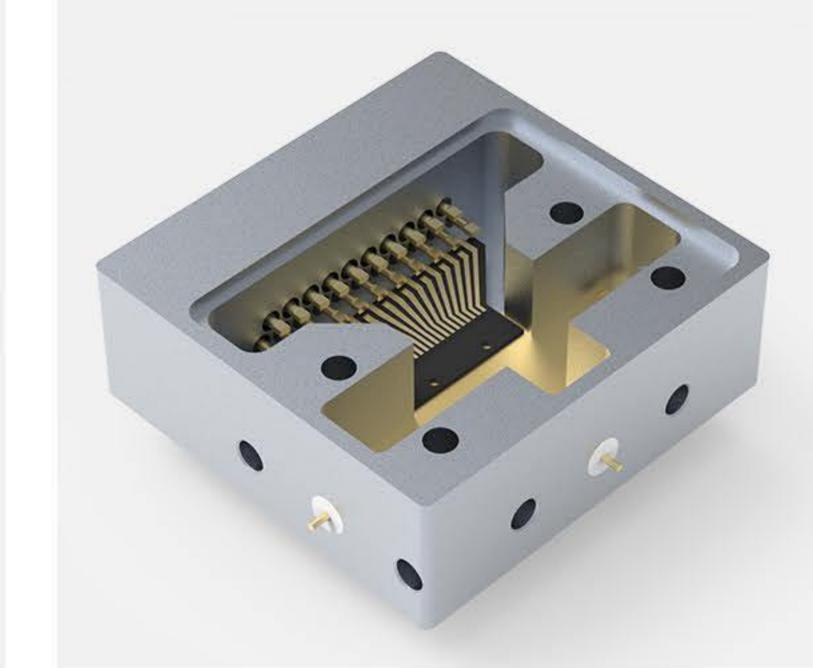
High package intergration, convenient and reliable micro-assembly.

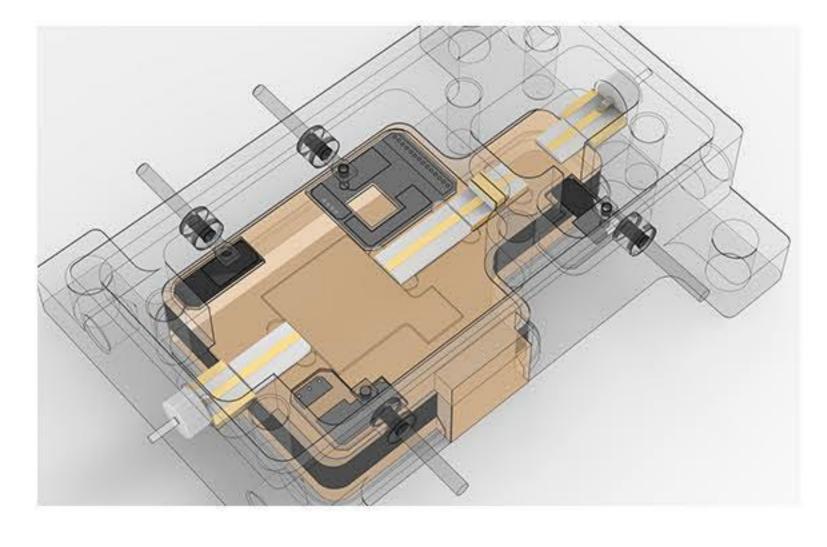
When designing the package, designers need to combine the characteristics of the actual micro-assembly process; they need to comprehensively consider the package feeding, radio frequency, thermal management, electromagnetic shielding, reliability and environmental adaptability protection in the chip layout stage, and the passive circuit components can be further integrated if necessary. If necessary, the package should be verified through microwave simulation after being designed.

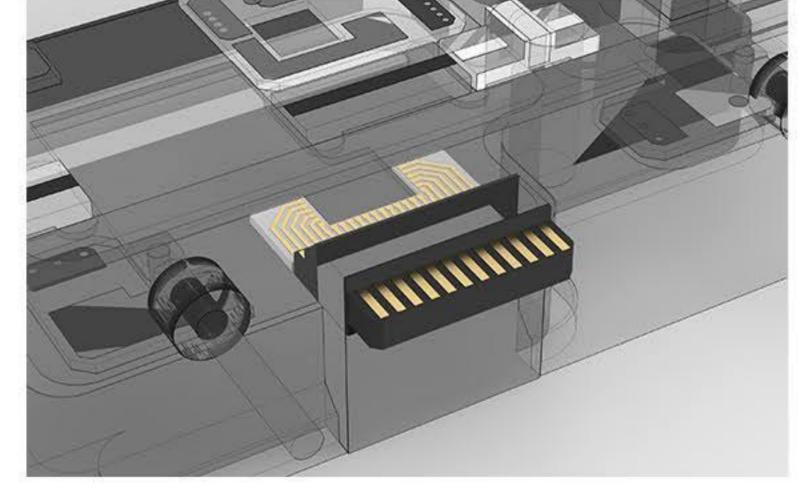
Fratures

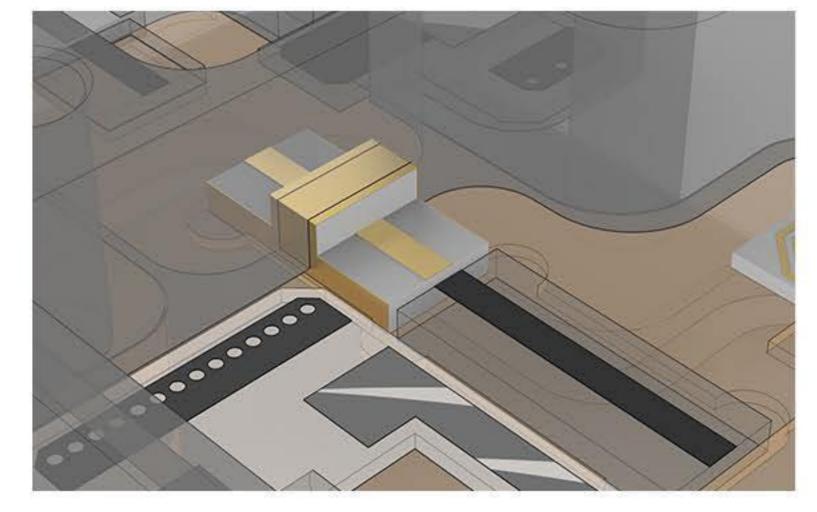
- ▶ 1. The package has comprehensively integrated the thin film, thick film, HTCC, PCB, glass melting seal, soft and hard brazing and other multi disciplinary process technology. In the illustrated samples, as a shielding structure, the HTCC RF feed-through can meet the Ku band index at the highest, and the mono-block's direct glass melt-sealed RF feed-through insulator can meet the RF performance of DC~40GHz.
- ≥ 2. The bottom of package is designed with embedded heat sink structure, usually using tungsten copper, molybdenum copper, CPC, Cu-Dia and other high heat dissipation materials, and the highest thermal conductivity of this structure is up to 580W/m.K. The supporting cover plate of the illustrated sample is composed of inner and outer parts. The interior is a screw-mounted shield cover, and the exterior uses a step cover plate to meet the parallel seam welding process.

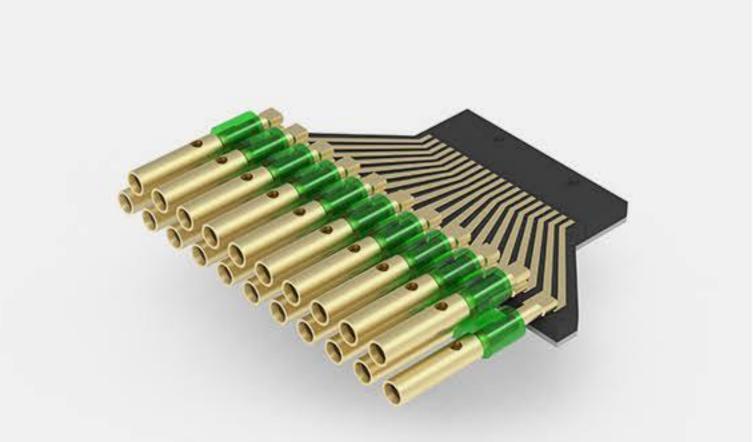












T/R Component Package

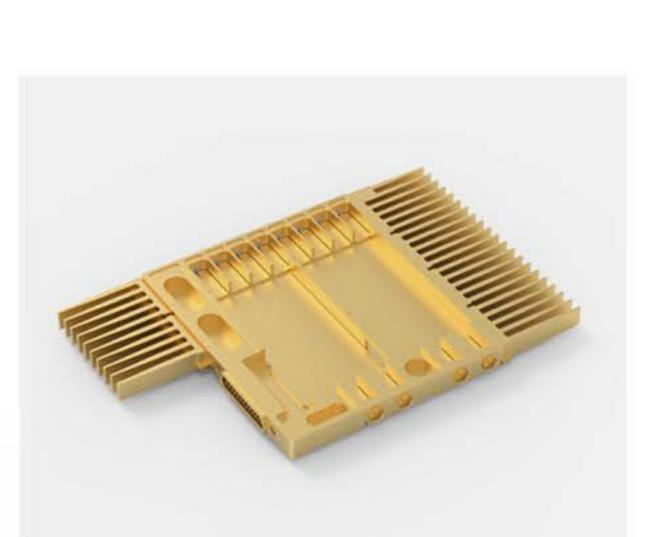
Take into account thermal adaptation, light weight, heat dissipation.

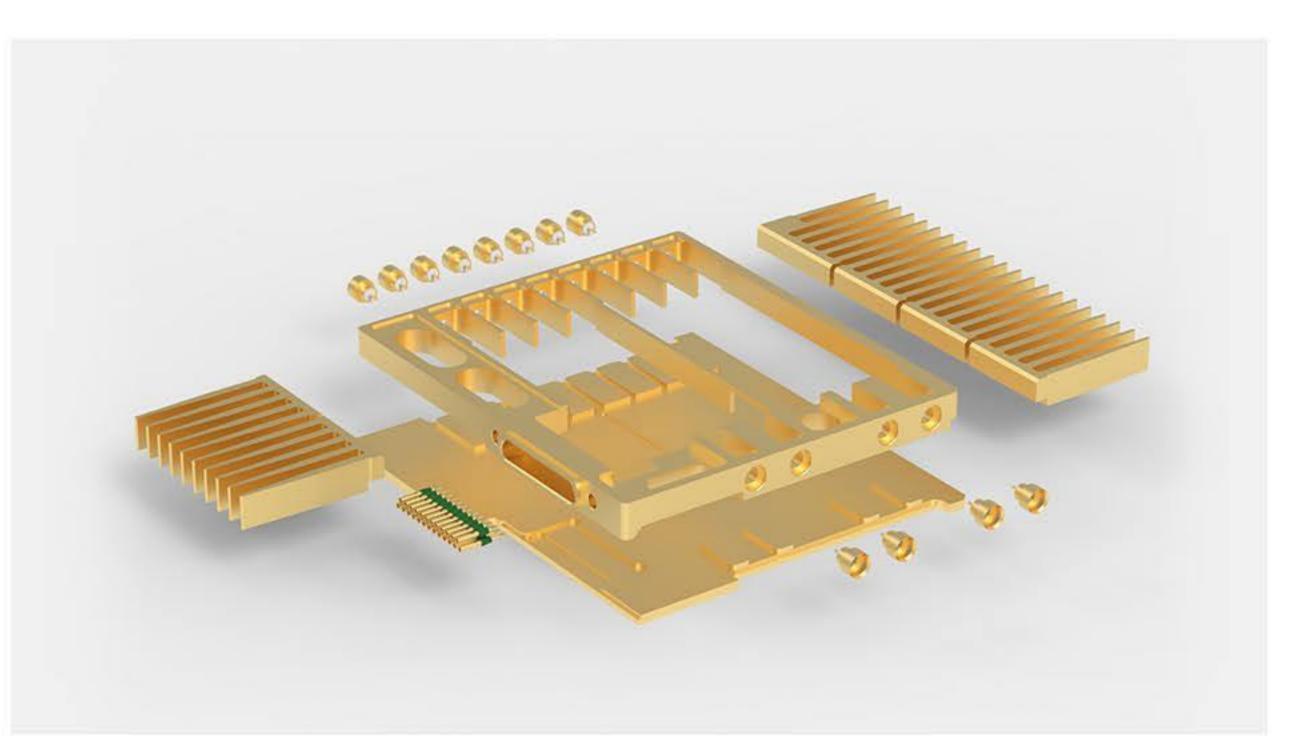
Companies of this type of package provide thermal management, micro-assembly process adaptation, structural reliability design, LTCC, HTCC ceramic circuit substrate brazing thermal stress analysis and other services in the structure design stage. If necessary, users/customers can participate in the package structure scheme discussion or provide preliminary solutions during the project development stage. The lid can be designed according to the actual sealing process of the user, which can meet the different sealing processes such as laser welding, electron beam welding and parallel seam welding.

Fratures

1. The package can be made with aluminum alloy, silicon aluminum (including gradient silicon aluminum), kovar or carbon silicon aluminum bottom plate brazing titanium alloy ring frame according to user's needs. The illustrated sample adopts gradient silicon and aluminum composite material, which can fully take into account the micro assembly process requirements of different areas of the mono-block chip welding surface and the sealing surface.







Notes

Frame: Fe-Ni-Co Alloy、AlSi Alloy、Ti Alloy

Finish: Ni+Au

Base: W-Cu、Mo-Cu、CPC、CMC

Lead: Fe-Ni-Co Alloy

Insulation Resistance: $\geq 1 \times 10^{9} \Omega$ (500 V DC)

Hermeticity: $\leq 1 \times 10^{-3} \text{Pa} \cdot \text{cm}^3/\text{s}$ (He)

RF Filter Package

Small Cavity, reliable coating

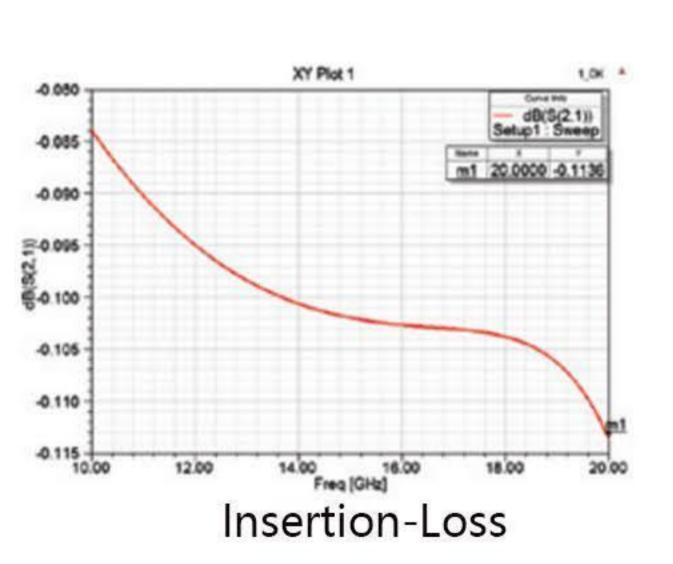
In the design of package, user performance index, miniaturization requirements, structure reliability and rear assembly process should be comprehensively considered. This type of filter packaging package products can achieve better cost control, smaller cavity size, higher working frequency.

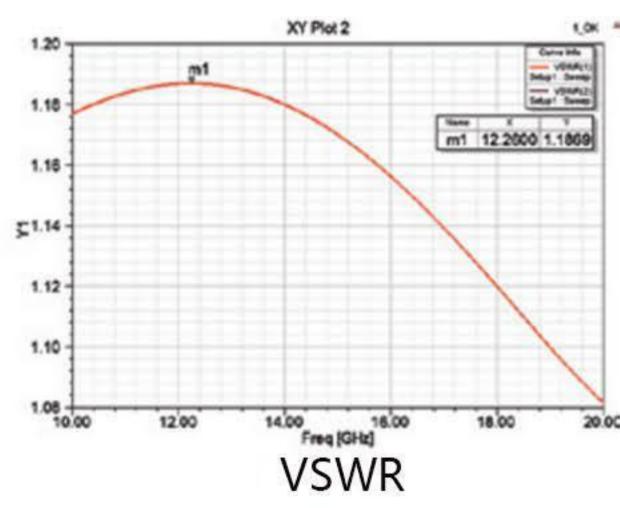
Fratures

1. The package material can selected kovar alloy or 10# steel according to the user's requirements, and the package structure usually adopts direct glass melting seal RF feed structure, which can meet the RF performance of DC~40GHz. The RF feed components can also be brazed if requested. The Illustrated sample adopts L-type lead direct glass melting sealing, which needs to ensure that the lead grounding is good, and the glass melting sealing technology has high requirements.









Notes

Frame: Fe-Ni-Co Alloy or Steel

Finish: Ni+Au

Lead: Fe-Ni-Co Alloy

Insulation Resistance: $\geq 1 \times 10^{9} \Omega$ (500 V DC)



Hermeticity: $\leq 1 \times 10^{-3} \text{Pa} \cdot \text{cm}^3/\text{s}$ (He)

Optical Communication

WSS Package

Large cavity, low cost.

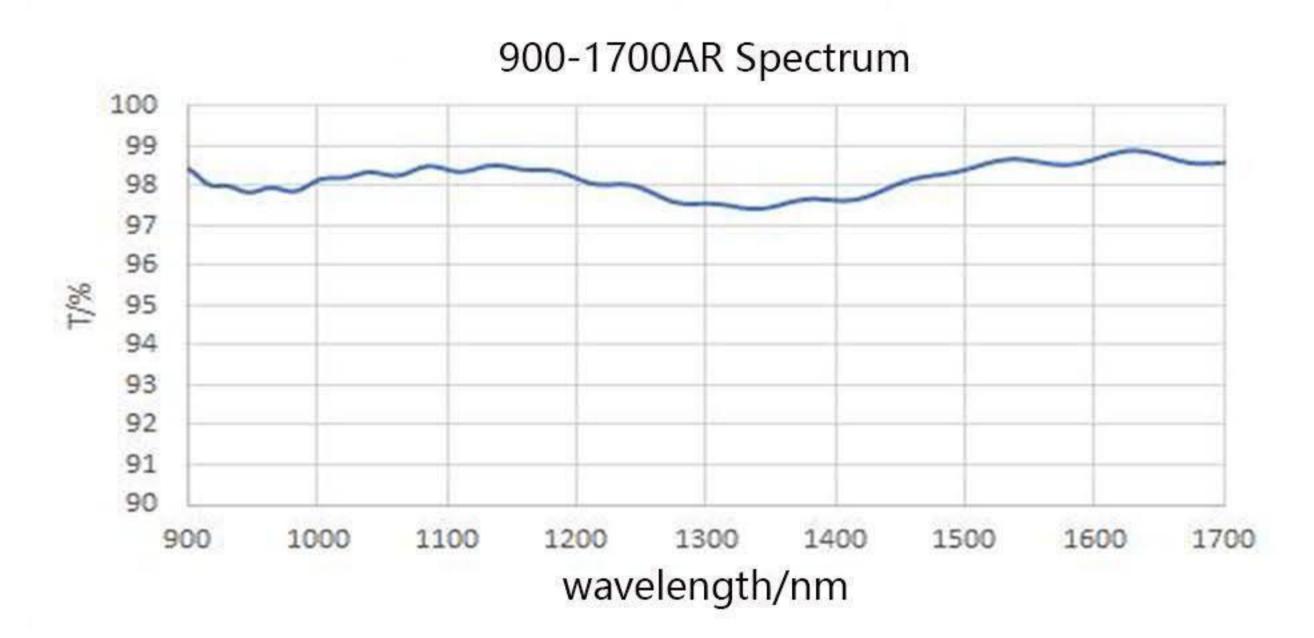
The package adopts metal cavity brazing or melt seal feed through assembly, optical tube structure.WSS package cavity is usually large, generally using the kovar alloy plate 6-side welding cavity structure (if the cavity is small, low cost aluminum alloy overall processing structure can be adopted). The large size cavity integrated through high precision mold design can greatly reduce the material cost and machining cost. The production process of these package products is complex, difficult integration and high cost control requirements.

Feature

- ▶ 1. Package feed through can be brazed ceramic high-density feed pass components or glass high-density feed pass components and brazing high-speed lead parts. If necessary, the glass lead line can also be fused directly on the package.
- ➤ 2. The package can be designed embedded heat sink structure; heat dissipation materials generally select molybdenum copper, tungsten copper; the highest thermal conductivity is up to 260W/m.K.
- > 3. The coating of the package is usually lead gold plating and package nickel plating, and the optical conduit is used for non-eutectic welding directly on the package nickel layer, greatly reducing the cost.







Butterfly Package

Available ceramic feed through and glass feed through structure

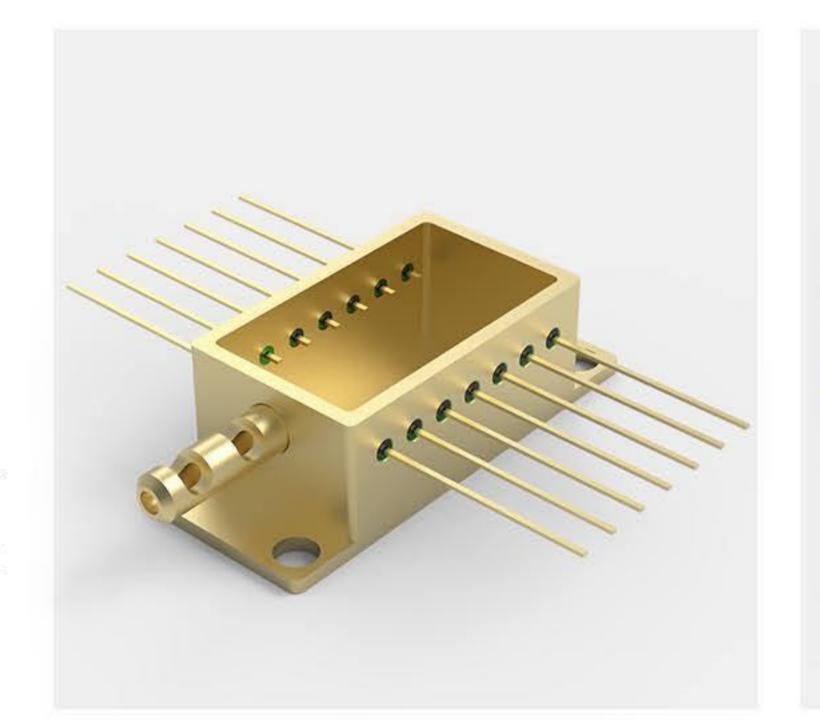
Butterfly package usually uses metal ring frame embedded in ceramic feed through assembly, brazed light pipe (light window), metal heat dissipation bottom plate, metal sealing ring structure. This type of package products can meet the requirements of air tightness and thermal insulation packaging through the complex cavity integrated with high precision mold.

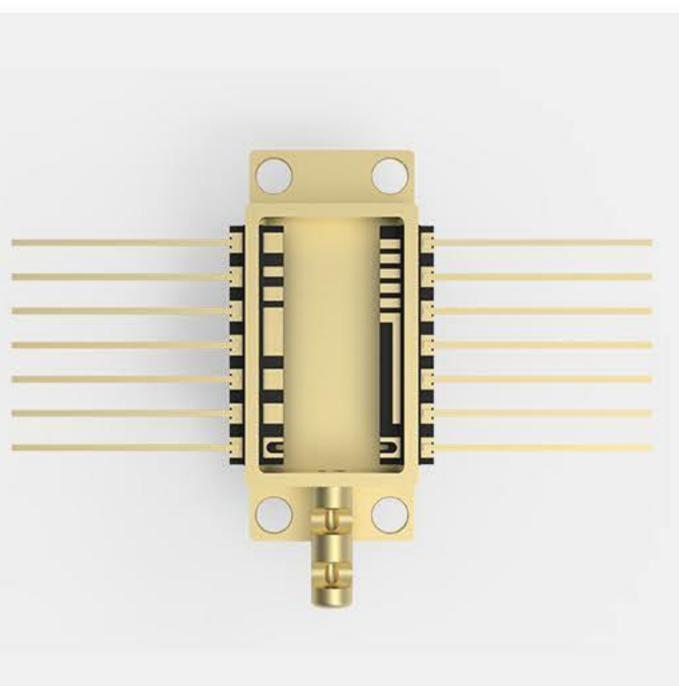
Fature

- 1. The package feed-through component adopts HTCC high-temperature ceramic design structure, which effectively increases the lead density and air density reliability, and meets the miniaturization needs of the package module. Under special requirements, the glass melt seal feed through structure can also be used.
- 2. The heat dissipation base is generally made of WCu, MoCu material, with the highest thermal conductivity of 260W/m.K.

Notes

- Insulation Material: 92%Al2O3 ceramic or glass
- Insulation Resistance: $\geq 1 \times 10^9 \Omega$ (100V DC)





Name	Lead Pitch	Pin Num	Heat Sink	Seal Size
FOF2113-14	2.54	14	WCu15	20.8x12.7
FOFC2113-14b	2.54	14	WCu15	20.8x12.7
FOFC2113-14c	2.54	14	WCu15	20.8x12.7
FOF2616-18	2.54	16	WCu20	26.2x15.8
FOFC2616-18a	2.54	16	WCu15	26.2x15.8
FOFC2524-32	1.27	32	TU-1	25.0X23.5
FOFC2524-32a	1.27	32	WCu15	25.0X23.6
FOFC3023-32	1.27	32	WCu15	29.5x23.4

► DP-QPSK LN Optical Modulator Package

At DC-32 GHz, the reflection loss -15dB max

The package of the modulator usually adopts cavity type stainless steel magnetic shielding package, brazing high and low frequency feed pass structure or ceramic high frequency differential feed pass structure, with optical fiber coupling interface on the side, GPPO, FPC adaptation. This type of packaging package products can meet the high-speed transmission requirements of more than 25Gbps.

Feature

- ▶ 1. The illustrated sample uses FPC to replace the high-frequency connector and integrates the low-frequency ceramic feed-through components, which achieves low reflection loss.
- After mass production, stainless steel powder can be adopted to metallurgy integrate molding belt catheter cavity structure.

Notes

Lead Material: Fe-Co-Ni Alloy or OFC

Insulation Material: 92%Al2O3 ceramic or glass

Insulation Resistance: ≤1.0x10-7 A at 100V DC

Hermeticity: 1.0x10-8 ccHe/sec. at 1.0atm Differential

TOSA/ROSA Package

Small size, low cost, high index.

TOSA/ROSA package usually uses the kovar metal ring frame gold tin brazing light window, high temperature brazing ceramic feed through component, metal heat dissipation bottom plate structure. This type of packaging package products have high integrated density, small volume and low cost, and can meet the 25Gbps transmission index.

Feature

- 1. The package feed-through component adopts the high-density HTCC multi-layer ceramic process, which effectively increases the lead density and air density reliability, and meets the miniaturization needs of the package module.
- 2. The heat dissipation base generally adopts tungsten copper, molybdenum copper, CPC and other high heat dissipation materials, with the highest thermal conductivity of 260W/m.K.

Notes

Frame Material: Fe-Co-Ni Alloy

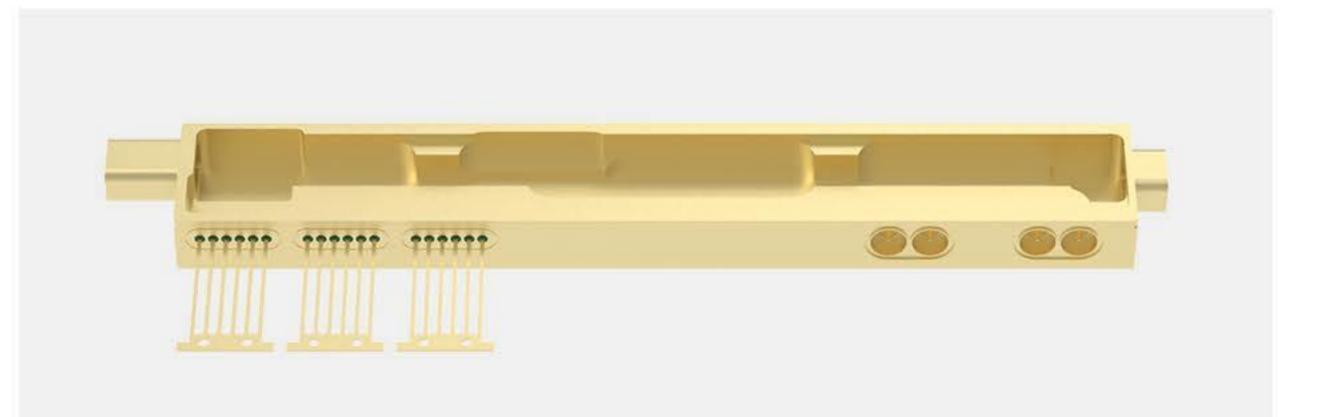
Finish: Ni+Au

Base Material: WCu, MoCu, CPC or CMC

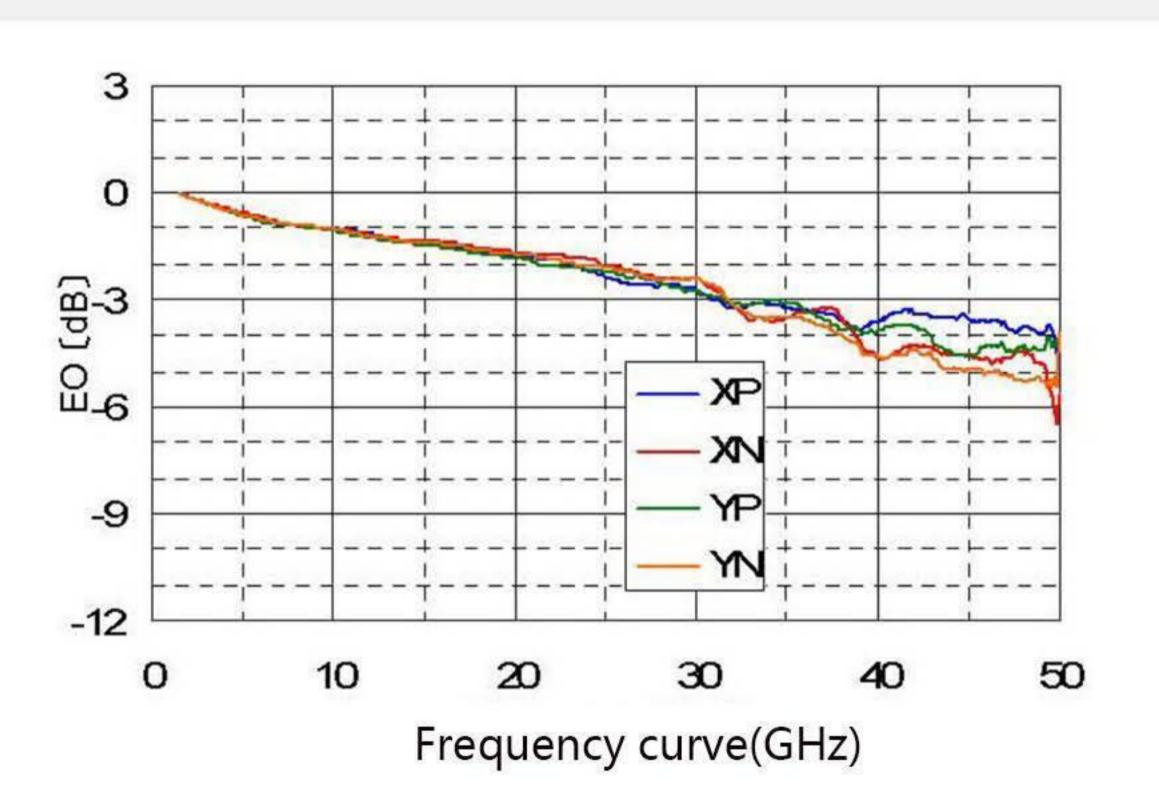
Insulation Material: 92% Al2O3 ceramic or glass

Insulation Resistance: ≤1.0x10-7 A at 100V DC

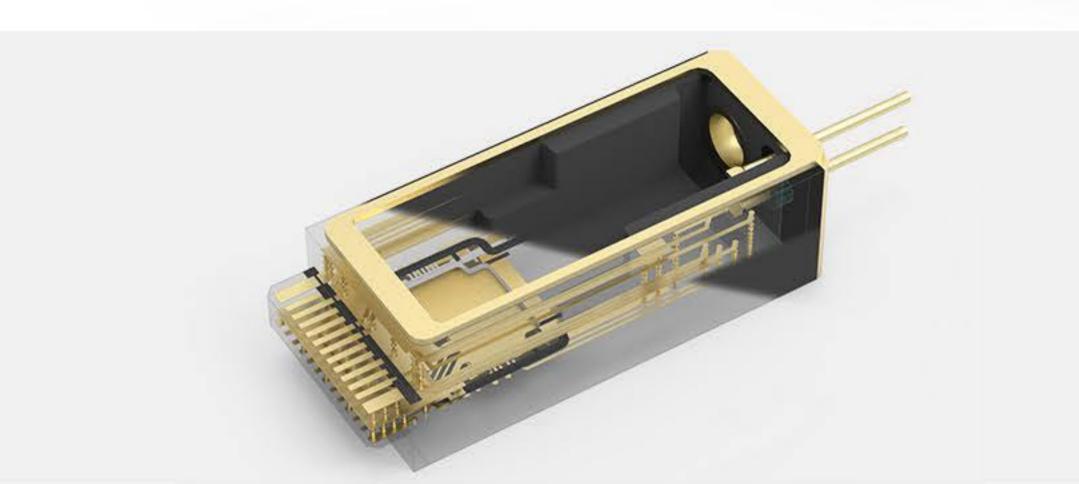
Hermeticity: 1.0x10-8 ccHe/sec. at 1.0atm Differential

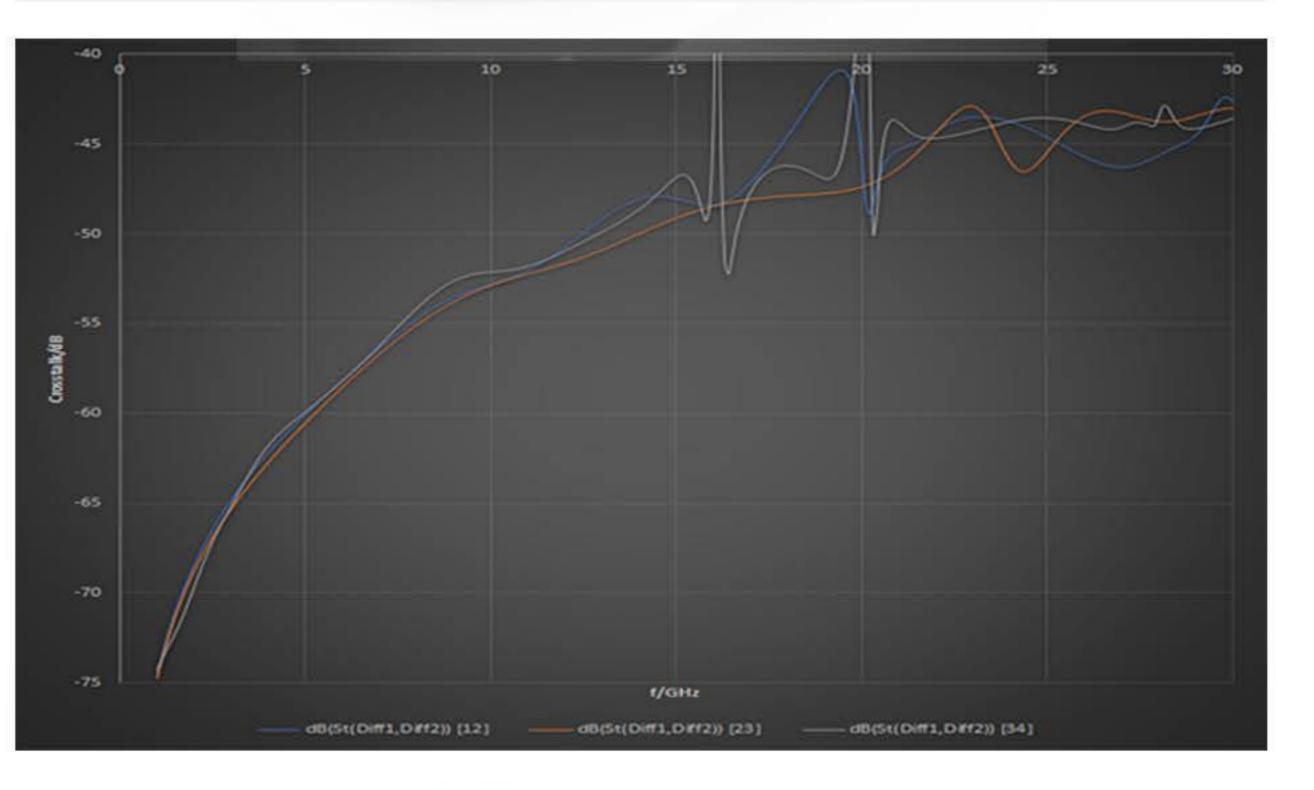










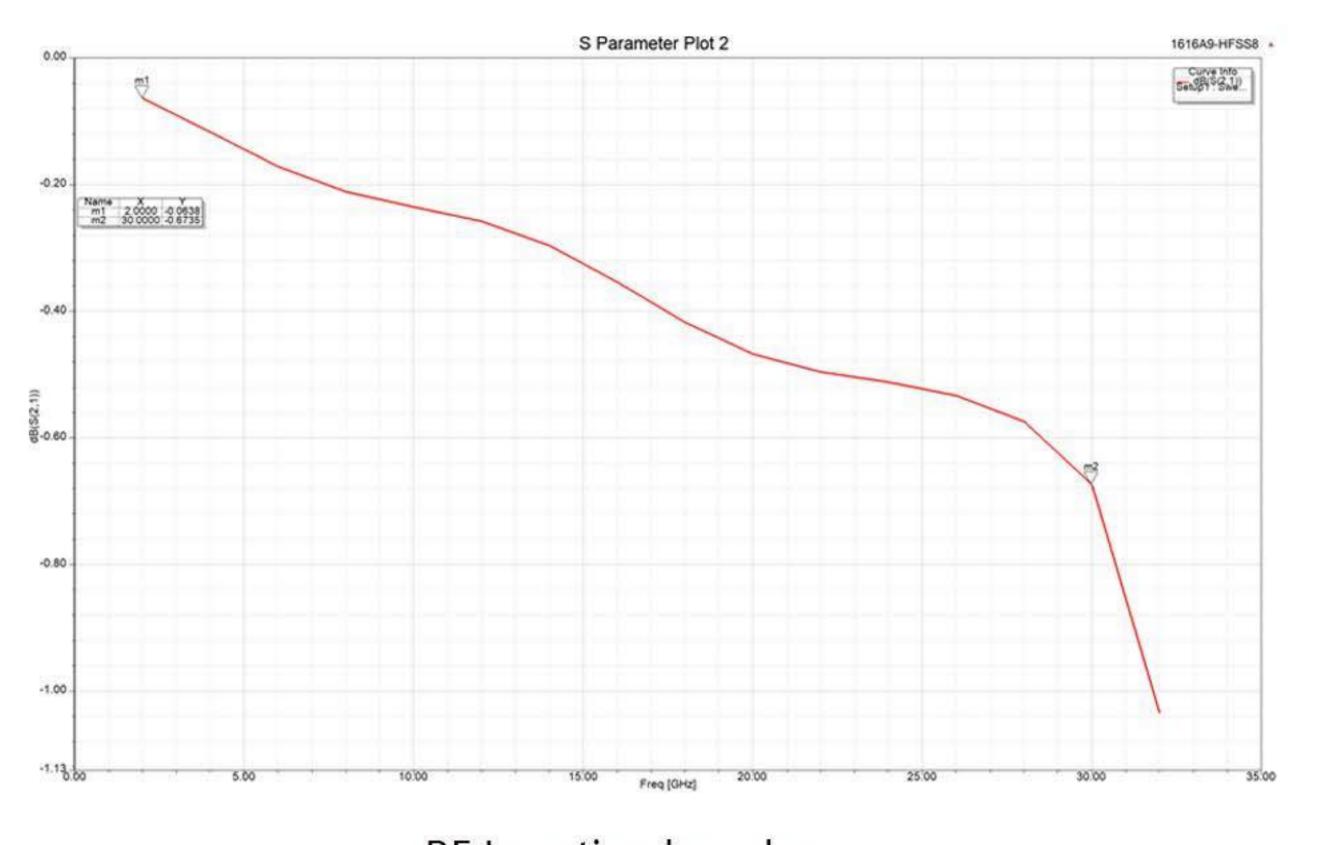


RF Frequency curve

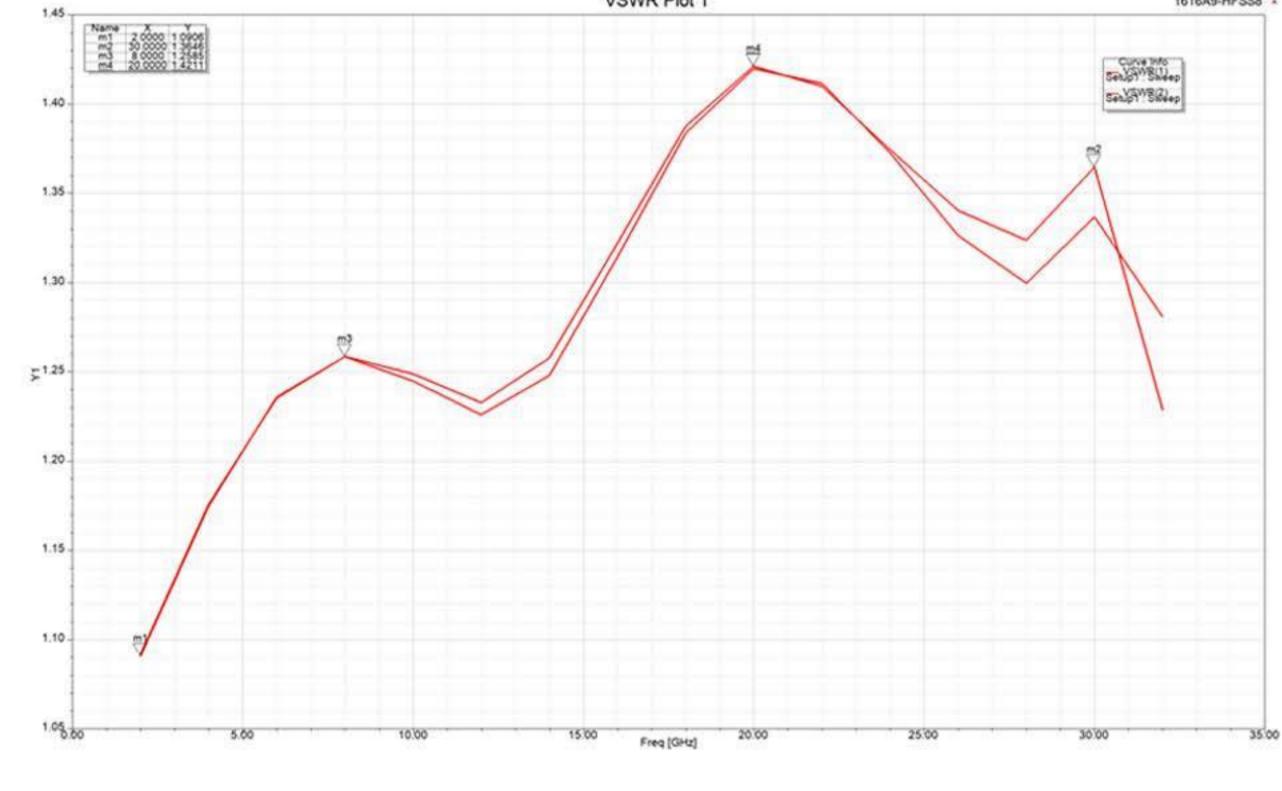
05

RF Module

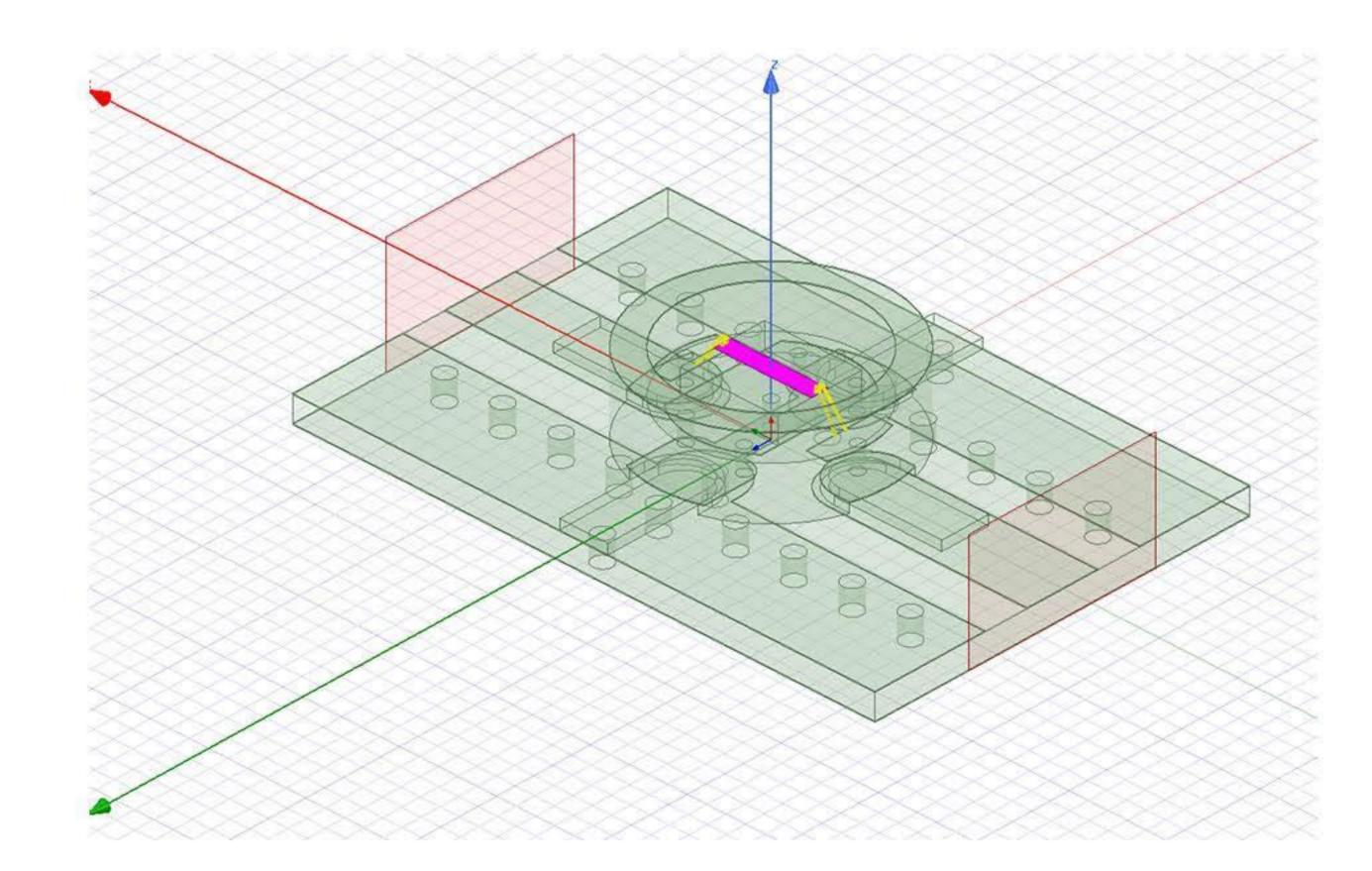
> RF Module Package



RF Insertion loss demo



RF VSWR demo



RF Simulation diagram

Notes

Frame Material: Fe-Co-Ni Alloy

Finishi: Ni+Au

Base Material: WCu, MoCu, CPC or CMC

Lead Material: Fe-Co-Ni Alloy

Small cavity, high performance.

The package usually adopts metal frame high temperature brazing ceramic radio frequency, current feed assembly, metal heat dissipation plate structure.

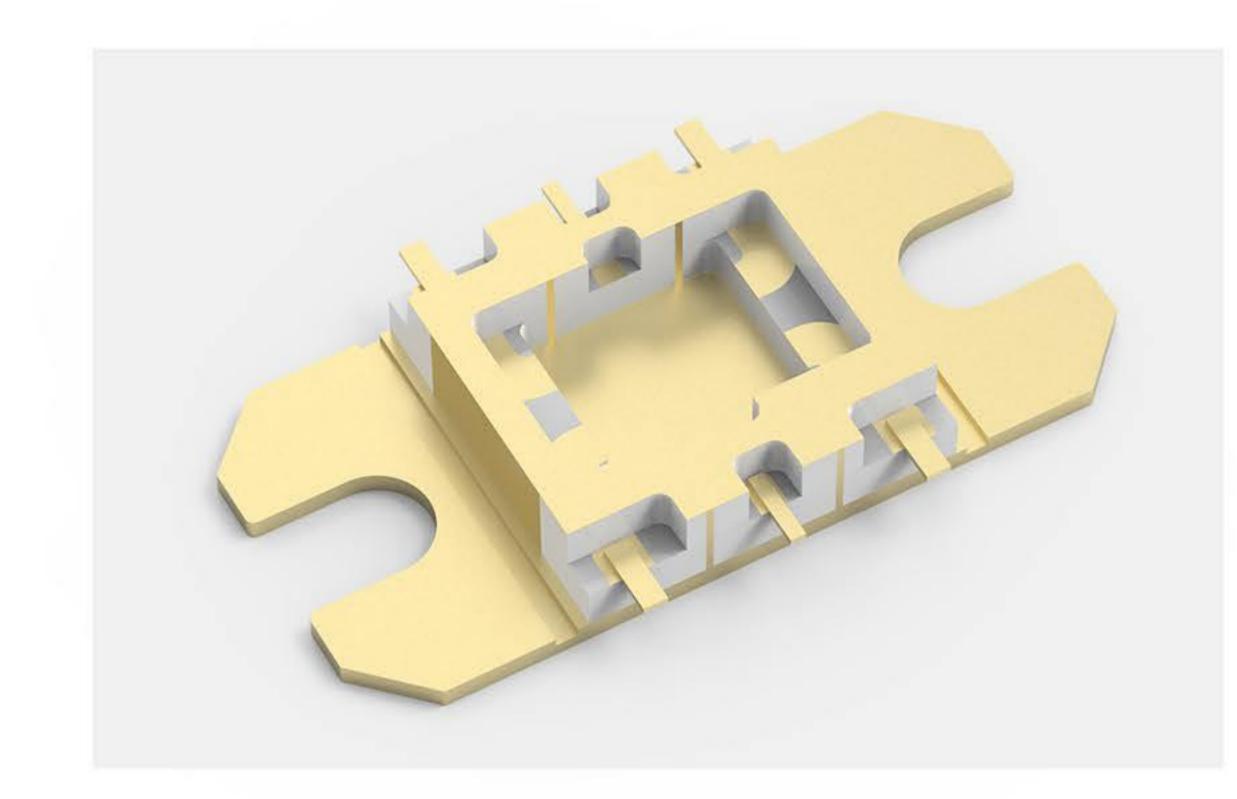
The overall structure, size and number of current load and RF feed pipe pins of this package product can be customized.

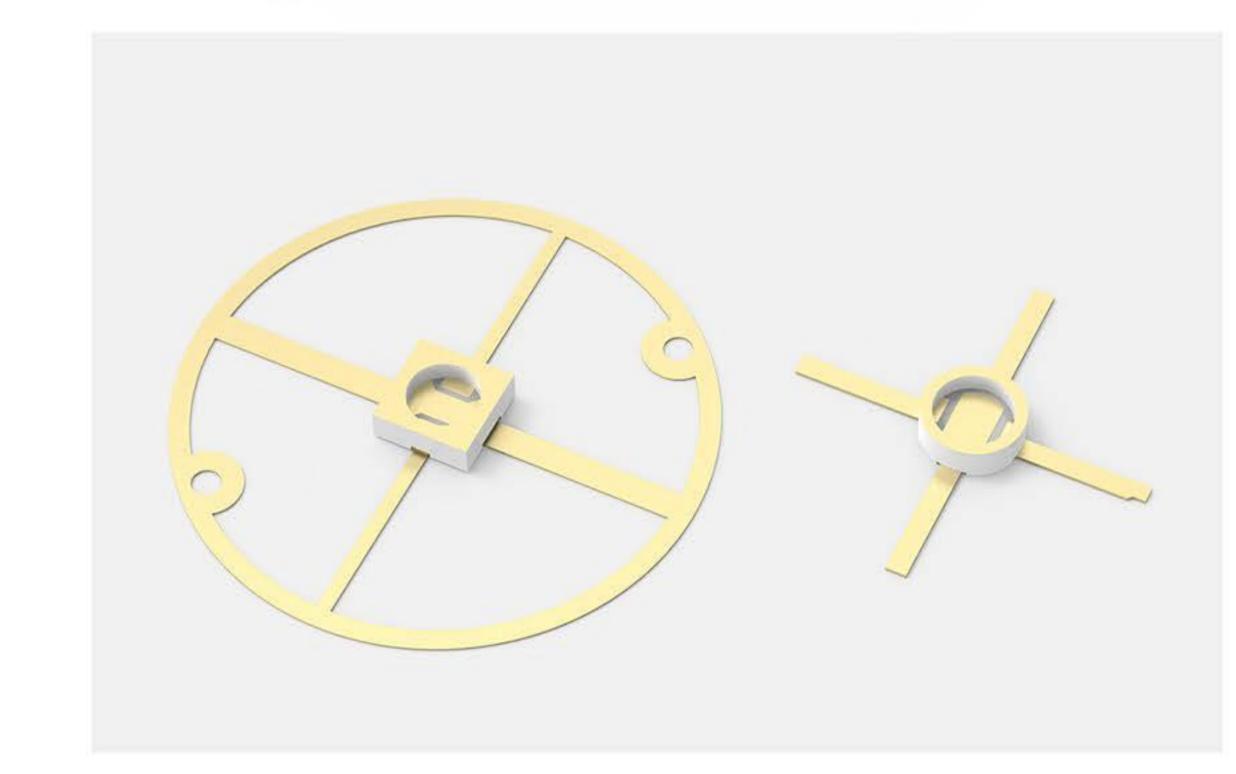
The supporting cover plate adopts the flat cover structure to meet the parallel seam welding process.

The illustrated sample shows a 6pin microwave power module package structure with a sealing surface size of $10 \, \text{mm} \ \text{X}7 \, \text{mm}$.

Feature

- The ceramic process is HTCC, which meets the X band requirements and the highest K band index.
- 2. The heat dissipation base adopts CPC, CMC, WCu, MoCu and other high heat dissipation materials, with the highest thermal conductivity of 260W/m.K. If the Cu-Dia material is used, its thermal conductivity is up to 580W/m.K.





Insulation Material: Al2O3 Ceramic

Insulation Resistance: ≤1.0x10-7 A at 100V DC

Hermeticity: 1.0x10-8 ccHe/sec. at 1.0atm Differential

RF Power Module Package

Low cost, high power

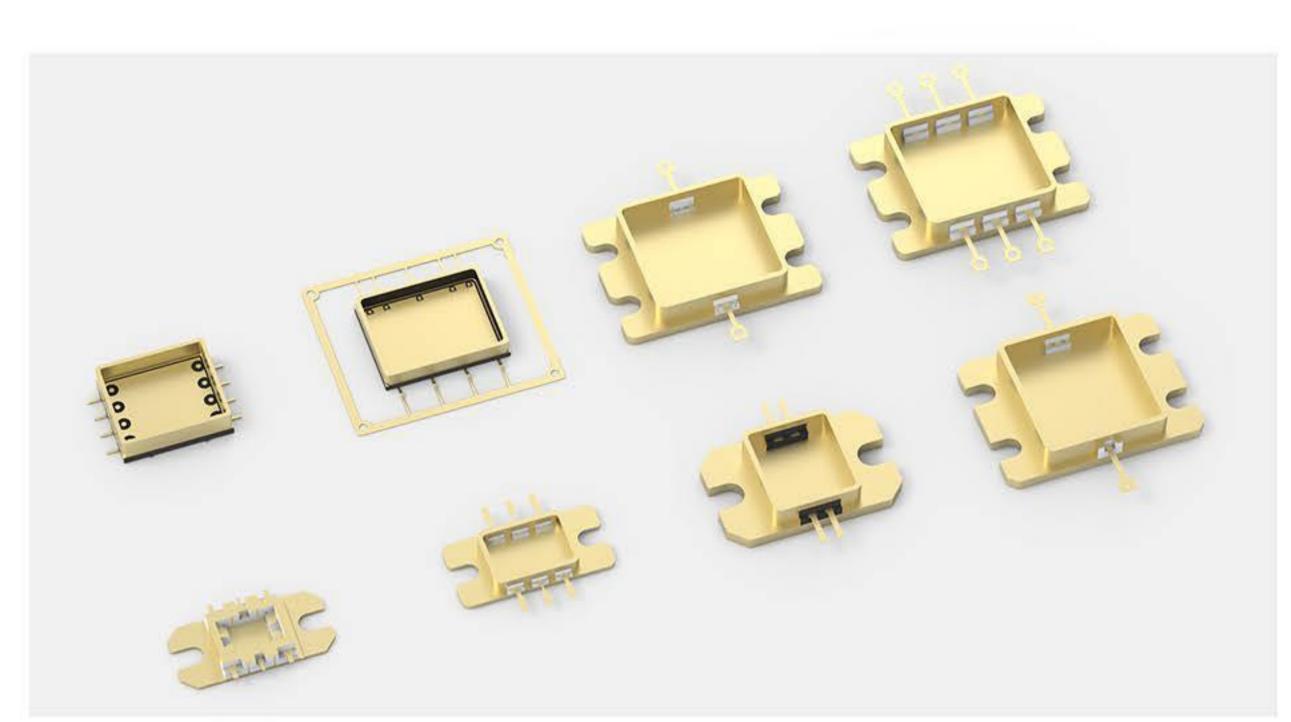
The package usually adopts metal frame high temperature brazing ceramic radio frequency feed component, metal heat dissipation plate structure.

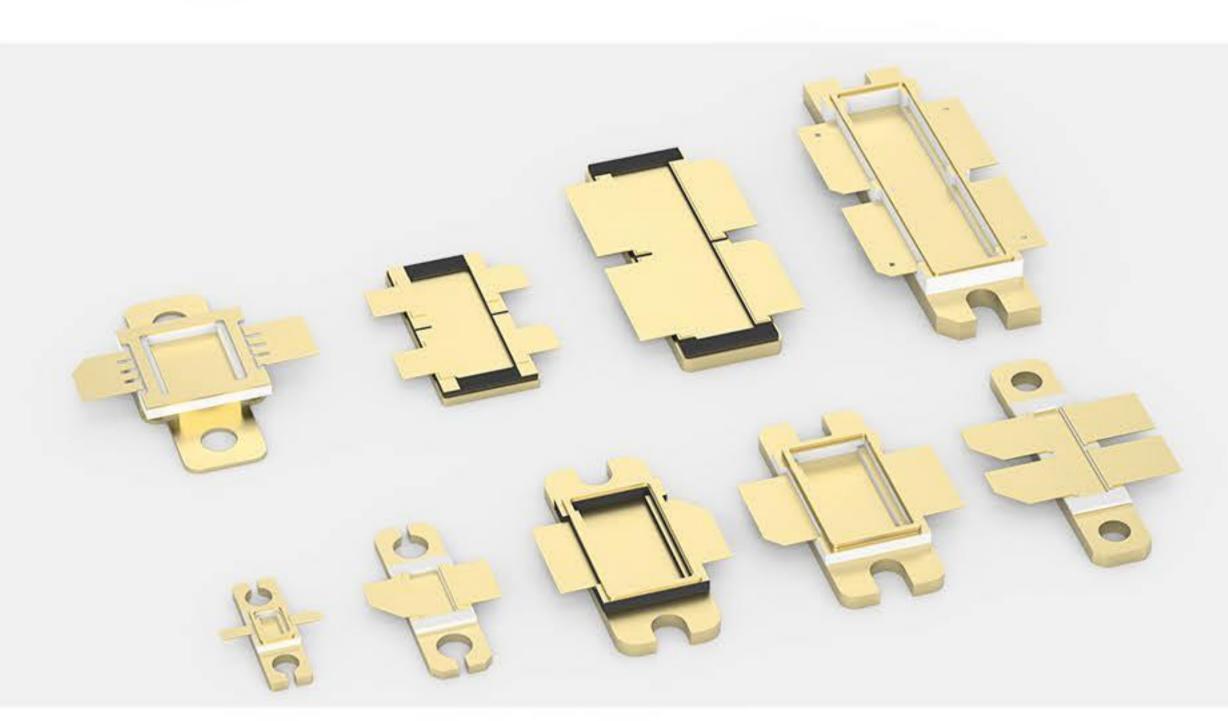
The shape, structure and size and number of RF feed pins can be customized. The illustrated sample shows the standard packaging structure of 2pin RF power transistor, and the sealing surface size is 16 mm X16 mm.

Feature

- ▶ 1. The package RF feed pass adopts HTCC ceramic process, which can meet the C band requirements and the highest X band index.
- > 2. The heat dissipation base adopts CPC, CMC, tungsten, copper, molybdenum, copper and other high heat dissipation materials, with the highest thermal conductivity of 260W/m.K.

If the Cu-Dia material is used, its thermal conductivity is up to 580W/m.K.





Notes

Frame Material: Fe-Co-Ni Alloy

Finishi: Ni+Au

Base Material: WCu, MoCu, CPC or CMC

Lead Material: Fe-Co-Ni Alloy

Insulation Material: Al2O3 Ceramic

Insulation Resistance: ≤1.0x10-7 A at 100V DC

Hermeticity: 1.0x10-8 ccHe/sec. at 1.0atm Differential

Power Chip Package

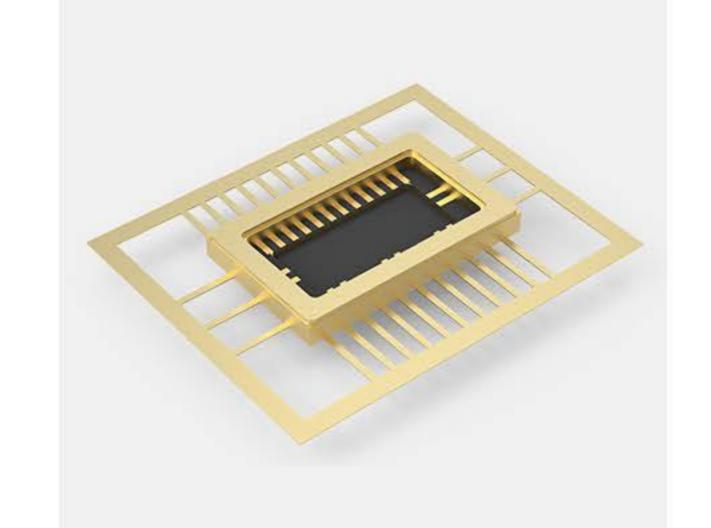
Custom metal seal frame.

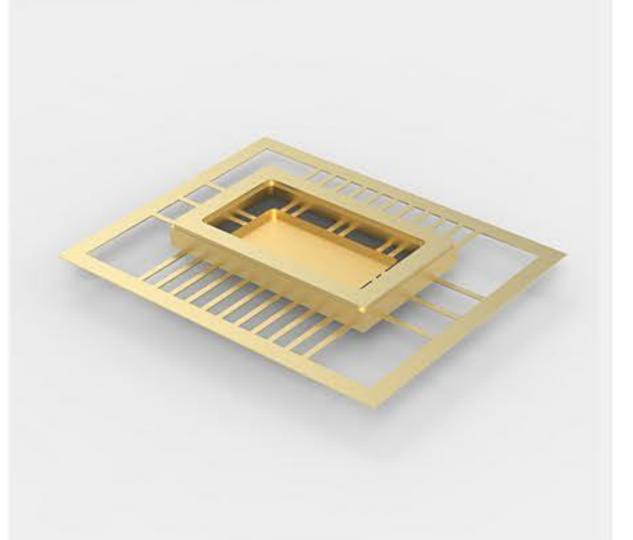
The package design usually adopts ceramic ring frame high temperature brazing kovar alloy metal sealing ring, metal heat dissipation bottom plate structure, shape structure, size and feed pipe foot number can be customized. This kind of packaging package product adopts a stable and reliable high-temperature brazing integration process, which can meet the requirements of rear channel micro-assembly and

parallel seam welding process. The illustrated sample shows a 4-side 28pin power chip package structure with a sealing surface size of 15 mm X9 mm.

Feature

1. The heat dissipation base usually adopts kovar alloy material, or higher performance heat dissipation material according to the actual power dissipation demand.





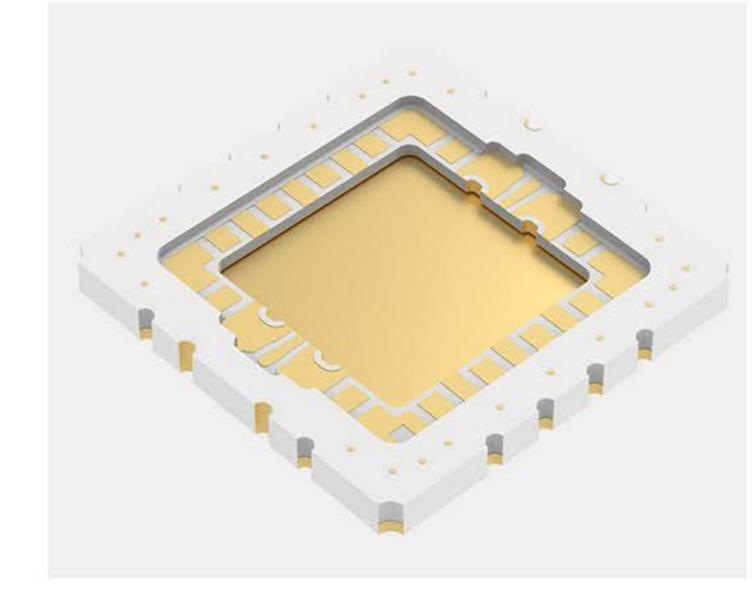
Notes

Seal Frame Material: Fe-Co-Ni Alloy

Finishi: Ni+Au

Base Material: Kovar, WCu, MoCu, CPC or CMC

Lead Material: Fe-Co-Ni Alloy



07

HIC Package

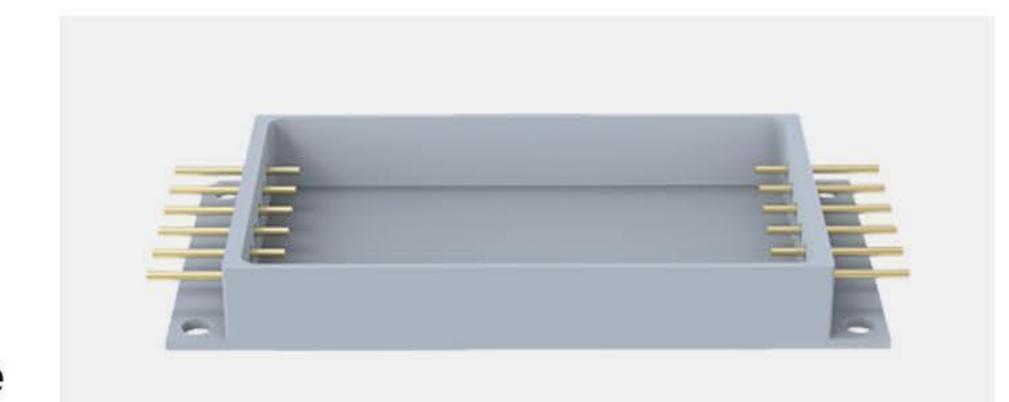
Flat DC/DC Power Package

High load current, high withstand voltage.

The power supply package is usually made of low-cost steel material, and it can also be made of kovar materials under special requirements. Packaging package products use a stable and reliable pressure type glass melt sealing process. Supporting step etched cover plate meets the requirements of parallel seam welding, and the cover plate can be customized and strengthened according to user needs. The illustrated sample uses 5.08 mm joint side to lead out the copper core composite lead, which can meet the requirements of 10A large load flow.



- > 1. The package feed-through structure can be customized according to the actual needs.
- > 2. The coating of the package is usually lead gold plating, package and cover plate nickel plating, which can meet the 24H salt spray resistance requirements.





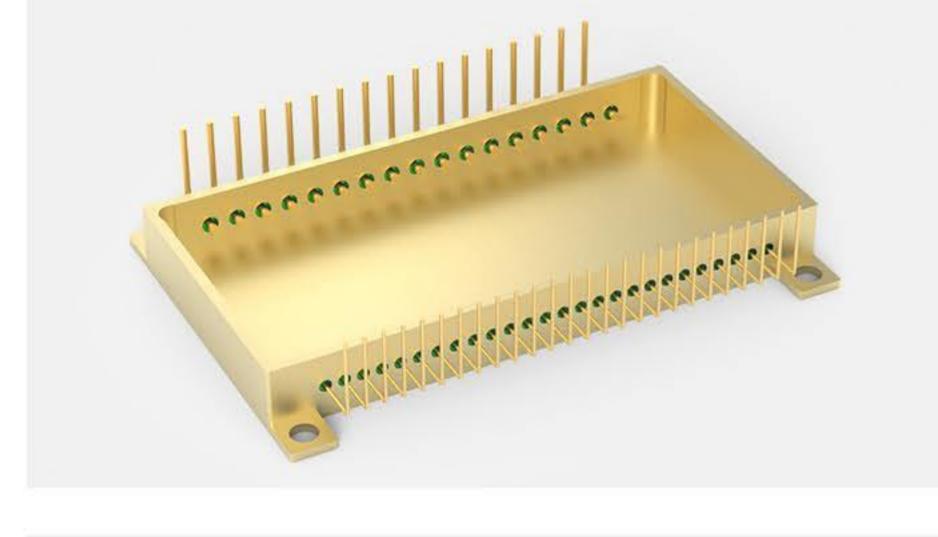
Wide Amplifier Module Package

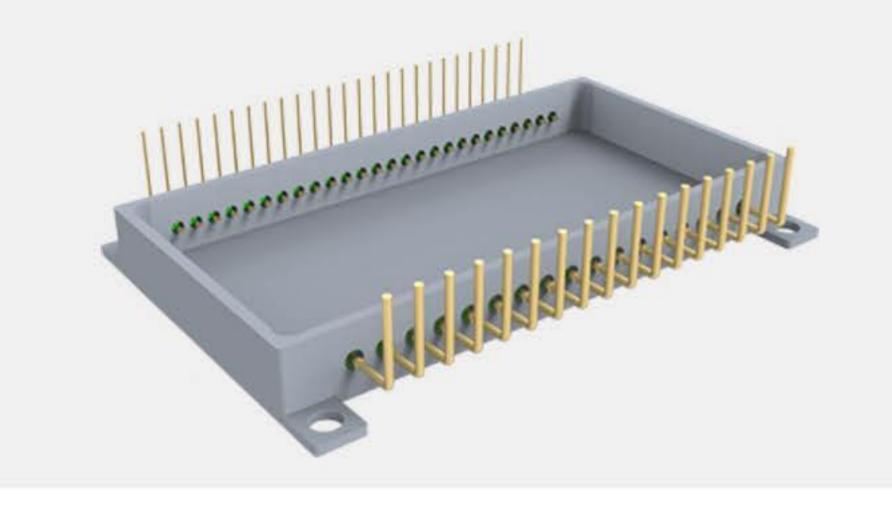
Both high-density feedthrough and high load current.

The package is usually made of kovar alloy material, but it can also use 10 # steel and other materials. Packaging package products adopt a stable and reliable matching type of glass melt sealing process. Supporting step etched cover plate meets the requirements of parallel seam welding, and the cover plate can be customized and strengthened according to user needs. The illustrated sample shows the combination of 3.81mm pitch diameter 1.2mm lead and 2.54mm pitch 0.7mm lead.



- Tor variable section lead to feed through the structure, kovar copper-clad lead is used through the wall, and the external lead uses OFC lead, which improves the current load performance.
- > 2. The base can be embedded in MoCu, WCu and other high heat dissipation materials, the highest thermal conductivity of 260W/m.K.





Double Row DC/DC Power Package

Stable and reliable glass sealing process.

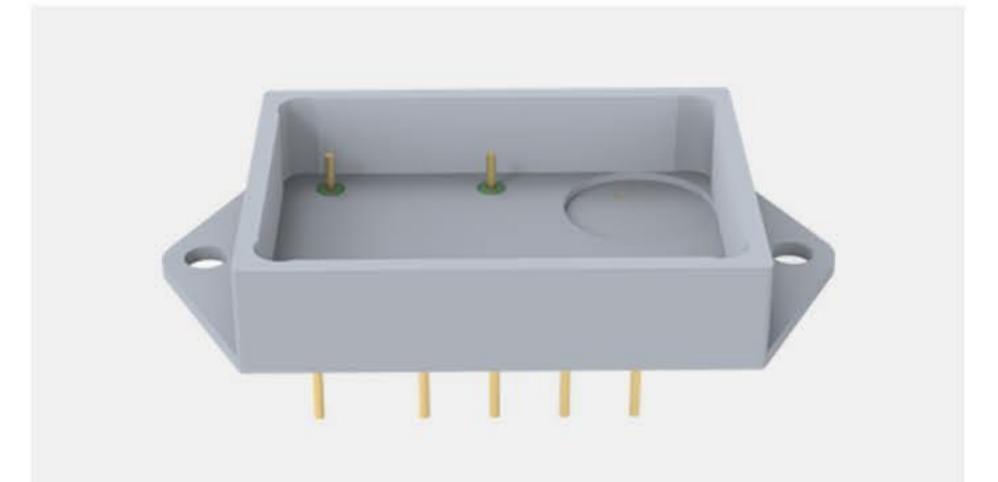
The power supply package is usually made of low-cost steel material, and it can also be made of kovar alloy materials under special requirements.

This type of packaging package products use stable and reliable pressure type glass melt sealing or ceramic insulator brazing process.



- > 1. The package feed-through structure can be customized according to the actual needs
- 2. The coating of the package is usually lead gold plating, package and cover plate nickel plating, which can meet the 24H salt spray resistance requirements.





Axft Angle Converter Package

High density feed through structure.

The package is usually made of low-cost steel material, and it can also be made of kovar alloy materials under special requirements.

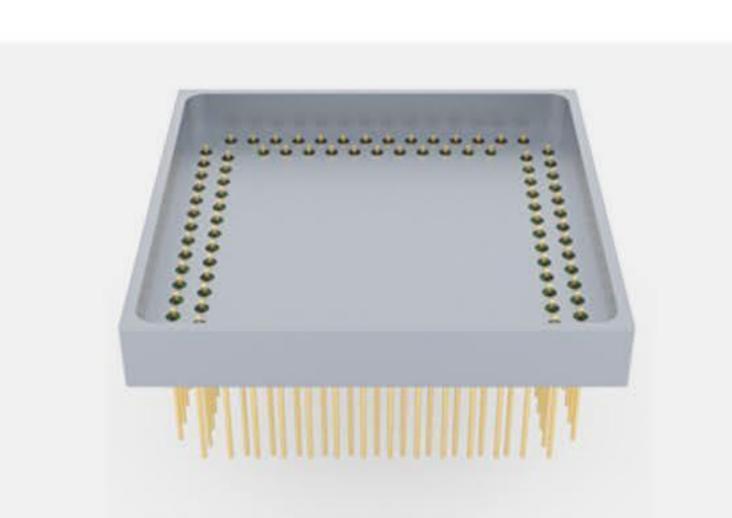
This type of packaging package products use a stable and reliable pressure type glass melt sealing process.

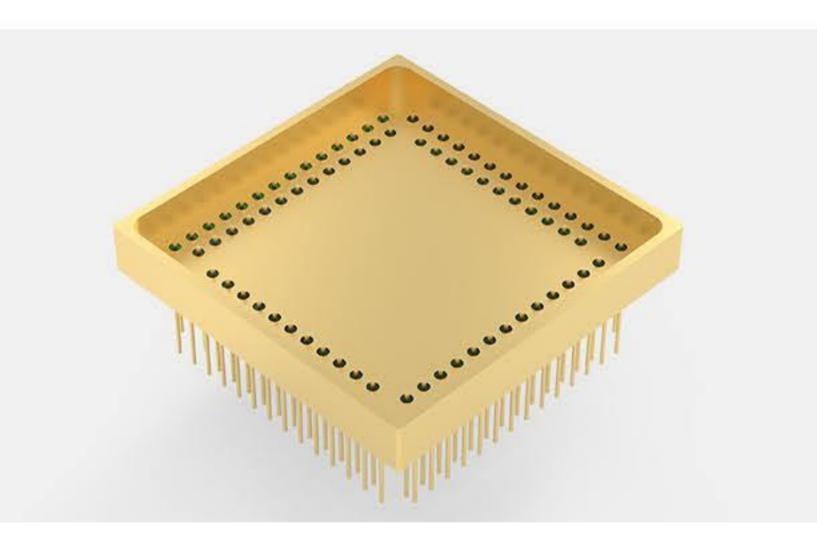
Supporting step etched lid meets the requirements of parallel seam welding, and the cover plate can be customized according to user needs.

The illustrated sample shows a pitch of 1.27mm and a number of 104.

Feature

1. High reliability and high density double-column lead arrangement.





Loading Current of Leads with Different Diameters

Specifications	Material	Max Current (A)
700 AE	4J29	1.0
φ0.45	4J50	1.0
φ0.64	Cu core 4J50	4.0
φ0.76	Cu core 4J50	6.0
φ0.80	4J50	3.5
	4J29	5.0
φ1.00	4J50	5.5
	Cu core 4J50	10.0
/o1 50	4J50	11.0
φ1.50	Cu core 4J50	20.0
φ2.00	Cu core 4J50	30.0

Notes

Frame Material: Steel, Kovar, AlSi, WCu

Insulation Material: Glass

Insulation Resistance: ≤1.0x10-7 A at 100V DC

Hermeticity: 1.0x10-8 ccHe/sec. at 1.0atm Differential

Industrial Laser

Pump Laser Package

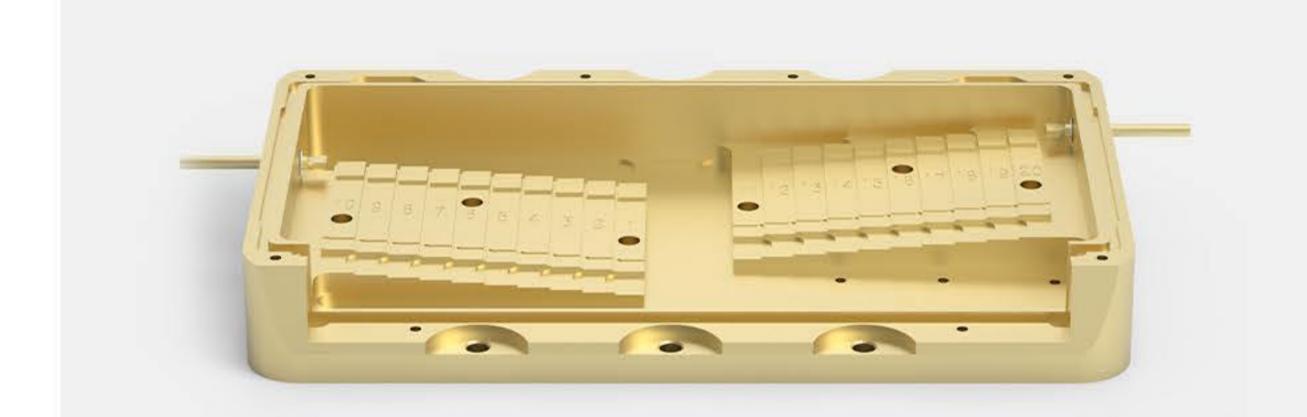
Package micro-deformation is controllable.

Pump source laser package design usually uses metal ring frame directly fused seal glass feed joint, bonding or high temperature brazing anaerobic copper heat dissipation plate structure. Under the air tightness requirements, the ring frame and the heat dissipation bottom plate need to be soldered. This kind of packaging package products have relatively high requirements for package integrated brazing micro-deformation and gilding process control.

Supporting large size cover plate adopts reinforced structure to meet the requirements of cover stress.







Feature

- > 1. When the frame and base of larger cavity are brazed, the air tightness requirement of large size cavity is high and the flatness requirement of bottom plate is high
- > 2. Package feeding through adopts the glass direct melting sealing process to meet the needs of ultra-high heat adaptation.

 If necessary, a ceramic bead brazing structure may be used.
- > 3. The coating of the package can be adjusted according to the characteristics of the user's micro-assembly process, which can meet the welding process of AuSn, gold germanium and different atmospheric conditions.

Power Laser Package

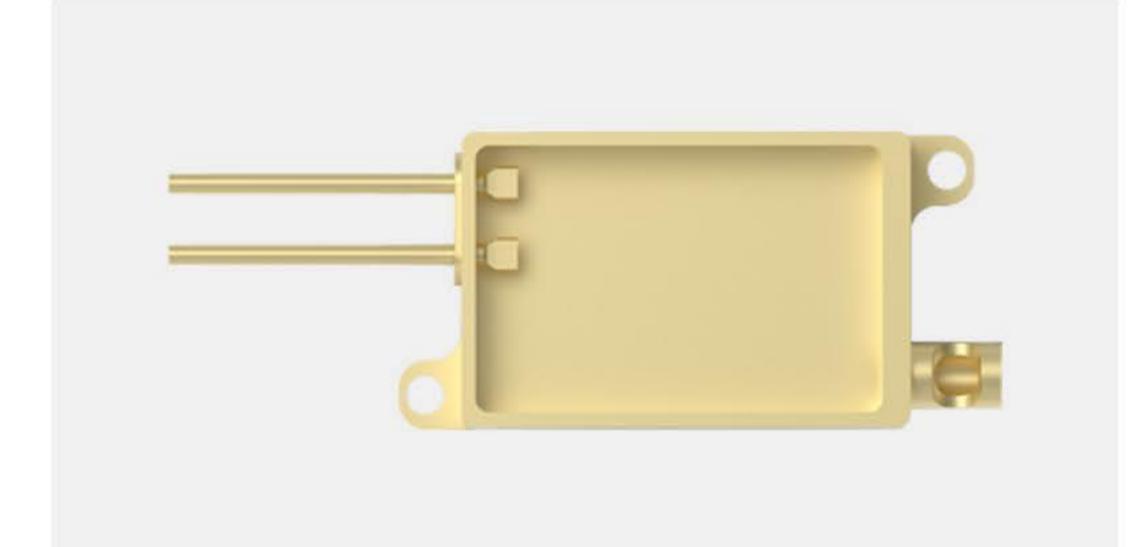
Cost control is the key.

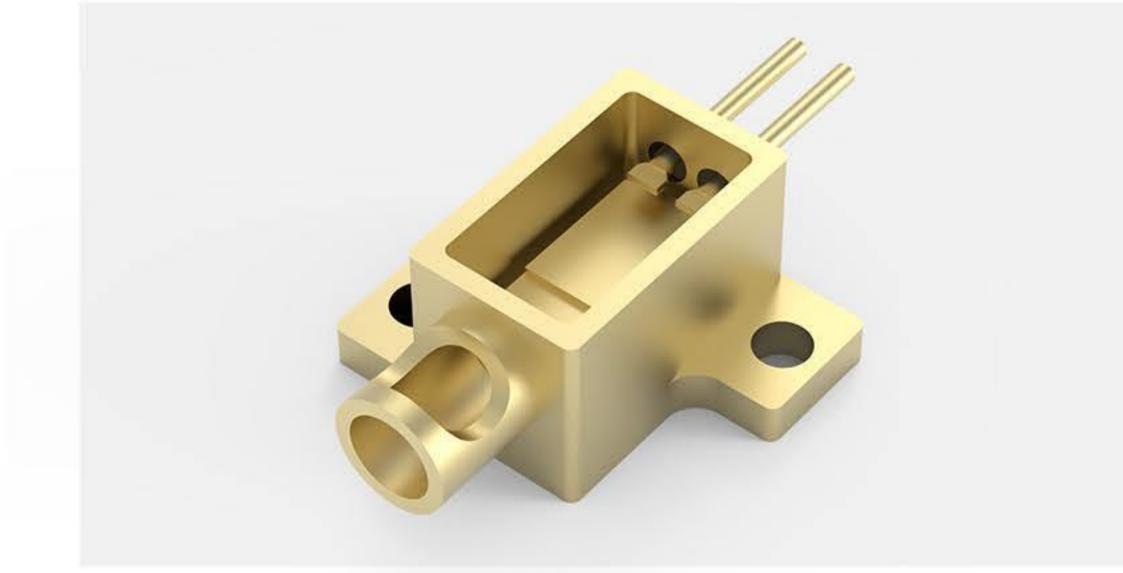
The package design of the power laser usually adopts anaerobic copper package base glass melt seal feed assembly, high temperature brazing fiber pipe, and kovar sealing ring structure. This kind of packaging package products have high cost requirements, and the precision machining process and package gold plating cost control are the key.

Feature

> 1. Package feeding through adopts glass direct melting sealing process to meet the needs of ultra-high heat adaptation.

If necessary, a ceramic bead brazing structure may be used.





Notes

- Frame Material: OFC、Fe-Co-Ni Alloy
- Finishi: Ni+Au
- Base Material: OFC, Cu-Dia
- Lead Material: Fe-Co-Ni Alloy, OFC

- Insulation Material: Al2O3 Ceramic、Glass
- Insulation Resistance: ≤1.0x10-7 A at 100V DC
- Hermeticity: 1.0x10-8 ccHe/sec. at 1.0atm Differential

Sensors

► IR Sensor Package

Achieve large size window reliability brazing.

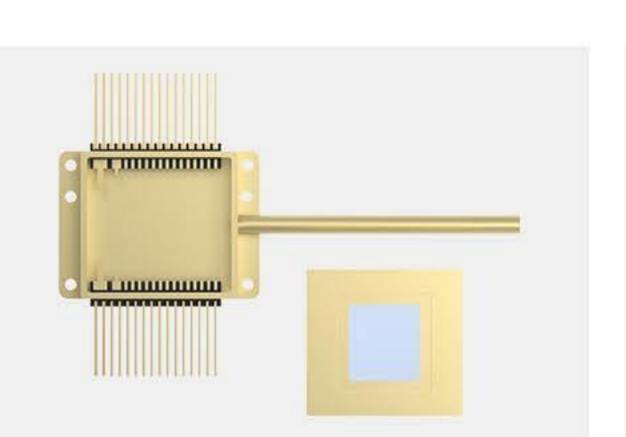
The package design usually uses metal ring frame embedded ceramic feed through components, brazed vacuum catheter, metal heat dissipation bottom plate structure, supporting germanium window or sapphire window cover plate. Package products meet the requirements of hermeticity and thermal insulation packaging through the complex cavity integrated with high precision mold.

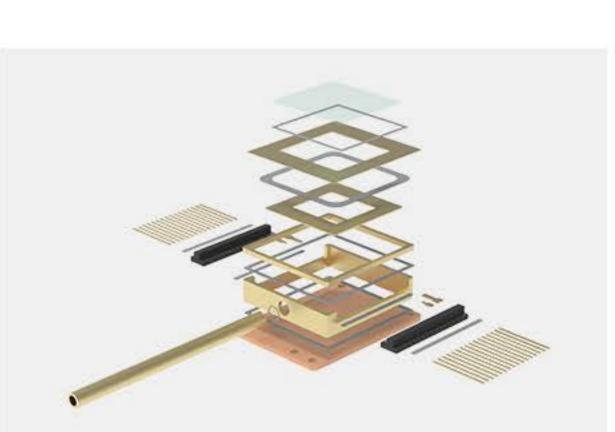
Synchronous supporting of high and reliable light window cover plate, to meet the parallel seam welding process.

Feature

▶ 1. The package feed-through component adopts HTCC high-temperature ceramic design structure, which effectively increases the lead density and air density reliability, and meets the miniaturization needs of the package module.

Under special requirements, the glass melt seal feed through structure can also be used.





No.	Pin Num.	Pitch	Seal Size	Heat Sink
FOFC2524-28	28	0.8	25.0x23.5	4J29
FOFC1713-28	28	0.8	16.5X13.0	WCu15
FOFC2625-32	32	1.27	26.2X25.0	4J29
FOFC2318-36	36	1.0	23.0X18.0	4J29
FOFC2524-40	40	1.27	25.0×23.5	WCu15
FOFC3023-40	40	1.27	30.0X22.5	4J29
FOFC5249-64	64	1.27	52.0X49.0	4J29

Notes

Frame Material: Fe-Co-Ni Alloy

Finishi: Ni+Au

Base Material: WCu, MoCu

Lead Material: Fe-Co-Ni Alloy

Insulation Material: Al2O3 Ceramic

Insulation Resistance: ≤1.0x10-7 A at 100V DC

Hermeticity: 1.0x10-8 ccHe/sec. at 1.0atm Differential

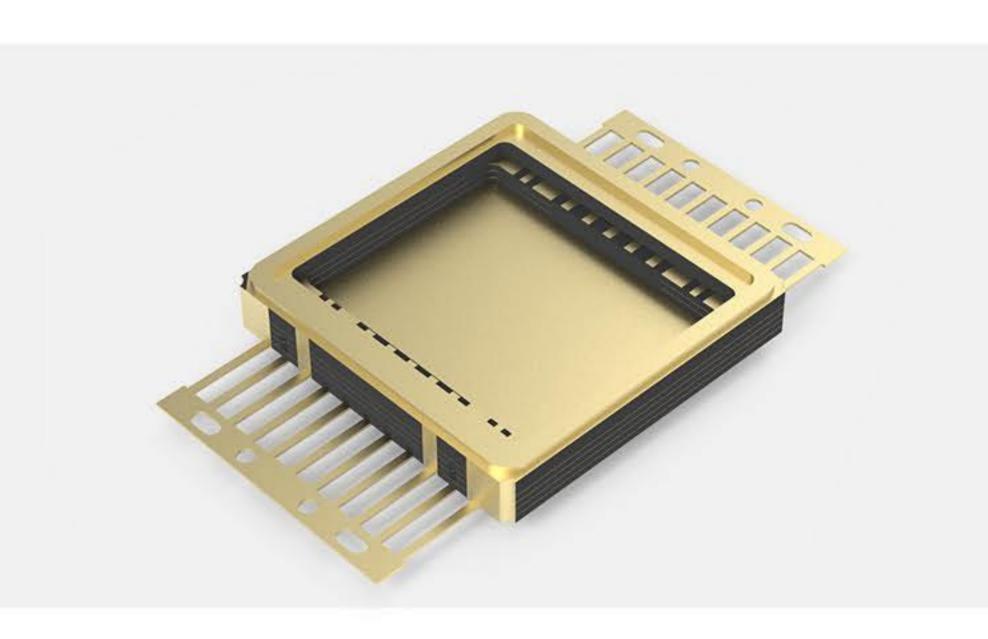
Image Sensor Pacakge

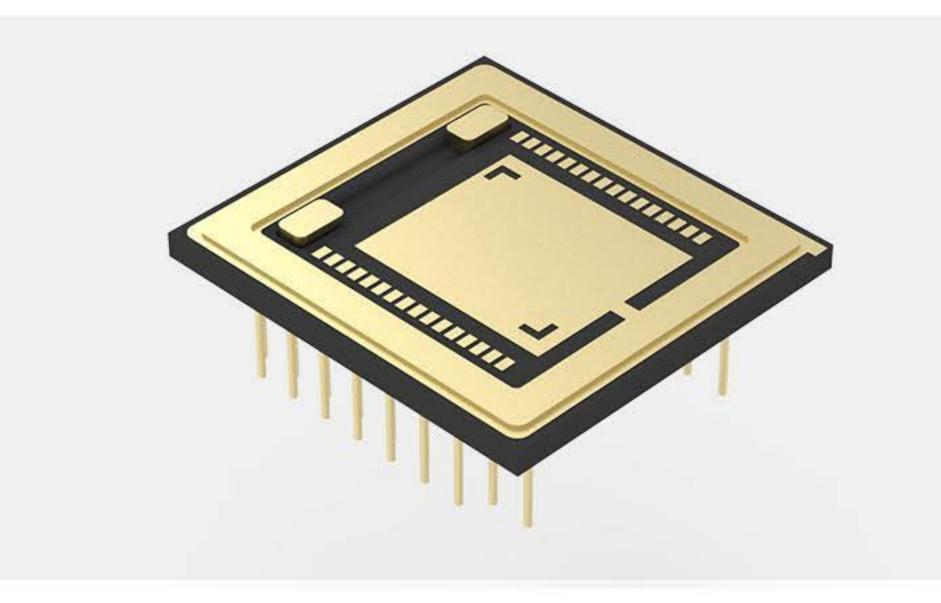
Small size, Thermal insulation, Low cost.

The package is made of ceramic cavity internal brazing metal heat sink, external no wire packaging structure, synchronous matching with high reliable germanium window or sapphire window cover plate. Cover plate sealing can be selected as soft and hard brazing or glass melting sealing process. This kind of ceramic package products meet the requirements of specific indicators, compared with metal package products have more miniaturization, thermal insulation and cost advantages.

Feature

1. Ceramic package can be divided into two structural forms: metal sealing transition ring and ceramic metallization layer direct sealing according to the sealing surface structure.
Generally, small size sealing surface or low cost requires ceramic metallicized layer brazed cover plate design, and large size sealing surface needs to be covered by seal ring.





产品参数

- Frame Material: Al2O3 Ceramic
- Finishi: Ni+Au
- Heat Sink Material: WCu, MoCu
- Lead Material: Fe-Co-Ni Alloy

- Insulation Resistance: ≤1.0x10-7 A at 100V DC
- Hermeticity: 1.0x10-8 ccHe/sec. at 1.0atm Differential

Sensors

Pressure Sensor Package

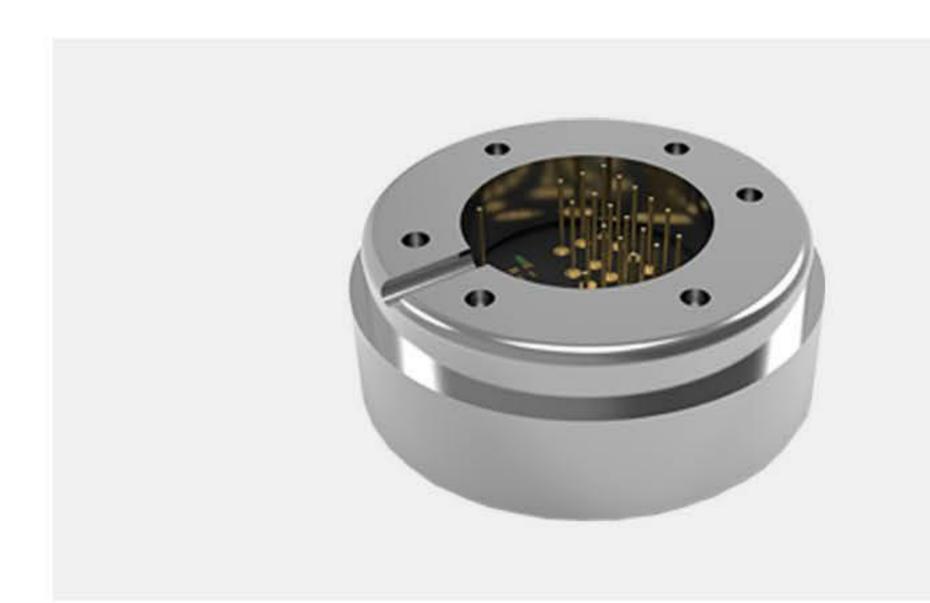
Large cavity, low cost.

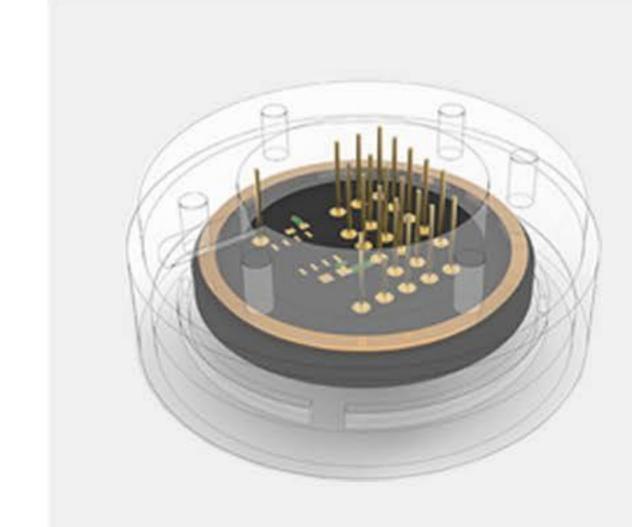
Usually using automotive stainless steel chassis circular array direct feed structure, the shape structure, size and pipe pin number can be customized according to the actual needs of the user. This type of package products use pressure type glass sealing process, can also use pressure resistant ceramic PGA process, can meet the requirements of rear channel micro-assembly and parallel seam welding process.

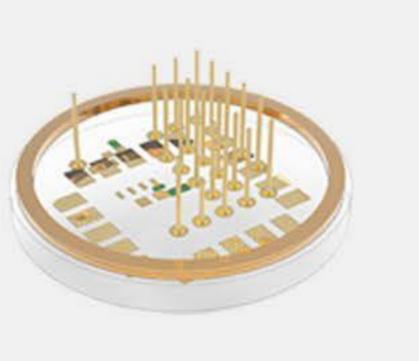
The process structure features are as follows:

Feature

▶ 1. Pressure resistant glass-metal sealing structure, thermal stress coupling analysis to ensure the pressure resistance index, and the bearing pressure is not less than 20MPa; A high-density pressure-resistant structure for PGA ceramics.



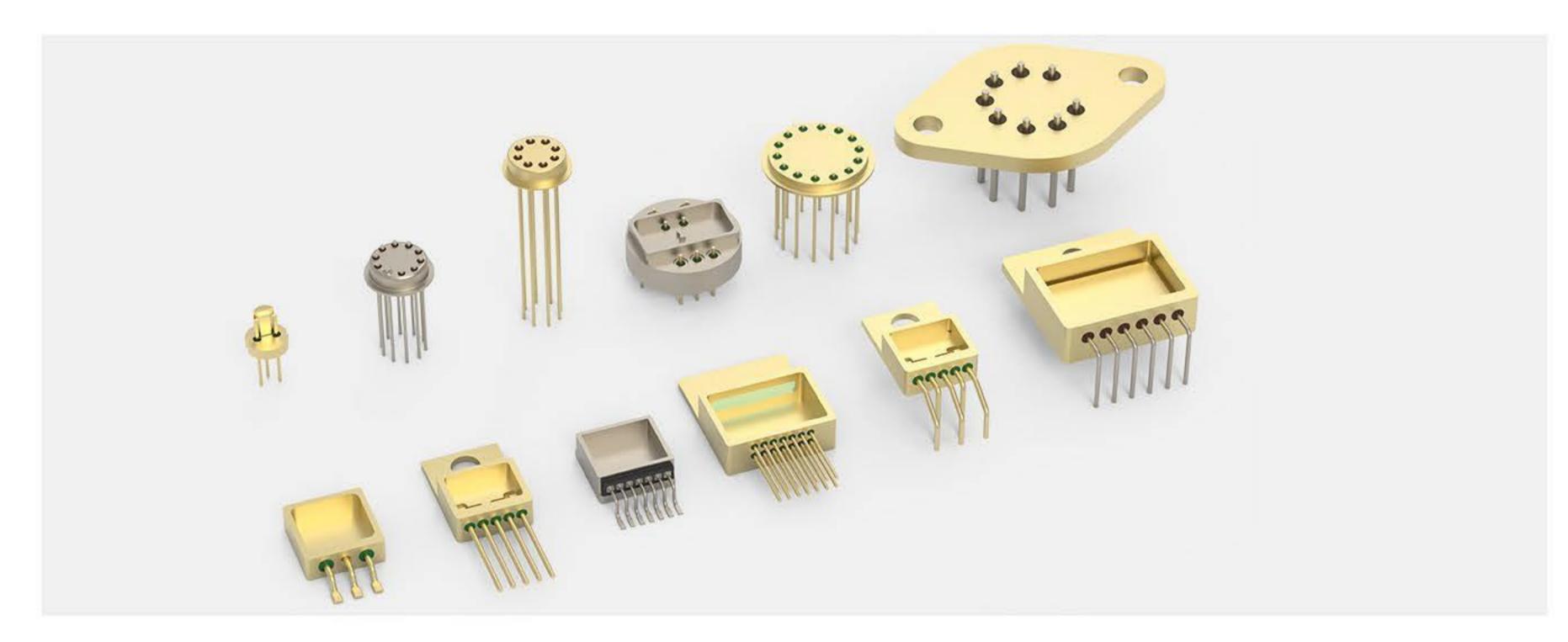


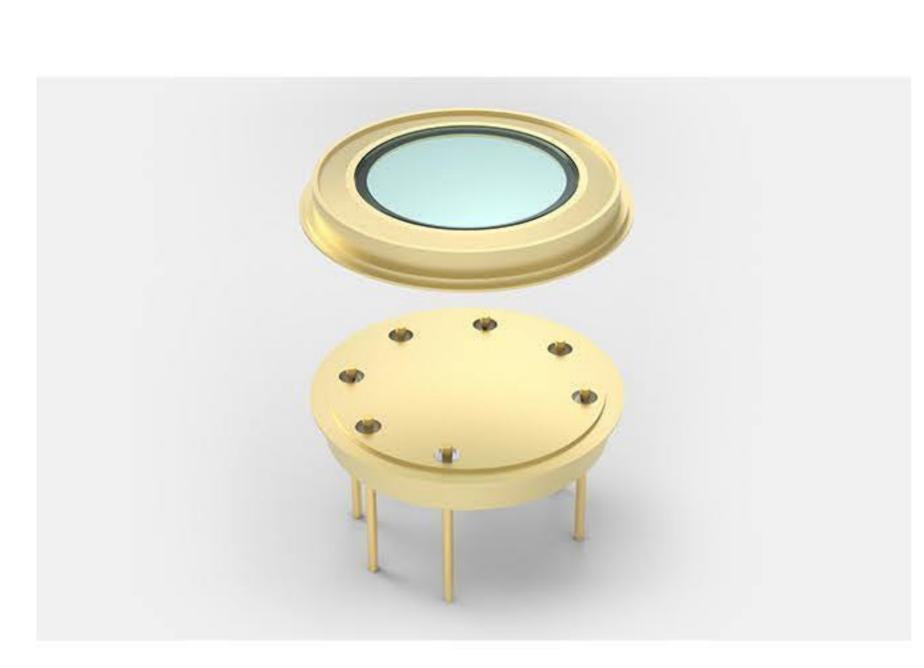


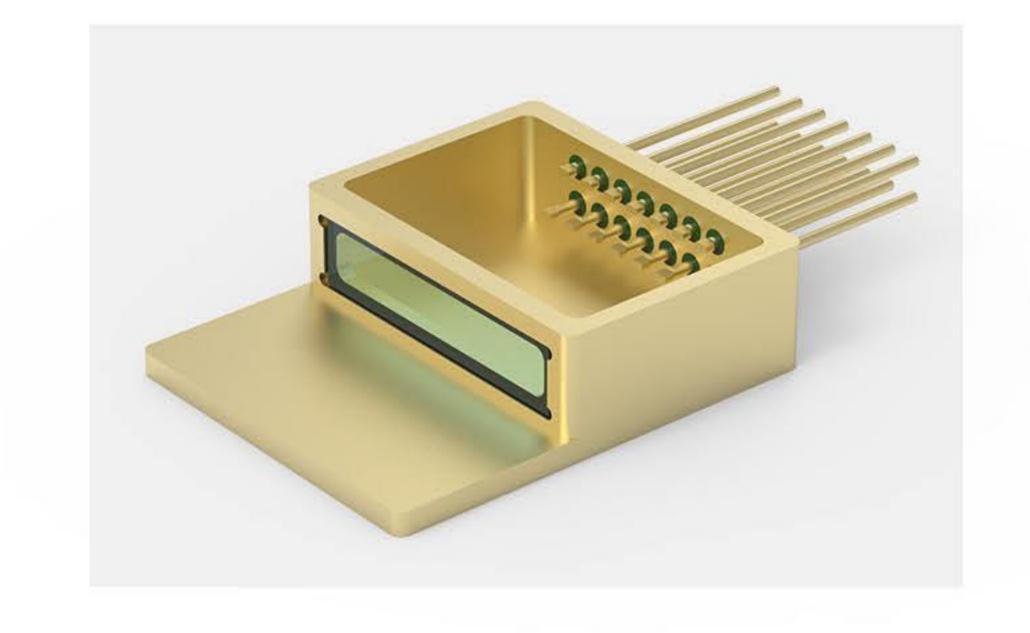
Photoelectric Sensor Package

Ceramic feed through, glass feed through avaliable.

The circular array of kovar alloy chassis is usually used, and the shape structure, size and pin number can be customized according to the actual needs of the user. This type of package products adopt matching glass melt sealing process, which can meet the requirements of laser welding or energy storage welding process, The process structure features are as follows:







Feature

- > 1. The package feed-through component adopts HTCC or glass design structure, which effectively increases the lead density and air density reliability, and meets the miniaturization needs of the package module.
- 2. The cap is welded with high reliability and large diameter light window.

> Terahertz Mirror

Ultra-precision grinding.

The aluminum alloy high precision vehicle and milling composite processing structure, the mirror adopts ultra-precision grinding processing, the mirror penetration film adopts film process, the mirror body adopts anti-salt spray electroplating surface treatment, which can meet the infrared reflection and imaging performance under high-speed swing conditions, and meet the adaptability requirements of humid heat and salt fog environment. The product integrates mechanical, optical, coating and surface treatment and other process disciplines, and its process and technical characteristics are as follows:

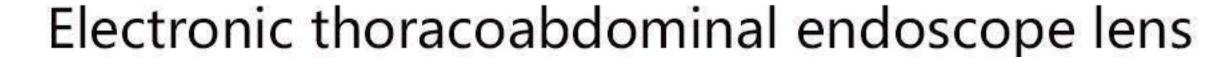


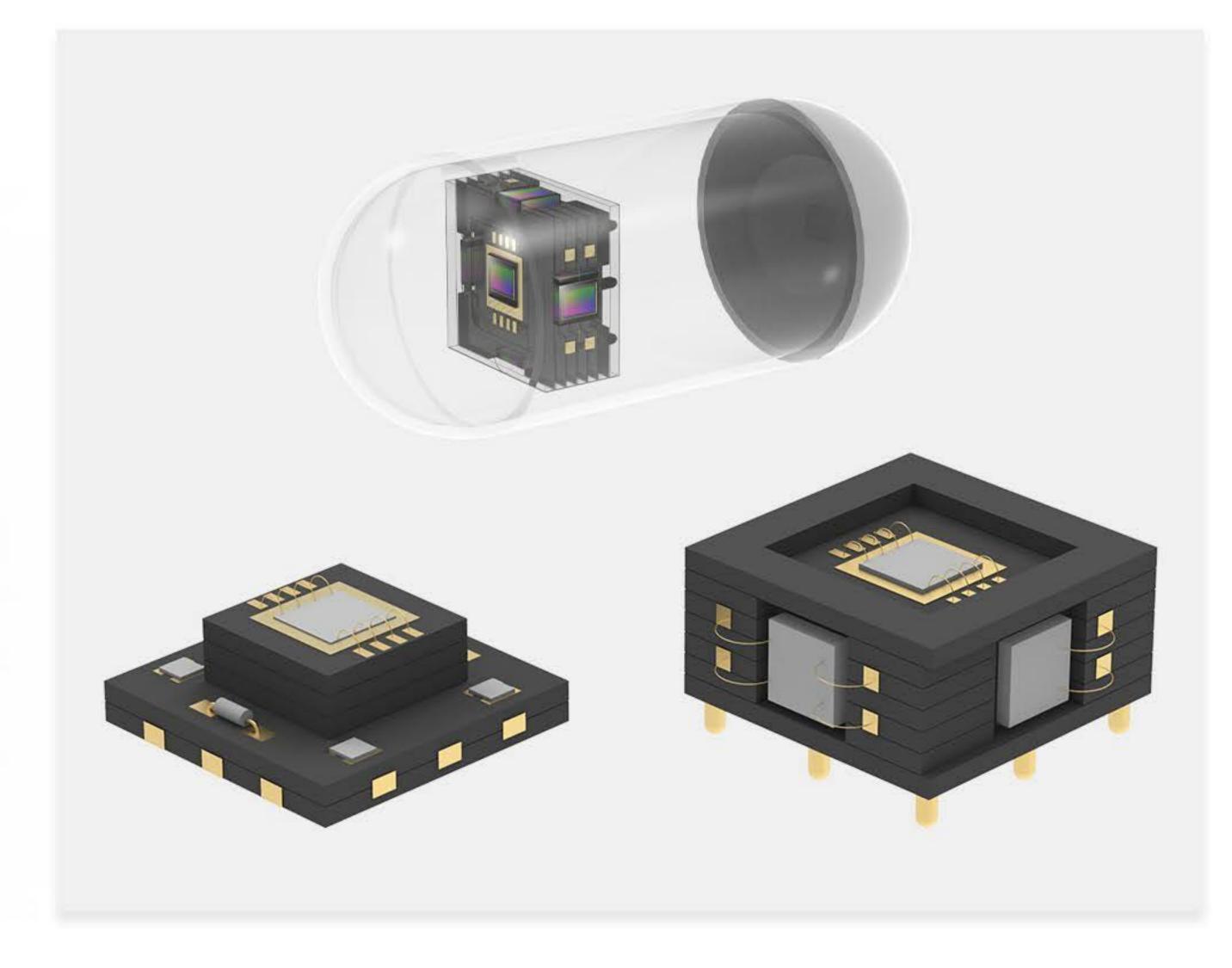
Feature

1. The flatness and surface index of the mirror should meet the requirements of high-precision imaging reflection; The surface treatment of the mirror needs to meet the harsh environment such as anti-salt fog and heat and humidity; The infrared signal reflectivity of the mirror film layer is above 95%.

Medical Electronic





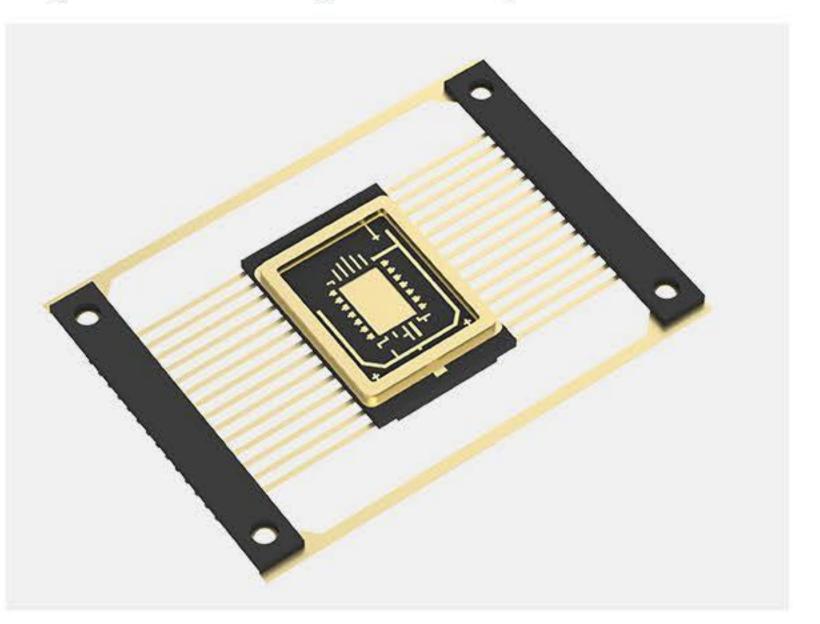


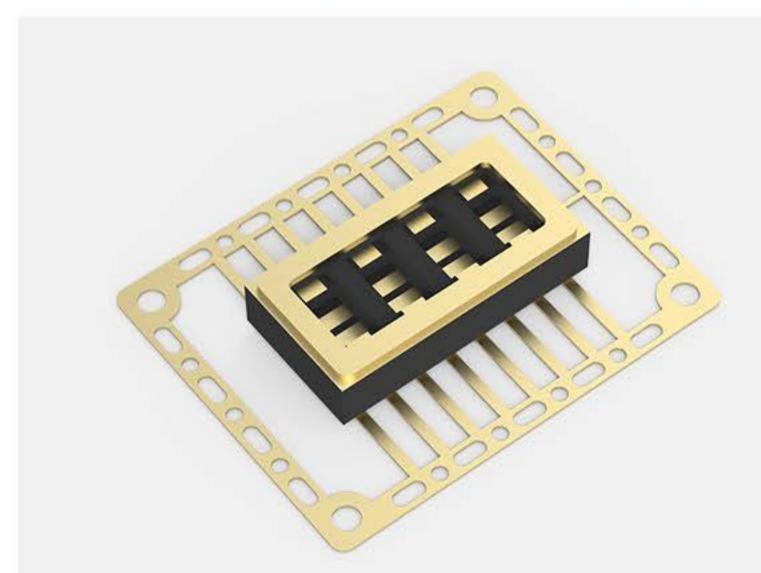
Capsule endoscope CMOS 3D Package

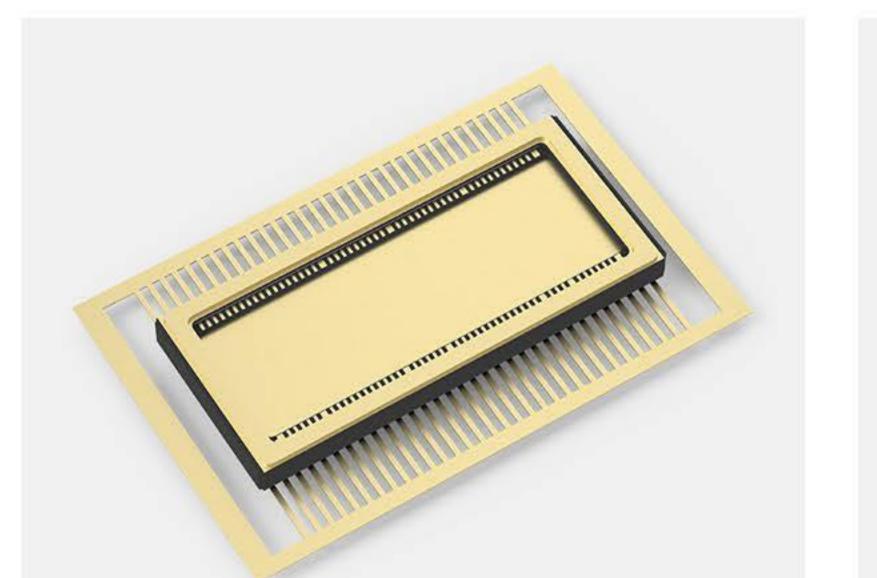
Ceramic package

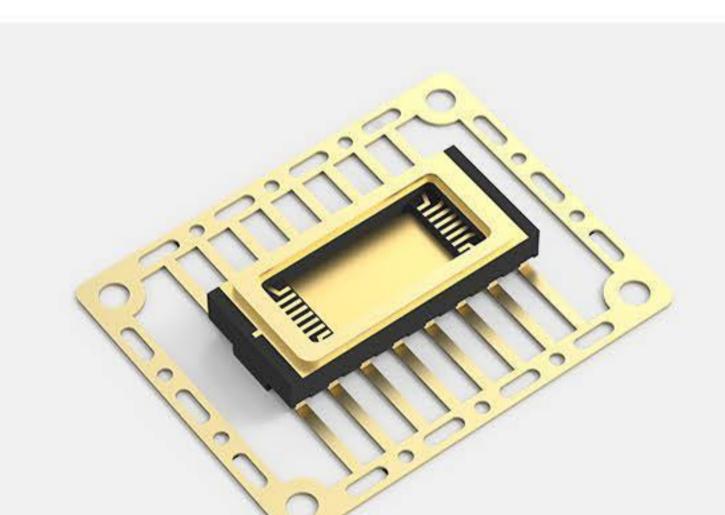
CSOF

Small ceramic package, usually with metal leads from the bottom, suitable for surface mount technology. The sealing size of the shell usually does not exceed 12 * 12mm, and the number of feedthrough is 6-40, which can meet the RF feedthrough requirements of DC~10GHz. It has high reliability, small size, and high feedthrough density, and is suitable for various single chip packaging;





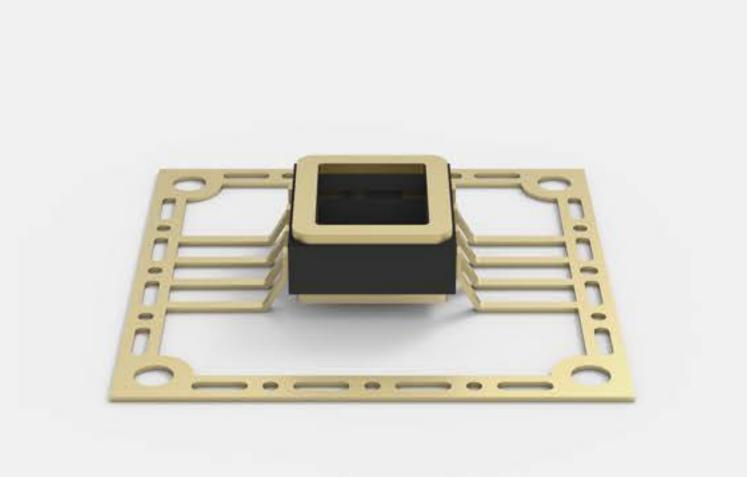


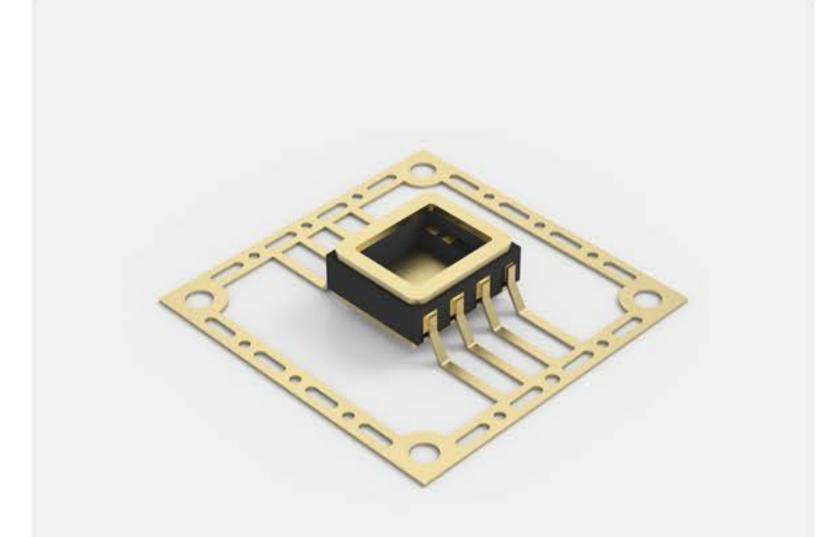


NAME	I/O COUNT	DIE CAV mm	Seal Type	Heat Sink
FPC0504-08	8	3.0X3.0	Parallel	N
FPC0504-08a	8	3.0X3.8	Parallel	N
FPC0604-08	8	3.0X3.0	Parallel	N
FPC0505-08	8	3.5X3.5	Parallel	N
FPC0705-08	8	3.6X1.5	AuSn Solde	r Y
FPC0806-10	10	5.6X3.2	Parallel	Υ
FPC0904-16	16	6.2X3.8	Parallel	N
FPC1608-48	48	13.9X4.9	Parallel	N

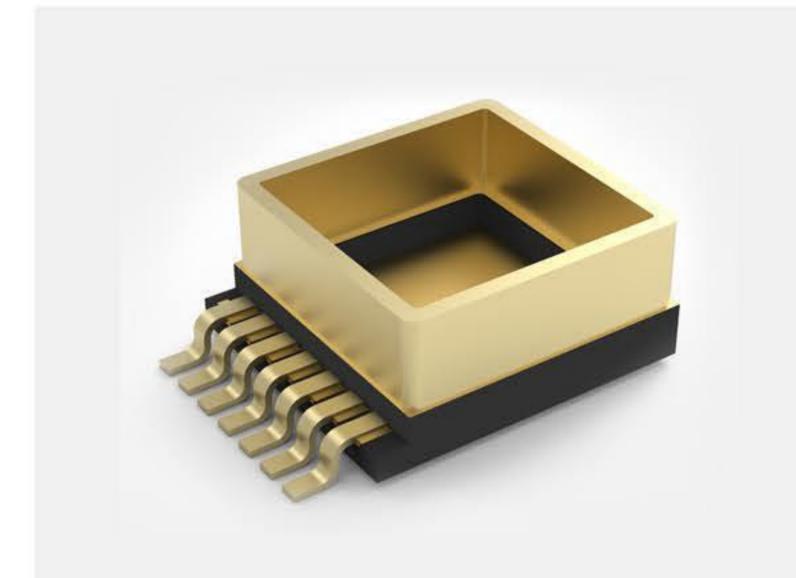
CFF

Ceramic package with lateral metal leads at the waist of the ceramic. The leads are interconnected through walls, and the metal leads are horizontally bent to the bottom to lead out. It can be changed to a structure with a heat dissipation base plate, suitable for power tube packaging with certain power and current carrying requirements.





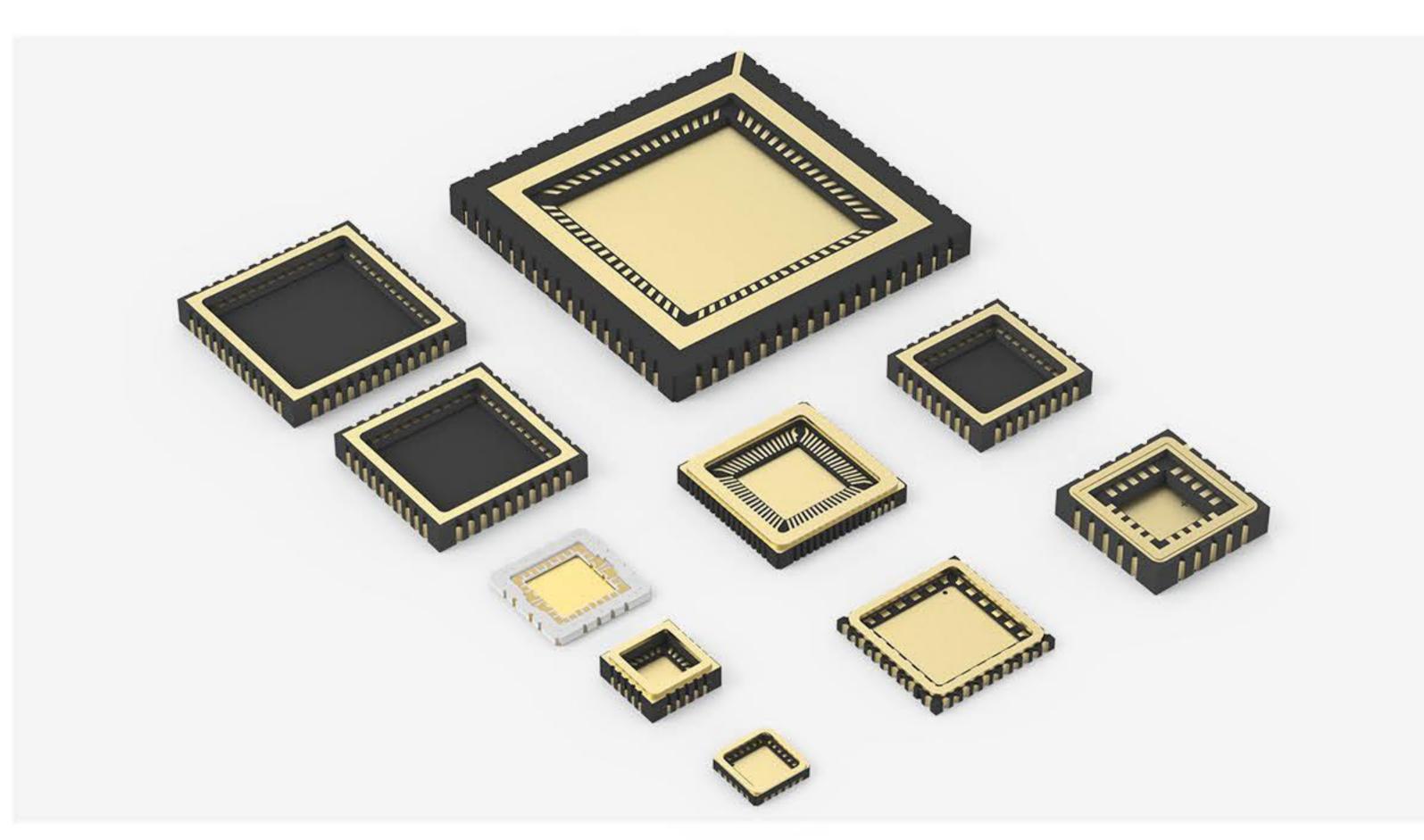


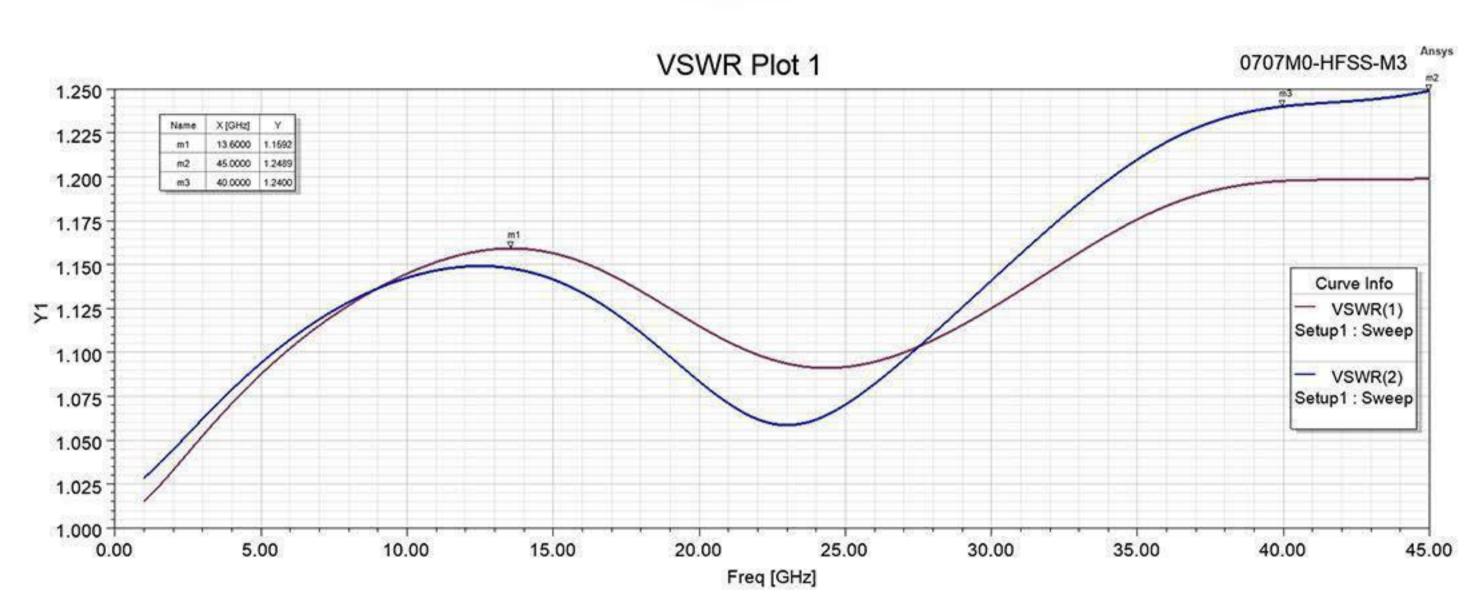


NAME	I/O COUNT	DIE CAV mm	Seal Type	I/O PITCH
FPC1010-07	7	7.8X7.8	Parallel	1.27
FPC0806-08	8	3.2X2.3	AuSn Solder	1.27
FPC1007-16	16	5.1X3.4	Parallel	1.27
FPC1308-20	20	4.8X3.0	Parallel	1.27
FPC3224-42	42	26.7X19.1	Parallel	2.00

COFN

Symmetrical lead-free solder pads on all sides, capable of transmitting DC~40GHz control signals or RF signals. The core grounding method can be divided into metallization grounding or metal heat sink grounding to meet different heat dissipation needs of the chip. Multiple sealing forms such as parallel seam welding and alloy melting can also be selected. This type of shell has the characteristics of small size, light weight, and excellent high-frequency performance, making it suitable for low-power chip packaging.





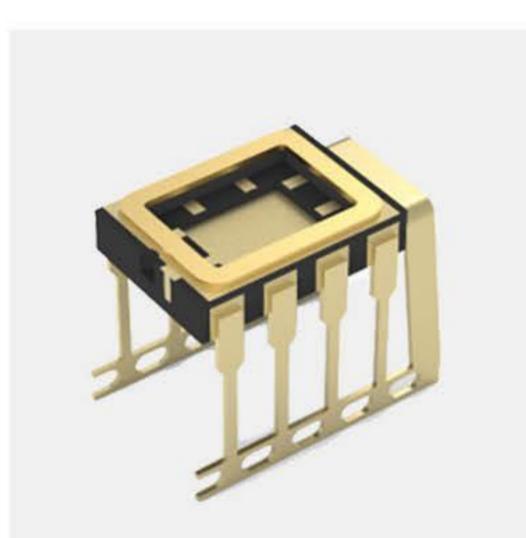
RF simulation test curve of high-frequency package

NAME	I/O COUNT	DIE CAV mm	Seal Type	SPEED
FPCN0303-16	16	SQ1.5	AuSn Solder	DC-12
FPCN0404-24	24	SQ2.7	AuSn Solder	DC-12
FPCN0505-20	20	SQ2.3	Parallel	DC-12
FPCN0707-18	18	SQ4.0	AuSn Solder	DC-40
FPCN0707-48	48	SQ5.0	Parallel	DC-12
FPCN0707-48a	48	SQ4.6	AuSn Solder	DC-40
FPCN0808-20	20	SQ4.6	Parallel	DC-08
FPCN0909-32	32	SQ6.0	AuSn Solder	DC-10
FPCN1010-64	64	SQ6.7	Parallel	DC-10
FPCN1111-40	40	SQ8.0	AuSn Solder	DC-08
FPCN1313-48	48	SQ10.0	AuSn Solder	DC-08
FPCN2020-32	32	SQ15.0	Parallel	DC-05
FPCN2424-68	68	SQ14.7	AuSn Solder	DC-05

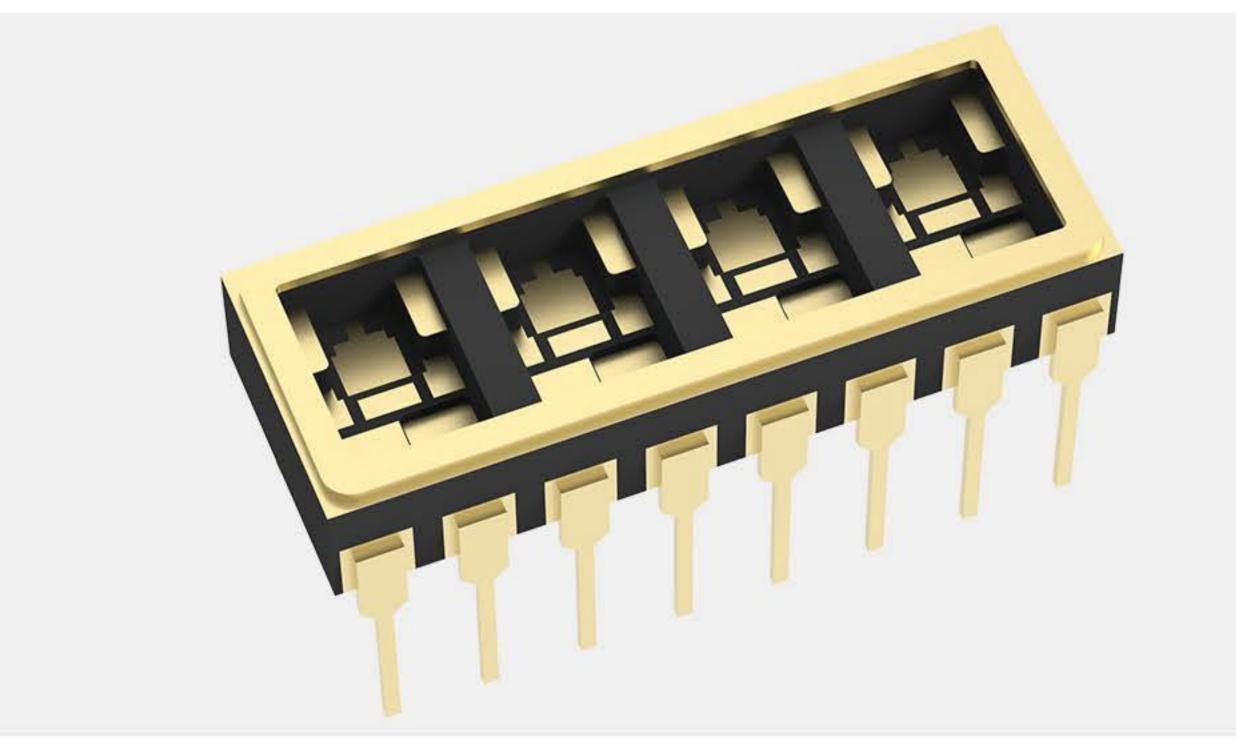
CDIP

Ceramic packaging with vertical metal leads on both sides, with 6-40 leads, suitable for digital logic chips, optocouplers, small optoelectronic modules, and other devices;







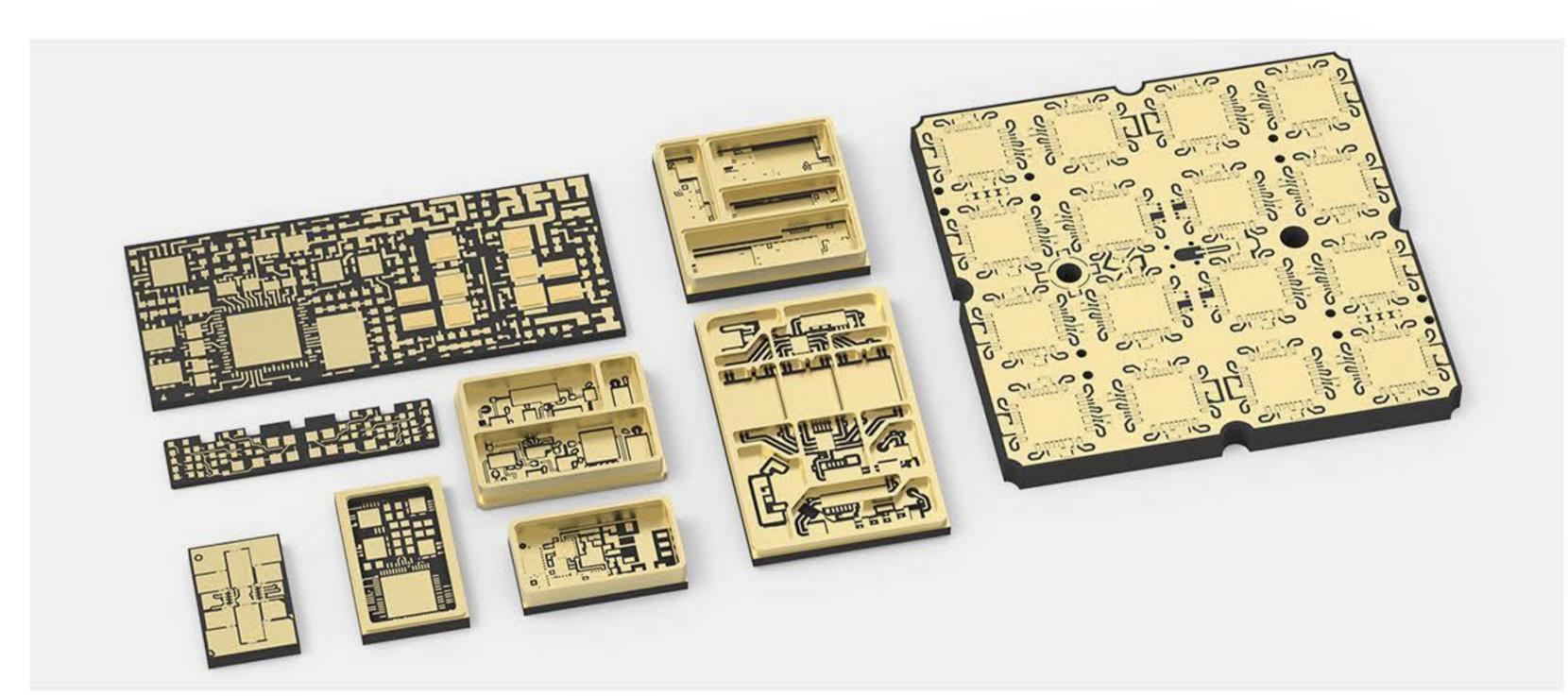


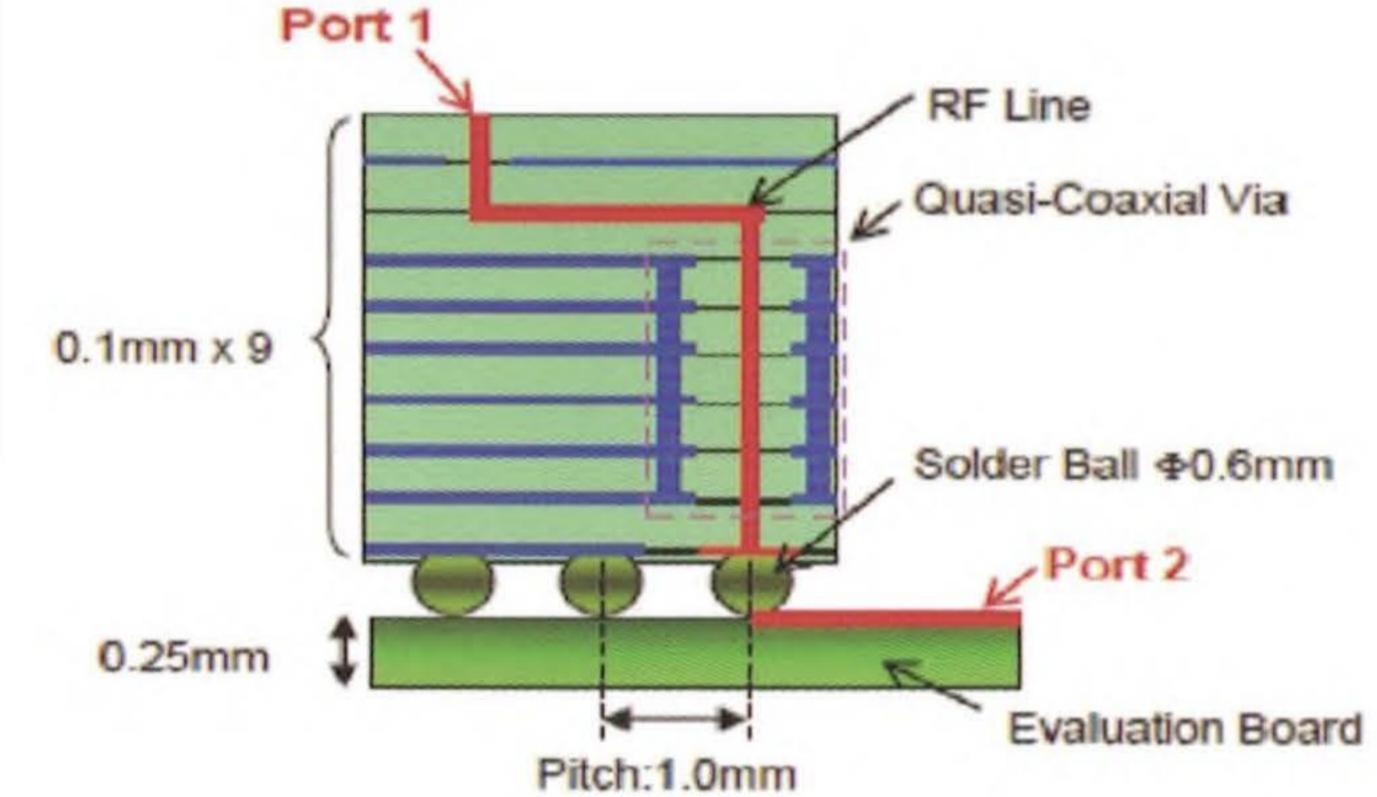
Name	I/O COUNT	DIE CAV mm	Seal Type	I/O PITCH
UPC0705-04	4	5.4X3.2	Parallel	2.54
UPC0807-06	6	6.6X5.4	Parallel	2.54
UPC0907-08	8	7.7X5.4	Parallel	2.54
UPC0907-08a	8	5.7X5.0	AuSn Solder	2.54
UPC1507-12	12	5.6X3.8	Parallel	2.54
UPC1607-14	14	5.6X3.8	Parallel	2.54
UPC1807-16	16	5.6X4.3	Parallel	2.54
UPC1807-18	18	5.6X3.8	Parallel	2.54
UPC2407-20	20	8.4X3.9	AuSn Solder	2.54
UPC2607-24	24	8.9X4.5	Parallel	2.54
UPC2609-32	32	10.0X6.2	Parallel	2.54

Ceramic package

CBGA

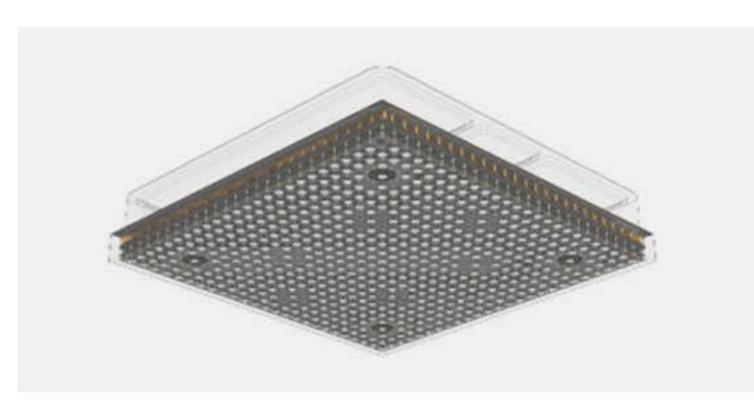
Ceramic pad array housing (CBGA) is a surface mount packaging form with surface array layout. On the back of the ceramic substrate, spherical protrusions are made in an array manner to replace pins. Compared with traditional packaging forms, under the same number of lead out ends, the ceramic pad array shell has a small packaging volume, and the pitch of the lead out ends can be adjusted according to the chip area from 1.27mm to 0.7mm. The contact area between the pad and the substrate is large and short, which is beneficial for improving heat dissipation and electrical performance, and has good moisture resistance, High reliability characteristics.

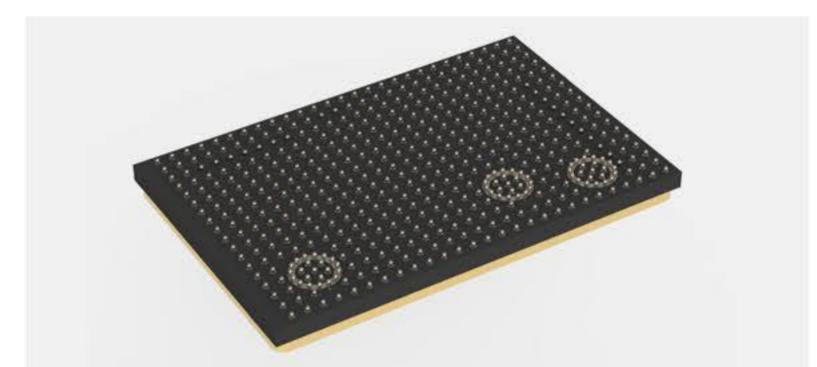




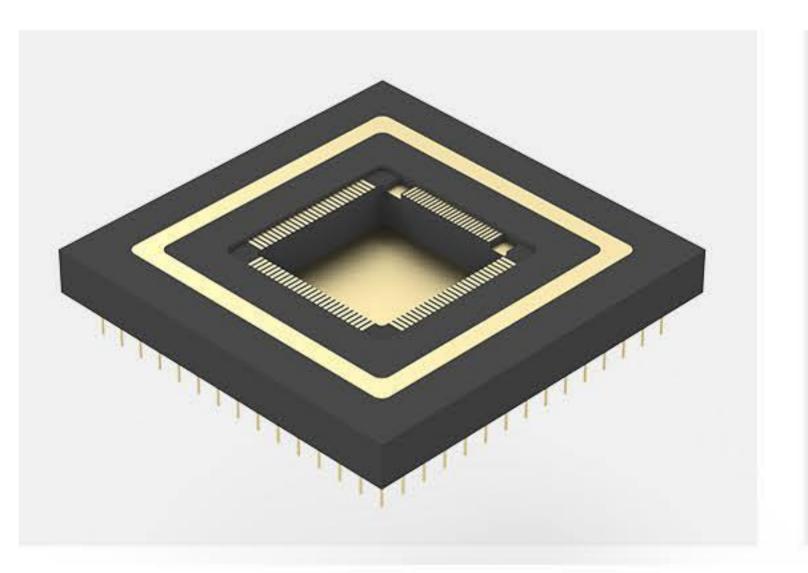
I/O I/O DIE CAV mm Seal Type Heat Sink

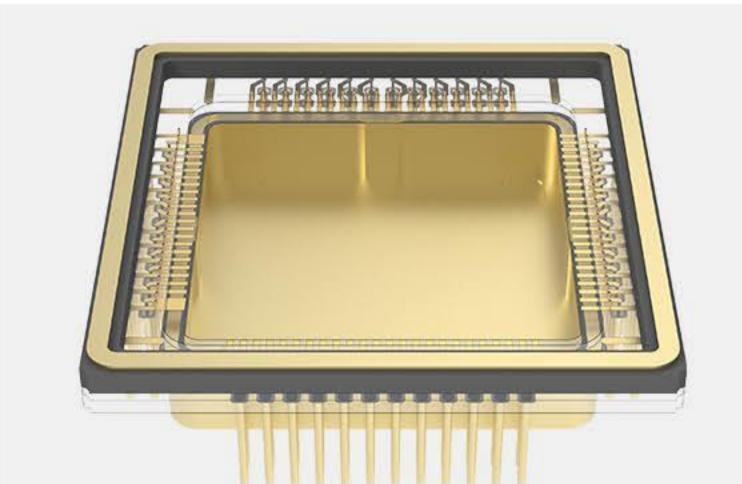
14.2X14.2 AuSn Solder N

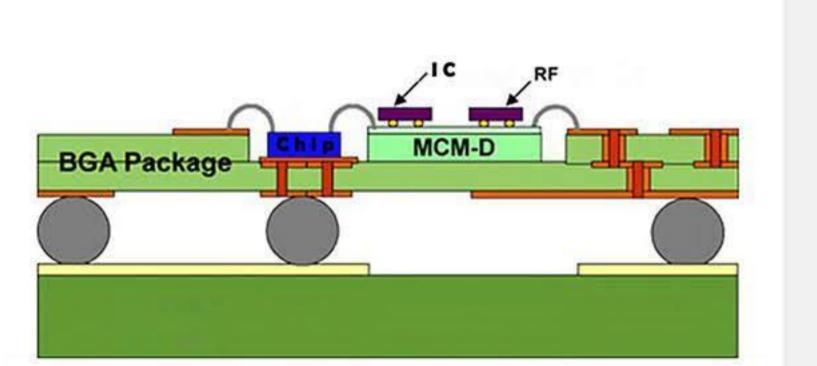




The commonly used plug-in packaging form has high packaging density, good electric heating performance, good airtightness, and high reliability. The commonly used pin pitches are 1.27m and 2.54mm, arranged in a regular manner. When there are many pins, there are also 2.54mm staggered arrangements, achieving higher packaging density. There are two structures: cavity up and cavity down. The downward cavity is beneficial for installing heat sinks to achieve greater dissipation power: when the cavity is upward, the cavity size can be made larger, which is conducive to installing large chips or multi-chips. It is mainly used for packaging VLSI chips such as CPU, DSP, CCD,









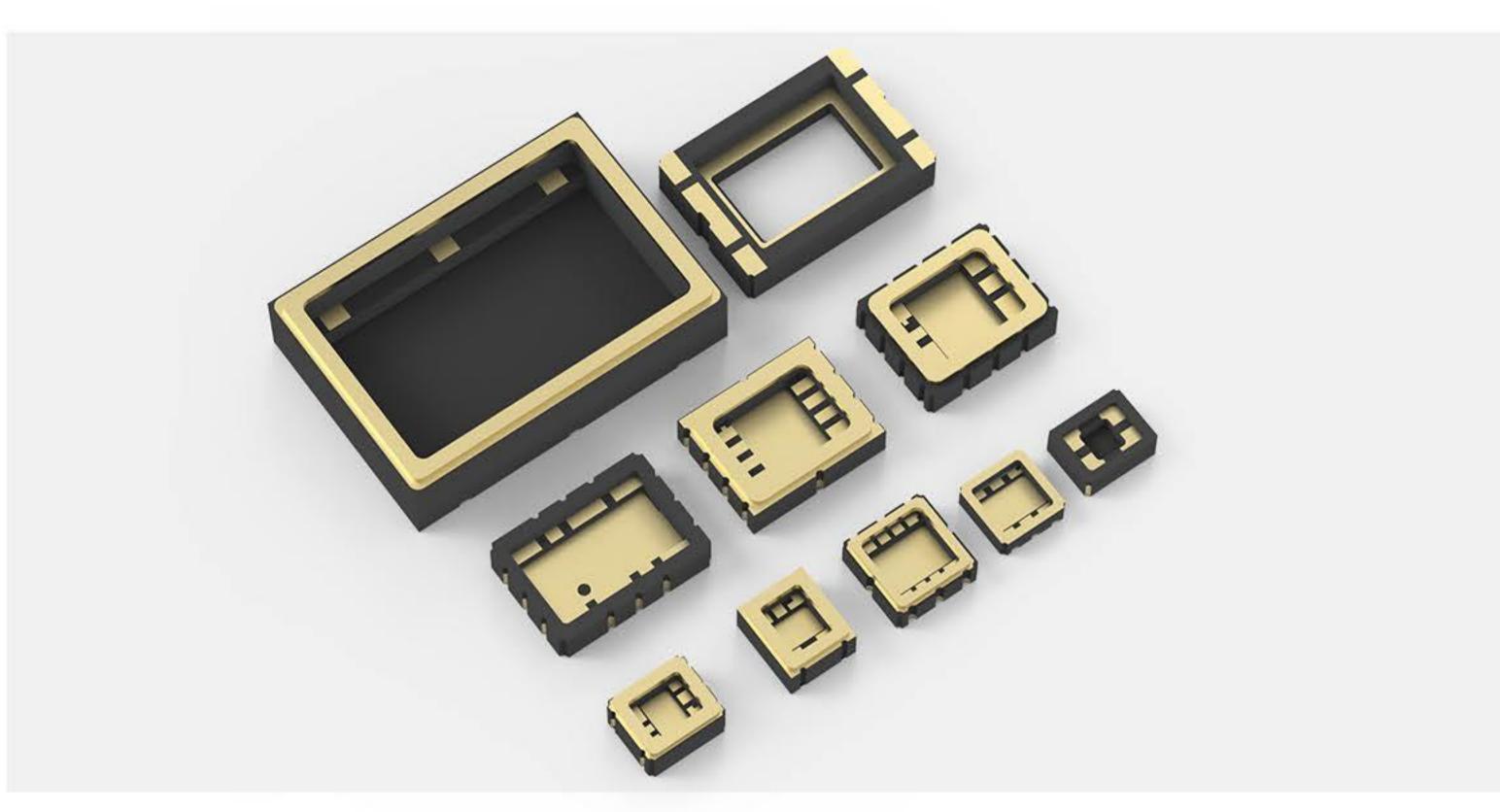
os or multi-chips. It is mainly used						
, ASIC, etc.	UPC2929-20	20	2.54	25.8X25.8	Parallel	Υ
	UPC2525-24	24	2.54	21.5X21.5	Parallel	N
	UPC2424-26	26	2.54	15.8X15.8	Parallel	N
	UPC2222-32	32	1.27	18.5X17.5	Parallel	N
	UPC3232-48	48	2.54	23.2X22.4	Parallel	Ν
	UPC3232-100	100	2.54	23.2X22.2	Parallel	Ν
	UPC3232-175	175	1.27	27.0X27.0	Parallel	N
	UPC4040-417	417	2.54	38.0X38.0	Parallel	Ν
	UPC4040-591	2424-26 26 2.54 22222-32 32 1.27 3232-48 48 2.54 3232-100 100 2.54 3232-175 175 1.27	1.27	22.0X22.0	Parallel	Υ

UPC1818-16 16

CLCC

Ceramic leadless chip carrier (CLCC) has two structures: cavity down and cavity up, with commonly used lead end pitches of 1.27mm, 0.5mm, etc. CLCC is suitable for surface installation, with small parasitic parameters, small volume, light weight, good heat dissipation, and easy installation of heat sinks. Used for packaging various VLSI, ASIC, and ECL circuits, etc.

Ceramic quad leaderless flat packaging shells (CQFN) commonly have lead pitch of 0.5mm and 0.635mm, characterized by small size, short transmission line, small parasitic parameters, and the ability to increase metallization grounding or heat sink grounding, with excellent high-frequency characteristics.



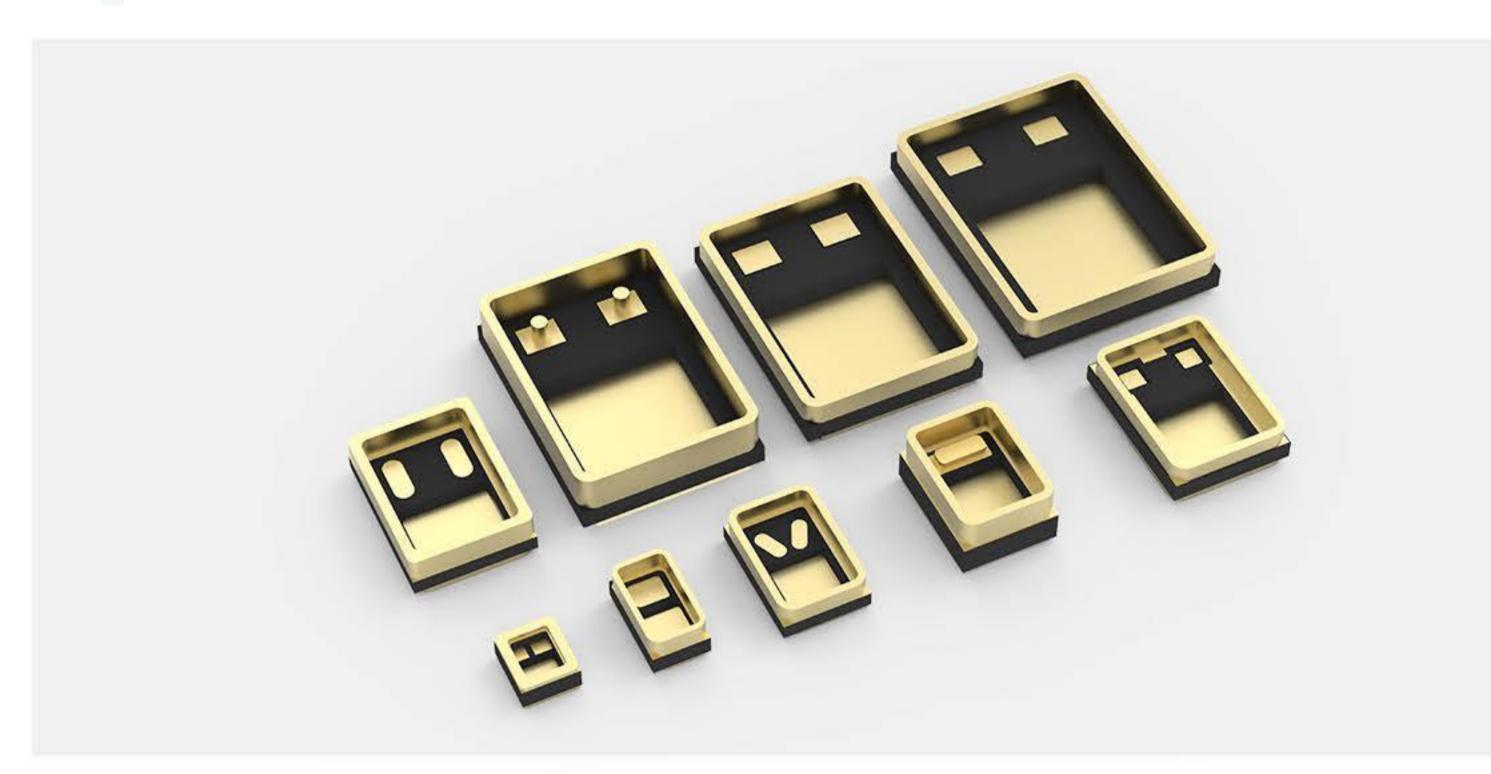




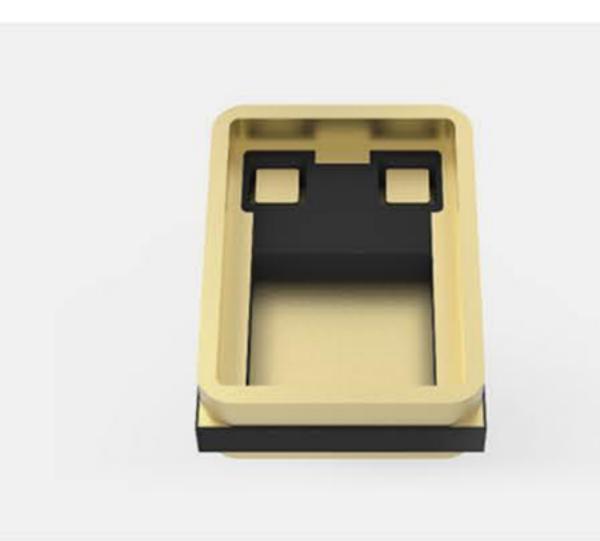
NAME	I/O COUNT	DIE CAV mm	Seal Type	Heat Sink	OVERALL mm
FPCN0303-03	3 2	1.8X1.2	AuSn Solder	N	3.05X2.54
FPCN0303-06	5 6	2.3X1.5	AuSn Solder	N	3.0X3.0
FPCN0606-08	3 8	2.4X2.0	Parallel	Υ	6.0X6.0
FPCN0606-10	0 10	3.0X2.4	Parallel	Υ	5.5X5.5
FPCN0909-20	20	4.6X4.6	Parallel	N	9.0X9.0
FPCN0909-24	1 24	4.7X4.7	Parallel	Υ	8.54X8.54
FPCN1111-28	3 28	7.37X7.37	Parallel	Y 1	1.43X11.43
FPCN2020-32	2 32	15X15	Parallel	Υ	20.6X20.6
FPCN2020-72	2 72	6.5X6.5	AuSn Solder	· N	20.0X20.0

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SMD packaging shell, small size and light weight, strong electrode current carrying capacity, good bottom plate heat dissipation performance, suitable for surface mount technology, suitable for high-power diodes and transistors;



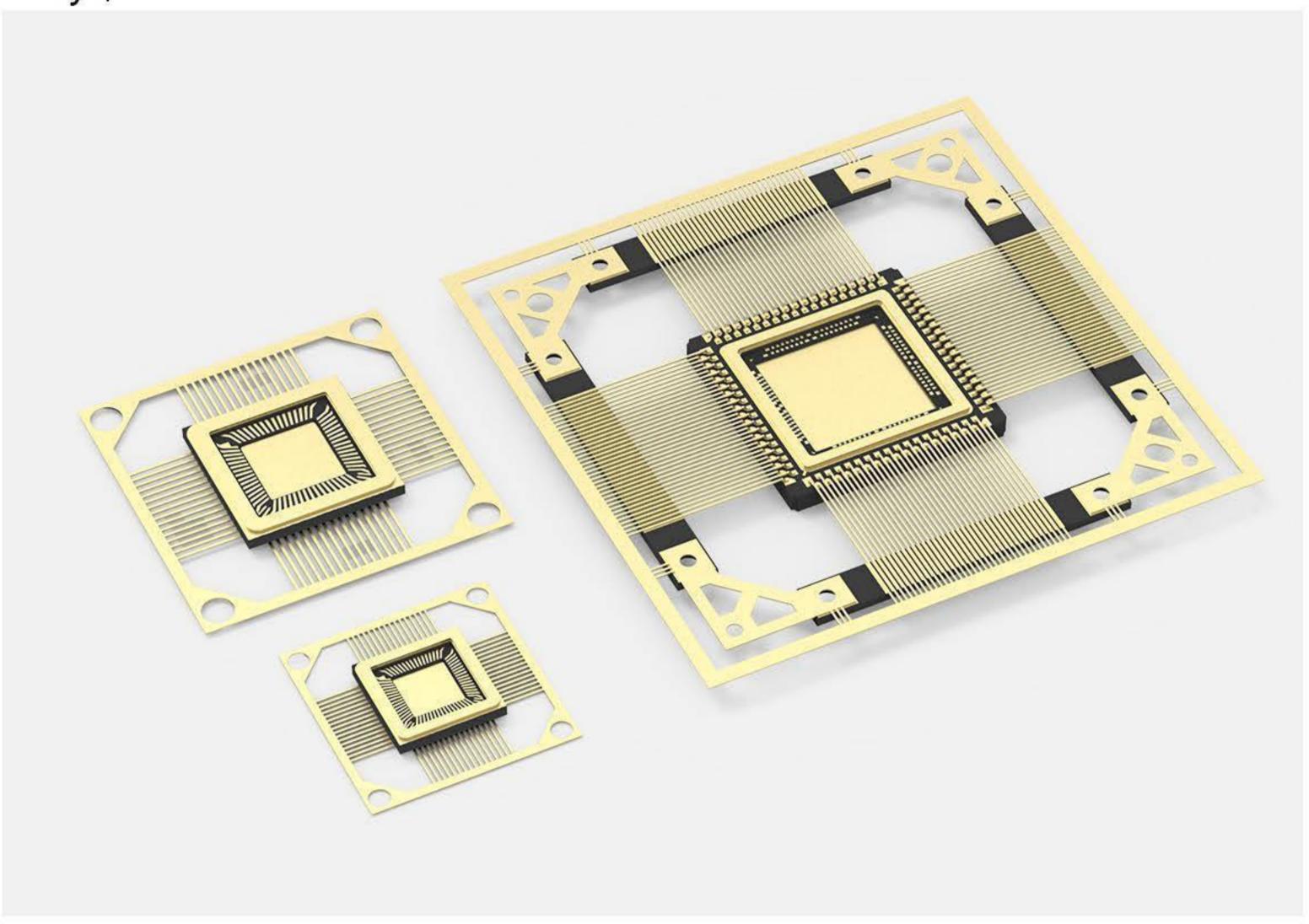




NAME	I/O COUNT	DIE CAV mm	Seal Type	Heat Sink	DWG NO.
SP0604-00	2	5.3X2.8	Parallel	Υ	SMD0.1
SP0805-00	3	3.6X3.6	Parallel	Υ	SMD0.2
SP0806-00	3	5.8X3.0	Parallel	Υ	SMD0.3
SP1008-00	3	7.5X3.8	Parallel	Υ	SMD0.5
SP1611-00	3	8.6X8.6	Parallel	Υ	SMD1.0
SP1813-00	3	9.4X9.9	Parallel	Υ	SMD2.0

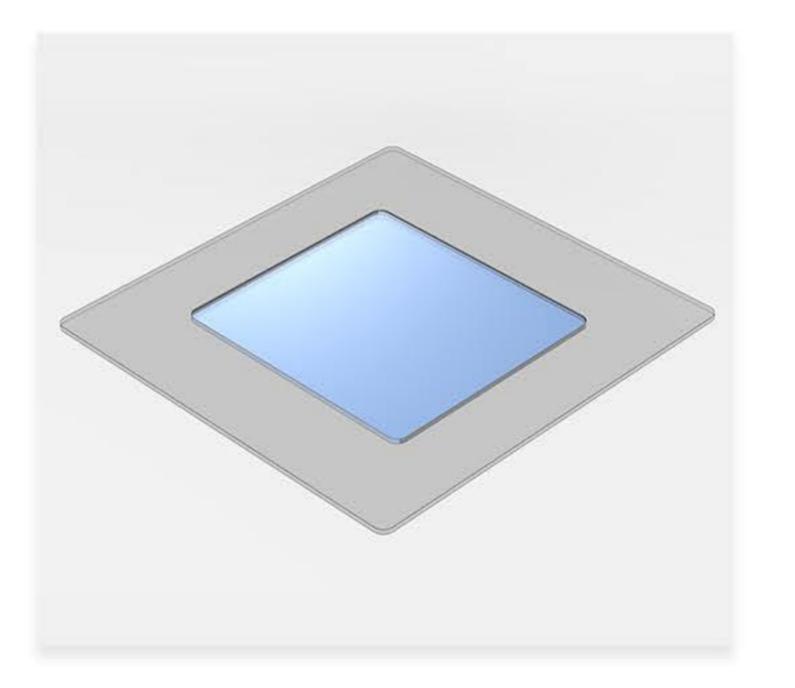
Ceramic package

Ceramic quad flat package (CQFP) is one of the surface mount packaging types, with commonly used lead pitches of 1.27mm, 1.0mm, 0.8mm, 0.65mm, 0.5mm, 0.4mm, etc. The number of pins ranges from 20 to 240. Due to its small size, light weight, high packaging density, good hot spot performance, and suitability for surface mounting, it is widely used in devices such as large-scale integrated circuits, microprocessors, signal processors, gate arrays, etc



NAME	I/O COUNT	I/O PITCH	DIE CAV mm	Seal Type H	Heat Sink
FPC0707-24	24	0.65	3.3X3.3	AuSn Solder	Υ
UPC2929-20	20	2.54	25.8X25.8	Parallel	Υ
UPC2525-24	24	2.54	21.5X21.5	Parallel	Ν
UPC2424-26	26	2.54	15.8X15.8	Parallel	N
UPC2222-32	32	1.27	18.5X17.5	Parallel	Ν
UPC3232-48	48	2.54	23.2X22.4	Parallel	N
UPC3232-100	100	2.54	23.2X22.2	Parallel	Ν
UPC3232-175	5 175	1.27	27.0X27.0	Parallel	Ν
UPC4040-417	7 417	2.54	38.0X38.0	Parallel	N
UPC4040-59	1 591	1.27	22.0X22.0	Parallel	Υ

accessory



Window(Sapphire/Si/Ge)



Feedthrough component



Composite (Al-Si Metal)



Heat Sink (CMC)

High performance ceramic materials

Characteristics of alumina ceramic materials

ITEM		UNIT	92% AI2O3	96% Al2O3
Dielectric Constant	10GHz		8.77	9.41
	20GHz		8.77	9.41
	30GHz	y. 1/	8.78	9.40
	40GHz		8.77	9.41
CTE	25-200℃	ppm/°C	5.5	5.6
	25-800°C	ppm/°C	7.9	7.8
Density		g/cm³	3.72	3.75
Insulation Resistance (500V DC)		Ω/mm	≥1×10 ¹²	≥1×10 ¹²
Surface Withstand Voltage		V/mm	> 1000	> 1000
Colour			Black	White
Flexural Strength		MPa	≥400	≥400
Heat Resistance		°C	1450	1450
Thickness	After Sintering	um	95/193	100/200

HTCC Ceramic Circuit Design Specification

ITEM(UNIT: mm)	Stander	MAX	MIN
Substrate appearance	5.0~80 SQ	150×150	1.5×1.5
Line width	≥0.15	 :	0.06
Insulation zone gap	≥0.3		0.2
Spacing between insulation areas of solder pads	≥0.15	 :	0.1
Filling hole diameter φ D	φ0.15、φ0.2、φ0.3		φ0.085
Center distance between filling holes	≥3×φd		2.5×φd
Filling hole center edge distance	≥0.5		0.4
Structural pad edge allowance	≥0.1		0.05
Through-hole aperture	φ0.5, φ1, φ3, 1×1		
Pad diameter	≥φd+0.1		
Margins	≥0.5		0.4
Total thickness	≤3	3.6	 .
wall thickness	≥1		
Hole filling depth	≤0.8	1	
Grid scale	≤50%		≤75%