GK7202V300 Datasheet

Version 1.1

Hunan Guoke Microelectronics Co., Ltd.

Version History

Version	Note
V1.0	
V1.1	Supplemental hardware features

Table of contents

1. Overview

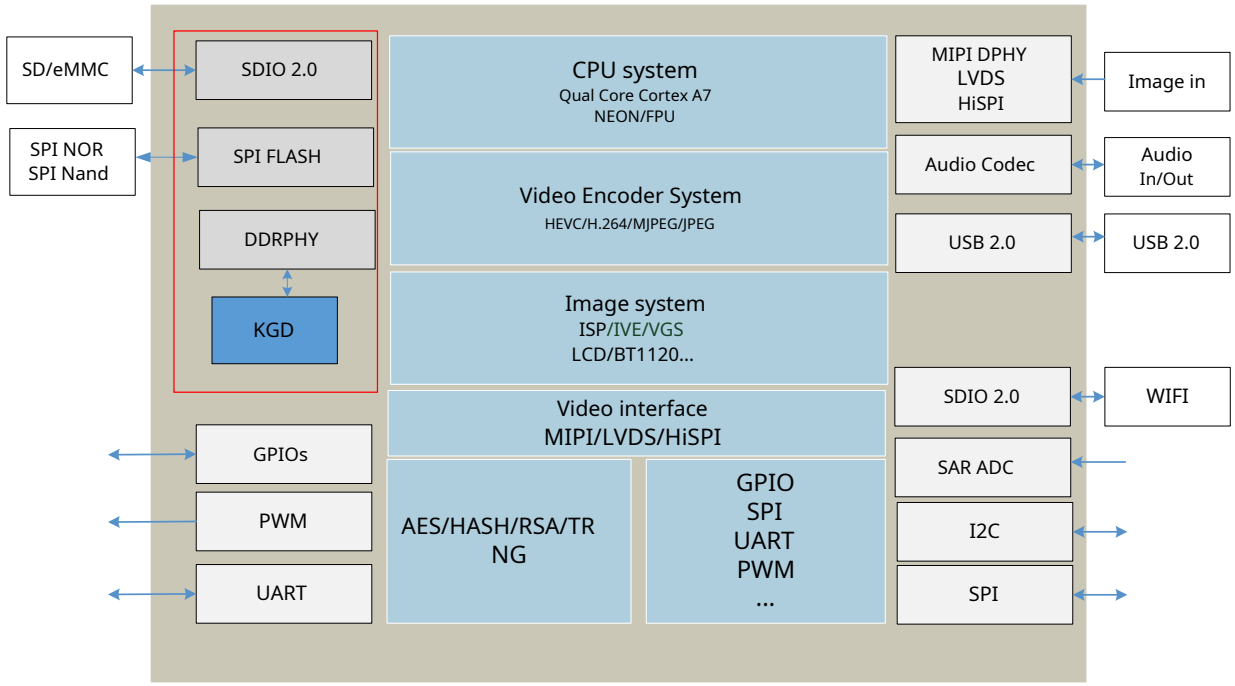
The GK7202V300 chip is a new generation consumer camera SOC chip launched by Guoke for the consumer camera market, supporting ISP and H.265 encoding.

piece.

This chip integrates a dedicated ISP, boasting high-efficiency video encoding and processing performance, supporting H.265 encoding, and meeting various differentiated business needs of customers.

It includes RTC, POR, audio codec, and a rich set of peripheral interfaces, helping customers reduce BOM costs. Through a low-power CPU and low-power architecture, it helps...

To help customers reduce power consumption.



picture1-1:GK7202V300Functional block diagram

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2. Key Features

CPU

- ARM Cortex A7 @ 900MHz
- 32KB I-Cache, 32KB D-Cache, 128KB L2 Cache
- Integrated multimedia acceleration engine -NEONand hardwareJavaaccelerate
- Integrated hardware floating-point coprocessor

Storage interface and boot

- Embedded512Mb DDR2
- Highest support1200Mbps
- supportSPI Nor Flash,Maximum capacity256MB
- supportSPI Nand FlashMaximum capacity1GB
- supporteMMC 4.5Maximum support2TBcapacity
- Choose fromSPI NororSPI NandoreMMCstart up

Video encoding

- supportH.265/H.264Video encoding
  - Supported maximum resolution is2304x1296
- supportMJPEG/JPEGcoding
- supportCBR/VBR/FIXQP/AVBR/QPMAP/CVBR

Audio codec

- Supports software encoding and decoding, supportsG.711,G.726,ADPCM
- Supports audio3A (AEC/ANR/AGC)

Video and graphics processing

- Supports multiple application analysis
- Supports video and graphicsPQpromote
- -supportISP

Safety handling

- Supports algorithms such as AES/RSA
- Support HASH
- supportOTP
- supportTRNG

Audio and video interfaces

- Video input
  - supportMIPI,LVDS,HiSPIinterface
  - Supports various mainstream HD media.sensor
- Video output
  - supportLCDOutput
  - supportBT656/BT1120Output
- audio interface
  - supportmic/line inenter
  - supportline outOutput
  - supportI2S

Peripherals and others

- Support oneUSB 2.0 Host/Deviceinterface
- Support oneSDIO 2.0andSD2.0Card
- support10M/100MEthernet, built-inEPHY
- Supports fourPWM
- Supports threeUARTinterface
- Supports dual channelsSAR ADC

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- MultipleI2CInterface; multipleGPIOinterface
- supportSPIinterface
- Built-in high precisionRTC

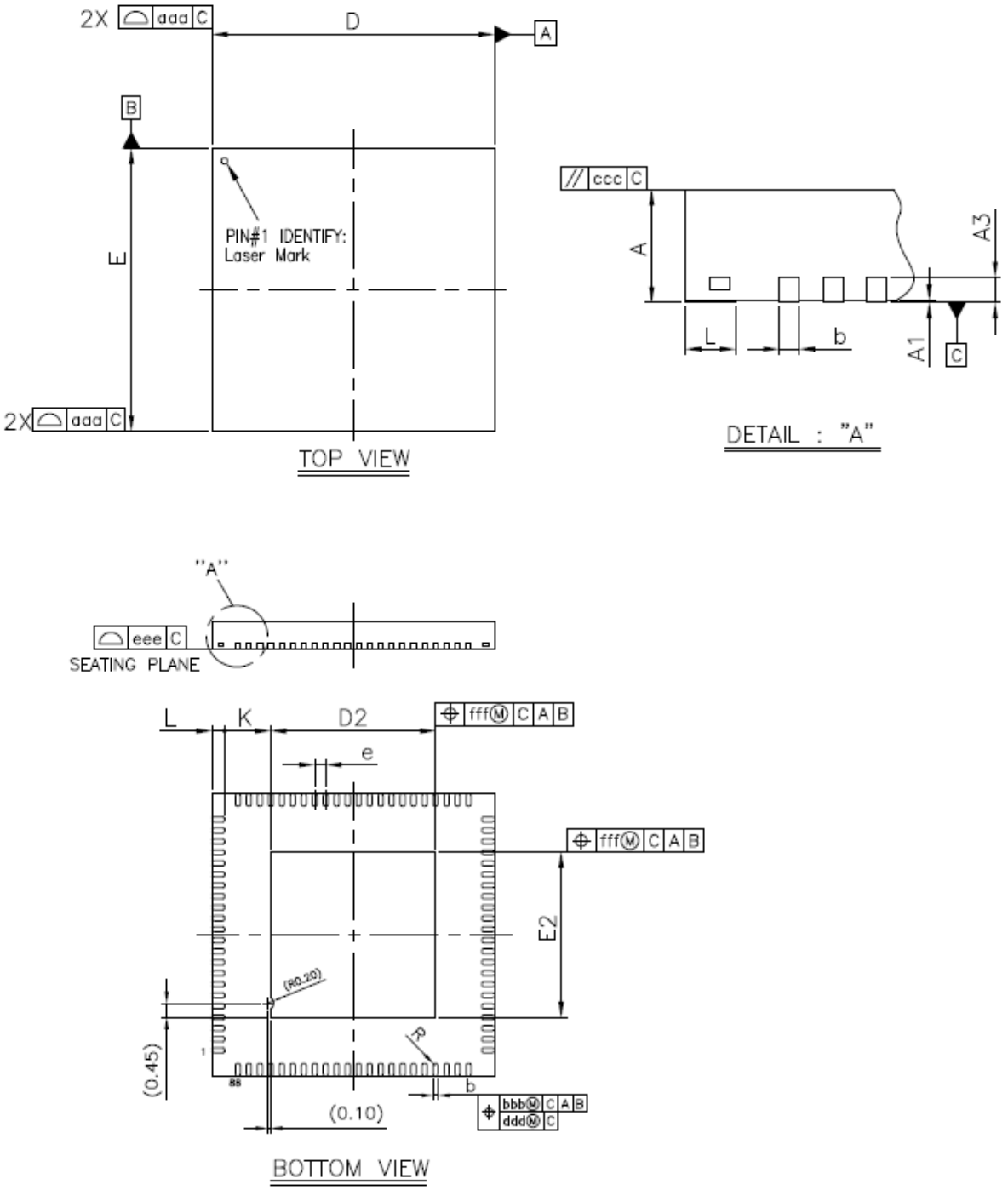
Physical Specifications

- Operating voltage
  - CoreVoltage:0.9v
  - IOVoltage:3.3v
  - SDRAMVoltage:1.8v
- Packaging:
  - QFN 9mm * 9mm,88 pins

3. Package and pinout

3.1. Packaging

The GK7202V300 chip uses a QFN package with a package size of 9mm × 9mm, a pin pitch of 0.35mm, and a total of 88 pins. Please refer to the figure for detailed package information.



picture3-1GK7202V300 chip package diagram

Table 3-1 GK7202V300 Chip Package Parameters

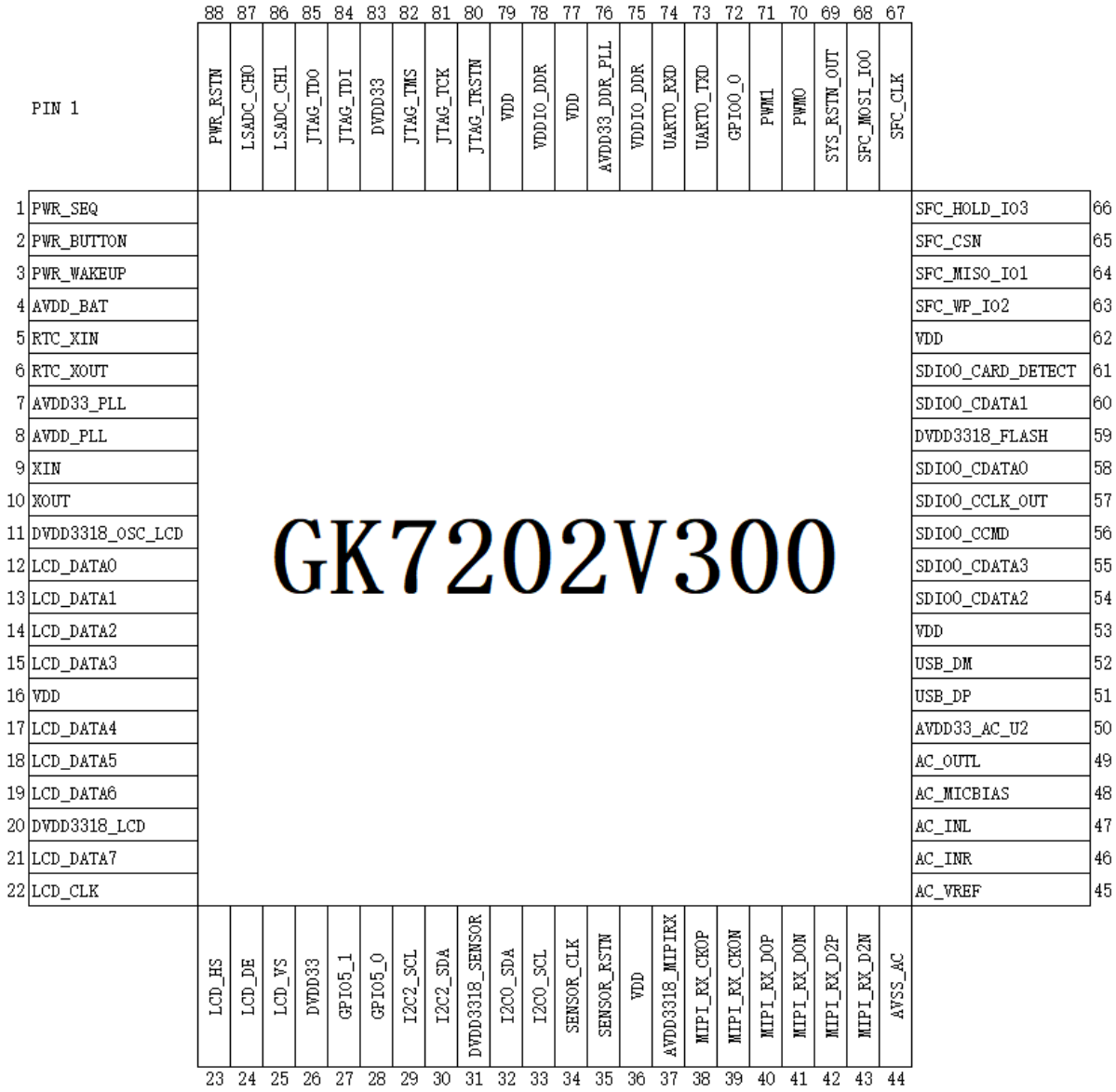
Symbol	Dimension in mm			Dimension in inch		
	MIN	NOM	MAX	MIN	NOM	MAX
A	0.85	0.90	0.95	0.033	0.035	0.037
A1	0.00	0.02	0.05	0.000	0.001	0.002
A3	0.20 REF			0.008 REF		
b	0.11	0.16	0.21	0.004	0.006	0.008
D	8.90	9.00	9.10	0.350	0.354	0.358
E	8.90	9.00	9.10	0.350	0.354	0.358
D2	5.16	5.26	5.36	0.203	0.207	0.211
E2	5.16	5.26	5.36	0.203	0.207	0.211
e	0.35 BSC			0.014 BSC		
L	0.30	0.40	0.50	0.012	0.016	0.020
K	0.20	---	---	0.008	---	---
R	0.055	---	0.105	0.002	---	0.004
aaa	0.10			0.004		
bbb	0.07			0.003		
ccc	0.10			0.004		
ddd	0.05			0.002		
eee	0.08			0.003		
fff	0.10			0.004		

NOTE:

1. CONTROLLING DIMENSION : MILLIMETER

2. REFERENCE DOCUMENT: JEDEC MO-220.

3.2. Pin Distribution



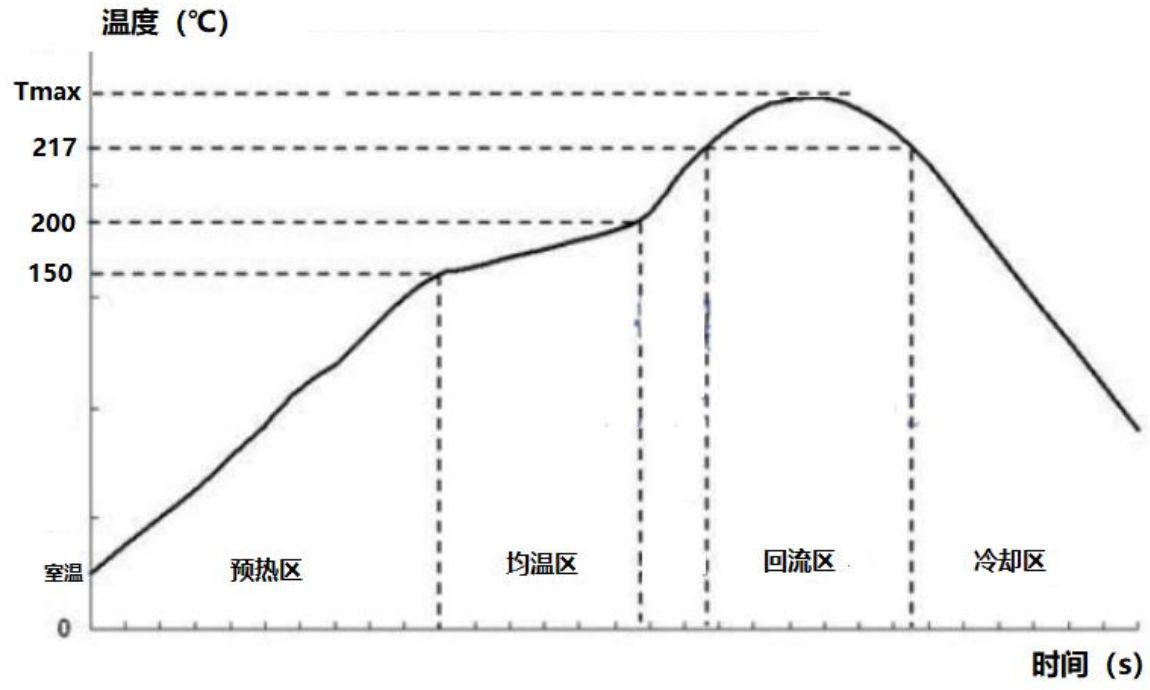
picture3-2GK7202V300 Pinout Diagram

4. Hardware Features

4.1Welding process recommendations

4.1.1 Lead-free reflow soldering process parameter requirements

The lead-free reflow soldering process profile is shown in the figure.4-1As shown.



picture4-1.Lead-free reflow soldering process profile

Lead-free reflow soldering process parameters are shown in the table.4-1As shown.

surface4-1Lead-free reflow soldering process parameters

Welding area	time	heating rate	Peak temperature	cooling rate
Preheating zone (room temperature ~150℃)	60~150s	≤2.0℃/s	-	-

Uniform temperature zone (150~200℃)	60~120s	<1.0℃/s	-	-
Reflux area (>217℃)	60~90s	-	Tmax=230-260℃	-
Cooling area (Tmax~180℃)	-	-	-	1.0℃/s≤Slope≤4.0℃/s

Lead-free reflow soldering process parameters:

Preheating zone: Temperature ranges from room temperature to...150℃, the rate of temperature rise is controlled at2℃/sThe time in this temperature zone is approximately [time range missing].60~150sUniform temperature zone: temperature from150℃~200℃, stable and slow temperature increase, the rate of temperature increase is less than1℃/sAnd the time in this region is controlled within60~120s (Note: This area must be heated slowly, otherwise it may lead to poor welding.)

Reflux zone: temperature from217℃~Tmax~217℃, the entire interval time is controlled within60~90sReflux time is60~90sFor boards with large heat capacity that cannot meet the time requirements, the reflow time can be extended to [a later timeframe].120sCooling zone: Temperature fromTmax~180℃, the rate of temperature decrease must not exceed4℃/sThe temperature rose from room temperature to...TmaxThe total time should not exceed6minutes. This reflow profile is only a recommended value; the client needs to adjust it according to actual production conditions.

4.2 Humidity parameters

This chapter stipulatesICThe usage principles of (moisture-sensitive products), and the explanations of related terms are as follows:

- Floor lifeThe maximum time a product is allowed to remain in the workshop (environmental conditions <30℃/60% RHAfter unpacking the moisture-proof packagingreflow Before)
- Desiccant (Desiccant: A material used to absorb moisture and keep dry.
- Humidity Indicator Card (HIC)Humidity indicator card
- Moisture sensitivity level (MSL)Hygroscopic sensitivity level
- Moisture Barrier Bag (MBB)Moisture-proof packaging bags
- Solder ReflowReflow soldering
- Shelf LifeNormal storage time after moisture-proof packaging

[Shypersensitivity Level]

This product has a moisture sensitivity rating of [missing information].3class.

4.2.1Product moisture-proof packaging

4.2.1.1Packaging Information

Dry vacuum packaging materials include:

- Humidity indicator card (HIC)
- Moisture-proof bags (MBB)
- Desiccant

picture4-2Schematic diagram of dry vacuum packaging materials

4.2.1.2Incoming material inspection of moisture-sensitive products

In production use (SMTBefore opening the vacuum bag:

- ifHICThe maximum indicator point has changed (it's no longer blue or tan), and the product must be referenced in the table.4-3conductrebake.
- ifHICmiddle10%RH dotIf it is blue or tan, it means the product is very dry and can be vacuum-sealed after simply replacing the desiccant.

4.2.2Storage and Use

【Storage environment

It is recommended that the product be stored in vacuum packaging and stored in <30°C/60% RHDown.

【shelf life(Normal storage time after moisture-proof packaging)

Storage environment30°C/60% RHStore in vacuum packaging.shelf life(Storage period) not less than12Months.

【floor life】

Under environmental conditions30°C/60%Down,floor lifePlease refer to the following.

surface4-2 floor lifeReference Table

MSL	Floor life(out of bag) at factory ambient≦30°C/60% RH or as stated
1	Unlimited at≦30°C/85% RH
2	1 year
2a	4 weeks
3	168 hours
4	72 hours
5	48 hours
5a	24 hours
6	Mandatory bake before use, must be reflowed within the time limit specified on the label

【Use of moisture-sensitive products

- The product is in ≦30°C/60%RHThe next continuous or cumulative exposure exceeds2It is recommended to do so within 24 hours.rebakeThen vacuum dry and package.

- The product is in ≦30°C/60%RHThe cumulative exposure did not exceed2Hours, can be skippedrebakeHowever, a new desiccant must be used, and vacuum drying and packaging are required.

For storage and usage principles not mentioned in this article, please refer directly to [the relevant documentation/reference],***JEDEC J-STD-033A***.

4.2.3Rebaking

【Scope of Application】

Need to be rebakedIC(Moisture-sensitive products)

[Rebaking Reference Table]

surface4-3 Rebaking Reference Table

Body thickness	level	bake@125°C	bake@90°C≦5% RH	bake@40°C≦5% RH
≦1.4mm	2a	3 hours	11 hours	5 days
	3	7 hours	23 hours	9 days
	4	7 hours	23 hours	9 days

Body thickness	level	bake@125℃	bake@90℃≦5% RH	bake@40℃≦5% RH
	5	7 hours	24 hours	10 days
	5a	10 hours	24 hours	10 days
≦2.0mm	2a	16 hours	2 days	22 days
	3	17 hours	2 days	23 days
	4	20 hours	3 days	28 days
	5	25 hours	4 days	35 days
	5a	40 hours	6 days	56 days
≦4.5mm	2a	48 hours	7 days	67 days
	3	48 hours	8 days	67 days
	4	48 hours	10 days	67 days
	5	48 hours	10 days	67 days
	5a	48 hours	10 days	67 ays
Remark	The values shown in this table are the minimum baking times required after the food has become damp. Low-temperature baking is preferred for rebaking. Please refer to the following for details.JEDEC			

5. Electrical performance

5.1. Extreme operating conditions

Operating the chip beyond its maximum rated conditions may cause permanent damage. Functional operation should be limited to the conditions given in the "Recommended Operating Conditions" section. Prolonged operation under extreme conditions may affect the reliability of the device. Exceeding the chip junction temperature to its destructive junction temperature may cause physical damage to the chip.

surface5-1Extreme operating conditions (VSS=0V)

parameter	symbol	scope	unit
power supply voltage	0V9	-0.2 to +1.17	V
	1V8	-0.2 to +2.16	
	3V3	-0.2 to +3.96	
Destructive junction temperature	T_J	125	℃

5.2. Recommended Working Conditions

surface5-2Recommended working conditions

parameter	symbol	Require			unit
		Minimum value	Typical value	Maximum value	
power supply voltage	0V9	TBB	0.9	TBD	V
	1V8	TBD	1.8	1.89	
	3V3	2.97	3.3	3.63	
Chip ambient temperature	T_A	0	-	70	℃
Chip junction temperature	T_J	0	-	105	℃

5.3. DC Electrical Parameters

The DC electrical parameters of GK7202V300 are as follows:surfaceAs shown

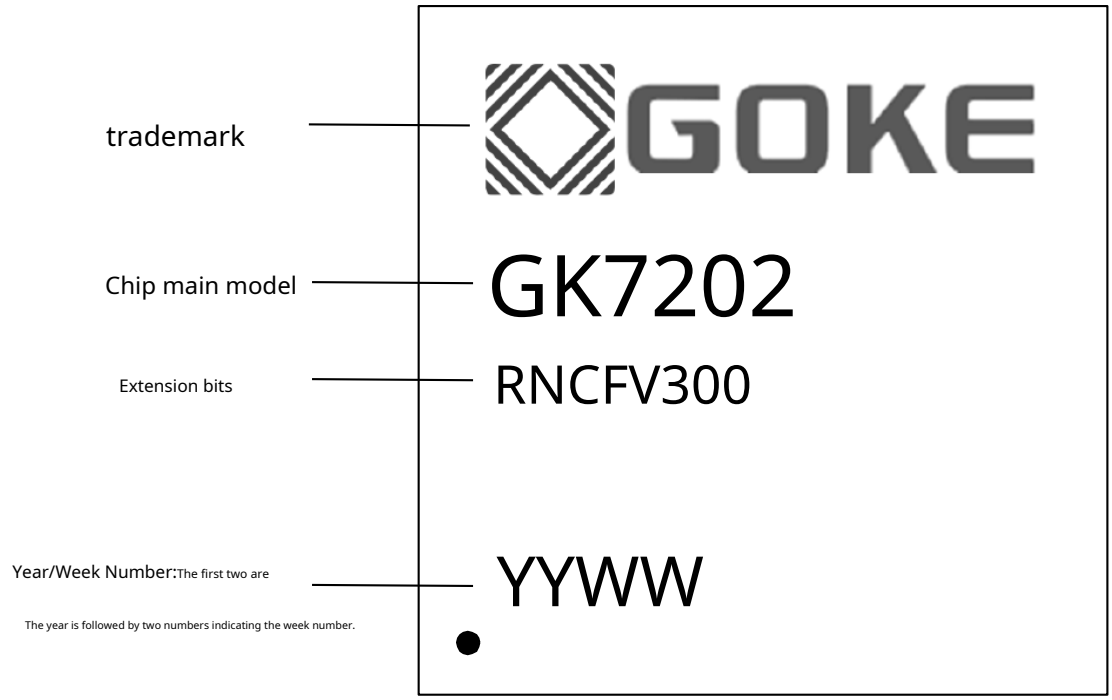
parameter	symbol	condition	Minimum value	Typical value	Maximum value	unit
High-level output voltage	V_{OH}	IO voltage = 3.3V	2.4	-	-	V
Low-level output voltage	V_{OL}		-	-	0.4	
High-level input voltage	V_{IH}		2	-	-	
Low-level input voltage	V_{IL}		-	-	0.8	

Table 5-3DC electrical parameters

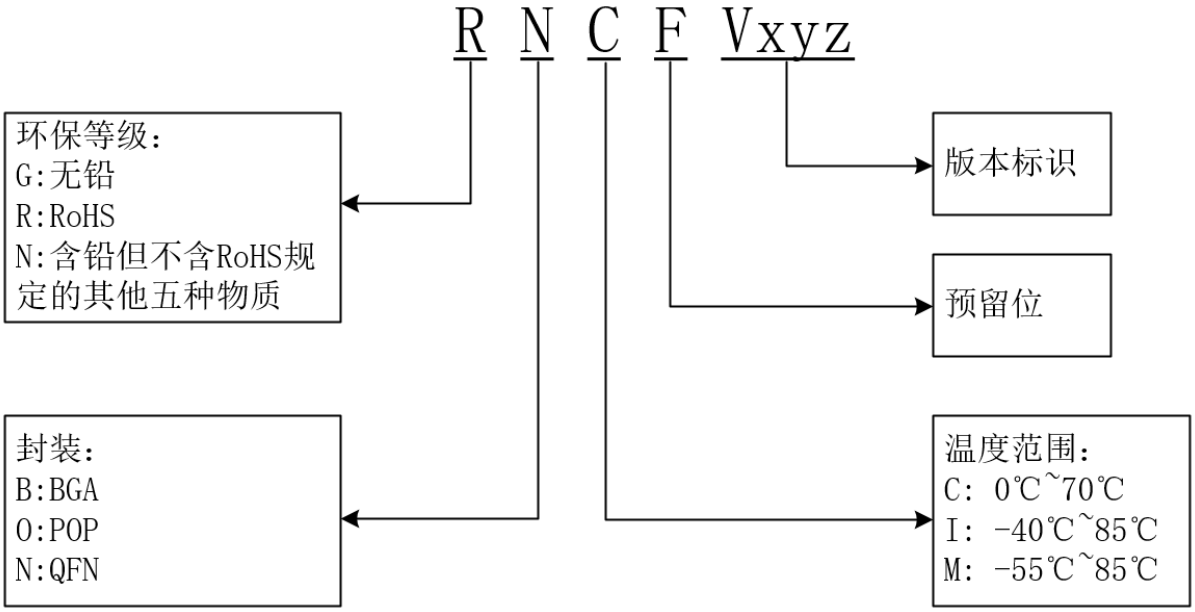
6.Ordering Information

Chip Identification and Definition

Chip identification:



Extended bit definition:



Technical support, Mr. Zhang: 18676796057 (WeChat)

7. RoHSillustrate

All GK7202V300 products provided by Guoke to its customers are RoHS compliant, meaning they are all lead-free.