A product Line of
Diodes Incorporated

PRODUCT BRIEF

PI7C9X2G304/404EVQ Family

Automotive PCIe® 2.1 3~4-Port/4-Lane Low Power Packet Switch

Features

- Integrated 100MHz Clock buffer for each downstream port
- Reliability, Availability and Serviceability
  - Supports Data Poisoning and End-to-End CRC
  - Advanced Error Reporting and Logging
  - IEEE 1149.1 JTAG interface support
- Link Power Management
  - Supports PCI-PM L1.1 of L1 PM Sub-states
  - Supports L0, L0s, L1, L2, L2/$L3_{Ready}$ and L3 link power state
  - Active state power management for L0s and L1 state
- Device State Power Management
  - Supports D0, $D3_{Hot}$ and $D3_{Cold}$
  - 3.3V Aux Power support in $D3_{Cold}$ power state
- Supports up to 512-byte maximum payload size
- Low Power Dissipation: 300 mW typical in L0 normal mode and 35mW typical in PCI-PM L1.1 D3 hot PM sub-state mode
- Automotive Temperature Range: -40ºC to 105ºC
- Manufactured in facilities certified to ISO / TS 16949
- MTBF: TBD hours
- Pb free and 100% Green
- I²C (Default) and SMBus support
- Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)
- Halogen and Antimony Free. “Green” Device (Note 3)
- The PI7C9X2G304/404EVQ is suitable for automotive applications requiring specific change control and is AEC-Q100 qualified, has a grade 2 -40°C to +105°C temperature rating, is PPAP capable, and is manufactured in IATF16949:2016 certified facilities.
- Package:
  - 136-pin aQFN 10mm x 10mm

Enhanced Features

- Programmable Driver Current and De-Emphasis Level at each individual port
- 150ns typical latency for packet running through switch without blocking
- Supports “Cut-through”(Default) as well as “Store and Forward” mode for switching packets
- Advanced Power Savings
  - Empty downstream ports are set to idle
  - Clock to corresponding circuit is turned off when any port enters L1 or ASPM L1
- Supports Access Control Service (ACS) for peer-to-peer traffic
- Supports Address Translation (AT) packet for SR-IOV application
- Supports Latency Tolerance Reporting (LTR) to improve platform power management
- Supports Optimized Buffer Flush Fill (OBFF) to improve platform power management

Description

The PI7C9X2G304/404EVQ family is an Automotive Compliant PCI Express® 2.1 3~4-port/4-lane PCI Express Switch specifically designed to meet automotive grade specification, qualified by AEC-Q100 Grade 2 to enhance reliability specification and support wider range temperature up to 105ºC, and support advanced power management to reduce power dissipation and lead (Pb)-free requirements.

The PI7C9X2G304/404EVQ family is a high-performance, cost-effective solution that can be implemented in systems such as automotive safety and security, traffic mapping, infotainment and telematics platforms.

The PI7C9X2G304/404EVQ family provides one x1 or x2 upstream ports and two or three x1 downstream ports.

The PI7C9X2G304/404EVQ family provides users the flexibility to expand or fan-out from a wide range of bridges such as automotive MCU, FPGA, video processing and other application specification ICs.

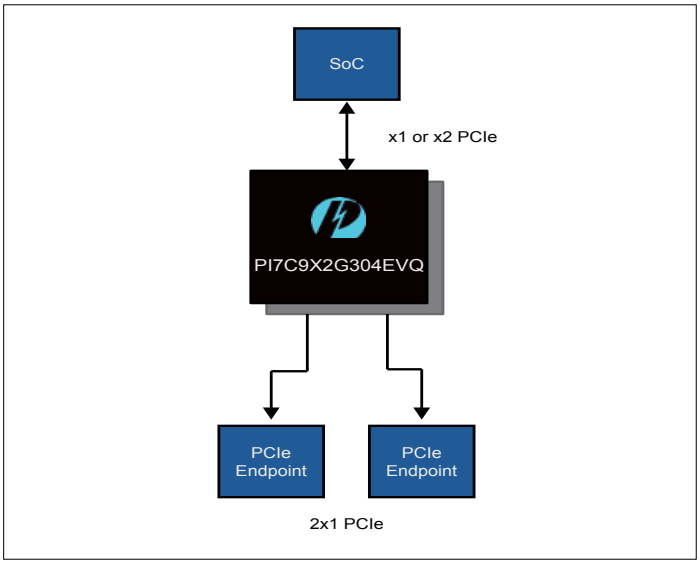
Industry Specifications Compliance

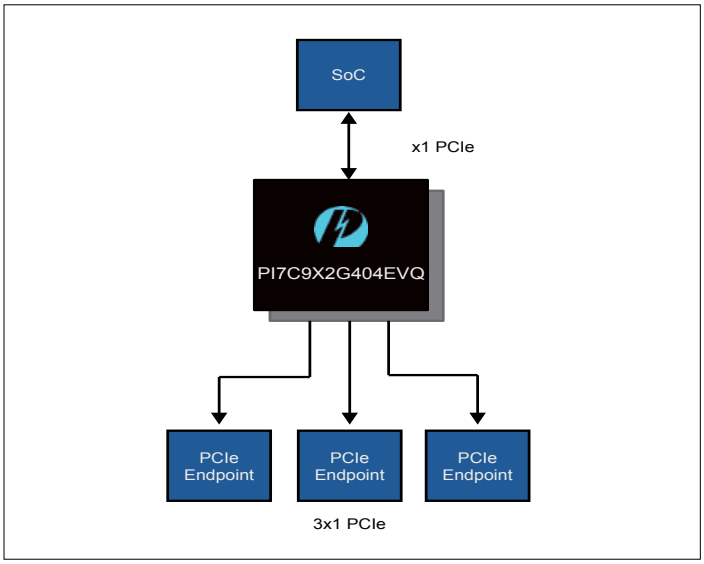
- AEC-Q100 Grade 2
- PCI Express® Base Specification, Revision 2.1
- PCI Express CEM Specification, Revision 2.0
- PCI-to-PCI Bridge Architecture Spec., Rev 1.2
- Advanced Configuration Power Interface (ACPI) Specification

Applications

- Automotive Telematics and Infotainment
- In-vehicle Wireless AP/Router
- V2V System
- ADAS
- Vehicle Navigation
- Safety and Security
- V2G System

Application Diagram





PI7C9X2G304/404EVQ Family Features

Part Number	Ports	Lanes	AEC-Q100	Latency (ns)	Clock Buffer	Temp. (°C)	Package (mm)	Pkt pins	Pb free
PI7C9X2G304EVQ	3	4	Grade 2	<150	Yes	-40°C+105°C	10x10 aQFN	136	Yes
PI7C9X2G404EVQ	4	4	Grade 2	<150	Yes	-40°C+105°C	10x10 aQFN	136	Yes

Ordering Information

Part Number	Package (mm)	AEC-Q100	Product Description	Evaluation kit Part Number	Product Description
PI7C9X2G304EVAQ2ZXAEX+	10 x 10mm aQFN	Grade 2	3-Ports, 4-Lanes PCIe2.1 Packet Switch	PI7C9X2G304EVEVB-X1U	Evaluation kit for PI7C9X2G304EVQ
PI7C9X2G404EVAQ2ZXAEX+	10 x 10mm aQFN	Grade 2	4-Ports, 4-Lanes PCIe2.1 Packet Switch	PI7C9X2G404EVEVB	Evaluation kit for PI7C9X2G404EVQ

+Notes:

1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant.
2. See https://www.diodes.com/quality/lead-free/ for more information about Diodes Incorporated's definitions of Halogen- and Antimony-free, "Green" and Lead-free.
3. Halogen- and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
4. Q: Automotive Compliant
5. 2: AEC-Q100 Grade Level
6. E = Pb-free and Green
7. X suffix = Tape/Reel

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