



Connect Tech Inc.

Embedded Computing Experts

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Product Change Notification

COM Express® Type 7 + GPU Embedded System

PCN Number:	CTIU-00014
Revision:	0.01
Issue Date:	2019-09-19
Effective Date:	2019-09-19

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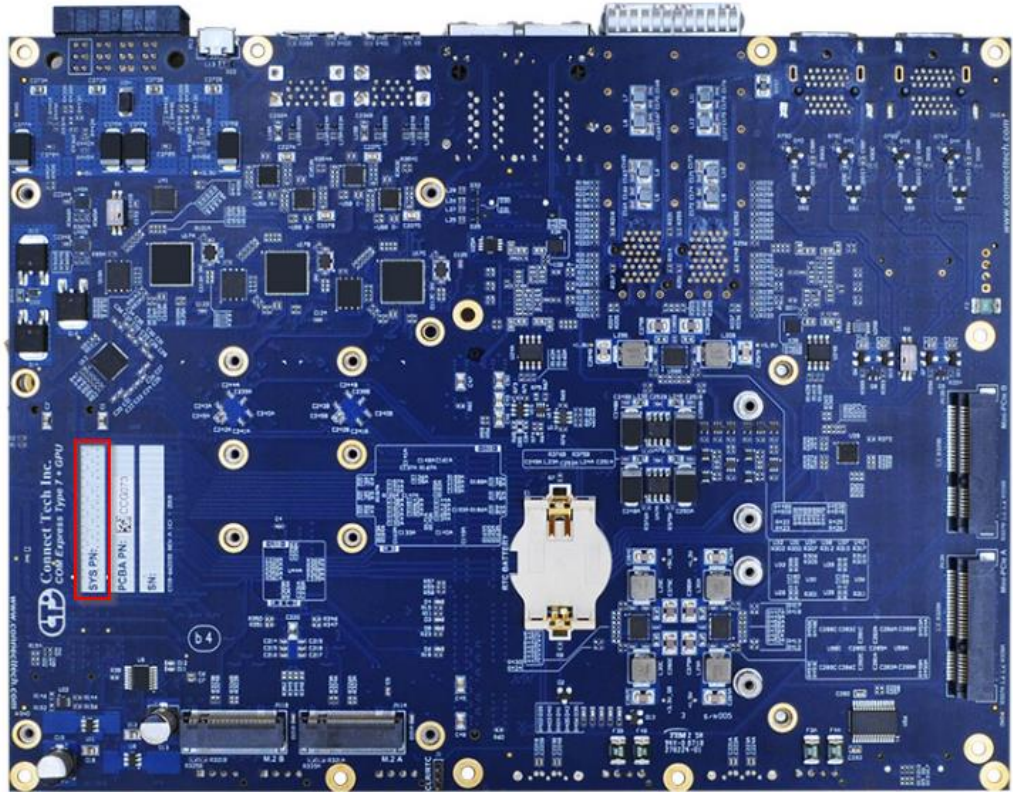
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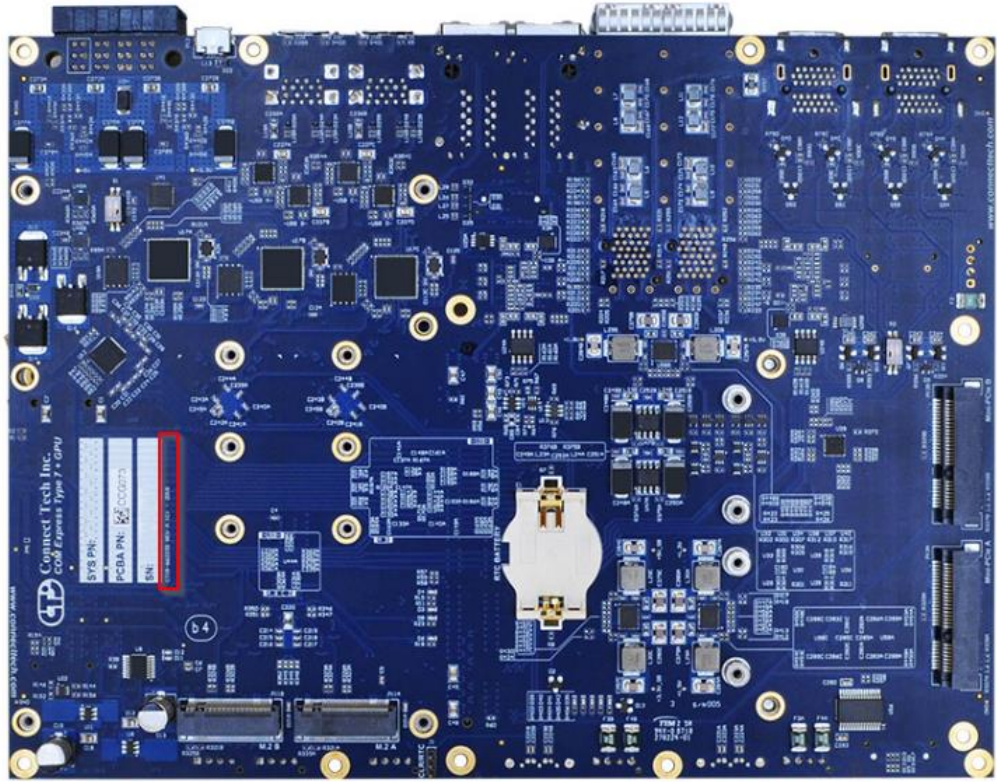
1 Product Identification

1.1 Product Data

	Previous Version	Interim Revision	New Version
Product Name	COM Express® Type 7 + GPU Embedded System	COM Express® Type 7 + GPU Embedded System	COM Express® Type 7 + GPU Embedded System
CTI Part Numbers	V7G001, V7G002, V7G003, V7G004, V7G005, V7G006, D7G001, D7G002, D7G003, D7G004, D7G005, D7G006	V7G001, V7G002, V7G003, V7G004, V7G005, V7G006, D7G001, D7G002, D7G003, D7G004, D7G005, D7G006	V7G001, V7G002, V7G003, V7G004, V7G005, V7G006, D7G001, D7G002, D7G003, D7G004, D7G005, D7G006
Hardware Revision	B and older	B – specific serial numbers	C

1.2 Means of Distinguishing Changed Products

	Remark
Product Number	<input checked="" type="checkbox"/> Product number on PCB silkscreen 
Hardware Revision	<input checked="" type="checkbox"/> See board number and revision on PCB silkscreen.

	
Lot Code	<input type="checkbox"/>
Label	<input type="checkbox"/>
Other	<input checked="" type="checkbox"/> Interim revisions are shipped after 2019-09-18 and can be identified by their serial number– contact sales@connecttech.com for further details

2 Description and Reason of Change

AVL	<input type="checkbox"/>	Product Improvement	<input checked="" type="checkbox"/>
Material	<input type="checkbox"/>	BIOS Release	<input type="checkbox"/>
Assembly Process	<input type="checkbox"/>	Firmware Release	<input type="checkbox"/>
Assembly BOM	<input type="checkbox"/>	Datasheet / Manual	<input checked="" type="checkbox"/>
Testing	<input checked="" type="checkbox"/>	DFM	<input type="checkbox"/>
Manufacturing Site	<input type="checkbox"/>	Other	<input type="checkbox"/>
Equipment	<input type="checkbox"/>		

2.1 CPU / GPU power path performance

CTI has found that certain external power supplies, wiring schemes, and V7G/D7G operational modes can cause the +12V rail seen by the CPU and GPU to dip below operational thresholds during turn-on as well as during significant processing load steps. Also in certain cases, the combination of external power supply, wiring, and operation mode could induce an overshoot on the +12V rail coming into the board.

Interim Solution

The interim solution modifies the input power path to the CPU and GPU by removing the ATX mode turn-on MOSFETS, adding capacitance, and optimizing transient voltage capabilities.

This modification means that CPU, GPU, and other devices will now be provided +12V at the same time – removing the occasionally double boot experienced during power on due to power supply brown out.

It also removes the DC losses incurred by CPU and GPU power control MOSFETS, which contribute to the power supply error margin.

This solution is suitable for applications not requiring ATX power modes.

Products implementing this solution will be shipped after 2019-09-18 and can be identified by their serial number.

Next Revision solution

Revision C will re-add ATX turn-on capabilities, improve transient response, and reduce DC losses by

- Introducing power-on ramp control
- Using optimized MOSFETS for reverse polarity and ATX power control
- Adding capacitance before and after power-on ramp controllers
- Adding the ability to attach sense lines from the external power supply to the V7G/D7G

However overall system performance remains contingent on the +12V power supply selected by the system integrator

2.2 Input Power Supply Specification

The external power supply and wiring selected by the system integrator has a significant impact on CPU and GPU performance. The +12V provided by the external supply is not regulated in any way by V7G/D7G on-board circuitry. The V7G/D7G only provides reverse polarity protection, with new versions providing power-on ramp control.

User guide documentation will be updated to indicate this very critical component of the system integration. Along with current requirements for each CPU/GPU combination.

The power supply input range must be between 11.4-12.6V. There are several factors that can influence the nominal power supply output to push it out of this range:

- Power supply DC offset
- DC losses from wiring
- temperature drift
- transient response.

The following are some guidelines for system integration:

Power supply wiring:

- must use the connectors specified in the V7G/D7G User Guide,
- wires conductors must be 14AWG or 16AWG
- all 6 conductors must be routed the entire length from V7G/D7G input to power supply
- length should be limited to 12 inches or less
- For the new revision, sense lines can be connected

Power supply selection

- Voltage tuning
- Sense lines
- Good transient response

3 Impact of change (positive or negative) on fit, form, function & reliability

3.1 Quality and Reliability

The changes listed in Section 2 will improve the power-on performance and transient performance of the V7g

3.2 Software Compatibility

All software written for Revision B and earlier will be compatible with the interim Revision and Revision C

3.3 Hardware Compatibility

The interim Revision eliminates ATX power modes; the Revision C provides a different implementation with similar functionality.

3.4 Mechanical Compatibility

The Revision C hardware adds a sense line connector – it will have minimal impact on system integrations.

4 Product / Revision Discontinuation

After the release of the document – the Revision B interim revision will be shipped until the Revision C reaches productions.

5 Contact Information

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