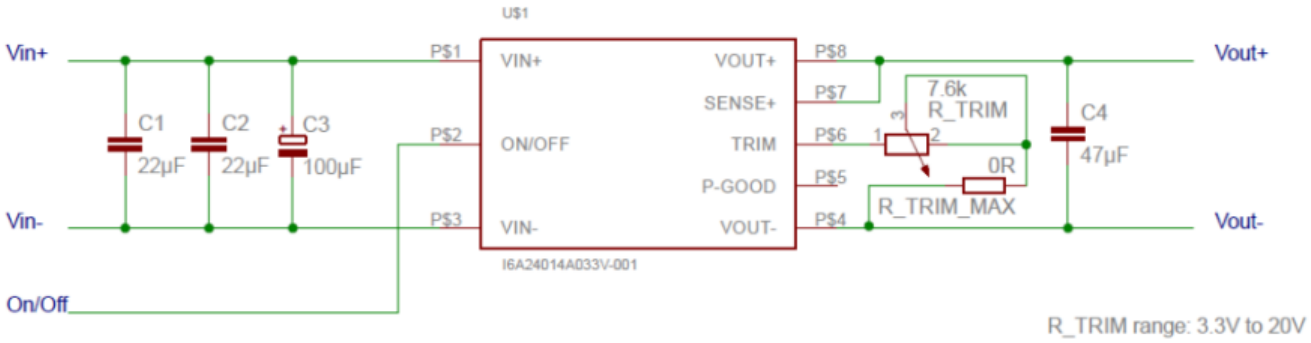
i6A Reference Design Application Note

i6A Reference Design

1. Design Consideration

- TDK-Lambda's power module provides all the power train components in one compact package allowing the end user quickly to design a custom power system.
  The purpose of this reference design is to assist the engineer to design the printed circuit board and select the additional components from commonly available material.
- TDK-Lambda Technical Support will be glad to assist you further.



Picture 1

2. Reference Design

- Picture 1 shows a basic circuitry for basic mode operation.
- Trim:
  - R_TRIM_MAX with 0.75kΩ sets the maximum output voltage to 18V.
  - With R_TRIM the output voltage can be adjusted over the specified output voltage range of 3.3V to 18V.

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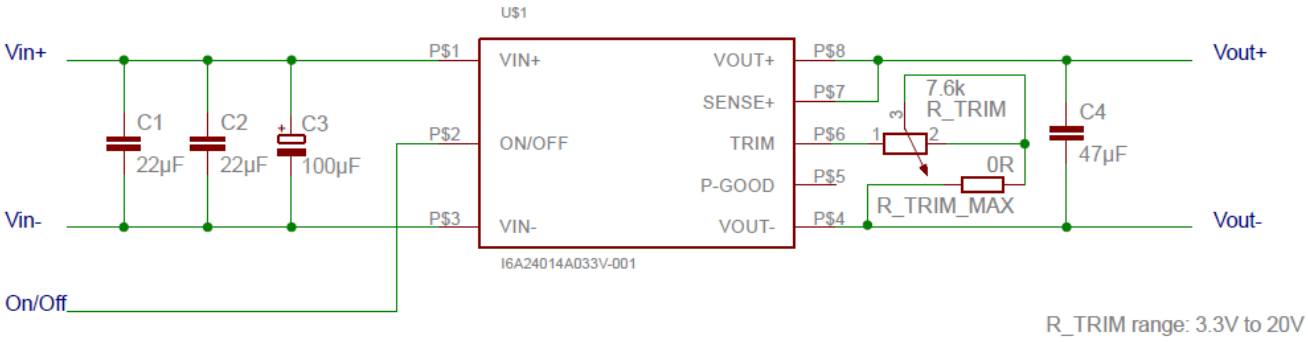
3. BOM

- Below list shows the additional used components for the reference design



Ref designator	Value, Rating	Manufacturer	Part number
C1, C2	Cap 22µF, 50V	TDK	CKG57NX5R1H226M500JH
C3	Cap 100µF, 50V	Panasonic	EEE-HD1H101P
C4	Cap 47µF, 25V	TDK	C3216X5R1E476M160AC
R_{Trim}			
R_{trim_max}			

4. Design Recommendations

- **R_{TRIM}:**
  Choose the value of R_{Trim} from the i6A datasheet page 14 according your output voltage requirement.

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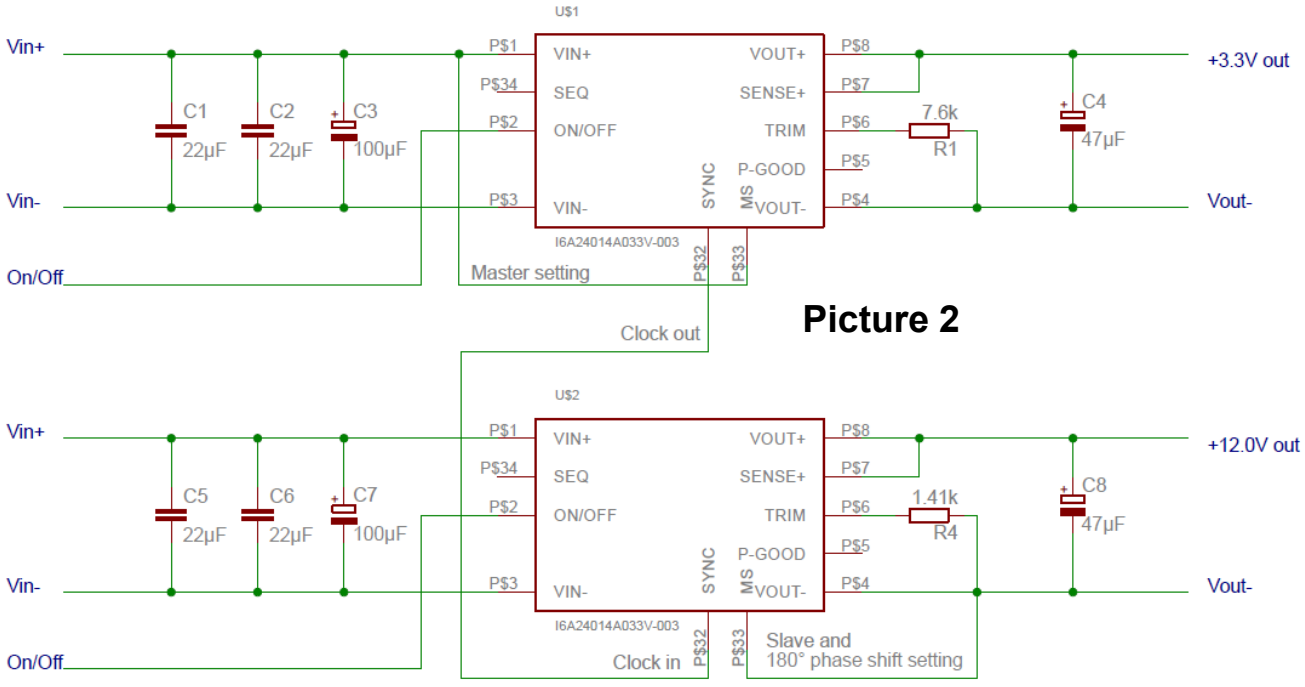
5. Full Feature option - Phase shift Synchronization

- The i6A modules can be synchronized to one another or to an external clock within +/- 20% of nominal value shown on electrical characteristics page by using pin 32(SYNC) and pin 33 (MS). Interleaving of switching can also be achieved to achieve input noise cancellation.

  Picture 2 shows the basic connection between two modules.



Picture 2

- Module 1 (U$1) is set in Clock Master mode (Pin33) . Pin 32 becomes an output.
- Module 2 (US2) is set in Clock Slave mode (Pin33) with 180 degree phase shift. Pin 32 becomes an input.

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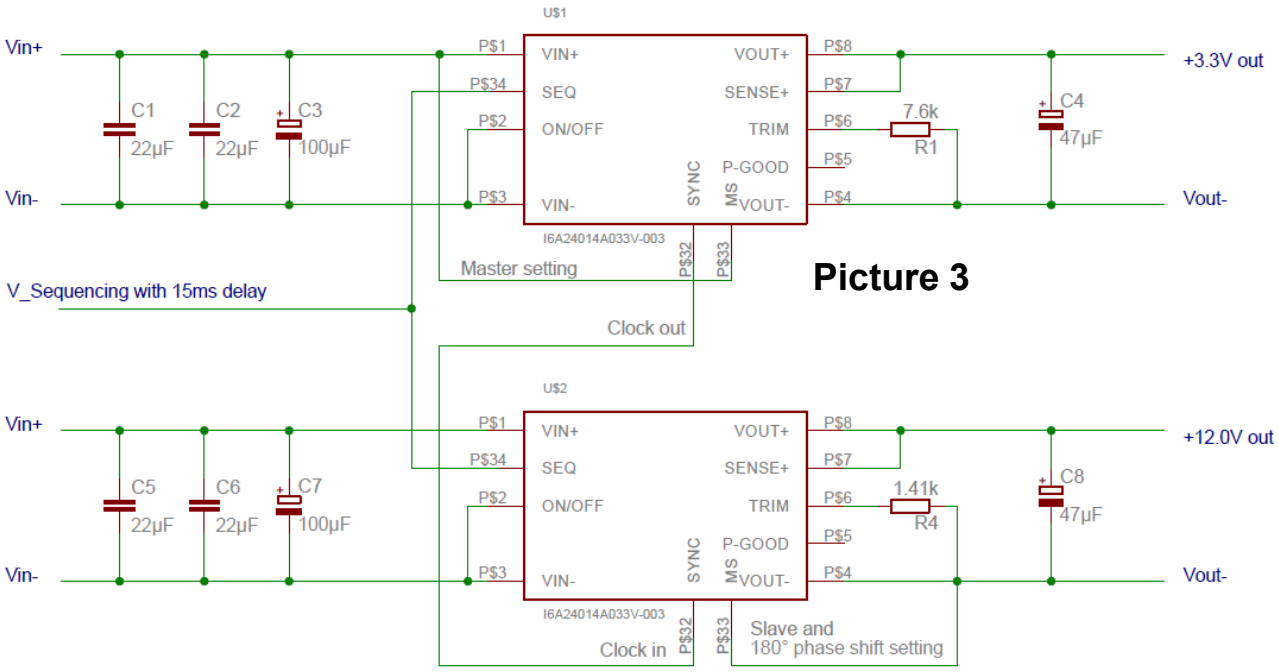
6. Full Feature option – Sequencing

- The i6A modules can be.

  Picture 3 shows the basic connection between two modules.



Picture 3

- Module 1 (U$1) is set in Clock Master mode (Pin33) . Pin 32 becomes an output.
- Module 2 (US2) is set in Clock Slave mode (Pin33) with 180 degree phase shift. Pin 32 becomes an input.