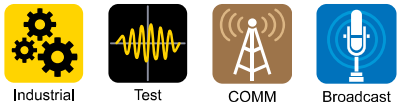
https://product.tdk.com/en/power/i7c
www.emea.tdk-lambda.com/i7c

300W, 9 to 53V Input Non-Isolated Buck-Boost DC-DC Converter



The i7C series of non-isolated step-up / step-down converters are ideal for generating additional DC output voltage rails up to 300 W from a single output 12V, 24V or 48V AC-DC power supply. The highly efficient i7C series accepts a very wide DC input and has a wide output adjustment range. Three mechanical configurations are available; low profile open frame, baseplate construction for conduction cooling, or integral heat sink for convection or forced air cooling. A full feature* Power Good signal, switching frequency synchronization and output current monitoring option is available.

Features	Benefits
• Up to 300W in a 1/16th Brick Pin-Out	• High Power Density, Less Board Area Needed
• High Efficiency - Up to 97%	• Longer Battery Life / Low Power Consumed
• Wide 5 to 28V or 9.6 to 48V Output Adjustment	• One Part Supports Multiple System Voltages
• Wide 9 to 53Vdc Input Range	• Can Operate From Different DC Source Voltages
• Low Component Count With Minimal External Components	• Low Cost
• Low Airflow With Minimal Derating Requirements	• Easy To Cool In End System

Model Selector

Model	Output Voltage (V)	Max Current (A)	Max Power (W)	Positive Logic On/Off	Negative Logic On/Off	Full Feature*	Integrated Heatsink	Integrated Baseplate
i7C4W008A120V-001-R	9.6 - 48	8	300	-	Yes	-	-	-
i7C4W008A120V-002-R	9.6 - 48	8	300	Yes	-	Yes	-	-
i7C4W008A120V-003-R	9.6 - 48	8	300	-	Yes	Yes	-	-
i7C4W008A120V-0C1-R	9.6 - 48	8	300	-	Yes	-	-	Yes
i7C4W008A120V-0F1-R	9.6 - 48	8	300	-	Yes	-	Yes	-
i7C4W012A050V-001-R	5 - 28	12.5	300	-	Yes	-	-	-
i7C4W012A050V-002-R	5 - 28	12.5	300	Yes	-	Yes	-	-
i7C4W012A050V-003-R	5 - 28	12.5	300	-	Yes	Yes	-	-
i7C4W012A050V-0C1-R	5 - 28	12.5	300	-	Yes	-	-	Yes
i7C4W012A050V-0F1-R	5 - 28	12.5	300	-	Yes	-	Yes	-

Preferred model

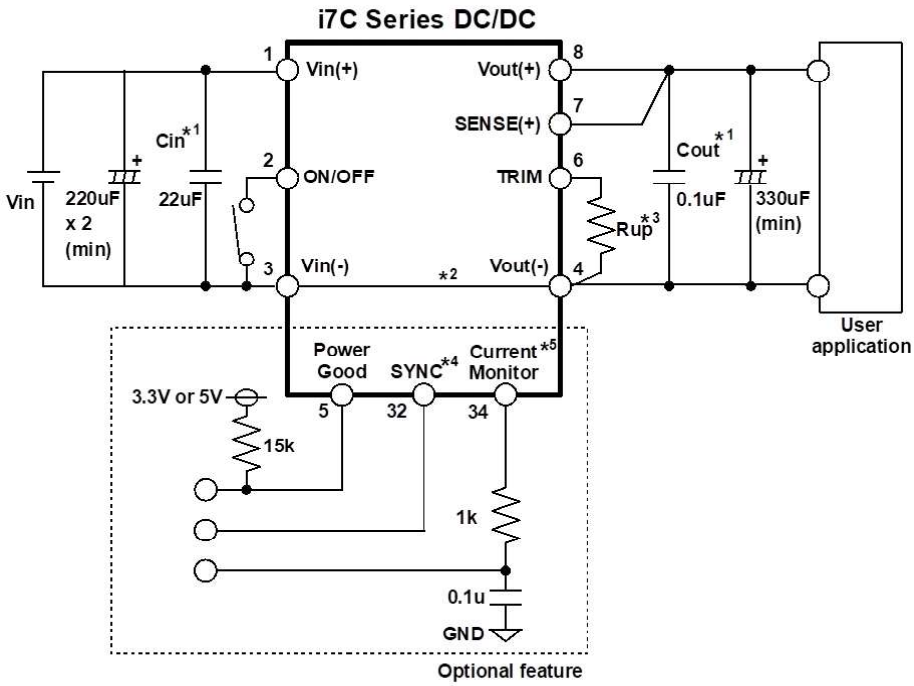
*Consult factory for a part number suffix of other feature combinations.

Specification

Model		I7C4W012A050V	I7C4W008A120V
Input			
Input Voltage range	Vdc	9 - 53 (Turn on at 9.5V typ)	
Input Current	A	25A maximum	
Standby Input Current (typ)	mA	0.25 (Nominal input, ON/OFF = OFF)	
No Load Input Current (typ)	mA	5.0 (Vin = 24 V, Vo = 12 V, Io = No load)	
Efficiency	%	91 - 96	93 - 97
Safety Agency Certifications	-	IEC/UL/CSA/EN60950-1, IEC/UL/CSA/EN62368-1, CE Mark (LVD and RoHS)	
Output			
Output Voltage Tolerance	%	± 4	
Switching Frequency	kHz	250	
Line Regulation	%	0.8	0.8
Load Regulation	%	0.8	0.5
External Load Capacitance	uF	330 - 3000	
Ripple & Noise	mV	200	180
Overcurrent Protection Threshold (typ)	-	17	15
Overvoltage Protection	V	None	
Overtemperature Protection	-	Yes	
Remote Sense	-	(+) Sense, compensating up to 5% of output voltage	
Remote On/Off	-	See Model Selector	
Power Good	-	Optional (Full Feature Version)	
Frequency Synchronization (Sync)	-	Optional (Full Feature Version)	
Current Monitor	-	Optional (Full Feature Version)	
Parallel Operation	-	Not possible	
Series Operation	-	Not possible	
Environmental			
Operating Temperature	°C	-40 to 125 (see thermal data on website)	
Storage Temperature	°C	-55 to 125	
Humidity (non condensing)	%RH	5 - 95 (Operating & Storage)	
Cooling	-	Convection, conduction (baseplate) or forced air	
Other			
Weight (Typ)	g	Open Frame: 25g, with Baseplate: 49g, with Heatsink: 64g	
Size (LxWxH)	mm	Open Frame: 34 x 36.8 x 12.2 With Baseplate: 34 x 36.8 x 13.0 With Heatsink: 34 x 36.8 x 24.9	
Size (LxWxH)	Inches	Open Frame: 1.34 x 1.45 x 0.5 With Baseplate: 1.34 x 1.45 x 0.51 With Heatsink: 1.34 x 1.45 x 0.98	
MTBF - Telcordia SR-332	-	> 10 MHrs; 100% Load; Ta = 40 °C	
Warranty	yrs	3 years	

Notes
See website for detailed specifications and test methods.

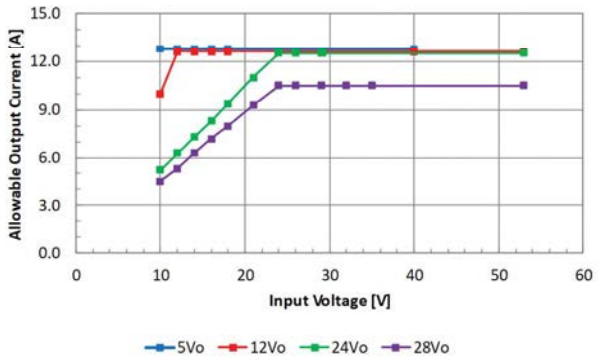
Typical Application Circuit



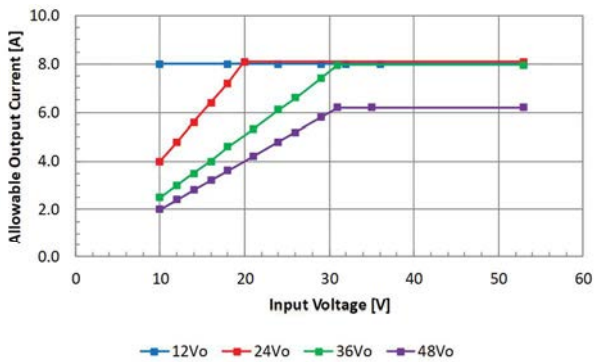
Recommendations:

1. Cin/Cout MLCC should be connected to the i7C module as close as possible in order to reject high frequency noise.
2. Connect Vin(-) and Vout(-) to copper ground plane underneath the i7C module.
3. TRIM resistor "Rup" should be connected to the i7C module as close as possible.
4. SYNC must be connected to GND when not in use.
5. External R-C filter is needed for Current Monitor

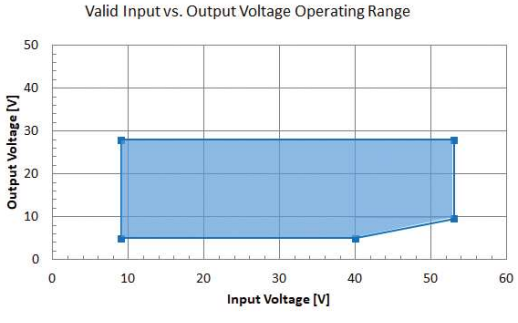
Operating Range I7C4W012A050V



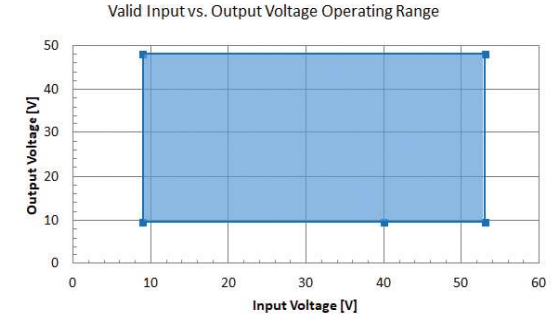
Operating Range I7C4W008A120V



Operating Range i7C4W012A050V

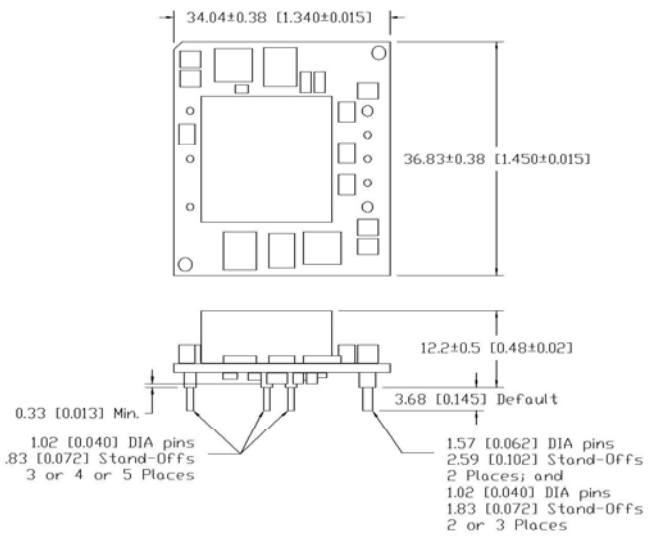


Operating Range i7C4W008A120V

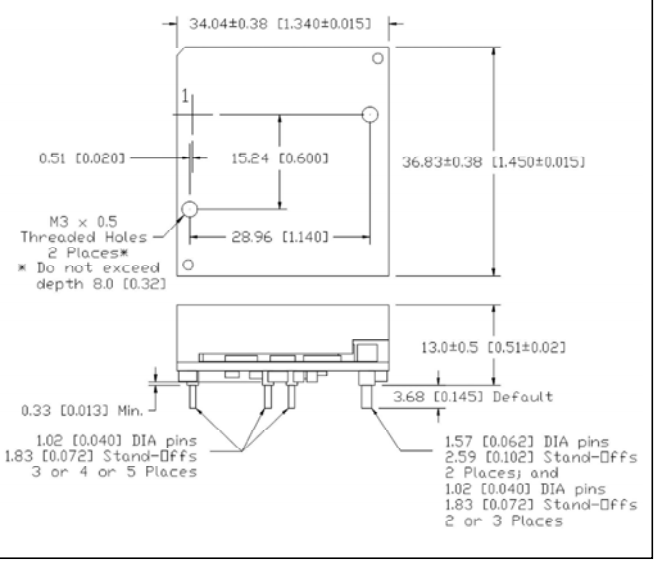


Mechanical Specification

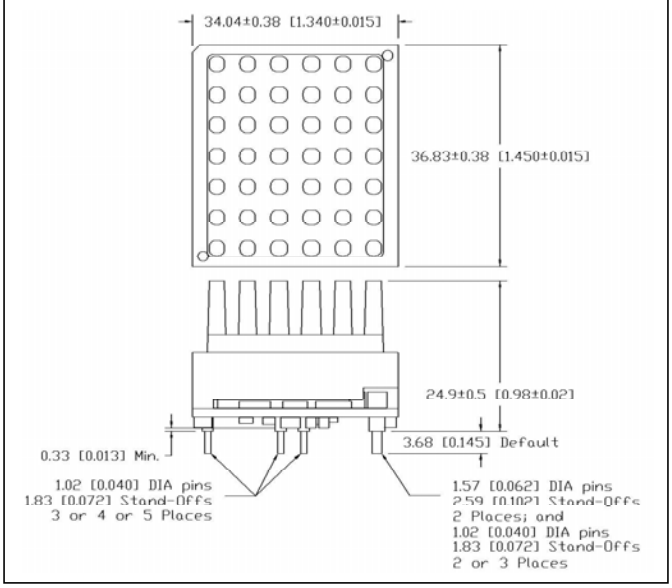
Openframe - 00x-R Series



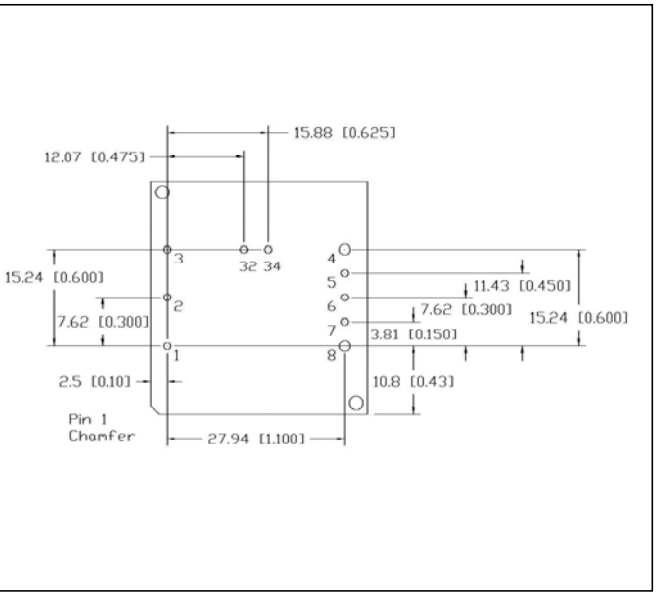
Baseplate - xCx-R Series



Heatsink - xFx-R Series

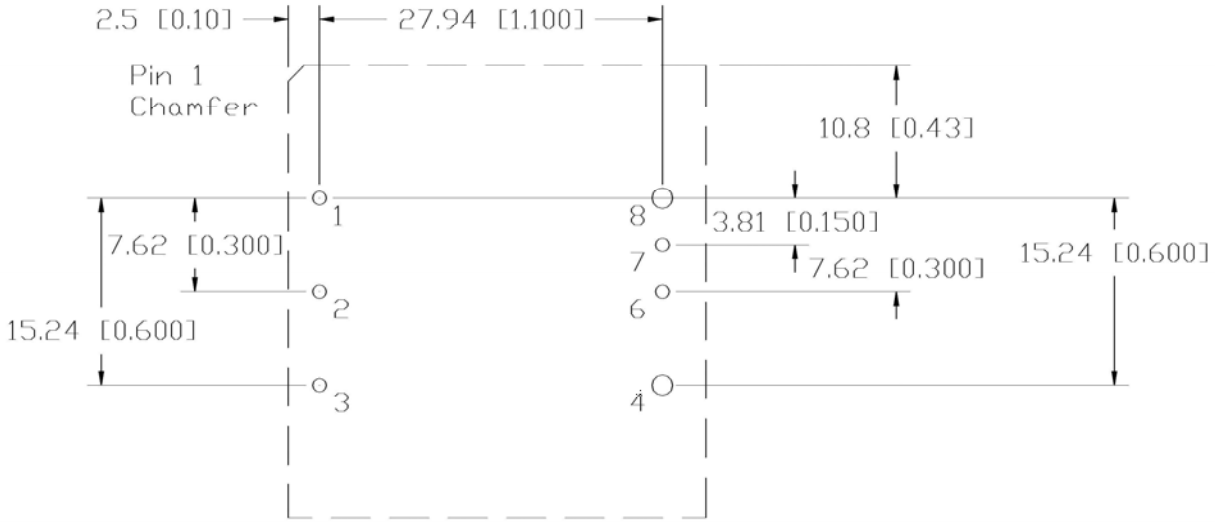


Mechanical Pin-Out / Spacing

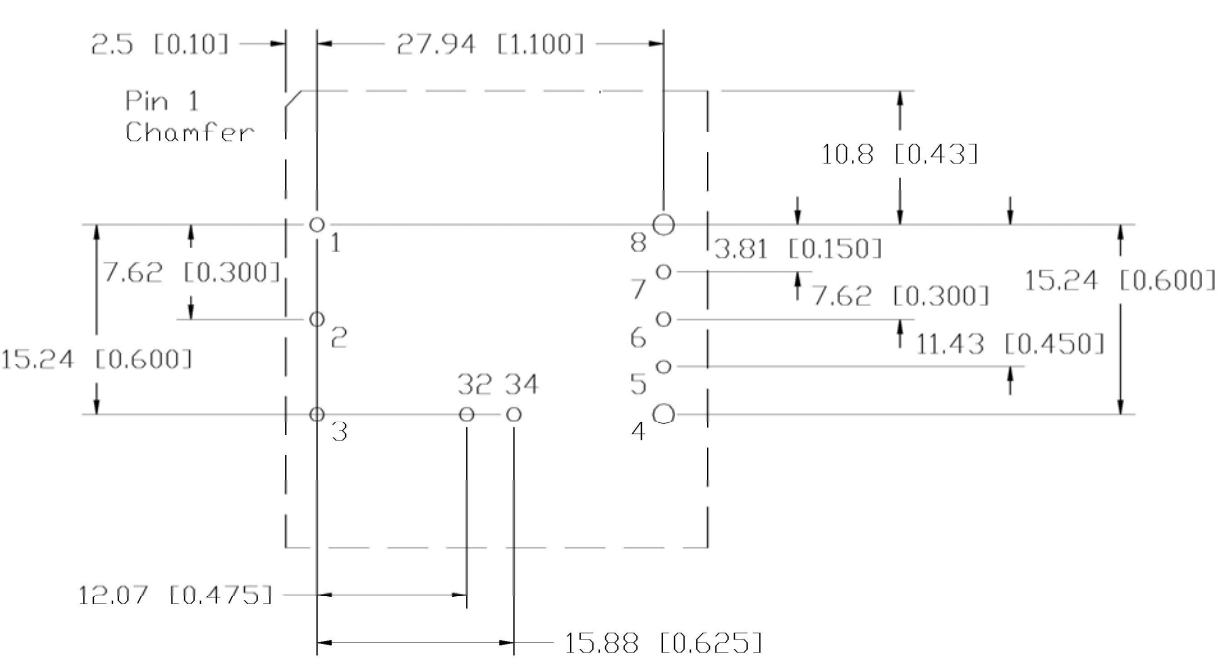


Mechanical Specification

Recommended Hole Pattern – STANDARD – xx1-R (Top View)



Recommended Hole Pattern – FULL FEATURE – xx2-R / -xx3-R (Top View)



Pinout

PIN	Function	PIN	Function
1	VIN (+)	6	TRIM
2	ON / OFF	7	SENSE (+)
3	VIN (-)	8	VOUT (+)
4	VOUT (-)	32	Sync (Option)
5	PWR GOOD (Option)	34	I Mon (Option)

Evaluation Board

Evaluation Kit PN	Description
i7C08A-C03-EVK-S1	Evaluation kit with i7C4W008A120V-003-R Full-Featured Module
i7C12A-C03-EVK-S1	Evaluation kit with i7C4W012A050V-003-R Full-Featured Module

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