

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



Industrial



Test



COMM



Broadcast



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	-

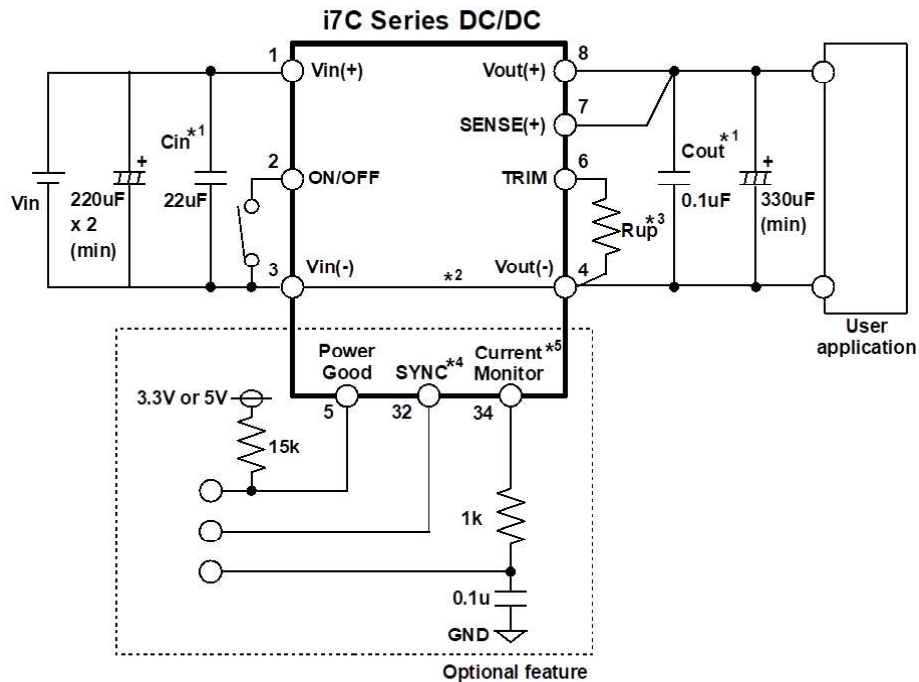
### Preferred model

\*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
Efficiency	%	91 - 96   93 - 97
Safety Agency Certifications	-	IEC/UL/CSA/EN60950-1, IEC/UL/CSA/EN62368, 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)
Sequencing	-	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 MHours; 100% Load; Ta = 40 °C
Warranty	yrs	3 years

Notes  
See website for detailed specifications and test methods.

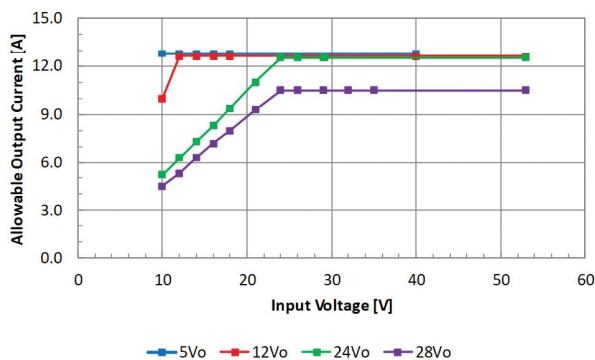
## Typical Application Circuit



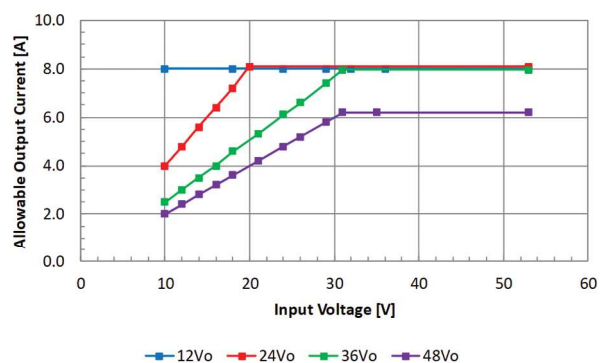
### Recommendations:

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

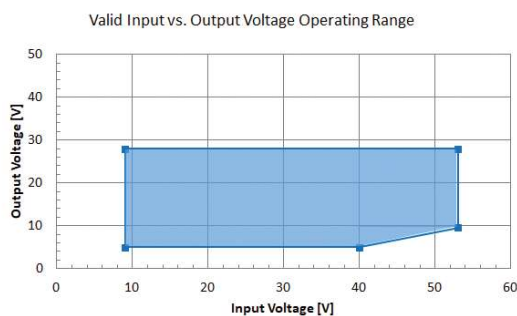
## Operating Range I7C4W012A050V



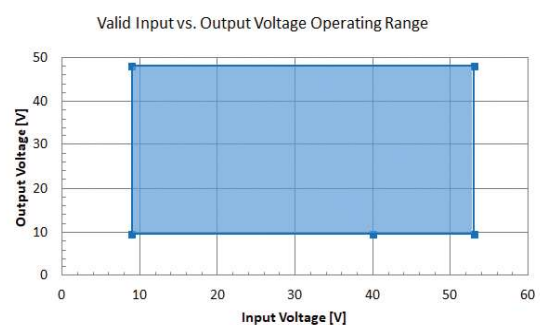
## Operating Range I7C4W008A120V



## Operating Range i7C4W012A050V

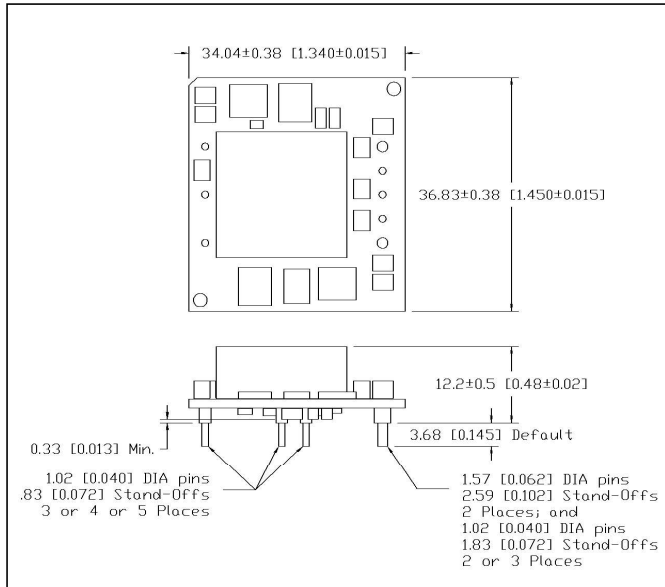


## Operating Range i7C4W008A120V

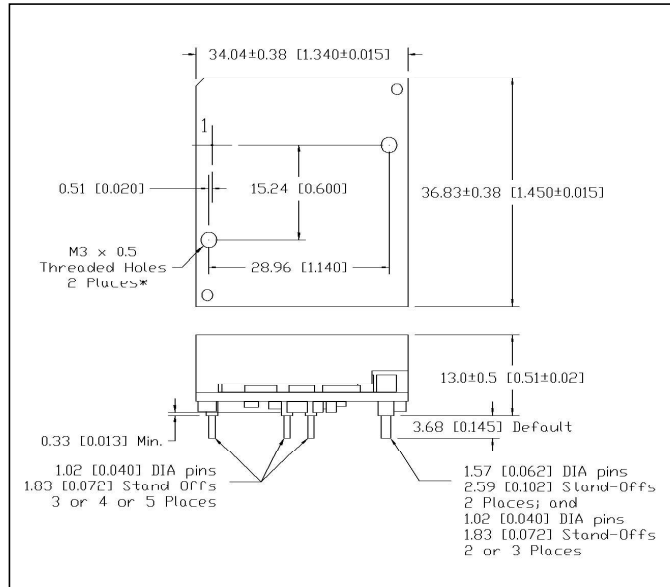


## Mechanical Specification

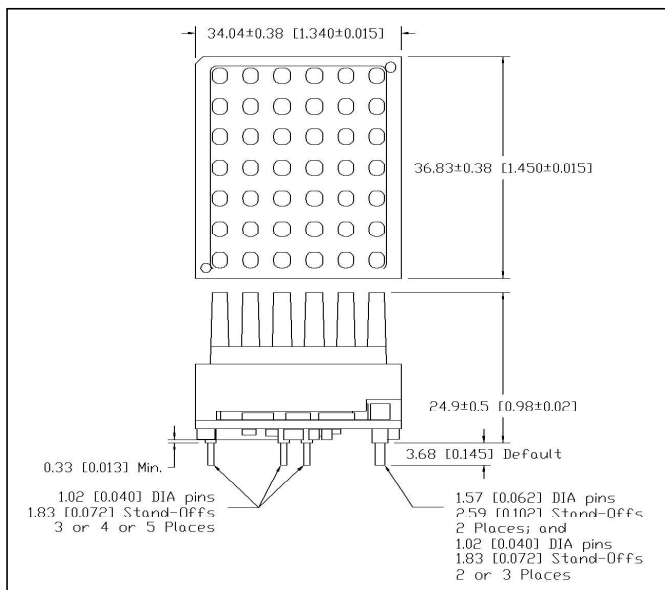
### Openframe - 00x-R Series



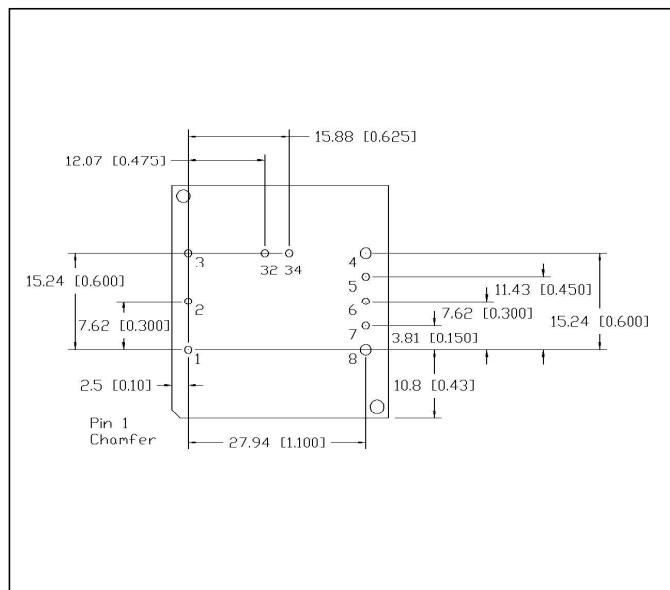
### Baseplate - xCx-R Series



### Heatsink - xFx-R Series

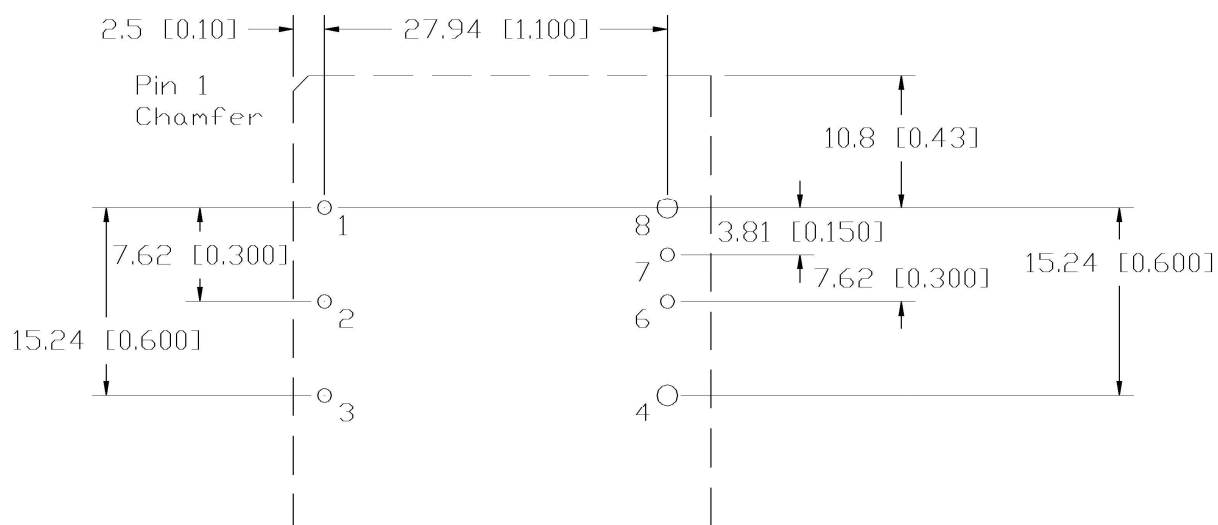


### Mechanical Pin-Out / Spacing

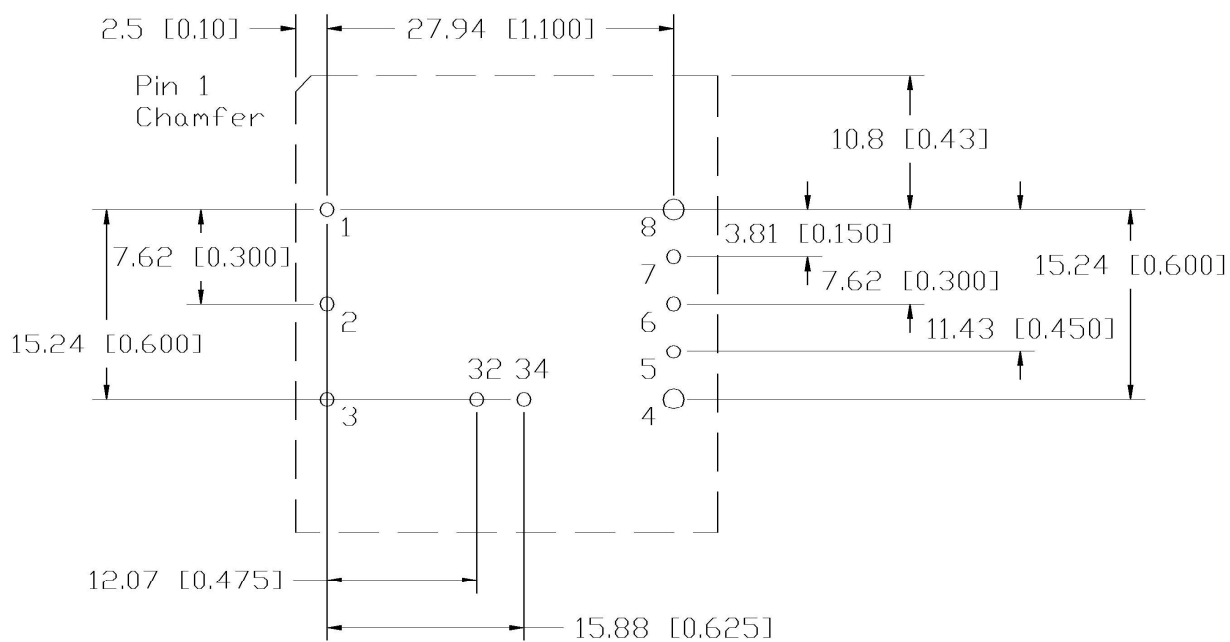


## Mechanical Specification

### 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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