



EC7C SERIES

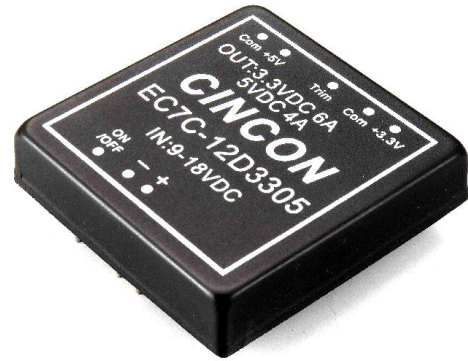
40 WATT 2:1 INPUT RANGE

DC-DC CONVERTERS



FEATURES

- * 40W Isolated Output
- * 2" X 2" Six-Sided Shield Metal Case
- * High Efficiency Up to 93%
- * Fixed 350KHz Switching Frequency
- * 2:1 Input Range
- * Regulated Outputs
- * Continuous Short Circuit Protection
- * UL60950-1 Approval (Except EC7C-XXD3305)
- * Safety Meets IEC/EN/UL 62368-1



MODEL NUMBER	INPUT VOLTAGE	OUTPUT VOLTAGE	OUTPUT CURRENT		INPUT CURRENT		% EFF.	CAPACITOR LOAD MAX.
			MIN.	MAX.	NO LOAD	FULL LOAD		
EC7C-12S25	9 -18 VDC	2.5 VDC	0 mA	10000 mA	200 mA	2354 mA	88.5	10000uF
EC7C-12S33	9 -18 VDC	3.3 VDC	0 mA	10000 mA	200 mA	3090 mA	89	10000uF
EC7C-12S05	9 -18 VDC	5 VDC	0 mA	8000 mA	200 mA	3683 mA	90.5	8000uF
EC7C-12S12	9 -18 VDC	12 VDC	0 mA	3333 mA	200 mA	3643 mA	91.5	3300uF
EC7C-12S15	9 -18 VDC	15 VDC	0 mA	2666 mA	200 mA	3642 mA	91.5	2700uF
EC7C-12D12	9 -18 VDC	±12 VDC	90 mA	±1800 mA	100 mA	4022 mA	89.5	1800uF
EC7C-12D15	9 -18 VDC	±15 VDC	70 mA	±1400 mA	100 mA	3867 mA	90.5	1400uF
EC7C-12D3305	9 -18 VDC	3.3/5.0 VDC	0 mA	10A/7.5 A	100 mA	3727 mA	89 ⁽³⁾	7270uF/7270uF
EC7C-12T3312	9 -18 VDC	3.3/±12 VDC	0.6A/±40 mA	6A/±0.4 A	200 mA	2768 mA	88.5	6000uF/400uF
EC7C-12T3315	9 -18 VDC	3.3/±15 VDC	0.6A/±30 mA	6A/±0.3 A	200 mA	2712 mA	88.5	6000uF/330uF
EC7C-12T0512	9 -18 VDC	5.0/±12 VDC	0.6A/±40 mA	6A/±0.4 A	200 mA	3729 mA	88.5	6000uF/400uF
EC7C-12T0515	9 -18 VDC	5.0/±15 VDC	0.6A/±30 mA	6A/±0.3 A	200 mA	3611 mA	90	6000uF/330uF
EC7C-24S25	18 – 36 VDC	2.5 VDC	0 mA	10000 mA	100 mA	1157 mA	90	10000uF
EC7C-24S33	18 – 36 VDC	3.3 VDC	0 mA	10000 mA	100 mA	1519 mA	90.5	10000uF
EC7C-24S05	18 – 36 VDC	5 VDC	0 mA	8000 mA	110 mA	1812 mA	92	8000uF
EC7C-24S12	18 – 36 VDC	12 VDC	0 mA	3333 mA	100 mA	1792 mA	93	3300uF
EC7C-24S15	18 – 36 VDC	15 VDC	0 mA	2666 mA	100mA	1792 mA	93	2700uF
EC7C-24D12	18 – 36 VDC	±12 VDC	90 mA	±1800 mA	100 mA	1967 mA	91.5	1800uF
EC7C-24D15	18 – 36 VDC	±15 VDC	70 mA	±1400 mA	100 mA	1902 mA	92	1400uF
EC7C-24D3305	18 – 36 VDC	3.3/5.0 VDC	0 mA	10A/7.5 A	50 mA	1843 mA	90 ⁽³⁾	7270uF/7270uF
EC7C-24T3312	18 – 36 VDC	3.3/±12 VDC	0.6A/±40 mA	6A/±0.4 A	100 mA	1361 mA	90	6000uF/400uF
EC7C-24T3315	18 – 36 VDC	3.3/±15 VDC	0.6A/±30 mA	6A/±0.3 A	100 mA	1333 mA	90	6000uF/330uF
EC7C-24T0512	18 – 36 VDC	5.0/±12 VDC	0.6A/±40 mA	6A/±0.4 A	100 mA	1813 mA	91	6000uF/400uF
EC7C-24T0515	18 – 36 VDC	5.0/±15 VDC	0.6A/±30 mA	6A/±0.3 A	100 mA	1786 mA	91	6000uF/330uF
EC7C-48S25	36 – 75 VDC	2.5 VDC	0 mA	10000 mA	50 mA	585 mA	89	10000uF
EC7C-48S33	36 – 75 VDC	3.3 VDC	0 mA	10000 mA	50 mA	764 mA	90	10000uF
EC7C-48S05	36 – 75 VDC	5 VDC	0 mA	8000 mA	60 mA	906 mA	92	8000uF
EC7C-48S12	36 – 75 VDC	12 VDC	0 mA	3333 mA	60 mA	896 mA	93	3300uF
EC7C-48S15	36 – 75 VDC	15 VDC	0 mA	2666 mA	60 mA	906 mA	92	2700uF
EC7C-48D12	36 – 75 VDC	±12 VDC	90 mA	±1800 mA	50 mA	989 mA	91	1800uF
EC7C-48D15	36 – 75 VDC	±15 VDC	70 mA	±1400 mA	50 mA	962 mA	91	1400uF
EC7C-48D3305	36 – 75 VDC	3.3/5.0 VDC	0 mA	10A/7.5 A	50 mA	926 mA	89.5 ⁽³⁾	7270uF/7270uF
EC7C-48T3312	36 – 75 VDC	3.3/±12 VDC	0.6A/±40 mA	6A/±0.4 A	50 mA	684 mA	89.5	6000uF/400uF
EC7C-48T3315	36 – 75 VDC	3.3/±15 VDC	0.6A/±30 mA	6A/±0.3 A	50 mA	682 mA	88	6000uF/330uF
EC7C-48T0512	36 – 75 VDC	5.0/±12 VDC	0.6A/±40 mA	6A/±0.4 A	50 mA	932 mA	88.5	6000uF/400uF
EC7C-48T0515	36 – 75 VDC	5.0/±15 VDC	0.6A/±30 mA	6A/±0.3 A	50 mA	903 mA	90	6000uF/330uF

NOTE: 1. Nominal Input Voltage 12, 24, 48 VDC

2. The Total Power of EC7C-12D3305, EC7C-24D3305 and EC7C-48D3305 Should not be Exceeded 40W.

3. The Efficiency is Measured with Rated Load Current (3.3V/6A, 5V/4A).

SPECIFICATIONS

All Specifications Typical at Nominal Line, Full Load, and 25°C Unless Otherwise Noted

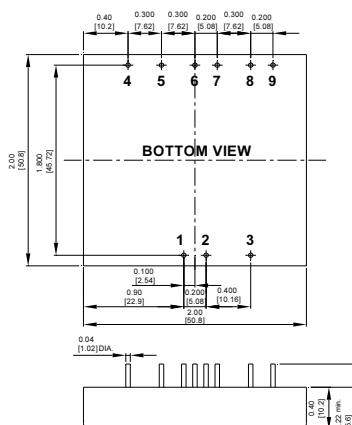
INPUT SPECIFICATIONS:

Input Voltage Range	
12V 9-18V, 24V 18-36V, 48V 36-75V	
Input Surge Voltage (100ms max.)	
12V 25Vdc max., 24V 50Vdc max., 48V 100Vdc max.	
Under voltage lockout	
12Vin: power up 8.8V, power down 8.0V	
24Vin: power up 17V, power down 16V	
48Vin: power up 34V, power down 32V	
Positive/Negative Logic Remote On/Off (note 5&6)	
Input Filter PI Type	

OUTPUT SPECIFICATIONS:

Voltage Accuracy	Single/Dual $\pm 1.5\%$ max.
	Dual positive $3.3V \pm 1.5\%$ max., $5V \pm 3\%$ max.
	Triple Main $\pm 1.5\%$ max., Auxiliary $\pm 3.0\%$ max.
Voltage Balance (Dual)	 $\pm 2.0\%$ max.
Transient Response: 75% - 100% Step Load Change (Main Output)	
Error Band ... $\pm 5\%$ Vout nominal, Recovery Time	 < 300us
Output Voltage Adjustment Range ... Single/Dual $V_o \pm 10\%$, Dual Positive $\pm 5\%$	
Ripple & Noise, 20MHz BW (Measured with 0.1uF MLCC)	
2.5V&3.3V&5V	, 50mVpp,max., 12V&15V 75mVpp max.
Dual $\pm 12V$	 120mVpk-pk, max., $\pm 15V$ 150mVpk-pkmax.
Dual positive +3.3V /+5V	 100mVpk-pk max.
Temperature Coefficient	 $\pm 0.02\%/^{\circ}C$ max.
Line Regulation (note1)	Single/Dual/Dual positive $\pm 0.5\%$ max.
	Triple Main $\pm 1.0\%$ max., Auxiliary $\pm 3.0\%$ max.
Load Regulation (note2)	Single $\pm 0.5\%$ max., Dual $\pm 1.0\%$ max.
Dual positive(note3)	 $3.3V \pm 1.5\%$ max., $5V \pm 4\%$ max.
Triple ... Main	 $\pm 1.0\%$ max., Auxiliary $\pm 4.0\%$ max.
Cross Regulation (note4)	 $+3.3V \pm 1.0\%$ max. $+5V \pm 4.0\%$ max.
Over voltage Protection (Zener Diode Clamp)	2.5V 3.6Vdc typ.
	3.3V 3.9Vdc typ., 5V 6.2Vdc typ.
	12V 15Vdc typ., 15V 18Vdc typ.
Output Current Limit, % Nominal Output	 110%-140%
Output Short Circuit Protection	 Continuous (Hiccup mode)
Start up Time	 10ms typ.

Case C Dimensions:



PIN CONNECTION				
Pin	Single	Dual	Dual Positive	Triple
1	+V Input	+V Input	+V Input	+V Input
2	- V Input	- V Input	- V Input	- V Input
3	On / Off	On / Off	On / Off	On / Off
4	NC	No Pin	+3.3Vout	+Aux. Out
5	- Sense	+V Output	Com(3.3V RTN)	Common
6	+Sense	Common	Trim	- Aux. Out
7	+V Output	Common	NC	+V Output
8	- V Output	- V Output	+5V Output	- V Output (Com)
9	Trim	Trim	Com(5V RTN)	NC

*NC : NO CONNECTION WITH PIN
NOTE: Pin Size is 0.02 $\pm$ 0.002 Inch(0.5 $\pm$ 0.05mm) DIA
All Dimensions In Inches(mm)
Tolerances Inches: X.XX=0.02 X.XXX=0.010
Millimeters: X.X=0.5 X.XX=0.25

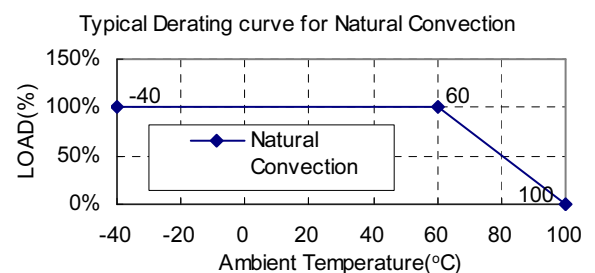
GENERAL SPECIFICATIONS:

Efficiency.....	See Table
Isolation Voltage Input/Output	1500VDC max.
Isolation Resistance	 10^9 ohm min.
Isolation Capacitance	 1000pF typ.
Switching Frequency	 350KHz typ.
Operating Ambient Temperature	 $-40^{\circ}C$ to $+85^{\circ}C$
De-rating, Above $60^{\circ}C$	 Linearly to Zero Power at $100^{\circ}C$
Case Temperature (note8)	 $100^{\circ}C$ max.
Cooling	 Natural Convection
Storage Temperature	 $-55^{\circ}C$ to $+125^{\circ}C$
Humidity	 95% RH max. Non Condensing
MTBF.. MIL-HDBK-217F. GB. $25^{\circ}C$. Full Load	 XXD3305 500Khrs typ.
	Others 700Khrs typ.

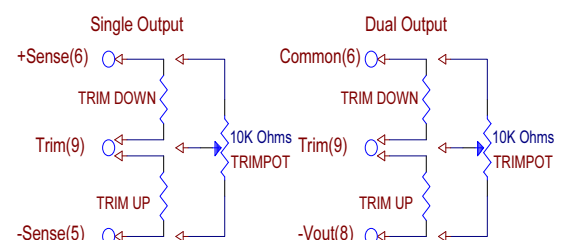
Thermal Shutdown, Case Temperature	 $110^{\circ}C$ Typical
Dimensions	 2.00 $\times$ 2.00 $\times$ 0.40 inches(50.8 $\times$ 50.8 $\times$ 10.2 mm)
Case Material	 Black Coated Copper with Non-Conductive Base
Weight	 65g

NOTE:

- Measured from high line to low line (dual positive at rated load).
- Measured from full load to 10% load.
- Measured from max. load to zero load, other output at zero load.
- Measured from max. load to 10% load, other output at 10% load.
- Logic Compatibility CMOS or Open Collector TTL, ref. to -Vin
Module On $>3.5Vdc$ to $75Vdc$ or Open Circuit
Module Off 0 to $<1.8Vdc$.
- Suffix "N" to the model number with negative logic remote on/off
Module On 0 to $<1.8Vdc$,
Module Off $>3.5Vdc$ to $75Vdc$ or Open Circuit
- If +/-Sense is not being used, the +sense should be connected to +Vout and likewise the -sense should be connected to -Vout.
- Maximum case temperature under any operating condition should not be exceeded $100^{\circ}C$.



EXTERNAL OUTPUT TRIM



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