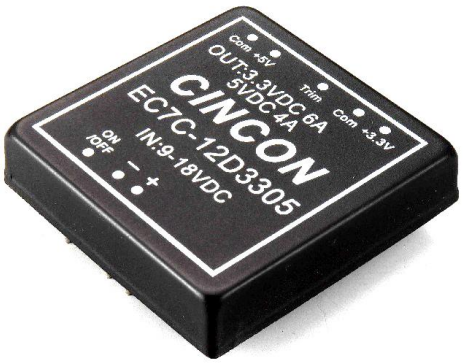
EC7C SERIES

40 WATT 2:1 INPUT RANGE DC-DC CONVERTERS

E176177



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℃ 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 ..... ±1.5%max.
Dual positive ..... 3.3V±1.5% max., 5V±3% max.
Triple ..... Main ±1.5% max., Auxiliary ±3.0% max.
Voltage Balance (Dual) ..... ±2.0% max.
Transient Response: 75% - 100% Step Load Change (Main Output)
Error Band ... ±5% Vout nominal, Recovery Time ..... < 300us
Output Voltage Adjustment Range ... Single/Dual Vo±10%, Dual Positive±5%
Ripple & Noise, 20MHz BW (Measured with 0.1uF MLCC)
2.5V&3.3V&5V ....., 50mVpp,max., 12V&15V ..... 75mVpp max.
Dual ±12V ..... 120mVpk-pk, max., ±15V ..... 150mVpk-pkmax.
Dual positive +3.3V /+5V ..... 100mVpk-pk max.
Temperature Coefficient ..... ±0.02%/°C max.
Line Regulation (note1) ..... Single/Dual/Dual positive ..... ±0.5% max.
Triple ..... Main ..... ±1.0% max., Auxiliary ..... ±3.0% max.
Load Regulation (note2) ..... Single ±0.5% max., Dual ±1.0% max.
Dual positive(note3) ..... 3.3V ±1.5% max., 5V±4% max.
Triple ... Main ..... ±1.0% max., Auxiliary ..... ±4.0% max.
Cross Regulation (note4) ..... +3.3V±1.0% max. +5V±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.

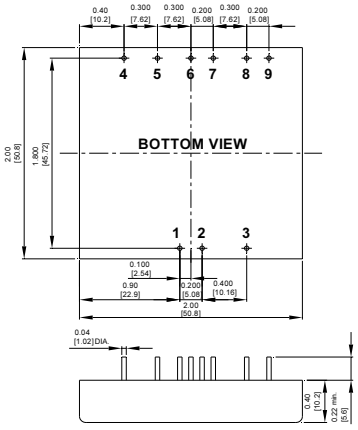
GENERAL SPECIFICATIONS:

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℃ to +85℃
De-rating, Above 60℃ ..... Linearly to Zero Power at 100℃
Case Temperature (note8) ..... 100℃ max.
Cooling ..... Natural Convection
Storage Temperature ..... -55℃ to +125℃
Humidity ..... 95% RH max. Non Condensing
MTBF.. MIL-HDBK-217F. GB. 25℃. Full Load ..... XXD3305 ..... 500Khrs typ.
Others ..... 700Khrs typ.
Thermal Shutdown, Case Temperature ..... 110℃ Typical
Dimensions ..... 2.00×2.00x0.40 inches(50.8x50.8×10.2 mm)
Case Material ..... Black Coated Copper with Non-Conductive Base
Weight 65g

NOTE:

1. Measured from high line to low line (dual positive at rated load).
2. Measured from full load to 10% load.
3. Measured from max. load to zero load, other output at zero load.
4. Measured from max. load to 10% load, other output at 10% load.
5. 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.
6. 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
7. If +/-Sense is not being used, the +sense should be connected to +Vout and likewise the –sense should be connected to –Vout.
8. Maximum case temperature under any operating condition should not be exceeded 100℃.

Case C Dimensions:

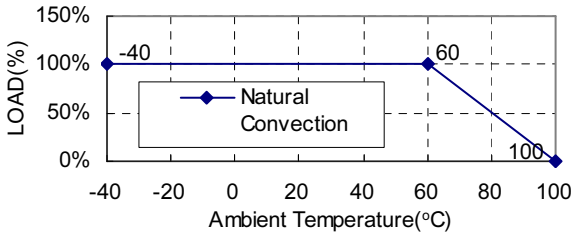


PIN CONNECTION				
Pin	Single	Dual	Dual Positive	Triple
1	+V Input	+V Input	+V Input	+V Input
2	- V Input	- V Input	- V Input	- V Input
3	On / Off	On / Off	On / Off	On / Off
4	NC	No Pin	+3.3Vout	+Aux. Out
5	- Sense	+V Output	Com(3.3V RTN)	Common
6	+Sense	Common	Trim	- Aux. Out
7	+V Output	Common	NC	+V 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±0.002 Inch(0.5±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

Typical Derating curve for Natural Convection



EXTERNAL OUTPUT TRIM

