



# EC7C SERIES

## 40 WATT 2:1 INPUT RANGE

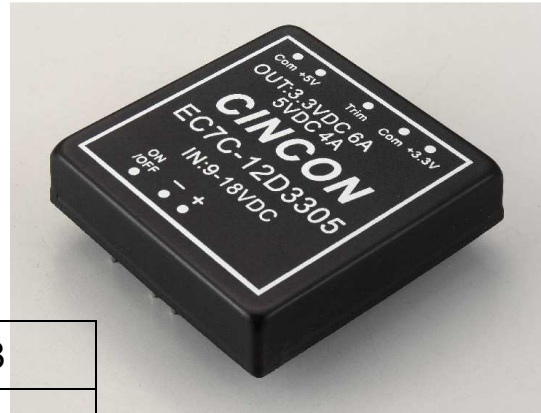
### DC-DC CONVERTERS



## 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
- \* CE Mark Meets 2004/108/EC
- \* UL60950-1 Approval

章 節	C-8
頁 次	1-1



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

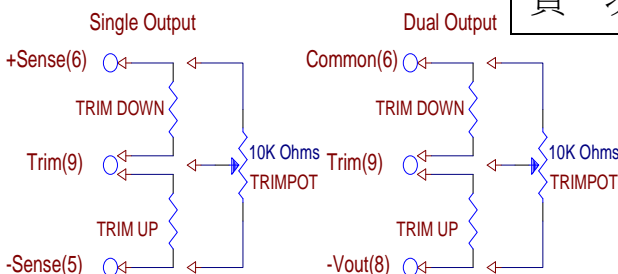
## OUTPUT SPECIFICATIONS:

- Voltage Accuracy ..... Single/Dual ..... ±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
- Line Regulation (note 1) ..... Single/Dual/Dual positive ..... ±0.5% max.
  - Triple ..... Main ..... ±1.0% max., Auxiliary ..... ±3.0% max.
- Load Regulation (note 2) ..... Single ±0.5% max., Dual ±1.0% max.
  - Dual positive(note 3) ..... 3.3V ±1.5% max., 5V±4% max.
  - Triple ... Main ..... ±1.0% max., Auxiliary ..... ±4.0% max.
- Cross Regulation (note 4) ..... +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.

## 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 ..... <1.8Vdc.
- Suffix "N" to the Model Number with Negative Logic Remote ON/OFF
  - Module ON ..... <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°C.

## EXTERNAL OUTPUT TRIM

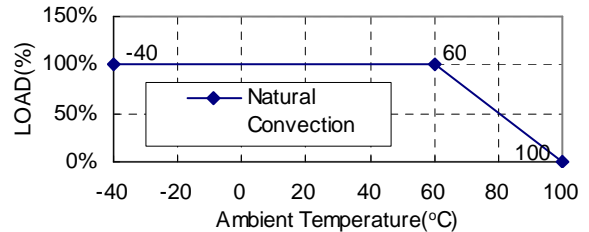


章 節	C-8
頁 次	1-2

## GENERAL SPECIFICATIONS:

- Efficiency..... See Table
- Isolation Voltage ..... Input/Output ..... 1500VDC max.
- Isolation Resistance ..... 10<sup>9</sup> ohm min.
- Isolation Capacitance ..... 1000pF typ.
- Switching Frequency ..... 350KHz typ.
- Operating Ambient Temperature ..... -40°C to +85°C
- De-rating, Above 60°C ..... Linearly to Zero power at 100°C
- Case Temperature (note 8) ..... 100°C max.
- Cooling ..... Natural Convection
- Storage Temperature ..... -55°C to +125°C
- Humidity ..... 95% RH max. Non condensing
- MTBF... MIL-STD-217F, GB, 25°C, Full Load
  - XXD3305 ... 500Khrs typ., Others ..... 700Khrs typ.
- Thermal Shutdown, Case Temperature ..... 110°C Typical
- Dimensions ..... 2.00×2.00×0.40 inches(50.8×50.8×10.2 mm)
- Case Material ..... Black Coated Copper with Non-Conductive Base
- Weight ..... 65g

Typical Derating curve for Natural Convection



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

\*NC : NO CONNECTION WITH PIN

## Case C Dimensions:

All Dimensions In Inches(mm)  
 Tolerance Inches: X.XX=±0.02, X.XXX=±0.010  
 Millimeters: X.X=±0.5, X.XX=±0.25

