



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

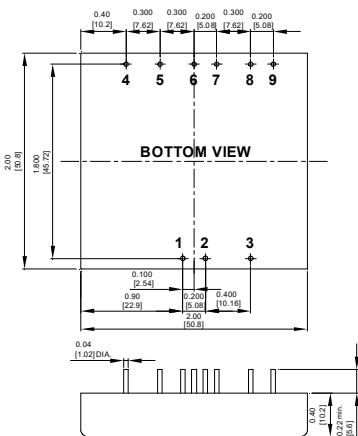
INPUT SPECIFICATIONS:

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-pk max.
 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 0.04±0.004 Inch(1.0±0.1mm) DIA
 All Dimensions In Inches[mm]
 Tolerances : Inches:XXX=±0.04,X.XXX±0.010
 Millimeters:XX=±1.0,X.XX=±0.25

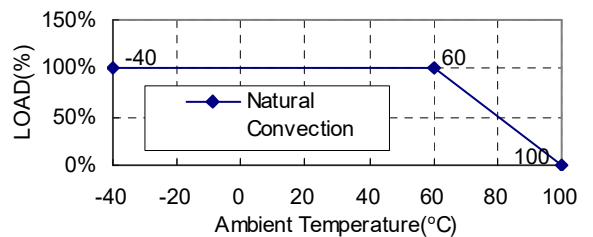
GENERAL SPECIFICATIONS:

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 2.00×2.00×0.40 inches(50.8×50.8×10.2 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 $100^{\circ}C$.

Typical Derating curve for Natural Convection



EXTERNAL OUTPUT TRIM

