



**THE DATASHEET OF  
EC7A-24S05**





# EC7A SERIES

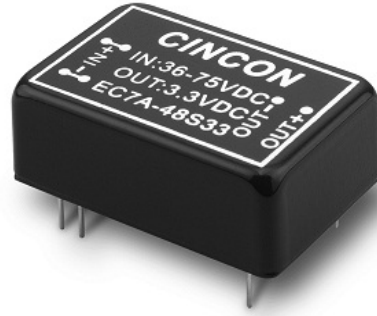
## 10 WATT 2:1 INPUT RANGE

### DC-DC CONVERTERS



## FEATURES

- \* 10W Isolated Output
- \* DIP-24/SMD Metal Package
- \* Very High Efficiency up to 89%
- \* 2:1 Input Range
- \* Regulated Outputs
- \* PI Input Filter
- \* Continuous Short Circuit Protection
- \* No Tantalum Capacitor Inside
- \* Safety Meets IEC/EN/UL 62368-1
- \* UL60950-1 Approval



MODEL NUMBER	INPUT VOLTAGE	OUTPUT VOLTAGE	OUTPUT CURRENT		INPUT CURRENT		% EFF.	CAPACITOR LOAD MAX.
			MIN.	MAX.	NO LOAD	FULL LOAD		
EC7A-12S25	9-18 VDC	2.5 VDC	0 mA	3000 mA	40 mA	735 mA	85	3000uF
EC7A-12S33	9-18 VDC	3.3 VDC	0 mA	3000 mA	50 mA	971 mA	85	3000uF
EC7A-12S05	9-18 VDC	5 VDC	0 mA	2000 mA	60 mA	947 mA	88	2000uF
EC7A-12S12	9-18 VDC	12 VDC	0 mA	835 mA	40 mA	949 mA	88	835uF
EC7A-12S15	9-18 VDC	15 VDC	0 mA	666 mA	40 mA	946 mA	88	666uF
EC7A-12D12	9-18 VDC	±12 VDC	0 mA	±416 mA	30 mA	956 mA	87	416uF
EC7A-12D15	9-18 VDC	±15 VDC	0 mA	±333 mA	30 mA	968 mA	86	333uF
EC7A-24S25	18-36VDC	2.5 VDC	0 mA	3000 mA	30 mA	368 mA	85	3000uF
EC7A-24S33	18-36VDC	3.3 VDC	0 mA	3000 mA	30 mA	480 mA	86	3000uF
EC7A-24S05	18-36VDC	5 VDC	0 mA	2000 mA	30 mA	473 mA	88	2000uF
EC7A-24S12	18-36VDC	12 VDC	0 mA	835 mA	30 mA	469 mA	89	835uF
EC7A-24S15	18-36VDC	15 VDC	0 mA	666 mA	30 mA	473 mA	88	666uF
EC7A-24D12	18-36VDC	±12 VDC	0 mA	±416 mA	20 mA	467 mA	89	416uF
EC7A-24D15	18-36VDC	±15 VDC	0 mA	±333 mA	20 mA	478 mA	87	333uF
EC7A-48S25	36-75VDC	2.5 VDC	0 mA	3000 mA	15 mA	184 mA	85	3000uF
EC7A-48S33	36-75VDC	3.3 VDC	0 mA	3000 mA	15 mA	243 mA	85	3000uF
EC7A-48S05	36-75VDC	5 VDC	0 mA	2000 mA	15 mA	237 mA	88	2000uF
EC7A-48S12	36-75VDC	12 VDC	0 mA	835 mA	15 mA	235 mA	89	835uF
EC7A-48S15	36-75VDC	15 VDC	0 mA	666 mA	15 mA	237 mA	88	666uF
EC7A-48D12	36-75VDC	±12 VDC	0 mA	±416 mA	10 mA	236 mA	88	416uF
EC7A-48D15	36-75VDC	±15 VDC	0 mA	±333 mA	10 mA	242 mA	86	333uF

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

# 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
	12Vin power down	8V
	24Vin power up	17V
	24Vin power down	16V
	48Vin power up	34V
	48Vin power down	32V
Input Filter	PI Type	

## OUTPUT SPECIFICATIONS:

Voltage Accuracy	±1.5% max.	
Voltage Balance (Dual)	±2.0% max.	
Transient Response: 75% - 100% Step Load Change		
Error Band	±5% Vout Nominal	
Recovery Time	< 300us	
Ripple & Noise, 20MHz BW	Single	75mV pk-pk, max.
	Dual	100mV pk-pk, max.
Temperature Coefficient	±0.05%/°C	
Line Regulation (note1)	Single	±0.2% max.
	Dual	±0.5% max.
Load Regulation (note2)	Single ... DIP	±0.5% max., SMD ±1.0% max.
	Dual	±1.0% max.
Output Short Circuit Protection	Continuous	
Over voltage Protection (Zener Diode Clamp, Single Output Only)		
2.5V, 3.3V	3.9Vdc typ.	
5V	6.2Vdc typ., 12V	
15V	18Vdc typ.	
Start up Time	24(48)S25(33)	120ms typ.
	24(48)S05(12)	60ms typ.
	Others	8ms typ.

## GENERAL SPECIFICATIONS:

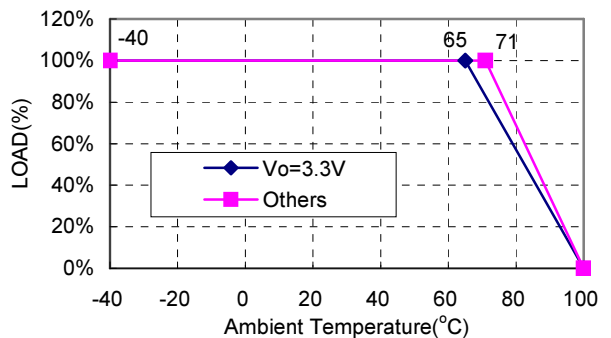
Efficiency	See Table	
Isolation Voltage	Input/Output	1500VDC min.
Isolation Resistance	10 <sup>9</sup> ohm min.	
Isolation Capacitance	1000pF typ.	
Switching Frequency	380KHz typ.	
Operating Ambient Temperature	-40°C to +85°C	
De-rating, Above 71°C	Linearly to Zero Power at 100°C	
Case Temperature(note4)	100°C max.	
Cooling	Natural Convection	
Storage Temperature	-40°C to +125°C	
Humidity	95% RH max. Non Condensing	
MTBF	MIL-HDBK-217F, GB, 25°C, Full Load	1150Khrs typ.
Dimensions	DIP	1.25x0.80x0.40 inches (31.8x20.3x10.2 mm)
	SMD	1.25x0.80x0.45 inches (31.8x20.3x11.4 mm)

Case Material	Black Coated Copper with Non-Conductive Base
Weight	18.4g

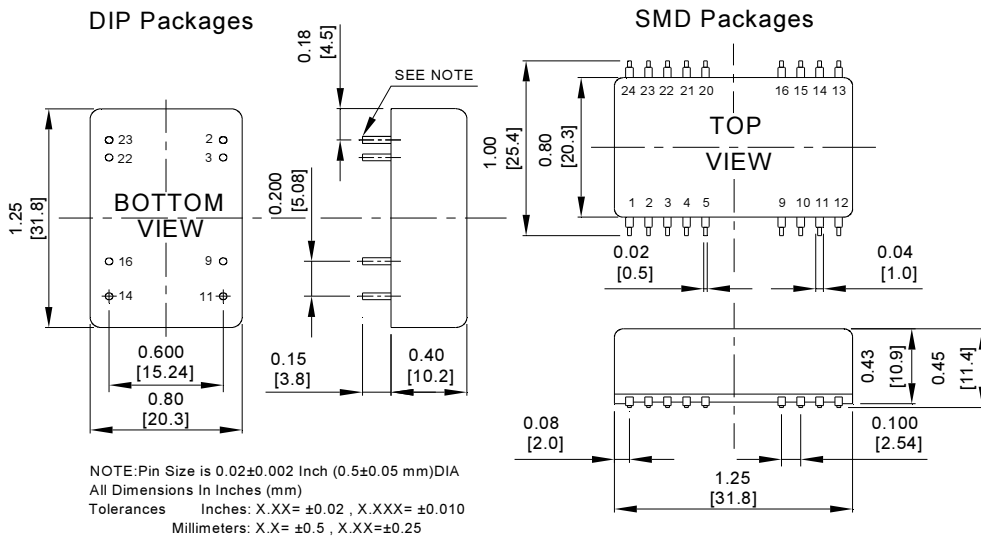
## NOTE:

1. Measured from high line to low line.
2. Measured from full load to 10% load.
3. Suffix "S" to the model number with SMD packages.
4. Maximum case temperature under any operating condition should not be exceeded 100°C.

Typical Derating curve for Natural Convection



## Case A Dimensions:





PIN CONNECTION				
Pin	Single Output		Dual Output	
	DIP	SMD	DIP	SMD
1,24	NP	NC	NP	NC
2,3	-V Input		-V Input	
4,5	NP	NC	NP	NC
9	NP	NC	Common	
10	NP	NC	NP	NC
11	NC		-V Output	
12	NP	NC	NP	NC
13	NP	+V Output	NP	NC
14	+V Output		+V Output	
15	NP	-V Output	NP	NC
16	-V Output		Common	
20,21	NP	NC	NP	NC
22,23	+V Input		+V Input	

\* NC-NO CONNECTION WITH PIN  
\* NP-NO PIN

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