

## FEATURES:

- 7 pin SIP package
- No-load input current as low as 5mA
- Continuous short-circuit protection
- High Efficiency up to 87%
- Unregulated Output Types
- 1.5KVDC ~ 6KVDC Isolation
- Industry Standard Pinout
- Designed to IEC62368, UL62368, EN62368
- UL Recognized

Specifications typical at TA=25°C nominal input voltage and rated output current unless otherwise specified

| Part Number | Input Voltage Range | Output Voltage | Output Current | Efficiency | Capacitive Load $\mu$ F |
|-------------|---------------------|----------------|----------------|------------|-------------------------|
|             | Vdc                 | Vdc            | mA             | %TYP       | $\mu$ F                 |
| EC2-05S03P3 | 4.5~5.5             | 3.3            | 303            | 76         | 2400                    |
| EC2-05S05P3 | 4.5~5.5             | 5              | 200            | 82         | 2400                    |
| EC2-12S05P3 | 9.6~14.4            | 5              | 200            | 82         | 2400                    |
| EC2-15S15P3 | 12~18               | 15             | 67             | 87         | 330                     |
| EC2-24S15P3 | 19.2~28.8           | 15             | 67             | 87         | 330                     |
| EC2-05D12P3 | 4.5~5.5             | $\pm$ 12       | $\pm$ 42       | 84         | $\pm$ 220               |
| EC2-12D24P3 | 9.6~14.4            | $\pm$ 24       | $\pm$ 21       | 85         | $\pm$ 100               |
| EC2-24D12P3 | 19.2~28.8           | $\pm$ 12       | $\pm$ 42       | 85         | $\pm$ 330               |

### Note:

1: No suffix is standard isolation (1.5KVDC) e.g., EC2-05S05  
 \*add suffix "3" for 3KVDC isolation, \*add suffix "4" for 4KVDC isolation,  
 \*add suffix "5" for 5.2KVDC isolation, \*add suffix "6" for 6KVDC isolation

2: No "P" suffix = no short circuit protection, e.g., EC2-05S05  
 \*add suffix "P" for short circuit protection  
 e.g., EC2-05S05P, EC2-05S12P3

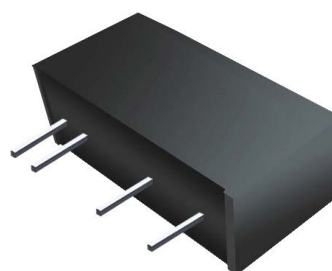
3: Character after "-" is Input Voltage: 12=12Vdc, 15=15Vdc, 24=24Vdc  
 e.g., EC2-12S05P, EC2-15S12P3, EC2-24S15P.

# ADAM TECH

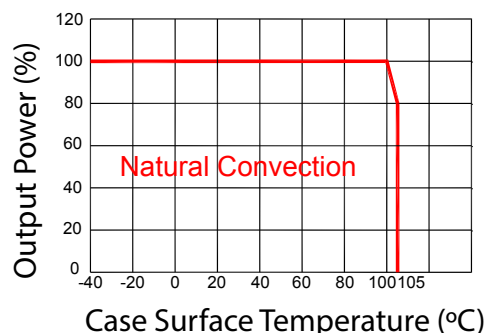
## DC-DC Converter EC2 Series

1 Watt

1.5KV ~ 6KV Isolated  
Single & Dual Output  
SIP7



### Temperature Derating Graph



## Input Specifications

| Parameters    | Conditions                 | Min | Typ | Max | Units |
|---------------|----------------------------|-----|-----|-----|-------|
| Voltage Range | Vo,Io Nom @Vin:5V          |     | ±10 |     | %     |
|               | Vo,Io Nom@ Vin:12V,15V,24V |     | ±20 |     | %     |
| Filter        | Capacitor                  |     |     |     |       |

## Output Specifications

| Parameters               | Conditions                               | Min | Typ | Max        | Units |
|--------------------------|------------------------------------------|-----|-----|------------|-------|
| Voltage Tolerance        | 100% full load                           |     |     | ±5         | %     |
| Short Circuit Protection | without suffix "P"                       |     |     | 1          | Sec   |
|                          | With Suffix "P"                          |     |     | Continuous |       |
| Line Regulation          | For 1.0% OF Vin                          |     | 1.2 |            | %     |
| Load Regulation          | 3.3V (10% To 100% F.L)                   |     | 15  | 20         | %     |
|                          | 5V (10% To 100% F.L)                     |     | 10  | 15         | %     |
|                          | 9V (10% To 100% F.L)                     |     | 8   | 10         | %     |
|                          | 12V (10% To 100% F.L)                    |     | 7   | 10         | %     |
|                          | 15V (10% To 100% F.L)                    |     | 6   | 10         | %     |
| Ripple & Noise           | 24V (10% To 100% F.L)                    |     | 5   | 10         | %     |
|                          | BW=DC To 20MHz<br>@Vo:3.3V,5V,9V,12V,15V |     | 30  | 75         | mVp-p |
|                          | BW=DC To 20MHz<br>@ Vo:24V               |     | 50  | 100        | mVp-p |

## General Specifications

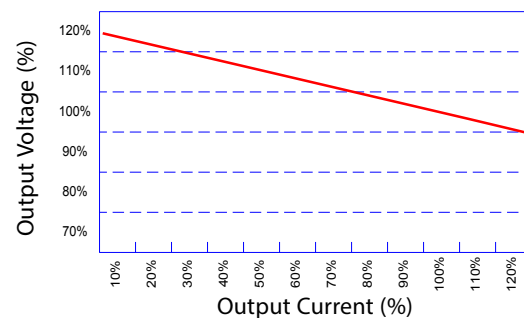
| Parameters            | Conditions                             | Min       | Typ           | Max  | Units |
|-----------------------|----------------------------------------|-----------|---------------|------|-------|
| Isolation Resistance  | 500Vdc                                 | 1000      |               |      | MΩ    |
| Isolation Capacitance | Input-output,<br>100KHz/0.1V           |           | 20            |      | pF    |
| Switching Frequency   | Full load, nominal input<br>@5V Vin    |           | 370           |      | KHz   |
|                       | Full load, nominal input<br>@other Vin |           | 250           |      | KHz   |
| Operating Temperature |                                        | -40       |               | +105 | °C    |
| Storage Temperature   |                                        | -55       |               | +125 | °C    |
| Humidity              | Non Condensing                         |           |               | 95   | %     |
| Cooling               | Free air Convection                    |           |               |      |       |
| Case Material         | DAP                                    |           |               |      |       |
| MTBF                  | MIL-HDBK-217F@25°C                     | 3,500,000 |               |      | Hours |
| Weight                |                                        |           | 2.1           |      | g     |
| Dimensions            |                                        |           | 19.5x6.0x10.0 |      | mm    |

## Part Number

EC2 – XX X XX X X  
A B C D E F

A: Series  
B: Input Voltage  
C: Single (S) / Dual Output (D)  
D: Output Voltage  
E: Protection (P)  
F: Isolation Voltage

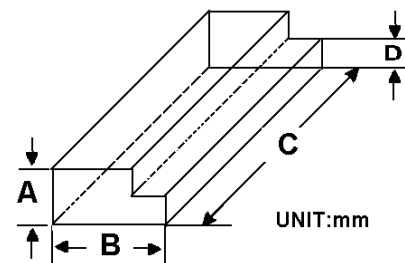
## Tolerance Envelope Graph



## Electromagnetic Compatibility (EMC)

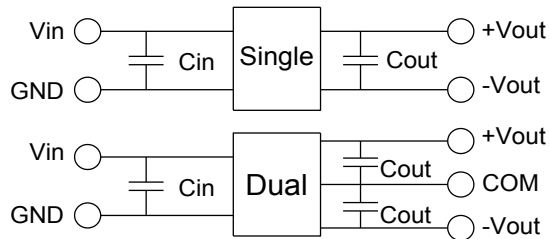
|     |     |                                                                 |
|-----|-----|-----------------------------------------------------------------|
| EMI | CE  | CISPR32/EN55032 CLASS B<br>(see Fig. 1 for recommended circuit) |
|     | RE  | CISPR32/EN55032 CLASS B<br>(see Fig. 1 for recommended circuit) |
| EMS | ESD | IEC/EN61000-4-2 Air ±8kV ,<br>Contact ±4kV perf. Criteria B     |

## Packaging



| Size (mm) |      |     |     |
|-----------|------|-----|-----|
| A         | B    | C   | D   |
| 9.5       | 16.5 | 522 | 5.0 |

## Recommended Test Circuit



| Vin   | Cin             | Single Vout | Cout            | Dual Vout    | Cout                  |
|-------|-----------------|-------------|-----------------|--------------|-----------------------|
| 5Vdc  | 4.7 $\mu$ F/25V | 3.3Vdc      | 10 $\mu$ F/16V  | $\pm$ 3.3Vdc | $\pm$ 4.7 $\mu$ F/16V |
| 12Vdc | 2.2 $\mu$ F/25V | 5Vdc        | 10 $\mu$ F/16V  | $\pm$ 5Vdc   | $\pm$ 4.7 $\mu$ F/16V |
| 15Vdc | 2.2 $\mu$ F/25V | 9Vdc        | 2.2 $\mu$ F/16V | $\pm$ 9Vdc   | $\pm$ 1 $\mu$ F/16V   |
| 24Vdc | 1 $\mu$ F/50V   | 12Vdc       | 2.2 $\mu$ F/25V | $\pm$ 12Vdc  | $\pm$ 1 $\mu$ F/25V   |
| --    | --              | 15Vdc       | 1 $\mu$ F/50V   | $\pm$ 15Vdc  | $\pm$ 1 $\mu$ F/25V   |

## EMC (CLASS B) Compliance Circuit

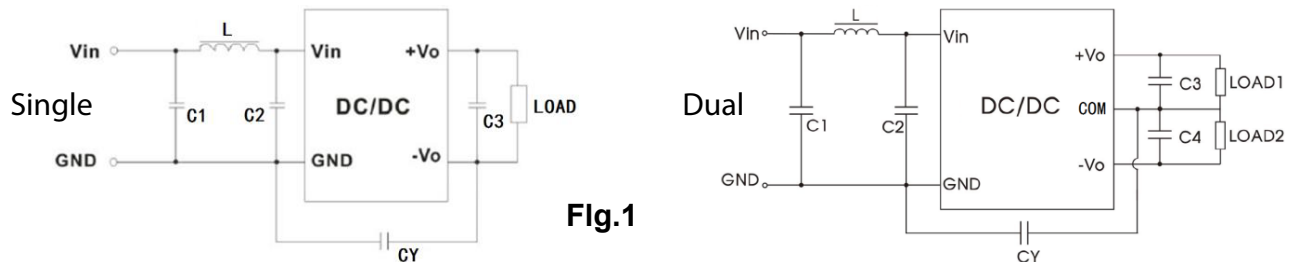
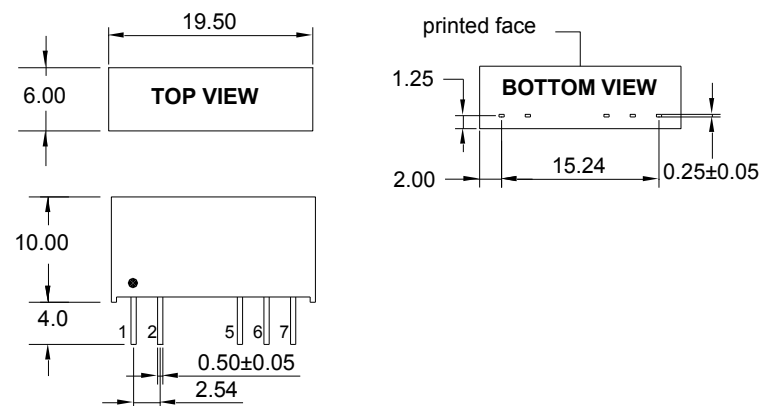


Fig.1

EMC Recommended Circuit Value Table

| EMI | C1     | 4.7 $\mu$ F /50V         |
|-----|--------|--------------------------|
|     | C2     | 4.7 $\mu$ F /50V         |
|     | CY     | 1nF/4kV                  |
|     | C3, C4 | Recommended Test Circuit |
|     | L      | 6.8 $\mu$ H              |

## Markings and Dimensions



UNIT: mm unless otherwise specified, all tolerances are  $\pm$ 0.25

## PIN Connection

| PIN    | 1    | 2    | 5     | 6      | 7     |
|--------|------|------|-------|--------|-------|
| Single | +Vin | -Vin | -Vout | No Pin | +Vout |
| Dual   | +Vin | -Vin | -Vout | Com    | +Vout |

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