

# 50, 75, 100, 150 WATT

## DC-DC Converters

### EP SERIES 18~36Vdc Input



Size: 60.70mm x 57.91mm x 13.30mm  
(2.39in. x 2.28in. x 0.52in.)

#### MODEL SELECTION

Model Name	Vin(Vdc)	Vout(Vdc)	Io(Amps)	Watts
EPB-12SC28-A	18-36	12	4.2	50
EPC-12SC28-A	18-36	12	6.3	75
EPD-12SC28-A	18-36	12	8.3	100
EPE-12SC28-A	18-36	12	12.5	150

#### FEATURES

- ▶ High Power Density - Up to 61W/in<sup>3</sup>
- ▶ Constant Frequency - 370kHz
- ▶ -40 to +100°C Operation
- ▶ 105°C Over Temperature
- ▶ High Efficiency
- ▶ Low Output Noise
- ▶ Industry-Standard Pinout
- ▶ Metal Baseplate
- ▶ 2:1 Input Voltage Range
- ▶ Thermal Protection
- ▶ Over Voltage Protection
- ▶ Current Limit/Short Circuit Protection
- ▶ Adjustable Output Voltage: 60% to 110% of V<sub>0,set</sub>
- ▶ Remote Sense
- ▶ Logic ON/OFF
- ▶ Safety Agency Approval

#### SPECIAL FEATURES

- ▶ Long Lead(0.23in)-LL
- ▶ Negative Logic Control-Neg.  
(Remote Control For C-T)
- ▶ Threaded hole standoff-Td

#### SPECIFICATION

#### ABSOLUTE MAXIMUM RATINGS:

Exceeding absolute maximum ratings may cause permanent damage and reduce reliability

PARAMETER	MIN	MAX	UNITS	CONDITIONS
Input Voltage		40	Vdc	Continuous
Transient Input Voltage		50	Vdc	100 msec max.
Input/Output Isolation		1500	Vdc	
Operating Case Temperature	-40	100	°C	
Storage Temperature	-40	110	°C	

#### INPUT SPECIFICATIONS:

PARAMETER	MIN	TYP	MAX	UNITS	CONDITIONS
Operation Input Voltage (V <sub>i</sub> )	18	28	36	Vdc	
Maximum Input Current (I <sub>i,max</sub> ):					V <sub>i</sub> = 0Vdc to 36Vdc I <sub>o</sub> = I <sub>o,max</sub>
EPB-12SC28-A			4.7	A	
EPC-12SC28-A			6.7	A	
EPD-12SC28-A			8.7	A	
EPE-12SC28-A			10.6	A	
Inrush Transient			1	A <sup>2</sup> t	
Input Reflected-Ripple Current:					
Peak to Peak		5		mA	5Hz to 20Mhz. 12uH
Input Ripple Rejection		60		dB	Source Impedance

**OUTPUT SPECIFICATIONS:**

PARAMETER	MIN	TYP	MAX	UNITS	CONDITIONS
Output Voltage Set Point ( $V_{o,set}$ )	11.78	12.00	12.22	V	$T_c=25^\circ\text{C}$ , $V_i=28\text{V}$ ,
Line Regulation		0.01	0.1	%	$I_o=I_{o,max}$
Load Regulation		0.05	0.2	%	$V_i=18\text{V to }36\text{V}$
Temperature Drift		50	150	mV	$I_o=0.3\text{A to }I_{o,max}$
Total Regulation			1.5	%	$T_c=-40^\circ\text{C to }100^\circ\text{C}$
Output Ripple and Noise Voltage:					5Hz to 20MHz
RMS	0		50	mV <sub>rms</sub>	
Peak to Peak			200	mV <sub>p-p</sub>	
External Load Capacitance			5,000	uF	Electrolytic capacitor
Output Current( $I_o$ ):					At $I_o < 0.5\text{A}$ , the modules may exceed output ripple specifications
EPB-12SC28-A	0.3		4.2	A	
EPC-12SC28-A	0.3		6.3	A	
EPD-12SC28-A	0.3		8.3	A	
EPE-12SC28-A	0.3		12.5	A	
Output Current limit:					
EPB-12SC28-A		4.8	5.8	A	
EPC-12SC28-A		7.2	8.8	A	
EPD-12SC28-A		9.6	10.8	A	
EPE-12SC28-A		14.4	16.3	A	$V_o=90\%$ of $V_{o,set}$
Output Short Circuit Current			170	% $I_{o,max}$	$V_o=250\text{mV}$
Switching Frequency		370		KHz	
Efficiency					
EPB-12SC28-A	83	86		%	
EPC-12SC28-A	84	86		%	$T_c=70^\circ\text{C}$ $V_i=28\text{V}$
EPD-12SC28-A	84	86		%	$I_o=I_{o,max}$
EPE-12SC28-A	84	86		%	
Dynamic Response					
Peak Deviation		2		% $V_{o,set}$	25%-50%-75% load, 0.1A/ $\mu\text{s}$
Settling Time			300	$\mu\text{s}$	$T_c=25^\circ\text{C}$ $V_i=28\text{V}$

**CONTROL SPECIFICATIONS:**

PARAMETER	MIN	TYP	MAX	UNITS	CONDITIONS
Logic On/Off:					
Logic Low: Ion/off			1	mA	$V_{on/off}=0\text{V}$
Von/off			1.2	V	$I_{on/off}<1\text{mA}$
Logic High: Ion/off			50	$\mu\text{A}$	$V_{on/off}=15\text{V}$
Von/of			15	V	$I_{on/off}=0.0\ \mu\text{A}$
Turn-On Time		20	35	ms	
Output Remote Sense Range			1.2	V	
Output Voltage Trim Range	60		110	% $V_{o,set}$	
Over Voltage Protection	13.5		16	V	Auto recovery
Over Temperature Protection		105		$^\circ\text{C}$	Auto recovery(100W & 150W)

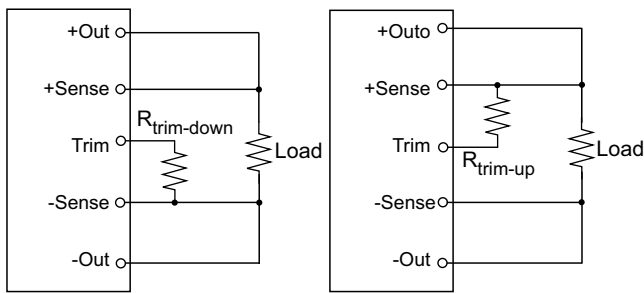
**ISOLATION SPECIFICATIONS:**

PARAMETER	MIN	TYP	MAX	UNITS	CONDITIONS
Input to Output		1500		Vdc	
Input to Case		1500		Vdc	
Output to Case		500		Vdc	
Input to Output Capacity		2000		pF	
Isolation Resistance	10			Mohm	

**GENERAL SPECIFICATIONS:**

PARAMETER	MIN	TYP	MAX	UNITS	CONDITIONS
Weight		118		g	
Size		2.39x2.28x0.52		in <sup>3</sup>	

**TRIM CIRCUIT**



Trim-Down

Trim-Up

$$R_{\text{trim-down}} = ((100/\Delta\%) - 2) \text{ Kohms}$$

$$R_{\text{trim-up}} = \left( \frac{V_o(100 + \Delta\%)}{1.225\Delta\%} - \frac{100 + 2\Delta\%}{\Delta\%} \right) \text{ Kohms}$$

$\Delta\%$  = Desired Output Voltage Change

$V_o$  = Output Voltage

$R_{\text{trim-up}}$  = External Resistor Value to Increase  $V_o$

$R_{\text{trim-down}}$  = External Resistor Value to Decrease  $V_o$

**OUTLINE DRAWING**

