

SEMICONDUCTOR CIRCUITS

High Efficiency Power Supplies

Chassis Mount and Plug-In Packages

ES,EA,EC

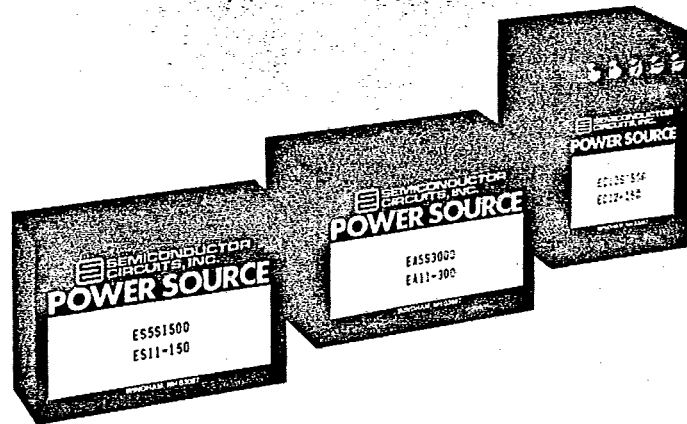
- NEAR-CONSTANT EFFICIENCY TO 70%: 105-125 Vac IN
- LINE TRANSIENT IMMUNITY >60 dB
- LOW CASE TEMPERATURE RISE: 15°C TYP

The ES, EA and EC Series of line operated power supplies feature high, near constant efficiency over the entire rated input voltage range. These electrically identical families employ a highly efficient, closed loop ripple regulation circuit which contains a low pass filter. Each stage, transformer, filter and regulator is engineered for maximum efficiency. This combination provides cooler operation, higher overall system reliability and greater line transient immunity to 60db, all to a degree unmatched by conventional power supply designs. Excellent thermal management permits full power output over the full operating range to +71° with NO DERATING.

Switch mode regulated via discrete components, the ES, EA and EC Series design is compact to save valuable P.C. board real estate. This family offers up to 50% more output power than competing series-regulated units in identical packages and with only 1/2 the case temperature rise. The ES and EA Series are plug-in modules offering a choice of two industry-standard pin-outs. The EC Series are chassis mount with a top-mounted, five-terminal barrier strip for power entry/exit.

Options available include:
The "C" crowbar type over voltage protection set at $6.2 \pm 5\%$ Vdc for 5 Vout models. Add suffix C.

The "J" option provides for a Faraday Shielded Transformer for isolation up to 1750 volts AC and leakage current of less than $20 \mu\text{A}$ at 60 Hz. For greater isolation see the UL544 products.
Add Suffix "J".



Applications:

The ES, EA, EC Series are ideal for powering many logic and μP based circuits.

Portable Systems:

For portable AC driven systems these modules offer up to 20 Watts of output power and the very best in environmental characteristics while keeping weight to a minimum.

Process Control Systems:

Process control environments demand the features offered by this series. Having no derating to +71°C and 60 db line transient immunity these units can survive the elevated ambient temperatures and AC line transients that are common in industrial applications.

General Specifications

Input Voltage and Frequency ¹

105 to 125 Vac-50 to 440 Hz
Add Suffix I to obtain:

200 to 252 Vac-50 to 60 Hz
Add Suffix N to obtain:

90 to 110 Vac-50 to 60 Hz
Add Suffix K2 to obtain:

105 to 125/210 to 250 Vac

Output Voltage Tolerance

$\pm 1\%$ (Fixed)

Regulation (Line/Load)

0.15/0.15%

Ripple and Noise (PARD)

7 mV RMS

Temperature Coefficient

0.02%/°C (typ)

Operating Temperature Range

-25°C to +71°C (No Derating)

Storage Temperature Range

-40°C to +85°C

I/O Isolation

Voltage: 1500V RMS

(Suffix I:2500Vac)

Resistance: 50 Megohms

Overcurrent Protection

Power Foldback

Note 1: Suffix I, N and K2 available on selected models - consult factory.



SEMICONDUCTOR
CIRCUITS, INC.

49RANGERD., WINDHAM, N.H. 03087 (603) 893-2330 TWX (710) 366-0505

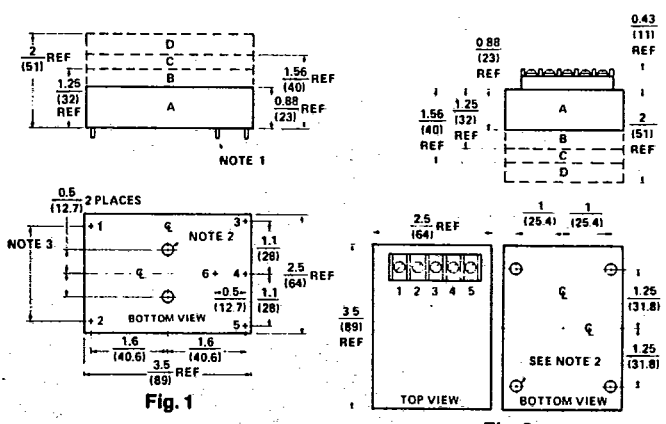
ES,EA,EC

Ordering Information

Output Voltage (Vdc)	Output Current (mA)	AC Pin Spacing Inches (mm)	Pkg. (Fig.)	New Model Number	Old Model Number
5V	1500	2.0 (51)	1-B	ES11-150	ES5S1500
		2.2 (56)	1-B	EA11-150	EA5S1500
		—	2-C	EC11-150	EC5S1500
	3000	2.0 (51)	1-C	ES11-300	ES5S3000
		2.2 (56)	1-C	EA11-300	EA5S3000
		—	2-D	EC11-300	EC5S3000
4000	2.0 (51)	1-D	ES11-400	ES5S4000	
	2.2 (56)	1-D	EA11-400	EA5S4000	
	—	2-D	EC11-400	EC5S4000	
12V	800	2.0 (51)	1-B	ES12-080	ES12S800
		2.2 (56)	1-B	EA12-080	EA12S800
		—	2-C	EC12-080	EC12S800
	1500	2.0 (51)	1-D	ES12-150	ES12S1500
		2.2 (56)	1-D	EA12-150	EA12S1500
		—	2-D	EC12-150	EC12S1500
24V	400	2.0 (51)	1-B	ES17-040	ES24S400
		2.2 (56)	1-B	EA17-040	EA24S400
		—	2-C	EC17-040	EC24S400
±12V	±500	2.0 (51)	1-D	ES22-100	ES12D500
		2.2 (56)	1-D	EA22-100	EA12D500
		—	2-D	EC22-100	EC12D500
±15V	±500	2.0 (51)	1-D	ES23-100	ES15D500
		2.2 (56)	1-D	EA23-100	EA15D500
		—	2-D	EC23-100	EC15D500

*Other versions available, please consult factory
 Socket Information: Standard ES use socket P/N #100013
 Socket Information: Standard EA use socket P/N #100015
 For socket dimensional information refer to page 23

Dimensions and Connections



- Notes:**
1. Pins 0.040 (1) Dia x 0.20 (5.1) Lg Min
 2. Mounting Inserts No. 4-40 x 0.10 (2.5) Dp Min
 3. See Pin Spacing in Ordering Information
 4. All Dimensions in Inches and (mm)
 5. Suffix K2 Pin-out -consult factory

Specifications Subject to Change Without Notice.

Connections

- | | | |
|---|---|---|
| <p>Single Output
 2.0" AC Pin Spacing</p> <p>PIN</p> <ol style="list-style-type: none"> 1. AC In 2. AC in 3. - Vdc out 4. Do Not Connect 5. + Vdc out 6. High Isolation* | <p>ES & EA Series (Fig. 1)
 Single Output
 2.2" AC Pin Spacing</p> <p>PIN</p> <ol style="list-style-type: none"> 1. AC In 2. AC in 3. Do Not Connect 4. - Vdc out 5. + Vdc out 6. High Isolation* | <p>Dual Outputs
 2.0" & 2.2" AC Pin Spacing</p> <p>PIN</p> <ol style="list-style-type: none"> 1. AC in 2. AC in 3. - Vdc out 4. Common out 5. + Vdc out 6. High Isolation* |
| <p>*PIN 6 is provided in J option only</p> | | |
| <p>Single Output
 TERM</p> <ol style="list-style-type: none"> 1. AC In 2. AC in 3. + Vdc out 4. Do Not Connect 5. - Vdc out | <p>EC Series (Fig. 2)
 Dual Output
 TERM</p> <ol style="list-style-type: none"> 1. AC In 2. AC in 3. + Vdc out 4. Common out 5. - Vdc out | |