

SEMICONDUCTOR CIRCUITS
Multi-Output, 25 Watt Off-Line Switchers
Accept AC Or DC Input Over 2:1 Range

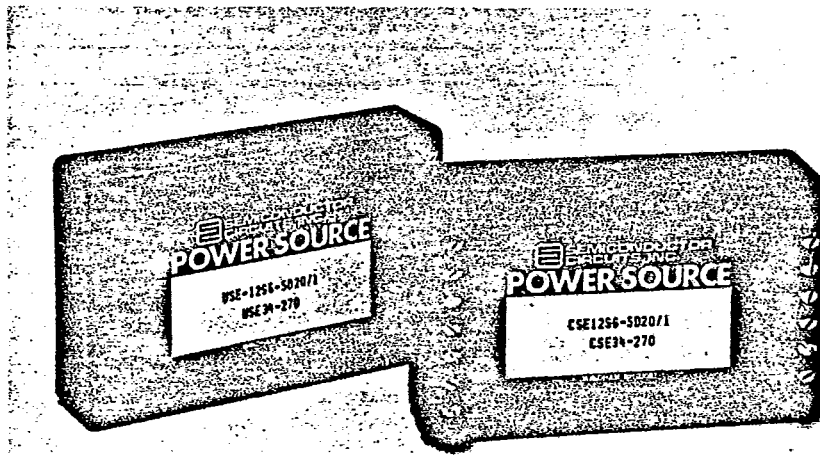
USE, CSE

- AC OR DC: 70-140 VAC OR 140-280 VAC/200-400 VDC
- OPTO-ISOLATED REMOTE POWER SHUTDOWN
- O.V. CLAMPED POWER OUTPUT PROTECTS LOGIC CHIPS

The USE, CSE Series are highly efficient Off-Line switchers with quad-ple, triple and single outputs that deliver up to 25 watts. Each model performs equally well from an AC or DC power input which may vary over a 2:1 range. The input configuration allows inputs of either 70-140 VAC, 140-280 VAC or 200-400 VDC by user selected external pin connection.

All models feature overcurrent-protected outputs and logic chips are protected by overvoltage clamping. Opto-isolated remote power up/down via standard TTL signals provides system design versatility. Other features include a PI input filter to minimize input reflected ripple and floating outputs having I/O isolation to 2500 Vac. The fixed switching frequency is well above the audible range at 40 kHz.

The USE, CSE Series of Off-Line switchers is designed for excellent performance in hostile environments and the 2:1 input range adds protection and versatility. Designed for either chassis mount (CSE) or P.C. card mount (USE), these units are exceptionally compact and ideally suited to μ P based applications such as process control, as well as other data processing applications.



General Specifications

(Derived Outputs: $\pm 12V$, $\pm 15V$ and $-5V$)

Input Characteristics

- Input Ranges:**
 (User Connectable)
1. 70 to 140 Vac — 47 to 440 Hz
 2. 140 to 280 Vac — 47 to 440 Hz
 3. 200 to 400 Vdc

Input Protection

- Inrush Current:**
 <10 Amps Peak
- Overvoltage:**
- | Range | Shutdown | Transient (8 msec) |
|-------|----------|--------------------|
| 1. | 150 Vac | 175 Vac max |
| 2. | 300 Vac | 350 Vac max |
| 3. | 420 V pk | 500 V pk |

Output Characteristics

- Voltage Tolerance:**
 $\pm 2\%$ Fixed (Primary)
 $\pm 1\%$ Fixed (Derived)
- Regulation: (Line/Load)**
 0.2%/0.2% (Primary)
 0.1%/0.15% (Derived)
 0.1%/0.5% ($-5V$)
- Ripple and Noise:**
 Primary — 0.1% Vout (VRMS);
 Greater of 50 mV pk-pk or
 0.5% Vout (Vpk-pk)
 Derived — 3 mV RMS; 30 mV
 pk-pk (typ.) See Note #3
- Temp. Coefficient:**
 0.02%/°C (typ)
- Transient Response:**
 0.1%/1% Δ Load
 Power Up/Down: No Overshoot

Output Protection

- Overcurrent: (Primary)**
 Power Foldback
- Current Limiting (Derived)**
- Overvoltage (O.V.): (Primary)**
 Crowbar - See APP. Note 1
- Holdup Time:**
 30mSec @ Nominal Line/F.L.
- Isolation:**
 Input/Output (Primary): 2500 Vac (min)
 Input/output (Derived): 2500 Vac (min)
 Output/output (Prim/Der): 300 Vac (min)
 Input/case: 1560 Vac (min)
 Output/case (Primary): 500 Vac
 Output/case (Derived): 500 Vac
- Remote Shutdown:**
 See APP. Note 2

Ambient Temperature

- Operating (No Derating):**
 $-25^{\circ}C$ to $+71^{\circ}C$
- Storage (Non-Operating):**
 $-40^{\circ}C$ to $+85^{\circ}C$

Operating Parameters

- Weight:** 2 lb.
- Efficiency:** $>70\%$ (Primary)
- Switching Frequency:** 40 kHz (Fixed)

NOTE: See Primary Output Distribution Graph in U,CU Series Section.



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USE, CSE

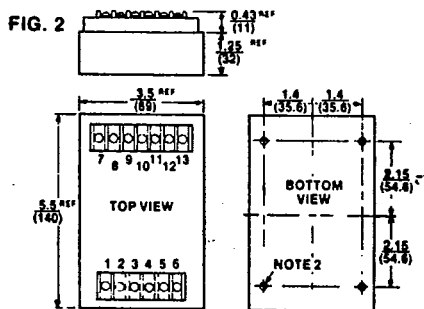
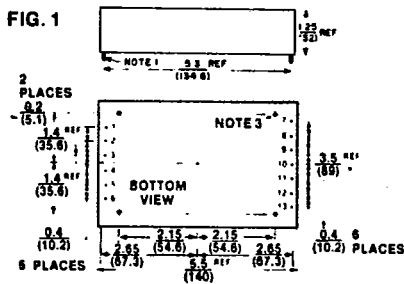
Ordering Information

Output Voltage (Vdc)	Output Current (mA)	Pkg. (Fig.)	New Model Number	Old Model Number
SINGLE OUTPUTS				
5V	5000	1	USE11-500	USE-5S50
		2	CSE11-500	CSE-5S50
12V	2000	1	USE12-200	USE-12S20
		2	CSE12-200	CSE-12S20
TRIPLE OUTPUTS				
5V/ -5V +12V	1000/ -1000/ +600	1	USE34-260	USE-12S6-5D10
		2	CSE34-260	CSE-12S6-5D10
	2000/ -100/ +600	1	USE34-270	USE-12S6-5D20/1
		2	CSE34-270	CSE-12S6-5D20/1
5V/ ±15V	2000/ ±300	1	USE35-260	USE-5S20-15D3
		2	CSE35-260	CSE-5S20-15D3

*Other versions available, please consult factory.

Dimensions and Connections

(Dimensions in Inches and (mm)).



Connections

Pin/Term

1. TTL Input (Floating)
2. TTL Return (Floating)
3. Case Ground
4. Vin; (Vin Return)
5. Vin; (110 Vac in, only)
6. Vin; (220 Vac/300 Vdc in)
7. -5 Vdc Out
8. +12/15 Vdc out
9. Common Out
10. -12/15 Vdc out
11. TTL Input
12. -Vdc Out
13. +Vdc Out

Comments

- Isolated Power Shutdown Input
- Isolated Power Shutdown Return
- Connect Safety Ground
- Vac or Vdc in return
- Derived Output No. 1
- Derived Output No. 2
- Derived Output common
- Derived Output No. 3
- Non-Isolated Shutdown - Input return is Pin 12
- Primary output common
- Primary output voltage.

Notes:

1. Thirteen Pins, 0.040 (1) Dia. x 0.20 (5.1) Lg. Min.
2. Four Mounting Inserts, 4-40 x 0.10 (2.5) Dp. Min.
3. Four Mounting Studs 4-40 x 0.25 (6.4) Lg. Min.

Application Notes

1. The Crowbar automatically triggers at the threshold level and clamps the output voltage to less than 1 Volt until reset. For O.V. conditions persisting less than 10 ms, reset occurs automatically; for O.V. conditions persisting over 20 ms, the unit remains clamped until cycled — either manually or via the remote shutdown circuit. The threshold levels are factory set at 6.2, 13.5V for the 5 and 12V models respectively.
2. Power-down occurs when a "1" input (4V @ 10mA) is applied to the remote shutdown terminals. A "0" input (1.0V @ 10 μA) produces a power-on condition. The isolation between the shutdown terminal and the input and output terminals is 2500 Vac min.
3. For decoupling, we recommend the addition of a 10μf tantalum capacitor in shunt with each load.