SEMICONDUCTOR CIRCUITS

USE, CSE

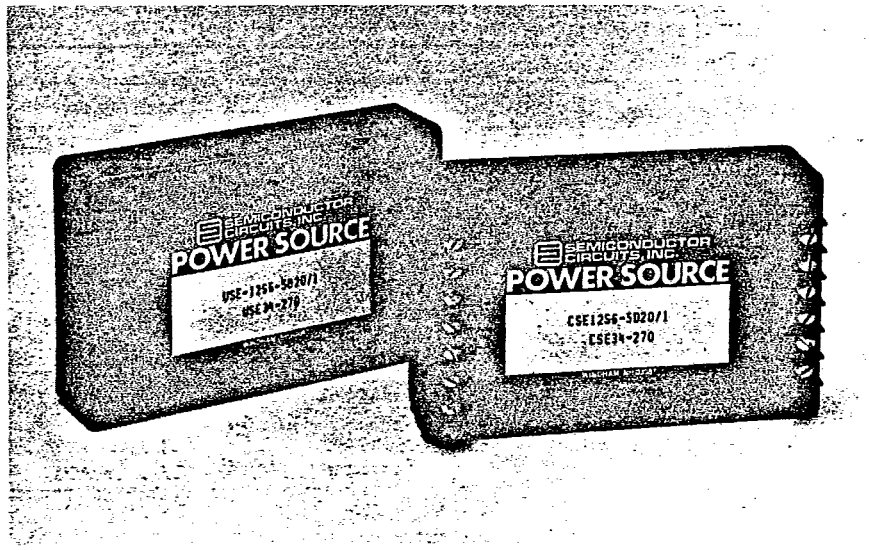
Multi-Output, 25 Watt Off-Line Switchers Accept AC Or DC Input Over 2:1 Range

- 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 quadruple, 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 μP based applications such as process control, as well as other data processing applications.



General Specifications

(Derived Outputs: ±12V, ±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:
±2% Fixed (Primary)
±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%/% 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°C to +71°C
Storage (Non-Operating):
−40°C to +85°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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Ordering Information

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

*Other versions available, please consult factory.

Dimensions and Connections

(Dimensions in Inches and (mm)).

FIG. 1

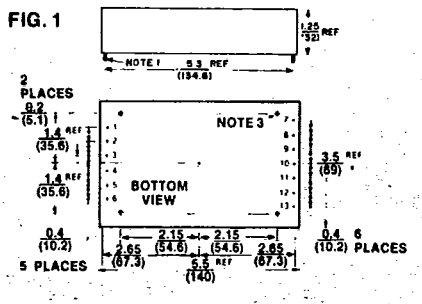
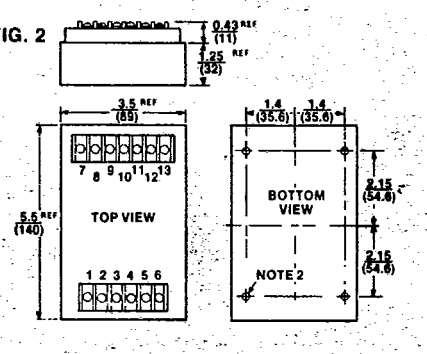


FIG. 2



Connections

Pin/Term	Comments
1. TTL Input (Floating)	Isolated Power Shutdown Input
2. TTL Return (Floating)	Isolated Power Shutdown Return
3. Case Ground	Connect Safety Ground
4. Vin; (Vin Return)	Vac or Vdc in return
5. Vin; (110 Vac in, only)	
6. Vin; (220 Vac/300 Vdc in)	
7. −5 Vdc Out	Derived Output No. 1
8. +12/15 Vdc out	Derived Output No. 2
9. Common Out	Derived Output common
10. −12/15 Vdc out	Derived Output No. 3
11. TTL Input	Non-Isolated Shutdown - Input return is Pin 12
12. −Vdc Out	Primary output common
13. +Vdc Out	Primary output voltage.

Notes:
1. Thirteen Pins, 0.040 (1) Dia.× 0.20 (5.1) Lg. Min.
2. Four Mounting Inserts, 4-40 × 0.10 (2.5) Dp. Min.
3. Four Mounting Studs 4-40 × 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, 13.5Vfor 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.

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