

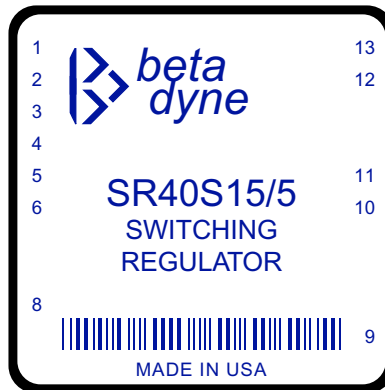


SR40 & SR80

40 & 80W STEP-UP SWITCHING REGULATORS
 5 to 10V_{IN} range for SR40, 10 to 18V_{IN} range for SR80

Key Features

- Efficiency up to 95%
- Wide input range (5–18V)
- Input undervoltage protection
- External synchronization
- 300kHz constant frequency
- 44W/in³ power density
- Six-sided shielding



Beta Dyne is protected under various patents, including but not limited to U.S. Patent numbers: 5,777,519; 6,188,276; 6,262,901; 6,452,818; 6,473,3171.

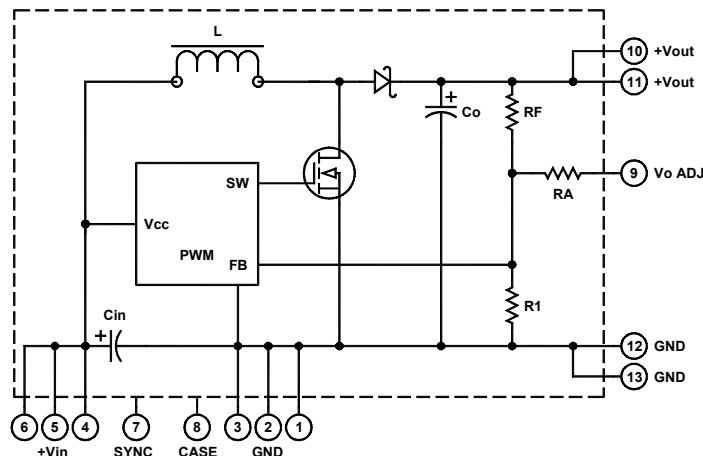
Applications

- Battery Chargers/Backup
- External Modems
- xDSL Power Supply
- Telecom Hardware
- LAN and Network Systems
- Point of Sale (POS) Systems

Functional Description

The SR40 & SR80 are constant frequency, current mode step-up switching regulators with excellent line and load regulation. The SR40 accepts 5V_{IN} to 10V_{IN} input and provides 9, 12, 15, 18 and 24V_{OUT}. The SR80 accepts 10V_{IN} to 18V_{IN} and provides 15, 18 and 24V_{OUT}. The SR40 delivers 40W to the load, while the SR80 delivers 80W. High switching frequency and SMD technology makes achieving high power density, low cost and high reliability possible. The SR80 requires a low impedance power source or minimum 2000μF input and 1000μF output capacitors for proper operation. Package size is 2×2×0.5 inches.

NOTE: These converters DO NOT feature short circuit protection, you must use an external fuse to provide short circuit protection.



Typical Block Diagram of SR40 & SR80

Electrical Specifications

INPUT SPECIFICATIONS

Unless otherwise specified, all parameters are given under typical +25°C with nominal input voltage and under full output load conditions.

PARAMETER	CONDITION / NOTE	MIN	TYP	MAX	UNIT
Input Voltage Range	See Model Selection Guide				
Input Current	NL, See Model Selection Guide				
Input Reflected Ripple	With 2000µF, See Model Selection Guide and Figure 1				
Turn On Delay	Including Soft Start, See Figure 2		5	8	mS
Undervoltage Lockout	Model Selection Guide				
External Sync Frequency	$F_{EXTERNAL} \geq 1.05\%$ of Switching Frequency		302		kHz
External Sync Amplitude	See Figures 6 & 7	2		5	Vdc

OUTPUT SPECIFICATIONS

PARAMETER	CONDITION / NOTE	MIN	TYP	MAX	UNIT
Output Voltage	See Model Selection Guide				
Output Voltage Accuracy			0.5	2	%
Line Regulation			±1	±2	% of V_{OUT}
Load Regulation			±1	±2	% of V_{OUT}
Ripple and Noise	With $C_o=1000\mu F$ minimum, See Figure 1		1	2	% of V_{OUTPP}
Temperature Coefficient			0.01	0.02	%
Transient Response	See Figure 3		100		µS
Short Circuit Current	Input Fuse, See Figures 4 & 6				
V_{OUT} Adjust Range			5	10	%

GENERAL SPECIFICATIONS

PARAMETER	CONDITION / NOTE	MIN	TYP	MAX	UNIT
Efficiency	See Model Selection Guide and Figure 4		94		%
Switching Frequency	Fixed	280	300	330	kHz
Isolation	None				
Thermal Resistance	Internally dissipated		5		°C/W
MTBF	per MIL-HNBK-217F (Ground benign, +25°C)		1.3×10^6		hours

ENVIRONMENTAL / PHYSICAL SPECIFICATIONS

PARAMETER	CONDITION / NOTE	MIN	TYP	MAX	UNIT
Humidity	Non-condensing			95	%
Storage Temperature		-55		+125	°C
Operating Temperature, Ambient	Contact factory for other temperature ranges	-25		+71	°C
Dimensions (L×W×H)	2.00×2.00×0.50 in. (50.80×50.80×12.70mm)				
Weight	2.43 oz. (69g)				
Case Connection	$-V_N / -V_{OUT}$				

Model Selection Guide

MODEL NUMBER	INPUT						OUTPUT		
	Voltage (Vdc)			Current (mA)		Reflected Ripple ¹ (mA _{PP})	Voltage (Vdc)	Current (mA)	Efficiency Full Load (%)
	Nominal	Range	Under-voltage	No Load	Full Load				
SR40S9/5	5 *	4.9–9	4.8	20	8695	40	9	4444	92
SR40S12/5	5 *	4.9–10	4.8	20	8695	40	12	3333	92
SR40S15/5	5 *	4.9–10	4.8	20	8695	40	15	2667	92
SR40S18/5	5 *	4.9–10	4.8	20	8602	40	18	2222	93
SR40S24/5	5 *	4.9–10	4.8	20	8602	40	24	1667	93
SR80S15/12	12	10–14	8	15	7092	20	15	5333	94
SR80S18/12	12	10–17	8	15	7092	20	18	4444	94
SR80S24/12	12	10–18	8	15	7017	20	24	3333	95

* Low source impedance is required.

¹ See Figure 1.

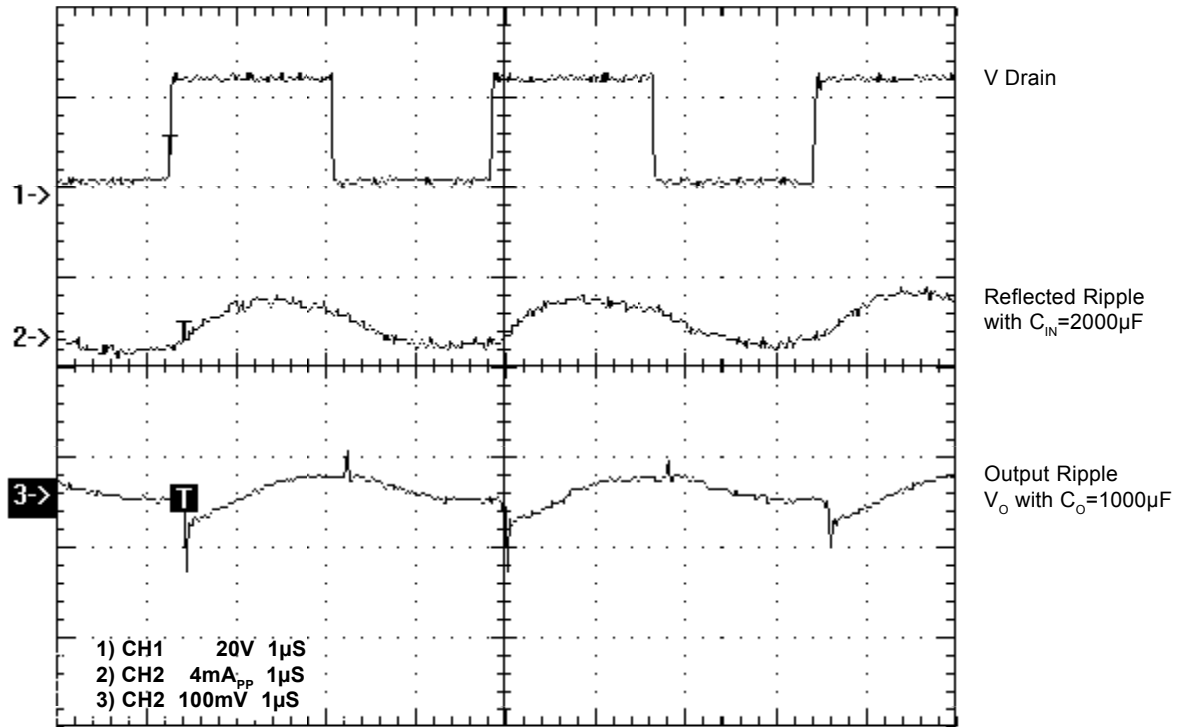


FIGURE 1. Reflected ripple and output ripple

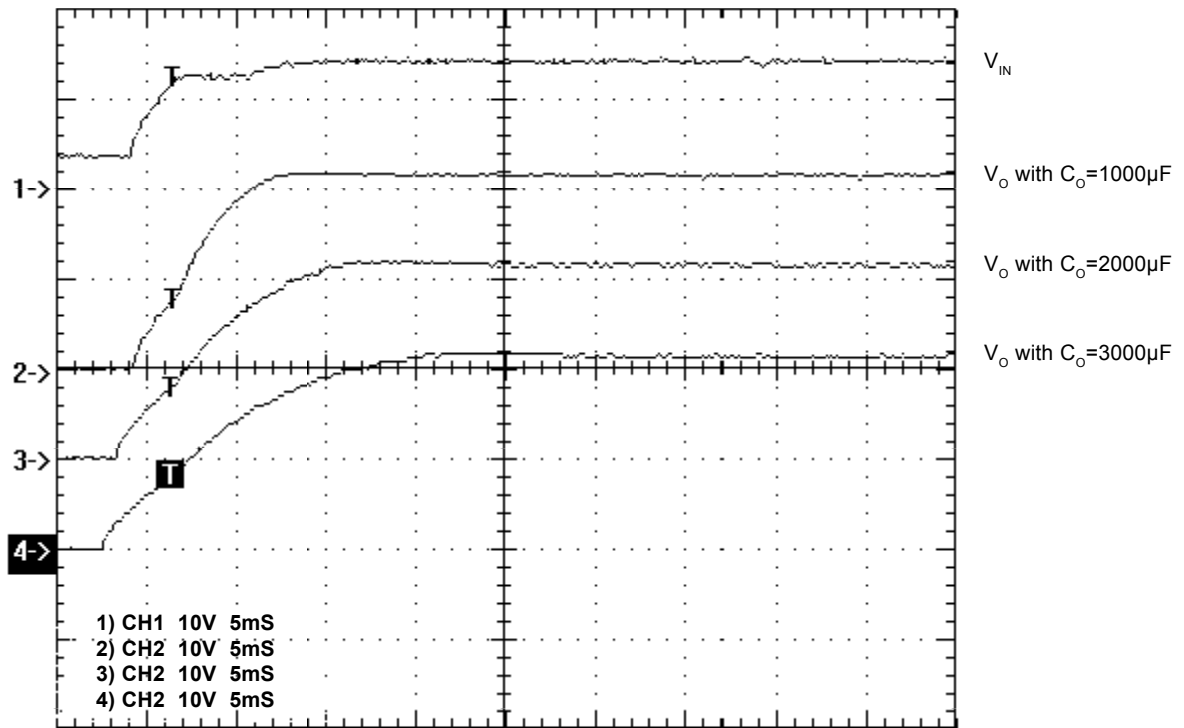


FIGURE 2. Soft start (SR80S24/12)

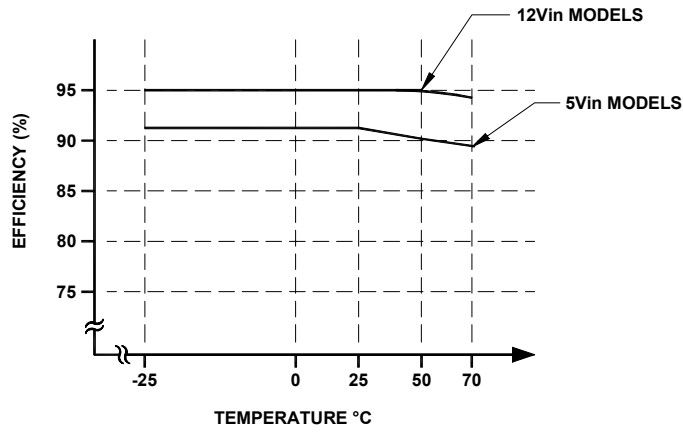


FIGURE 5. Efficiency vs. Temperature

V _{IN}	F1
5V	15A
12V	10A

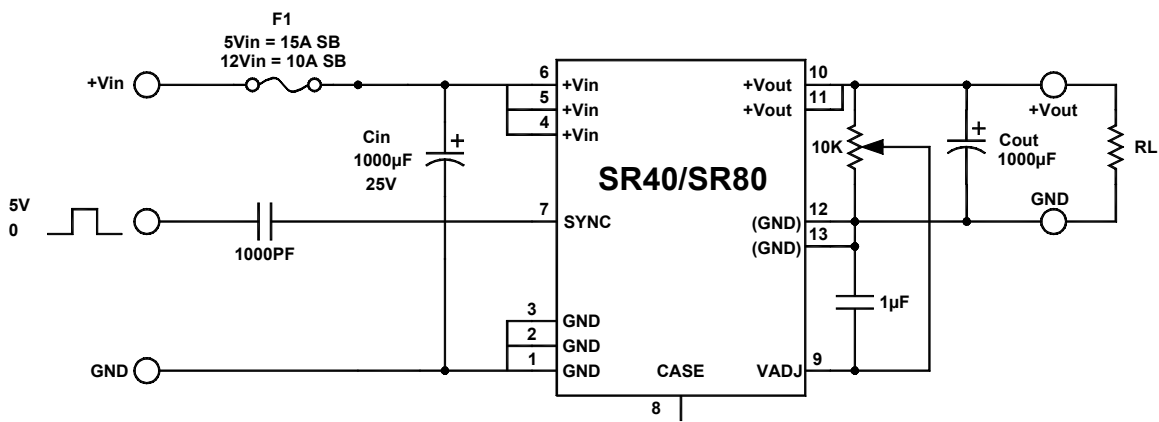
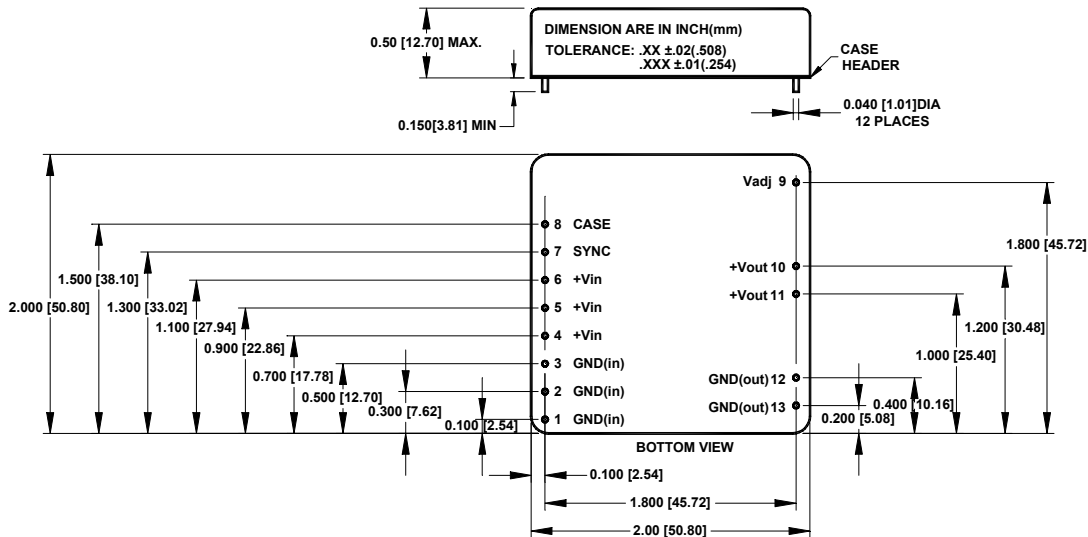


FIGURE 6. Typical connection diagram

MECHANICAL SPECIFICATIONS



Pin	Function
1	GND (INPUT)
2	GND (INPUT)
3	GND (INPUT)
4	+V _{IN}
5	+V _{IN}
6	+V _{IN}
7	SYNC
8	CASE
9	V _O ADJ
10	+V _{OUT}
11	+V _{OUT}
12	GND (OUTPUT)
13	GND (OUTPUT)

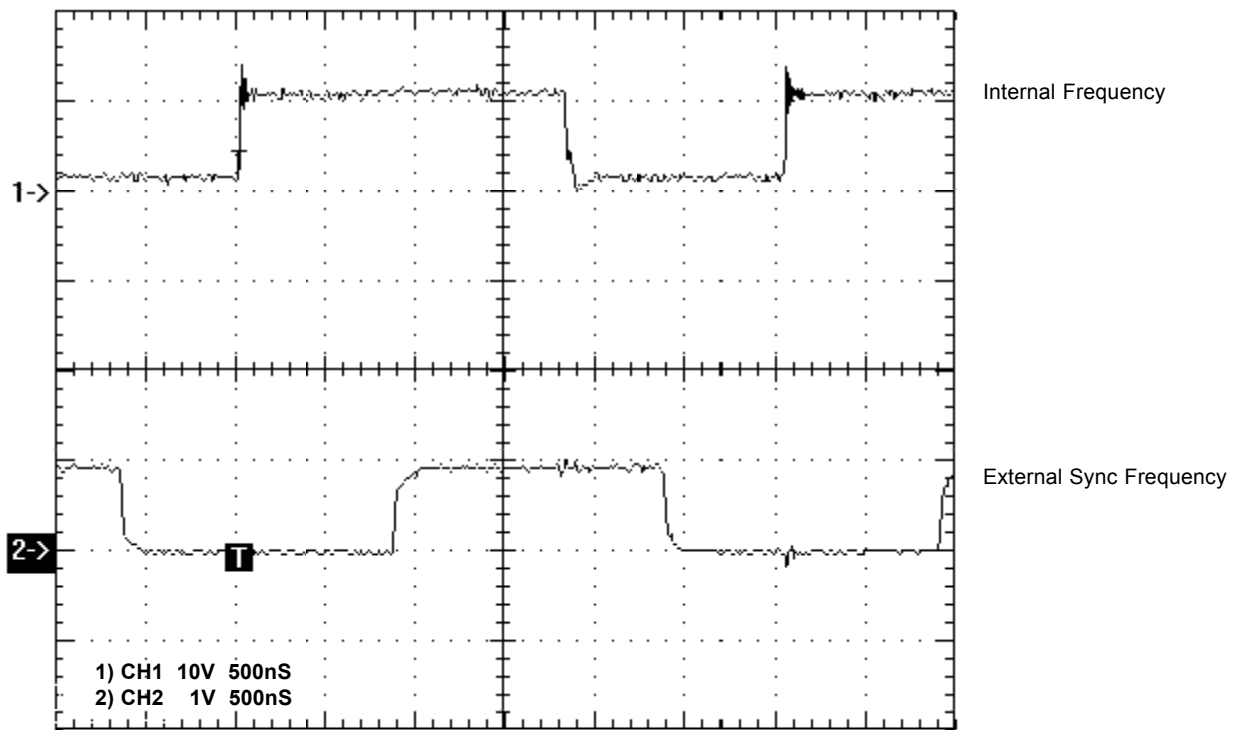


FIGURE 7. Synchronization