Features

- 2:1/4:1 Wide Input Range
- Operating Temperature Range: -40~105°c
- Approved to CE, RoHS & REACH
- Safety Standards to IEC/UL/EN62368-1
- Efficiency up to 91%
- EMC Class A & B
- Single output 9~425V DC

Ideal Power's 28SFBvvvvvv-V-y-Bz 600W Full Brick DC/DC Converters Series are certified to CE, RoHS, REACH & EN 62368-1/IEC 62368-1/UL 62368-1/EN 50155 Standards and comply with the relevant Efficiency Regulations. These are primarily used in ITE, Audio & Video, Railway Industries and customised solutions are available upon request.

Part Number Structure

Full Brick

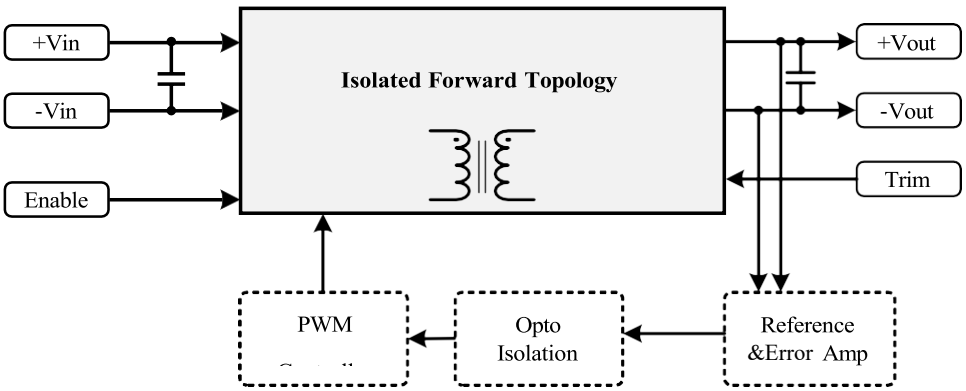
28SFB	-	110	120	-	V	-	P	-	B	600
Series Name		Input Voltage (VDC)	Output Voltage (VDC)		Pin Out		Remote On/Off Options		Shape	W
		018: 9-36 **024:** 18-36 **036:** 18-75 **110:** 40-180 **300:** 180-425	**120:** 12 **240:** 24 **280:** 28 **480:** 48		**V:** Victor		**N:** Negative logic. **P:** Positive logic.		**B:** Base Plate	400 600

Models

Model Number	Input			Output			Efficiency
	Voltage (V)		Current (A)	Voltage	Current	Power	
	Range	Nominal	Full load	(V)	(A)	(W)	Typ.(%)
28SFB018120-V-□-B400	9-36	18	25.25	12	33.33	400	88
28SFB018240-V-□-B400	9-36	18	25.25	24	16.67	400	88
28SFB018280-V-□-B400	9-36	18	25.25	28	14.28	400	88
28SFB018480-V-□-B400	9-36	18	25.25	48	8.33	400	88
28SFB024120-V-□-B600	18-36	24	28.09	12	50	600	89
28SFB024240-V-□-B600	18-36	24	28.09	24	25	600	89
28SFB024280-V-□-B600	18-36	24	28.09	28	21.42	600	89
28SFB024480-V-□-B600	18-36	24	28.09	48	12.5	600	89
28SFB036120-V-□-B600	18-75	36	18.94	12	50	600	88
28SFB036240-V-□-B600	18-75	36	18.94	24	25	600	88
28SFB036280-V-□-B600	18-75	36	18.94	28	21.42	600	88
28SFB036480-V-□-B600	18-75	36	18.94	48	12.5	600	88
28SFB110120-V-□-B600	40-180	110	6.20	12	50	600	88
28SFB110240-V-□-B600	40-180	110	6.20	24	25	600	88
28SFB110280-V-□-B600	40-180	110	6.20	28	21.42	600	88
28SFB110480-V-□-B600	40-180	110	6.20	48	12.5	600	88
28SFB300120-V-□-B600	180-425	300	2.22	12	50	600	90
28SFB300240-V-□-B600	180-425	300	2.20	24	25	600	91
28SFB300280-V-□-B600	180-425	300	2.20	28	21.42	600	91
28SFB300480-V-□-B600	180-425	300	2.25	48	12.5	600	89

Description

Supreme series - Full Brick converter is composed of Isolated, board-mountable, fixed switching frequency DC- DC converters that use synchronous rectification to achieve extremely high-power conversion efficiency. These DC- DC converter modules use advanced power processing, control, and packaging technologies to enhance the performance, flexibility, reliability, and cost effectiveness of mature power components. Each module is six-sided metal case enclosed to provide protection from the harsh environments seen in many industrial and transportation applications.



Input Specifications

Parameter	Conditions	Min	Typ	Max	Unit
Transient Input Voltage Ranges	SFB018 models(100ms Max)	--	--	50	VDC
	SFB024 models(100ms Max)	--	--	50	
	SFB036 models(100ms Max)	--	--	100	
	SFB110 models(100ms Max)	--	--	250	
	SFB300 models(100ms Max)	--	--	500	
Operating Input Voltage Ranges	SFB018 models	9	18	36	VDC
	SFB024 models	18	24	36	
	SFB036 models	18	36	75	
	SFB110 models	40	110	180	
	SFB300 models	180	300	425	
Over-Voltage Turn-off Voltage	SFB018 models	--	--	48	VDC
	SFB024 models	--	--	48	
	SFB036 models	--	--	85	
	SFB110 models	--	--	195	
	SFB300 models	--	--	470	
Over-Voltage Turn-on Voltage	SFB018 models	36	--	--	VDC
	SFB024 models	36	--	--	
	SFB036 models	75	--	--	
	SFB110 models	180	--	--	
	SFB300 models	425	--	--	
Under-Voltage Lockout Turn-on Voltage	SFB018 models	--	--	9	VDC
	SFB024 models	--	--	18	
	SFB300 models	--	--	180	
Under-Voltage Lockout Turn-off Voltage	SFB018 models	--	8	--	VDC
	SFB024 models	--	17	--	
	SFB300 models	--	175	--	
Input Current	See model selection guide, Standby mode (OFF,UVLO) 5mA				
Enable Function Input	Positive logic ON OFF	Open			VDC
	Negative logic ON OFF	Short or 0 ~ 1.2			

Note: Typical @ Ta=+25˚C under nominal line voltage conditions unless noted.

Output Specifications

Parameter	Conditions	Min	Typ	Max	Unit
Output Voltage Accuracy	VNOM 50% Load	--	--	±1.5	%
Line Regulation	Low Line to High Line	--	--	±0.3	
Load Regulation	10% to 100% Load	--	--	±0.5	
Output Ripple & Noise Voltage	Bandwidth 20MHz and with 1uF	--	1.5	--	%Vpk-pk
Temperature Coefficient		--	--	±0.04	% /˚C
Transient Recovery Time	25% load step change	--	800	--	µSec.
Transient Peak Deviation	ΔIo/Δt=2.5A/us	--	±2	--	%Vo
Start-Up Time	When use Enable Function	--	20	--	mSec.
Trimming Output Voltage	VNOM 10% Load	--	±10	--	%
Over Voltage Protection	VNOM 10% Load	--	120	--	
Output Power Protection	VNOM	--	120	--	

General Specifications

Parameter	Conditions	Min	Typ	Max	Unit
Switching Frequency	VNOM	--	250	--	KHz
Storage Temperature Range	All models	-60	--	125	˚C
Operating Case Temperature	All models	-45	--	105	
Over temperature Protection	All models, auto. Recovery	--	110	--	
Isolation Voltage Input to Output	All models, 1 Minute	2250	--	--	VDC
Isolation Resistance Input to Output	All models, 500VDC,At 70%RH	100	--	--	MΩ
Isolation Capacitance Input to Output	All models	--	1500	--	pF
Humidity (non-condensing)	All models	--	--	95	%
Calculated MTBF	BellCore-TR-332@ 50˚C G.B	--	TBD	--	M HR
Thermal shock	Environmental Engineering Experimental Tests				MIL-STD-810F
Vibration					MIL-STD-810F
Drop					MIL-STD-810F
Weight	Shape-B		225		g (oz.)
Dimensions	Shape-B	4.62” x 2.40” x 0.59” (117.3 x 61.0 x			
Case Material	Aluminum				
Potting Material	Silicone				

EMC Specifications

Parameter	Conditions		Level
EMI	EN55022		Class A / Class
ESD	EN61000-4-2	±4 kV Air Discharge ±4 kV Contact Discharge	Perf. Criteria A
Radiated immunity	EN61000-4-3	Level 2, 3 V/m	Perf. Criteria A
Fast transient	EN61000-4-4	±2 kV Applied	Perf. Criteria A
Surge	EN61000-4-5	±2 kV Applied	Perf. Criteria A
Conducted immunity	EN61000-4-6	Level 2, 3 V rms	Perf. Criteria A

AUTION: This power module is not internally fused. An input line fuse must always be used.

Characteristic Curve

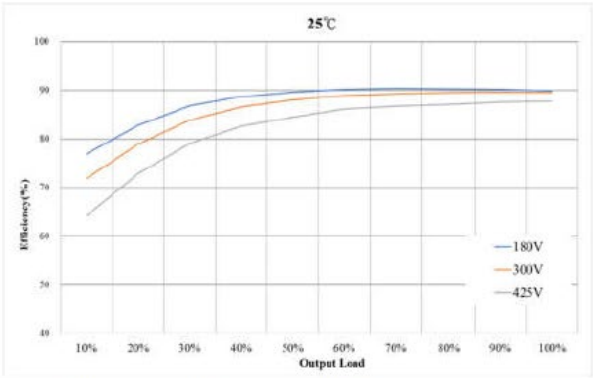


Figure 1 : Efficiency at Minimum, Nominal and Maximum Input Voltages VS. Output Load.

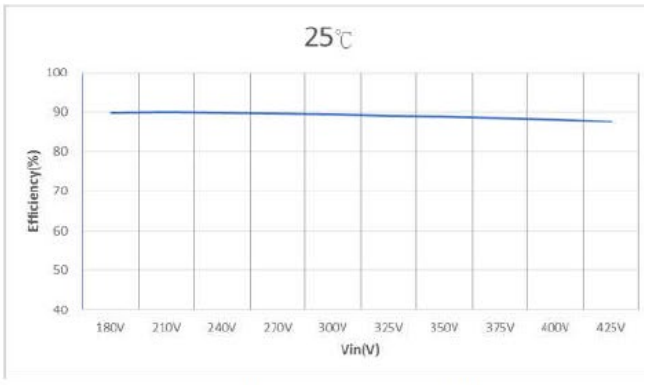


Figure 2 : Efficiency VS. Input Voltages at 100% rated power

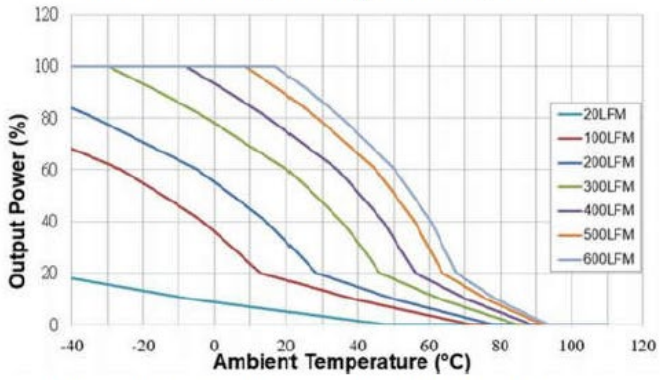


Figure 3 : Ambient Temperature VS. Output Power Derating Curves

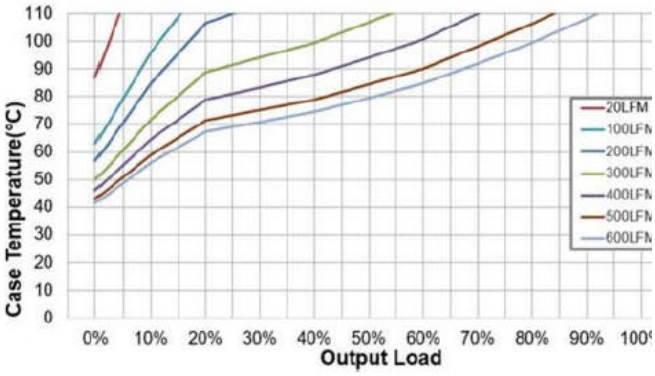


Figure 4 : Case Temperature VS. Output rated Power

Characteristic Curve (continued)

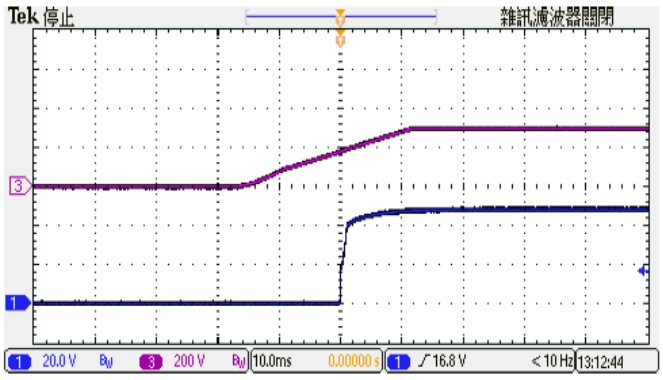


Figure 5 : CH1 = Vout, CH3 = Nominal Input
Typical Start-up waveform at Full load.

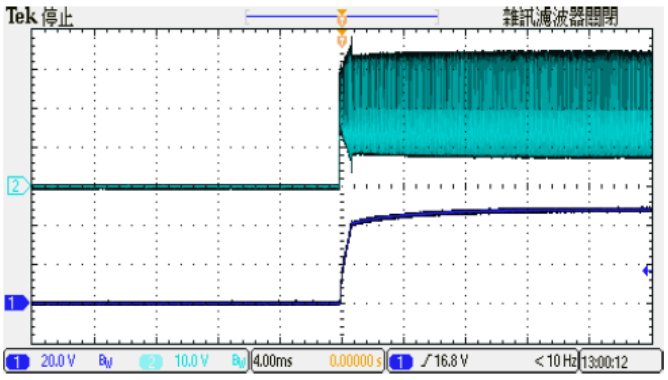


Figure 6 : CH1 = Vout, CH3 = Enable Pin
Typical Start-up waveform. Input voltage pre-applied

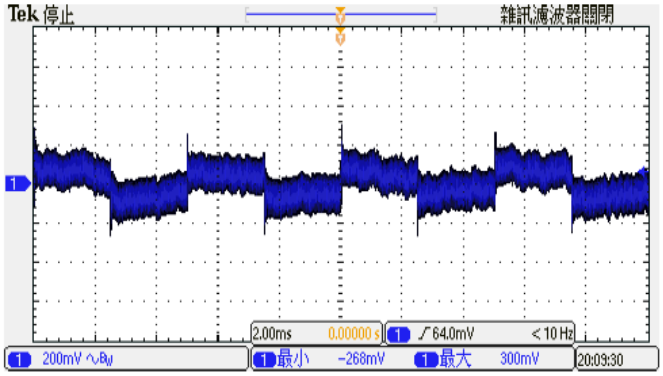


Figure 7 : Transient Response at Output step load
(Vin: Typical ,25~50% of output current; ΔIo/Δt =1A/μS)

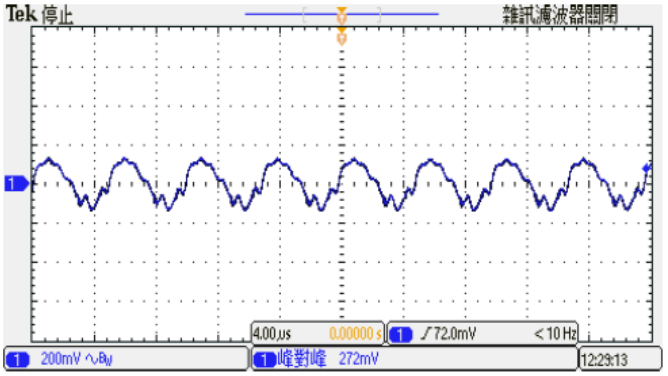
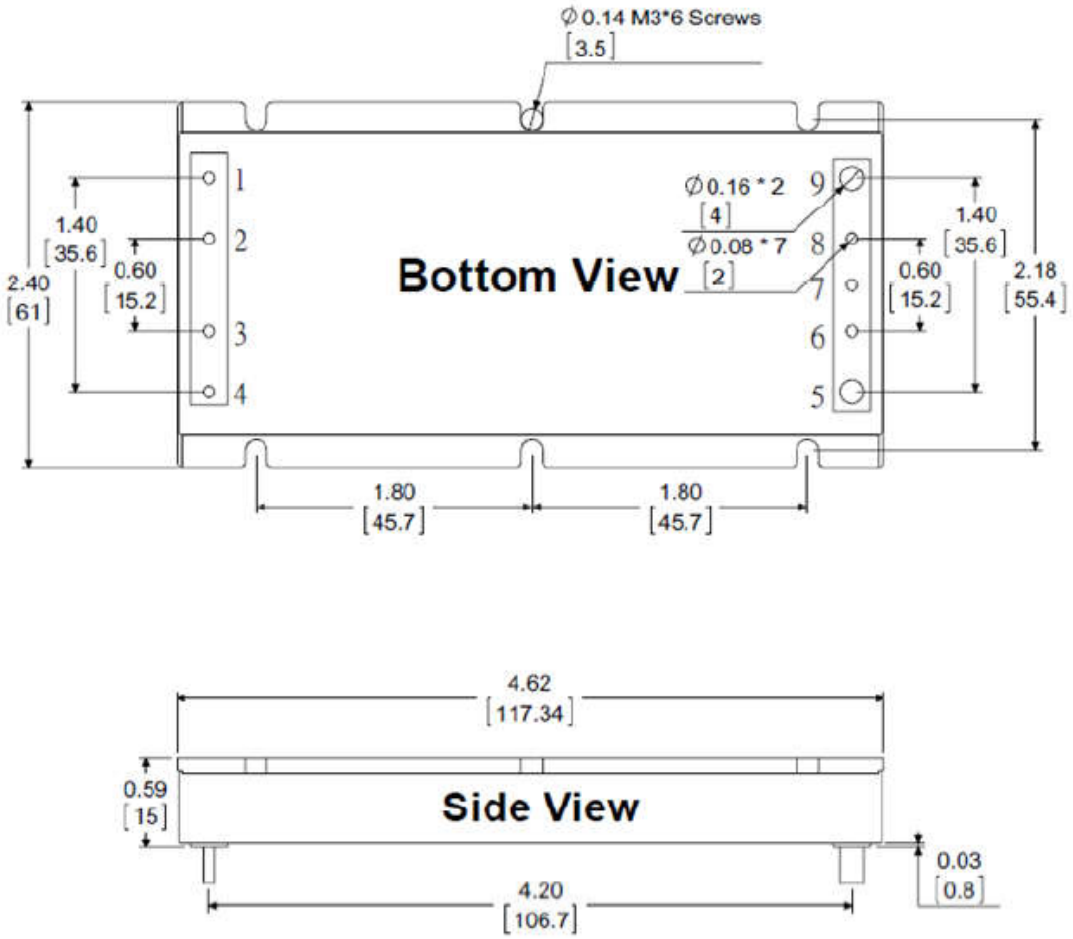


Figure 8 : Output Voltage Ripple & Noise at full load.
(Vin: Typical, With Output Capacitor to add 1uF MLCC)

Note: Testing conditions are at typical input, Ta=+25˚C,full load (horizontal mount) Unless otherwise indicated.

Mechanical Drawing



Pin Connection

Pin	Function
1	-Vin
2	--
3	Enable
4	+Vin
5	+Vout
6	+Sense
7	Trim
8	-Sense
9	-Vout

Note:
Pin Material: Copper Alloy Pin Plating: Gold
Dimensions in inches [mm]
Tolerances: .XX±0.02 [.X±0.5mm]

Output Voltage Adjustment

Only the single output converters have a trim function. That allows users to adjust the output voltage from +10% to –10%, please refer to the trim table that follow for details. Adjustments to the output voltage can be used with a simple fixed resistor as shown in Figures 1 and 2. A single fixed resistor can increase or decrease the output voltage depending on its connection.

Note:

※ Trim adjustments higher than the specified range can have an adverse effect on the converter's performance and are not recommended.

※ If the trim function is not used, leave the trim pin open.

Trim Up

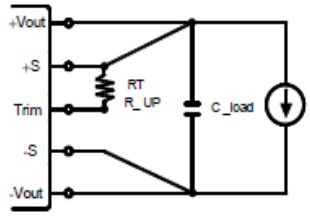


Figure 1. Trim Connections To increase Output Voltages Using Fixed Resistors

Trim up resistor value (KΩ)										
Vout	**1%**	**2%**	**3%**	**4%**	**5%**	**6%**	**7%**	**8%**	**9%**	**10%**
12	258	115	67	44	29	20	13	7.8	3.8	0.6
24	514	232	137	90	62	43	30	20	12	5.5
28	602	271	161	105	72	50	34	22	13	5.9
48	1039	464	273	177	120	81	54	34	18	5

Trim Down

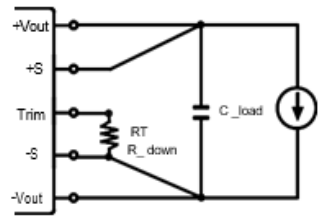


Figure 2. Trim Connections to Decrease Output Voltages Using Fixed Resistors

Trim up resistor value (KΩ)										
Vout	**1%**	**2%**	**3%**	**4%**	**5%**	**6%**	**7%**	**8%**	**9%**	**10%**
12	358	162	96	63	44	31	21	14	8.9	4.5
24	769	352	213	143	102	74	54	39	28	18
28	860	392	236	158	111	80	57	41	28	17
48	1413	638	380	251	173	121	85	57	35	18

Enable Control Function

The primary-side, Enable Control function can be specified to operate with either positive or negative polarity. Positive-polarity devices are enabled when the enable pin is left open or is pulled high .
See “Enable Function Input.

Positive-polarity devices are disabled when the enable pin is pulled low (under +1.0V with respect to –input). Negative-polarity devices are off when the enable pin is high/open and on when the enable pin is pulled low. See Figure 3.

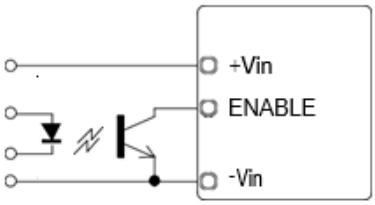


Figure 3. Driving the Enable Control pin

Output Ripple Noise

The two copper strips simulate real-world PCB impedances between the converter and its load. Scope measurements should be made using BNC connectors or the probe ground should be less than 1/2 inch and soldered directly to the fixture.

All external capacitors should have appropriate voltage ratings and be located as close to the converter as possible. Temperature variations for all relevant parameters should be taken into consideration.

The most effective combination of external I/O capacitors will be a function of line voltage and source impedance, as well as load and layout conditions. See Figure 4.

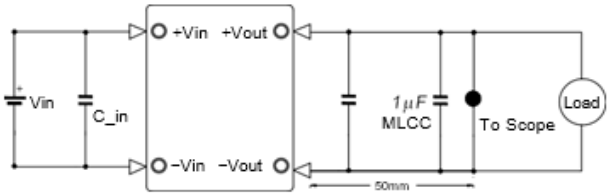


Figure 4. Measuring Output Ripple/Noise (20MHz bandwidth)

DC – DC