AcBel Product Specification

Acbel Part No.	DC7008-091G
Model Name	SV24-28-350
Description	DC-DC Converter 24Vdc Input, 28Vdc Output, 350W Output Power, Negative ON/OFF control
Revision	Draft 1
Date Issued	03/28/2011

Rev.Draft 1. 03/28/2011

High Output Power, High Efficiency Half Brick,

DC7008-091G SV24-28-350

Module: 18Vdc to 36Vdc Input,

28Vdc Output, Output Power Up to 350W.

World's Most Advanced High Power Density DC-DC Converters.

DESCRIPTION:

The SUPERVERTER™ module is a high density DC-DC converter designed for use in distributed power architectures, workstation, EDP equipment, and telecommunication applications. The surface-mount construction uses a metal baseplate and planar transformer to produce up to 350W in a half brick package. The SUPERVERTER™ module is a suitable replacement for all industry.

OPTIONS

- Remote On/Off Logic Configuration
- Heat Sink Available for Extended Operation

FEATURES:

- Miniature Size: 61.0mm x 57.9mm x 12.7mm (2.40in. x 2.28in. x 0.50in.) (Typical)
- High Power Density: Up to 128W/in.^3
- High Efficiency: 91% Typical
- Low Output Noise
- Industry-Standard Size
- Metal Baseplate
- Thermal Protection
- Under Voltage Protection
- Over Voltage Protection
- Current Limit/Short Circuit Protection
- Adjustable Output Voltage: 90% to 115% of Vo
- Remote Sense
- Remote ON/OFF Control: Negative Logic
- Safety: CSA Certified for Basic Insulation
- RoHS Compliant

SPECIFICATIONS:

ABSOLUTE MAXIMUM RATINGS

PARAMETER	MIN	TYP	MAX	UNITS	CONDITIONS
Input Voltage (+In to –In)	-0.3		50	V	<100ms
	-0.3		40	V	Continuous
Logic ON/OFF Voltage (ON/OFF to –In)	-0.3		15	V	
Storage Temperature	-40		125	℃	
Storage Humidity	10		95	%	
Operating Temperature	-40		100	℃	Temperature measure shall be taken from the baseplate (Tb).
Operating Humidity	30		95	%	

INPUT SPECIFICATIONS:

PARAMETER	MIN	TYP	MAX	UNITS	CONDITIONS
Operation Input Voltage (Vi)	18	24	36	V	
Maximum Input Current (Ii,max)		17		A	Vi=24V, Io =Io,max
Inrush Transient			2	A^2s	
Input Reflected-Ripple Current: Peak-Peak		50	60	mAp-p	5HZ to 20MHZ, Vin=24V, Io= Io,max, 12uH source Impedance, Cin=220uF, Ta=25℃
Input Ripple Rejection		60		dB	@ 120Hz
Input Under Voltage Protection: Turn-on Threshold Turn-off Threshold Hysteresis	 13.5 0.5	 15 14 1	16	V V V V	Vo=28V, Io= Io,max

OUTPUT SPECIFICATIONS:

PARAMETER	MIN	TYP	MAX	UNITS	CONDITIONS
Output Voltage Set Point (Vo,set)	27.95	28	28.05	V	Initial Adjusted @Tb=25℃,Vi=24V, Io=Io,max
Output Voltage Accuracy (Vo)	27.72	28	28.28	V	Io=Io,max
Output Voltage Tolerance Band			3	%	All Operating Condition
Line Regulation			0.2	%	Vi=18V to 36V
Load Regulation			0.2	%	Io= Io,min to Io,max.
Temperature Drift			0.02	%/ ℃	Tb= -40 to 100℃
Output Ripple and Noise Voltage Peak to Peak			350	mVp-p	Bandwidth 5Hz to 20MHz and with 0.1uF MLCC. Output Capacitor: 880uF
Output Current (Io,max)	0		12.5	A	
Output Current Limit	105		145	%Io,max	Current limit inception point Vo=90% of Vo,set
Output Short Circuit Current			170	%Io,max	Auto. Recovery
Output Over Voltage Protection	115		140	%Vo	Io=0.5A
External Capacitance		880		uF	50V/220uF*4 (LXZ)
Output Power			350	W	

OUTPUT SPECIFICATIONS (CONTINUED):

PARAMETER	MIN	TYP	MAX	UNITS	CONDITIONS
Efficiency		91		%	Vi=24V, Vo=28V, Io=80 % of Io,max @Tb=25 ℃.
Dynamic Response: Peak Deviation Settling Time		2 500		%Vo,set us	25%-50%-75% of Io,max, Slew rate 0.1A/μs, with load cap.880uF/50V Tb=25℃.

CONTROL SPECIFICATIONS:

PARAMETER	MIN	TYP	MAX	UNITS	CONDITIONS
Logic ON/OFF Remote Logic Low = module Off Logic High = module On Logic Low: Ion/off Von/off Logic High: Ion/off Von/off	 2	 	 1 0.7 50 	 mA V uA V	 Von/off=0V Ion/off<1mA Von/off=15V Ion/off=0.0μA
Turn-On Delay & Rise Times Tdelay Trise		 40 50		 ms ms	 Tdelay = Time until Vo = 10% of Vo, set from either application of Vi with Remote On/Off set to On or operation of Remote On/Off from Off to On with Vi already applied for at least one second. Trise = time for Vo to rise from 10% to 90% of Vo,set.
Output Voltage Adjustment Output Voltage Trim Range	 90		 115	 %Vo	With Cap. 880uF/50V, @Tb=25℃, Refer Trim Circuit.
Over Temperature Protection		105		℃	Auto. Recovery, Baseplate Temperature

ISOLATION SPECIFICATIONS:

PARAMETER	MIN	TYP	MAX	UNITS	CONDITIONS
Input to Output		1500		Vdc	60 seconds
Input to Case		1500		Vdc	60 seconds
Output to Case		500		Vdc	60 seconds
Input to Output Capacitance		2000		pF	
Isolation Resistance	100			Mohm	at Tb=25℃ and 70%RH, Output to Baseplate - 500VDC

STRUCTURAL DYNAMICS:

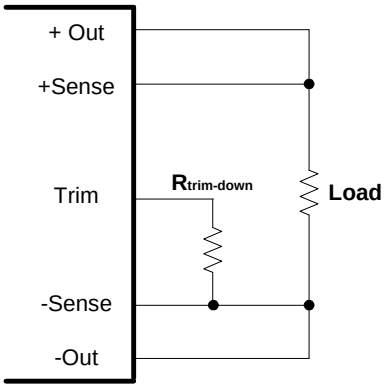
PARAMETER	CONDITIONS
Vibration	Sine Wave, 10-55Hz (Sweep for 1 min.), Amplitude 0.825mm Constant (Maximum 5g) X,Y,Z 1 Hour each, At No Operating,
Shock	20g, 166 in/sec, Square Wave

GENERAL SPECIFICATIONS:

PARAMETER	MIN	TYP	MAX	UNITS	CONDITIONS
MTBF		2.54		Mhrs	Tb=40℃, Io=80% of Io,max, Vi=24V
Weight		120		g	
Size (WxHxD)		2.40x2.28x0.5		in.^3	

TRIM CIRCUIT:

A. Trim down: The resistor for output voltage trim-down function could be calculated with the following formula:

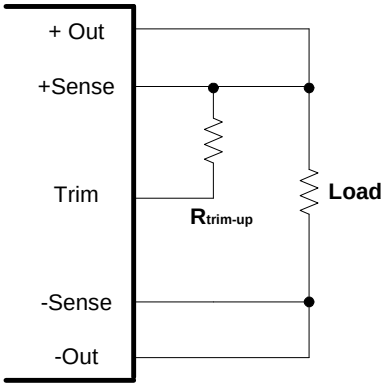


$$R_{trim-down} = \left(\frac{100\%}{\Delta\%} - 2\right)(k\Omega)$$

$\Delta\%$: Output voltage change rate against nominal output voltage.

Fig. 1 The schematic for output voltage trim down.

B. Trim up: The resistor for output voltage trim-up function could be calculated with the following formula



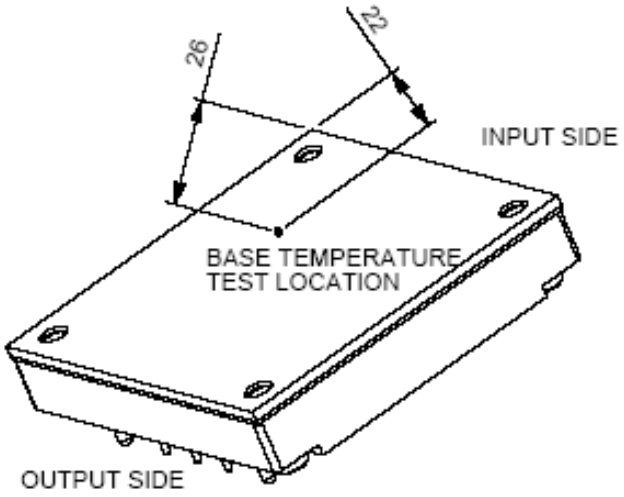
$$R_{trim-up} = \left[\frac{Vo(100\% + \Delta\%)}{1.225\Delta\%} - \frac{(100\% + 2\Delta\%)}{\Delta\%}\right](k\Omega)$$

Vo: The nominal output voltage.

$\Delta\%$: Output voltage change rate against nominal output voltage.

Fig. 2 The schematic for output voltage trim up.

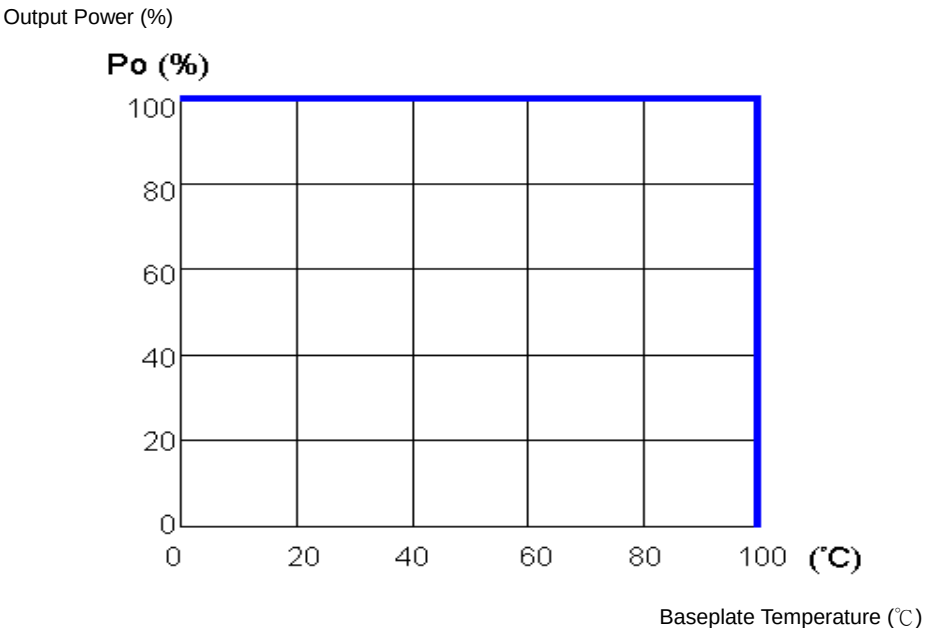
BASEPLATE MEASURE POINT:



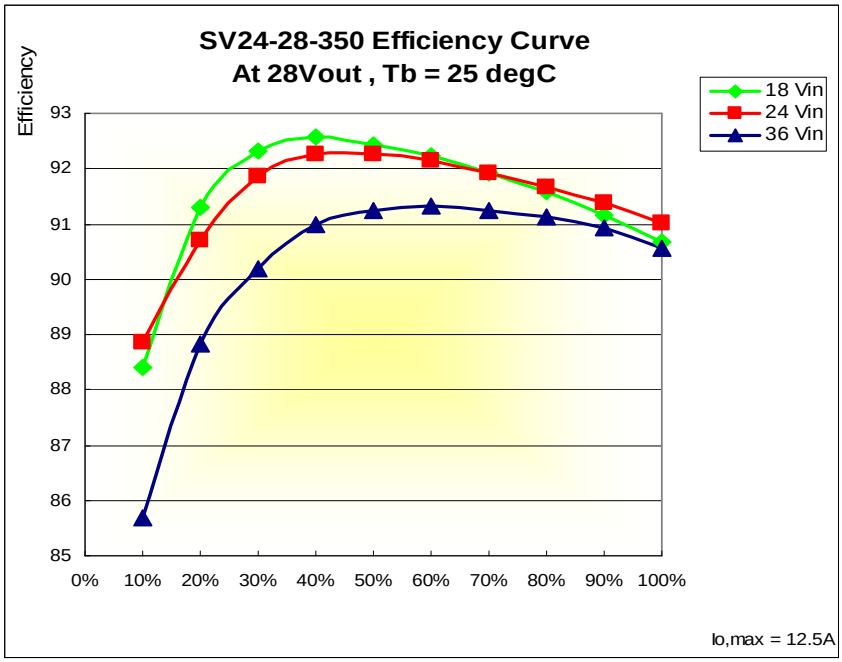
UNIT: mm

Fig. 3 Baseplate Temperature Measure Point.

DERATING CURVE:



EFFICIENCY CURVE:



OUTLINE DRAWING: