

# SDC-MIL-HP-614

## 600W 270V input 14VDC Output

### Military High-Density DC-DC Converter



Solitera Advanced Technology Systems offers a variety of high input voltage DC-DC converters from 50W-750W in military and industry standards quarter, half and full brick sizes.

They provide a 270Vdc/300Vdc nominal input (with an input range of 100 to 400Vdc) and 3000VAC reinforced isolation.

These converters are ideal for use in rugged, thermally challenged applications requiring baseplate cooled applications such as military systems, railway systems, distributed power architectures, telecommunications, servers, base station, battery operated equipment, and industrial applications, RF/power amplifiers, commercial avionics and industrial control.

Solitera second-generation high-density DC/DC converters have highly efficient power design and advanced thermal management techniques including insulated metal substrate technology, specialty dielectrics and formulated thermally conductive potting to produce small, ruggedized DC/DC converters with reduced temperature rise and increased reliability.

## FEATURES

- 600W Isolated Output
- Wide input range 180V ~ 425V
- High density 71W/in<sup>3</sup>
- Fixed frequency operation
- Single Wire Parallel with current sharing
- Fixed frequency operation
- External trim adjust requirements
- Remote On/Off
- Ruggedized
- -55°C to +100°C operating temperature
- No aluminum electrolytic capacitors
- Fully Isolated 4500VDC
- Custom models available
- Consult **Solitera Advanced Technologies** for special requirements

All Specifications are Typical at Nominal Line, Full load, and 25°C Unless Otherwise Noted

## ABSOLUTE MAXIMUM RATINGS\*

Parameter	Minimum	Typical	Maximum	Conditions
INPUT VOLTAGE	-0.2VDC		425VDC	Continuous
INPUT TRANSIENT VOLTAGE	-0.2VDC		450VDC	100 msec max.
SOLDERING TEMPERATURE			260°C	< 5 sec

\* Exceeding absolute maximum ratings may cause permanent damage or reduce reliability

## INPUT SPECIFICATIONS

Parameter	Minimum	Typical	Maximum	Conditions
INPUT VOLTAGE RANGE	180V	270V	425V	
TURN ON TIME		300ms	500ms	
SWITCHING FREQUENCY	280Khz	300KHz	330Khz	
MAXIMUM INPUT CURRENT		3.3ADC		Vin = 200V, Tc= 25°C

## OUTPUT SPECIFICATIONS

Parameter	Minimum	Typical	Maximum	Conditions
OUTPUT VOLTAGE	13.87 VDC	14.01 VDC	14.15 VDC	
OUTPUT CURRENT			42.8A	
TRIM ADJUST	±10%			
RIPPLE AND NOISE		1.5% p-p	2.5% p-p	20MHz BW.
LINE REGULATION		±0.5%	±1%	
LOAD REGULATION		±0.5%	±1%	
TURN ON OVERSHOOT			5%	
SENSE COMPENSATION			10%	
SHORT CIRCUIT PROTECTION			170% rated	200V < Vin < 400V, Rshort = 15mOhm
OUTPUT VOLTAGE TRIM *	±10%			See Note 1
OVER VOLTAGE PROTECTION	15.47VDC	16.46VDC	17.45VDC	

## GENERAL SPECIFICATIONS

Parameter	Minimum	Typical	Maximum	Conditions
EFFICIENCY		87%		Full Load
THERMAL SHUTDOWN RANGE	105 °C	110 °C		Case Temperature
TEMP COEFFICIENT			0.02%/°C	
SHUT DOWN CONTROL		Open Collector		
CURRENT SHARING (Parallel Operation)		5%		Single Wire Parallel Connection
OUTPUT GOOD SIGNAL		±10%		Active LOW
ISOLATION VOLTAGE				
(Input/Output)	4500VDC			
(Input/Case)	2500VDC			
(Output/Case)	500VDC			
ISOLATION RESISTANCE	10 <sup>7</sup> Ohm			Input-to-Output Resistance

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## ENVIRONMENTAL SPECIFICATIONS

Parameter	Minimum	Typical	Maximum	Conditions
OPERATING TEMPERATURE RANGE	-55°C		+100°C	With baseplate
STORAGE TEMPERATURE RANGE	-65°C		+135 °C	
MTBF	980.000hrs			MIL-HDBK-217F, @60°C baseplate

MIL-STD-810G Test	Method	Description
FUNGUS	508.6	Table 508.6-I
ALTITUDE	500.5 - Procedure I	Storage: 70,000 ft / 2 hr duration
	500.5 - Procedure II	Operating: 70,000 ft / 2 hr duration; Ambient Temperature
RAPID DECOMPRESSION	500.5 - Procedure III	Storage: 8,000 ft to 40,000 ft
ACCELERATION	513.6 - Procedure II	Operating: 15 g
SALT FOG	509.5	Storage
HIGH TEMPERATURE	501.5 - Procedure I	Storage: 135 °C / 3 hrs
	501.5 - Procedure II	Operating: 100 °C / 3 hrs
LOW TEMPERATURE	502.5 - Procedure I	Storage: -65 °C / 4 hrs
	502.5 - Procedure II	Operating: -55 °C / 3 hrs
TEMPERATURE SHOCK	503.5 - Procedure I - C	Storage: -65 °C to 135 °C; 12 cycles
RAIN	506.5 - Procedure I	Wind Blown Rain
IMMERSION	512.5 - Procedure I	Non-Operating
HUMIDITY	507.5 - Procedure II	Aggravated cycle @ 95% RH (Figure 507.5-7 aggravated temp - humidity cycle, 15 cycles)
RANDOM VIBRATION	514.6 - Procedure I	10 - 2000 Hz, PSD level of 1.5 g <sup>2</sup> /Hz (54.6 grms), duration = 1 hr/axis
SHOCK	516.6 - Procedure I	20 g peak, 11 ms, Functional Shock (Operating no load) (saw tooth)
	516.6 - Procedure VI	Bench Handling Shock
SINUSOIDAL VIBRATION	514.6 - Category 14	Rotary wing aircraft - helicopter, 4 hrs/axis, 20 g (sine sweep from 10 - 500 Hz)
SAND AND DUST	510.5 - Procedure I	Blowing Dust
	510.5 - Procedure II	Blowing

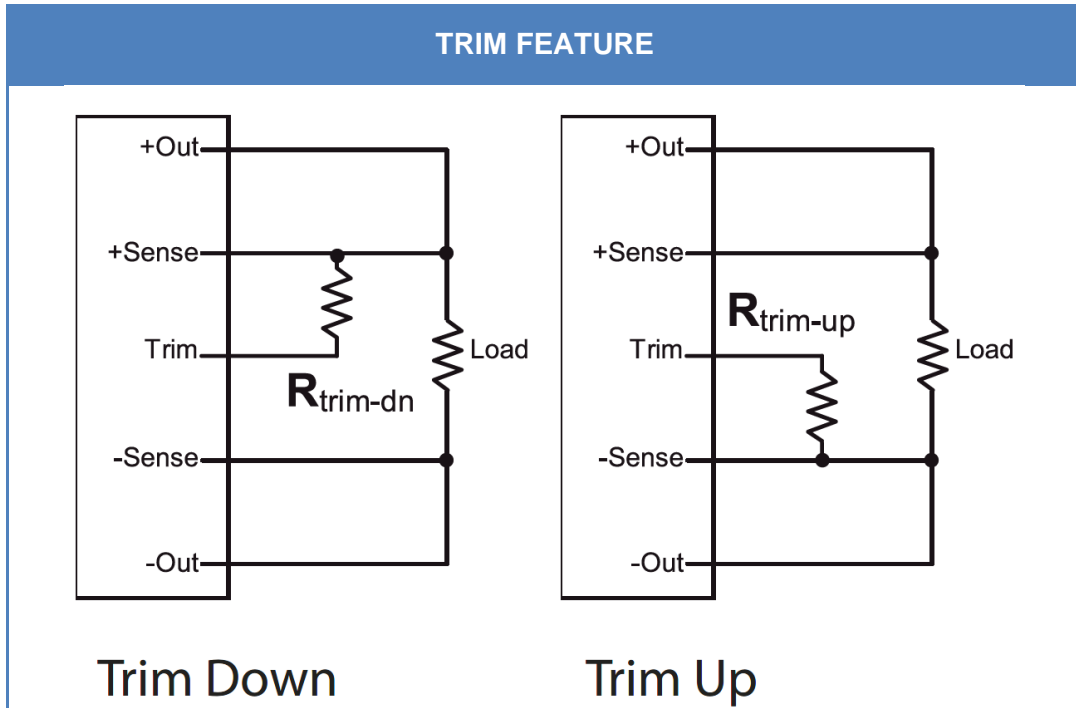
## PHYSICAL CHARACTERISTICS

Parameter	Minimum	Typical	Maximum	Conditions
DIMENSIONS (LxWxH)		4.3x2.70x0.80 inches (109.2x68.6x20.2 mm)		Custom Dimensions
WEIGHT		220g		
CASE MATERIAL		Aluminum Baseplate with Plastic Case		

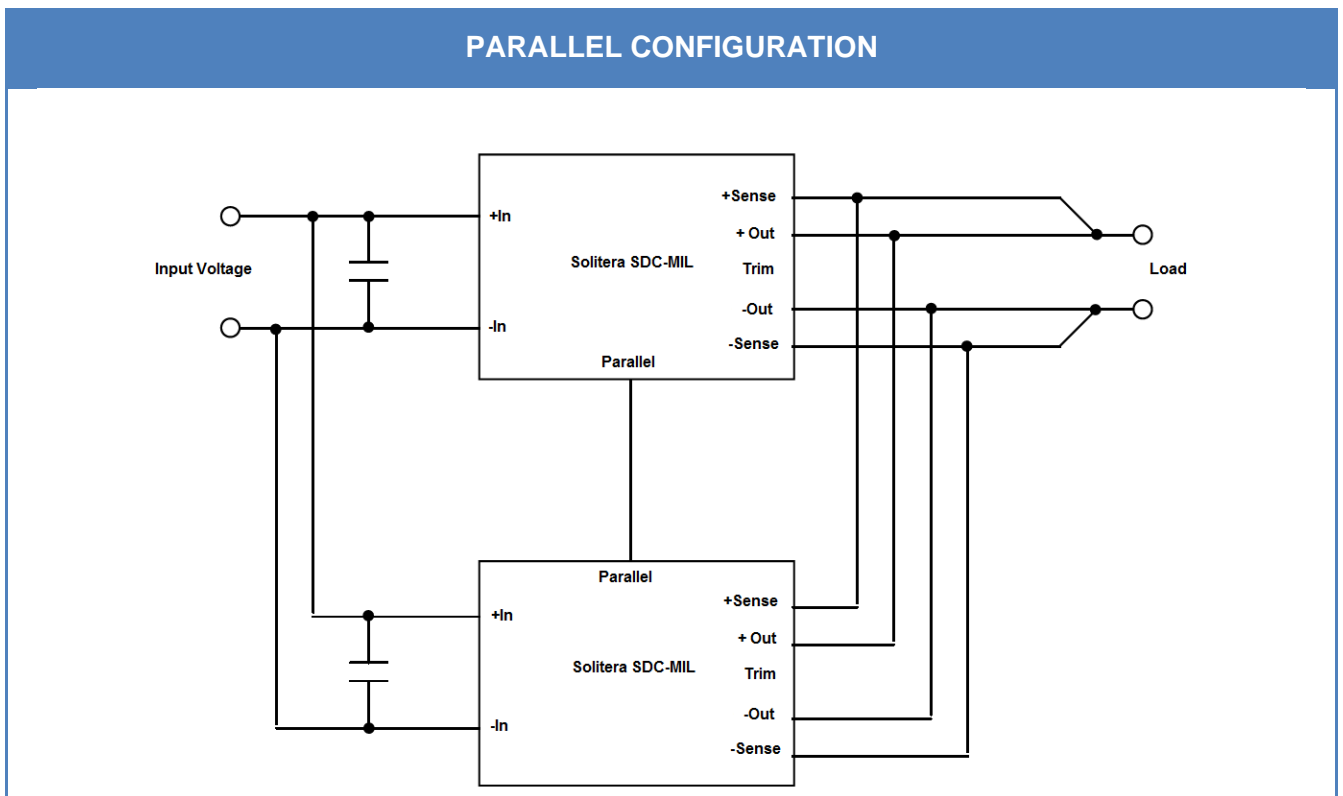
### NOTES:

1. Consult Solitera for trim adjust details.

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**Note:** Consult Solitera for trim resistors calculation.



**Note:** Please check application note for details.

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