VDC-MIL-28-A2

400W ¾ Brick 270V input 28VDC Output Military High Density DC-DC Converter





VIPULSE TECHNOLOGY 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.
VIPULSE 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

- 400W Isolated Output
- 3/4 Brick DC-DC converter
- Wide input range 200V ~ 400V
- High density 79W/in3
- Fixed frequency operation
- Single Wire Parallel with current sharing
- Fixed frequency operation
- External trim adjust requirements
- Remote On/Off
- Ruggedized
- –55°C to +95°C operating temperature
- No aluminum electrolytic capacitors
- Fully Isolated 4500VDC
- Custom models available
- Customized connector input/output
- Consult VIPULSE TECHNOLOGY 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		400VDC	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	200V	270V	400V	
TURN ON TIME		300ms	500ms	
SWITCHING FREQUENCY		300KHz		
MAXIMUM INPUT CURRENT		1.7ADC		Vin = 200V, Tc= 25°C

OUTPUT SPECIFICATIONS

Parameter	Minimum	Typical	Maximum	Conditions
OUTPUT VOLTAGE	27.72 VDC	28.01 VDC	28.28 VDC	
STANDARD OUTPUT CURRENT		11.8 A		Continuous standard rating, mandatory aluminum conduction cooling, case/baseplate temperature ≤60°C
ENHANCED OUTPUT CURRENT			14.3 A	Continuous enhanced rating, Vin = 200–400 VDC, mandatory aluminum conduction cooling, case/baseplate temperature ≤60°C, verified at thermal equilibrium
PEAK OUTPUT CURRENT			21.5 A	100 ms max., non-repetitive pulse, Vin = 200–400 VDC, case/baseplate temperature within derating limit before pulse
TRIM ADJUST		±10%		
RIPPLE AND NOISE		1% p-p	3% p-p	20 MHz BW.
LINE REGULATION		±0.5%	±1.5%	Vin = 200–400 VDC, Iout = 0–14.3 A, case/baseplate ≤60°C
LOAD REGULATION		±0.5%	±1%	
TURN ON OVERSHOOT			5%	
SENSE COMPENSATION			10%	
SHORT CIRCUIT PROTECTION	22.5A	24A	26A	Auto-recovery or hiccup mode, 200 V < Vin < 400 V, Rshort = 50 mΩ

GENERAL SPECIFICATIONS

Parameter	Minimum	Typical	Maximum	Conditions
EFFICIENCY		88%		
THERMAL SHUTDOWN RANGE	100 °C	105 °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	107 ohm			Input-to-Output Resistance

ENVIRONMENTAL SPECIFICATIONS

Parameter	Minimum	Typical	Maximum	Conditions
OPERATING TEMPERATURE RANGE	-55°C	With baseplate	+95°C	
STORAGE TEMPERATURE RANGE	-55°C		+125 °C	
HUMIDITY	MIL-STD-810C, Method 507.1, Proc. IV MIL-STD-810F, Method 507.4			
ALTITUDE	up to 70,000 ft			
SALT FOG	MIL-STD-810C, Method 509.1, Proc. I MIL-STD-810F, Method 509.4			
VIBRATION	MIL-E-5400T, Curve IVa, 5Hz to 2KHz			
SHOCK	MIL-S-901C-D, Grade A, Type A,			
MTBF	Class 1 High Impact Shock			MIL-HDBK-217F, @60°C baseplate

PHYSICAL CHARACTERISTICS

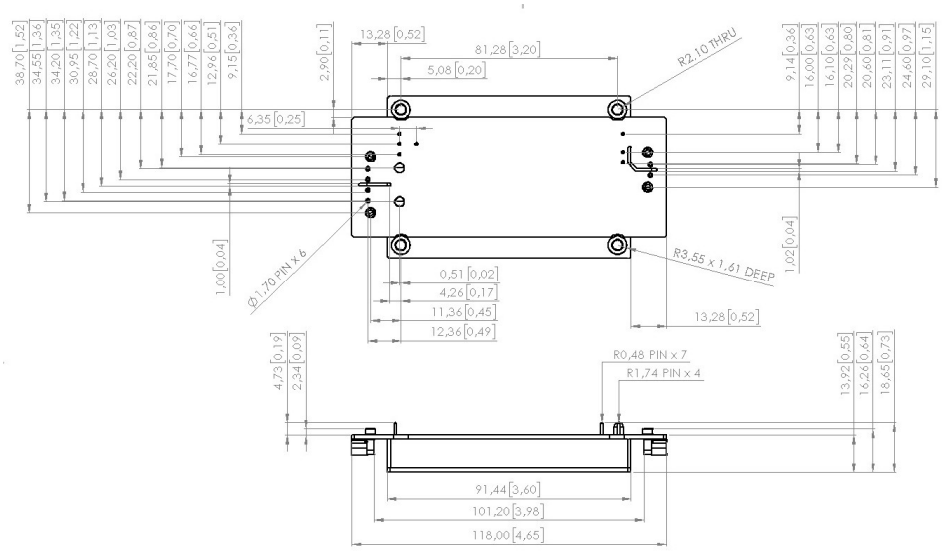
Parameter	Minimum	Typical	Maximum	Conditions
DIMENSIONS (LxWxH)		3.6x2.40x0.50 inches (91.4x61.0x12.7 mm)		¾ Brick
WEIGHT		165g		
CASE MATERIAL		Aluminum Baseplate with Plastic Case		

NOTES:

1. Consult VIPULSE for trim adjust details.

MECHANICAL DIMENSIONS (**)

Dimensions in inches (in mm), for reference only.



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