

Series 3813

18 Watt Proton Rad Hard 100K+[®] DC – DC Converters



28 VDC Input

Features

- Efficiency optimized for medium power applications
- GaN switching transistor at fixed 200 kHz. for low ripple
- No SEE LET>82 MeV*cm²/mg
- 100K+ Rad Hard TID 100 kRads (S and SE grades)
- TID 45 Krads (L and LE grades)
- Magnetically coupled regulation, no optocoupler
- Inhibit-not and external sync
- Internal soft start
- Rugged Seam Welded Hermetic Package 1.12" by 1.45"

Specifications

INPUT: 28 VDC nominal
Range: 18 to 50 VDC

ISOLATION:

10 Megohms
Input to case: 500 VDC
Input to output: 500 VDC
Output to case: 500 VDC

ENVIRONMENT:

Storage temperature: -55°C to +150°C
Shock: MIL-STD-810 Method 516.5 Procedure III
Random Vibration: MIL-STD-883 Method 2026, test condition 2H
Acceleration: MIL-STD-883 Method 2001, test condition A1, Y1 Direction, 500G's

Grades: L & S:

Operating -55°C to 85°C

Grades LE & SE:

Operating -55°C to 125°C

WEIGHT:

35 grams typical

To operate converter, open inhibit-not pin
To inhibit converter, connect inhibit-not pin to input return
If not used, leave sync pin open

Suggested EMI Filter MDI Model 3723

This DC-DC converter is recommended for space applications requiring good efficiency at low power as well as a small package size.

SINGLE OUTPUT DEVICES		3813-S3.3 (16.5W)			3813-S05 (18W)			3813-S12 (18W)			3813-S15 (18W)		
PARAMETER	CONDITION	MIN	TYP	MAX	MIN	TYP	MAX	MIN	TYP	MAX	MIN	TYP	MAX
Output voltage	F.L.	+3.1	+3.3	+3.4	+4.8	+5.0	+5.2	+11.8	+12.0	+12.2	+14.8	+15.0	+15.2
Output current	$V_{in\ min} - V_{in\ max}$	0.5A	—	5A	0.36A	—	3.6A	0.15A	—	1.5A	0.12A	—	1.2A
Efficiency	$P_{out} = \text{max rated load}$	67%	70%	—	72%	75%	—	80%	83%	—	80%	84%	—
Line regulation	$P_{out} = \text{max rated load}$ $V_{in\ min} - V_{in\ max}$	—	100mV	200mV	—	110mV	200mV	—	20mV	100mV	—	25mV	125mV
Load regulation	$P_{out} = 10\% \text{ to F.L.}$	—	100mV	200mV	—	100mV	200mV	—	150mV	500mV	—	200mV	600mV
Output ripple	F.L. BW 2 MHz mV _{pp}	—	30	100	—	40	125	—	60	150	—	70	180

SINGLE OUTPUT DEVICES		3813-S28 (18W)		
PARAMETER	CONDITION	MIN	TYP	MAX
Output voltage	F.L.	+27.7	+28.0	+28.3
Output current	$V_{in\ min} - V_{in\ max}$	0.065A	—	0.65A
Efficiency	$P_{out} = \text{max rated load}$	80%	84%	—
Line regulation	$P_{out} = \text{max rated load}$ $V_{in\ min} - V_{in\ max}$	—	50mV	250mV
Load regulation	$P_{out} = 10\% \text{ to F.L.}$	—	400mV	700mV
Output ripple	F.L. BW 2 MHz mV _{pp}	—	180	300

DUAL OUTPUT DEVICES		3813-D05 (18W)			3813-D12 (18W)			3813-D15 (18W)		
PARAMETER	CONDITION	MIN	TYP	MAX	MIN	TYP	MAX	MIN	TYP	MAX
Output voltage	F.L.	+4.8	+5.0	+5.2	+11.8	+12.0	+12.2	+14.8	+15.0	+15.2
Output current*	$V_{in\ min} - V_{in\ max}$	±0.18A	—	±1.8A	±0.075	—	±0.75A	±0.06A	—	±0.6A
Efficiency	$P_{out} = \text{max rated load}$	72%	75%	—	80%	83%	—	80%	84%	—
Line regulation	$P_{out} = \text{max rated load}$ $V_{in\ min} - V_{in\ max}$	—	±110mV	±200mV	—	±200mV	±350mV	—	±200mV	±400mV
Load regulation†	$P_{out} = 10\% \text{ to F.L.}$	—	±100mV	±200mV	—	±150mV	±500mV	—	±200mV	±600mV
Output ripple	F.L. BW 2 MHz mV _{pp}	—	40	125	—	60	150	—	70	18

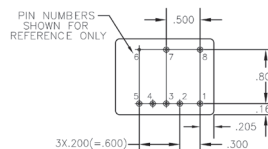
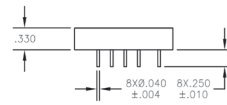
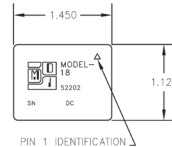
Notes: *Up to 90% full power available from either output if rated output power is not exceeded; †balanced load conditions.

Pin Outs

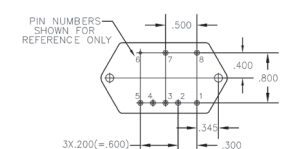
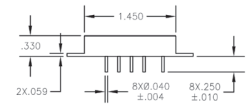
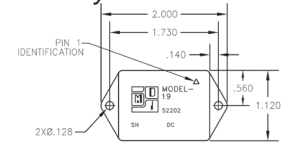
3813-SXX	
Pin 1	Inhibit-Not
Pin 2	N/C
Pin 3	Output Return
Pin 4	Output Pos
Pin 5	Sync
Pin 6	Case
Pin 7	+28VDC Input Return
Pin 8	+28VDC Input

3813-DXX	
Pin 1	Inhibit-Not
Pin 2	Output Pos
Pin 3	Output Return
Pin 4	Output Neg
Pin 5	Sync
Pin 6	Case
Pin 7	+28VDC Input Return
Pin 8	-28VDC Input

Case Style 18 Seam Weld



Case Style 19 Seam Weld



Note: Baseplate is recommended heat removal surface.

For heat removal and mounting recommendations. See MDI application notes on mounting considerations for DC-DC converters.



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