

# MPPT-Race V 4.0

## Low Voltage Setup



### Technical Specification

25 - 540 W DC/DC-Boost Maximum Power Point Tracker

#### Features:

- High Conversion Efficiency up to 97.5%
- Seeks and Tracks MPP with closed loop algorithm
- Wide I/O Range
- High Reliability and Durability due to Low Thermal Stress
- Separate Control and Power Part
- Data Transmission via CAN Bus
- Input and Output Protection
- End of charge current control
- Fully customized design according to customer specifications



The 4th generation of drivetek's well-proven MPPT-Race. Optimized for solar boat applications with a low input voltage range (< 60V). The absence of almost any switching losses makes this converter ideal for solar cars and any solar power application which needs extremely high efficiency over a wide power range. Current and voltage limits are customized to increase accuracy of MPPT algorithm. High efficiency allows an operation temperature range up to +70 °C.

#### Characteristics<sup>1</sup>

Parameter	Unit	Minimum	Typical	Maximum
Input Power Continuous	W	5		540
Input Power Peak <sup>3</sup>	W			600
Input Current	A <sub>DC</sub>			9
Peak Efficiency <sup>2</sup>	%		97.5	
Input Voltage Range	V <sub>DC</sub>	26		60
Output Voltage Range <sup>4</sup>	V <sub>DC</sub>	28		140
Output Shutdown Voltage <sup>7</sup>	V <sub>DC</sub>			236
Output to Input Voltage Ratio <sup>6</sup>	-	1.05		3

Length	mm		170	
Width	mm		100	
Height	mm		80	
Weight	g		650	
Operating Temperature	°C	0		70

#### CAN Interface Specification

Supply Voltage	V <sub>DC</sub>	6		18
Supply Current Recessive <sup>5</sup>	mA	15		50
Supply Current Dominant <sup>5</sup>	mA	60		100
Transmission Rate	kB/s		125	
Bus Length	m			500
Standards	-		ISO 11898	

<sup>1</sup>At 25°C ambient temperature

<sup>2</sup>At 140W input power, 42V input and 50V output voltage

<sup>3</sup>During maximum 5min. per hour

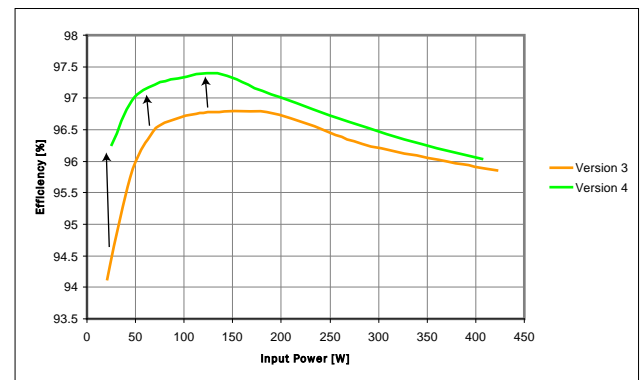
<sup>4</sup>Output voltage must be higher than input (boost topology)

<sup>5</sup>TX=VINH, U<sub>CAN</sub>=5.5V, RL=60Ω

<sup>6</sup>Use a transmission ratio close to 1.05 for best efficiency

<sup>7</sup>Maximum output voltage in case of a sudden load drop

#### Efficiency<sup>1</sup> U<sub>in</sub>=42V U<sub>out</sub>=50V



Big winner of the Frisan Solar Challenge 2010 is the Private Energy Solarboatteam using drivetek's MPPT-Race V4.0.

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