

Photovoltaic Power Converter

YCH-H003

Datasheet



Key Features:

- High efficiency Si-based MIH[®] VMJ PV cells
- Optimized for 915nm through 980nm laser sources
- Low cost, high reliability laser diode wavelengths
- Efficiency at 8W input: ~26% without heatsinking
- Efficiency at 10W input: ~27% with heatsinking
- Up to 15 volts output
- FC / SMA connector available

Applications:

- Electronic Current Transducer (ECT)
- Electromagnetic Field Measurement
- RF over Fiber & 5G
- Remote Sensors
- Power Electronics
- Applications require voltage isolation, noise immunity or spark free operation

Product Description

MH GoPower (“MHGP”) offers the only photovoltaic power converter (PPC) product line capable of delivering a wide range of power and voltage outputs. Power output levels range from tens of milliwatts to over 20 watts (higher power available upon request), while output voltage levels are possible from 4 volts to over 30 volts. MHGP’s PPC product line operates most efficiently with wavelengths in the range of 915nm to 980nm, and with fiber with an NA of 0.22 to 0.27.

The YCH-H003 is MHGP’s high power PPC offering for applications requiring power up to ~3 watt (when passively cooled), and over 5W when utilizing a heat pipe. Device efficiencies of greater than 30% are achievable with appropriate heat sinking.

Target applications include powering remote and embedded sensors, current sensors, optical network components, IGBT and MOSFET gate drive circuits, as well as other applications requiring voltage isolation between the power source, and embedded electronics in high voltage or high noise environments.

Availability: FC / SMA models in stock.

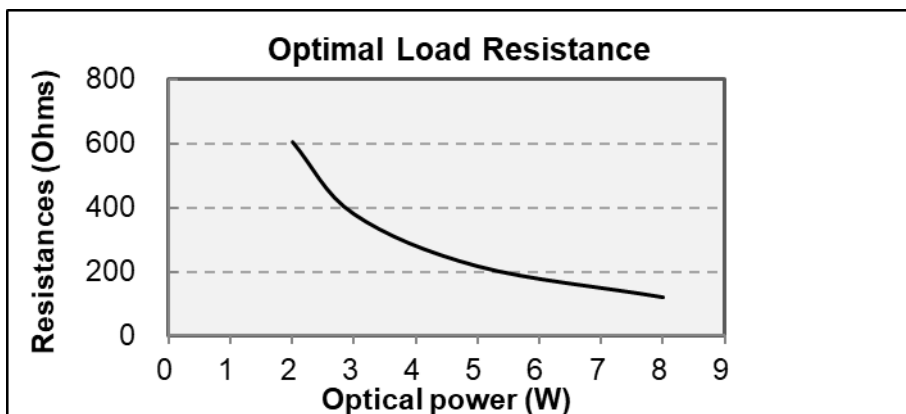
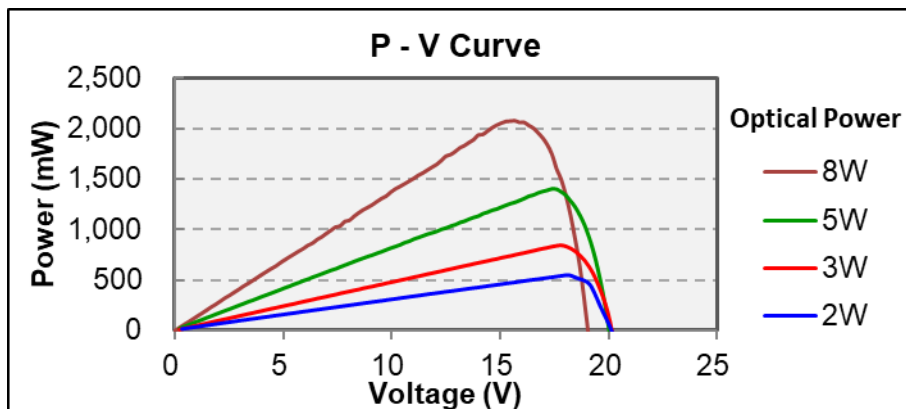
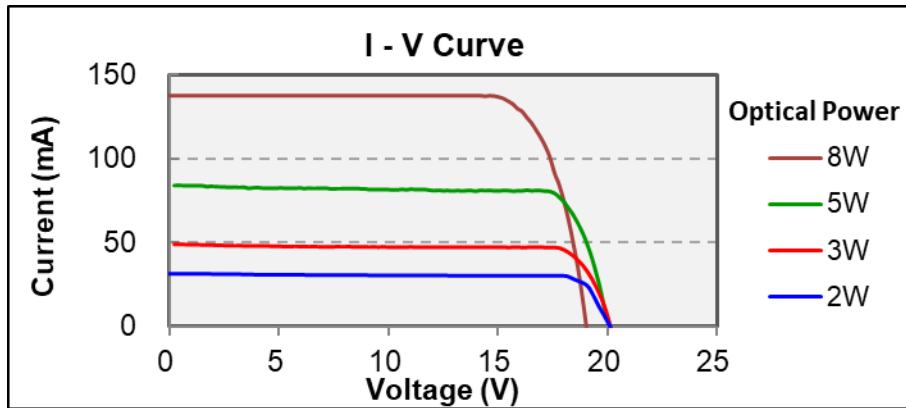
Electrical Characteristics of YCH-H003 PPC *

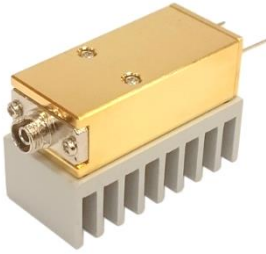
Optical Power (mW)	2,000	3,000	5,000	8,000
Pmax (mW)	272	838	1,401	2,081
Vmax (V)	18.1	17.8	17.4	15.7
I _{max} (mA)	14.9	47.0	80.5	132.5
Efficiency (%)	27.1%	27.9%	28.0%	26.0%

* Typical converter performance with ambient temp of ~25°C

* Tested with 975 nm wavelength laser

* PPC and heatsink held in free space, with no active airflow over the heatsink fins or PPC





Passive Heatsinking Option: Custom heatsinking can be easily applied to the YCH-H003 PPC to generate higher power output, and higher performance. Heatsink size will depend on the application’s operating conditions and power requirements. The below summarizes the performance of the YCH-H003 PPC with 50 x 24 x 16 mm aluminum heatsink. An efficiency of ~26% with 10W input is achieved:

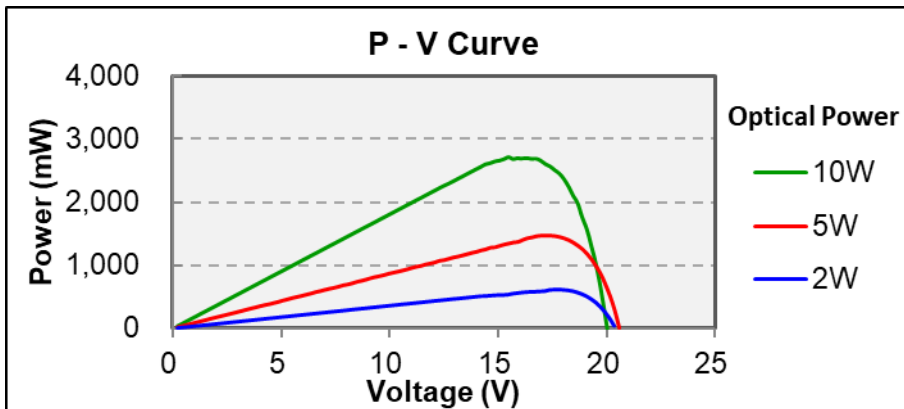
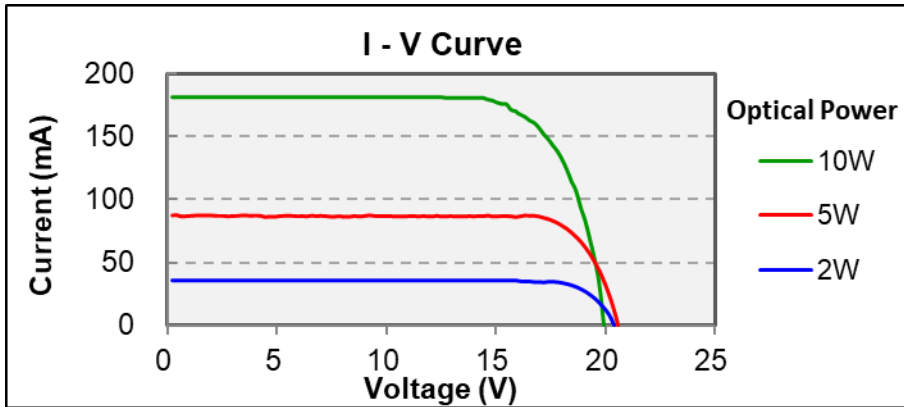
Electrical Characteristics of YCH-H003 PPC with Passive Heatsinking *

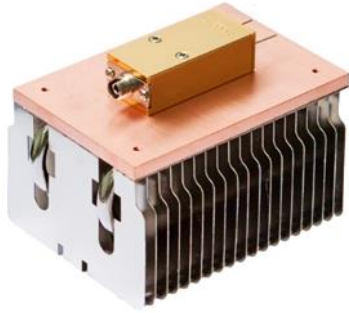
Optical Power (mW)	2,000	5,000	10,000
Pmax (mW)	614.8	1,471	2,716
Vmax (V)	17.8	17.2	15.5
I _{max} (mA)	34.5	85.7	175.4
Efficiency (%)	30.7%	29.4%	27.2%

* Typical converter performance with ambient temp of ~25°C

* Tested with 975 nm wavelength laser

* PPC and heatsink held in free space, with no active airflow over the heatsink fins or PPC





Passive Heat Pipe Option: The YCH-H003 PPC’s performance with a heat pipe is illustrated to demonstrate the adaptability of the YCH-H003 PPC. Custom heatsinking can be easily applied to the YCH-H003 PPC to generate higher power output, and higher performance. The below summarizes the performance of the YCH-H003 PPC with a 98 x 75 x 55 mm heat pipe (available for purchase). An efficiency of ~26% at 20W input is achieved.

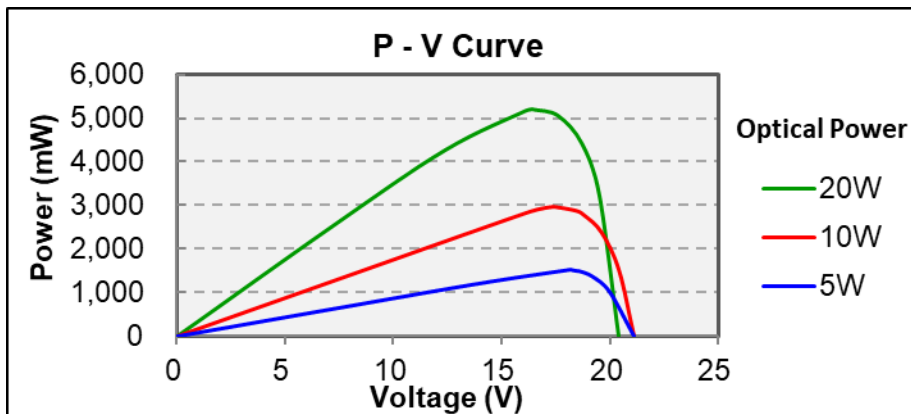
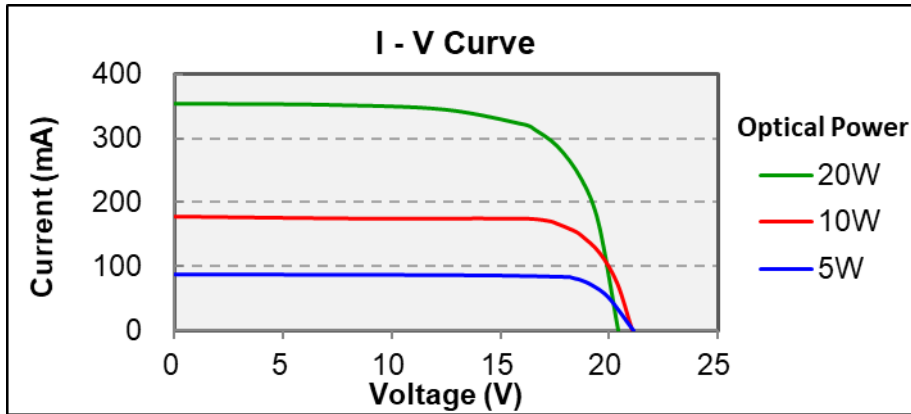
Electrical Characteristics of YCH-H003 PPC with Passive Heat Pipe *

Optical Power (mW)	5,000	10,000	20,000
Pmax (mW)	1,534	2,965	5,210
Vmax (V)	18.2	17.4	16.4
I _{max} (mA)	84.3	170.4	317.7
Efficiency (%)	30.7%	29.6%	26.1%

* Typical converter performance with ambient temp of ~25°C

* Tested with 975 nm wavelength laser

* PPC and heatsink held in free space, with no active airflow over the heatsink fins or PPC



Ordering information

	Part no.	Connector type	Heat dissipation module	Weight (g)
1	YCH-H003-15-FC	FC	N/A	45
2	YCH-H003-15-SM	SMA	N/A	45
3	YCH-H003-15-FC-A	FC	heatsink	75
4	YCH-H003-15-SM-A	SMA	heatsink	75
3	YCH-H003-15-FC-P	FC	heat pipe	425
4	YCH-H003-15-SM-P	SMA	heat pipe	425

YCH-H003 Mechanical Dimensions

FC Connector

(Unit: mm)

