

## Standard Micro Propulsion System

The VACCO Standard Micro-Propulsion System (MiPS) is a low-cost, cold gas propulsion system designed for CubeSats.

Using Chemically Etched Micro System (ChEMS™) technology, VACCO has produced a complete propulsion system including propellant storage, pressurization, distribution, thrusters, and controller. This simple, highly integrated design uses a self-pressurizing liquid propellant that is expelled as a gas.

The 0.3U MiPS is capable of 44 N-Sec of total impulse with up to 880,000 firings, MiPS brings true propulsion capabilities to micro-spacecraft for formation flying, attitude control and velocity change (delta-v).



## Features

- Five thrusters for pitch, yaw, roll and delta-v
- 10 mN thrust
- Up to 880,000 minimum impulse firings
- Frictionless valves
- Inherently safe, non-toxic R134a propellant
- All-welded aluminum alloy construction
- Light weight
- Minimal re-entry hazard
- Smart system with integral controller
  - Simple RS422 digital interface
  - Integral sensor suite
  - Closed-loop vector pointing
  - Closed-loop thrust vector control

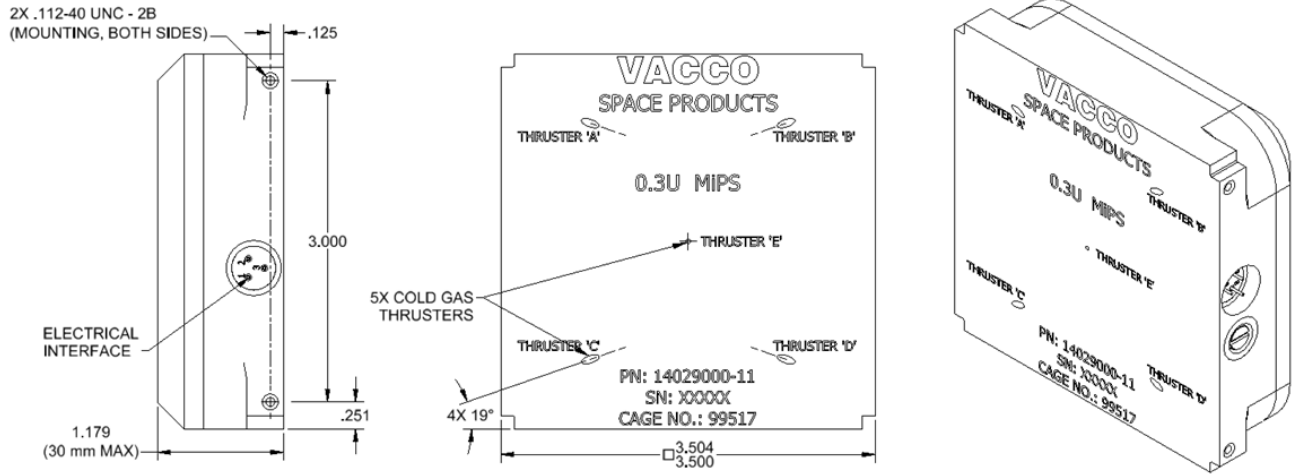
## Operating Parameters

Nominal Thrust..... 10 mN @ 20°C  
Specific Impulse..... 40 sec  
Total Impulse ..... 44 to 250 N-sec  
Internal Leakage .....  $<1 \times 10^3$  sccs GHe  
External Leakage .....  $<1 \times 10^{-6}$  sccs GHe  
Operating Temperature..... 0°C to +60°C

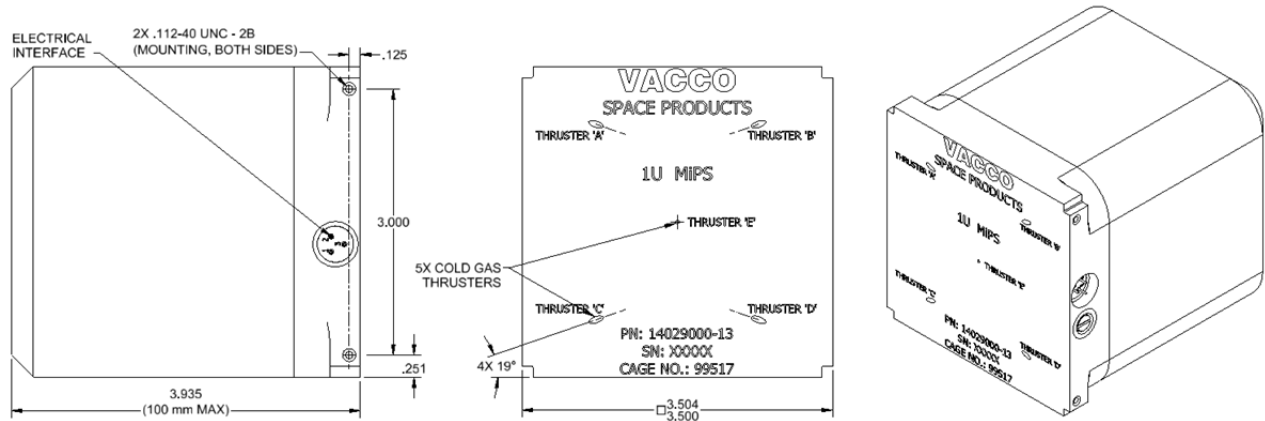
Vibration..... 16 Grms  
Minimum Impulse Bit..... 0.05 mN-sec  
Operating Voltage ..... 9.0 to 12.6 vdc  
Mass (Including Propellant) ..... 542 grams (wet)  
Stand-By Power ..... 0.25 watts  
Maximum Steady-State Power ..... 10 watts

Performance characteristics are based on customer requirements. As such, they are not representative of component capabilities or limitations.

0.3U



1U



Spec List

Part Number	Size	Depth (mm)	"Wet" Mass (grams)	Total Impulse (N-sec)
X14029003-1	0.3U	30	542	44
X14029003-4	0.5U	50	743	103
X14029003-7	0.8U	80	1044	191
X14029003-9	1U	100	1245	250