



PERFORMANCE MATRICES FOR CUA PROPULSION SYSTEMS (JULY 2023)

WARM GAS SYSTEMS*:

PARAMETER / PROPULSION SYSTEM	CHIPS (0.54U)	PUC (0.35U)	MVP (0.93U)	UNITS
Thruster System Package Volume	540	350	926	cm ³
Available Tank Volume	280	219	309	cm ³
Propulsion Technology	Micro-resistojet	Micro-plasma discharge	Micro-resistojet	–
Propellant	R236fa (R134a opt.)	SO ₂	Polymer Fiber (Delrin)	–
Power Draw when Firing (Avg. Duty Cycled)	20 (10)	15 (10)	45 (13.5)	W
Specific impulse	56	70	66	sec
Mass Flow Rate	30	6.5	7.0	mg/s
Thrust	16	4.5	4.5	mN
Total impulse	176	184	280	N-s
Vol. Impulse (total impulse / system volume)	326	526	302	N-s/liter
Propellant Mass	329	268	433	g
Dry Mass	750	450	622	g
Propulsion System Wet Mass	1,079	718	1,055	g
Delta-V capability (for 4 kg s/c Wet Mass)	47	48	74	m/s
ACS Capability	Yes (6 DOF)	No	No	m/s
Maximum continuous thrust time (rest time)	10 (10)	20 (10)	3 (7)	min
TRL	6	6	6	–

HIGH TOTAL IMPULSE SYSTEMS*:

PARAMETER / PROPULSION SYSTEM	MPUC (1.5U [†])	MPUC (2U [†])	FPPT (1.7U)	UNITS
Thruster System Package Volume	1,500	2,000	1,719	cm ³
Available Tank Volume	700	1056	360	cm ³
Propulsion Technology	Monopropellant		Pulsed Plasma Thruster	–
Propellant	H ₂ O ₂ -Ethanol		Teflon Fiber	–
Nominal Power Draw	3		32 (@ 1 Hz pulse rate)	W
Capacitor Bank Energy	N/A		32	J
Specific impulse	178 (avg. over life)		3,200	sec
Mass Flow Rate	132		0.00265	mg/s
Thrust	230		0.85 (@ 1 Hz pulse rate)	mN
Total impulse	1407	2122	24,000	N-s
Vol. Impulse (total impulse / system volume)	938	1061	13,960	N-s/liter
Propellant Mass	805	1214	780	g
Dry Mass	1641	2036	2,250	g
Propulsion System Wet Mass	2446	3250	3,030	g
Delta-V capability (for 10 kg S/C Wet Mass)	147	226	2,550	m/s
TRL	Integrated – 4, Thruster Head - 6		6	–

*Alternate sizing options available for different mission needs with non-recurring engineering (NRE)

[†]System package volume assumes the length of the external thruster head can be housed in the CubeSat deployer spring