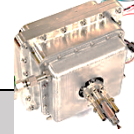
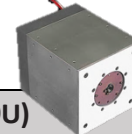




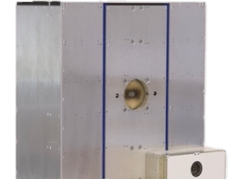
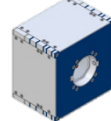
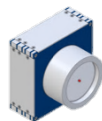
PERFORMANCE MATRICES FOR CUA PROPULSION SYSTEMS (AUGUST 2024)

WARM AND HOT GAS SYSTEMS[†]:



PARAMETER / PROPULSION SYSTEM	CHIPS (0.5U)	MVP (0.9U)	MPUC (2U)	UNITS
Thruster System Package Volume	540	926	2,000	cm ³
Propulsion Technology	Micro-resistojet	Micro-resistojet	Monopropellant	–
Propellant	R134a	Polymer Fiber (Delrin)	H ₂ O ₂ -Ethanol	–
Power Draw when Firing (Avg. Duty Cycled)	20 (10)	33.5 (13.2)	3	W
Specific impulse	67	63	178 (avg. over life)	sec
Mass Flow Rate	23	5.2	132	mg/s
Thrust	15	3.2	230	mN
Total impulse	176	265	1,320	N-s
Vol. Impulse (total impulse / system volume)	326	286	660	N-s/liter
Propellant Mass	277	430	756	g
Dry Mass	750	622	900	g
Propulsion System Wet Mass	1,027	1,052	1,656	g
Delta-V capability (for XX kg S/C Wet Mass)	47 (4)	26 (10.5)	124 (11)	m/s
ACS Capability	Yes (6 DOF)	No	No	m/s
Maximum continuous thrust time (rest time)	10 (10)	2 (11.1)	55	min
TRL	6	6	Feed: 4 / Thruster Head: 6	–

HIGH SPECIFIC IMPULSE PPT SYSTEMS[†]:



PARAMETER / PROPULSION SYSTEM	QT-PPT (DISK)	QT-PPT (FIBER)	FPPT (1.7U)	FPPT (ESPA)	UNITS
Thruster System Package Volume	550	670	1,719	52,500	cm ³
Propulsion Technology	Pulsed Plasma Thruster				–
Propellant	PTFE Disk-Passive	PTFE (Teflon®) Fiber – Active			–
Nominal Power Draw (@ Pulse Rate)	20 (2 Hz)	20 (2 Hz)	16 (0.64 Hz)	185 (2 Hz)	W
Capacitor Bank Energy	7.4	7.4	19	75	J
Specific impulse	700	1,575	3,870	3,300	sec
Mass per Pulse	0.010	0.0023	0.0028	0.019	mg
Thrust (@ Pulse Rate)	0.14 (2 Hz)	0.07 (2 Hz)	0.07(0.64 Hz)	1.2 (2 Hz)	mN
Total impulse	1,100	2,700	29,000	500,000	N-s
Vol. Impulse (total impulse / system volume)	2,000	4,030	16,870	9,524	N-s/liter
Propellant Mass	160	170	780	35,000	g
Dry Mass	630	750	2,250	20,000	g
Propulsion System Wet Mass	790	920	3,030	55,000	g
Thrust Vectoring	No	Yes (±5°)	Yes (±5°)	Yes (±5°)	g
Delta-V capability (for XX kg S/C Wet Mass)	280 (4)	450 (6)	2,900 (10.5)	4,880 (250)	m/s
TRL	5	5	6	5	–

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

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