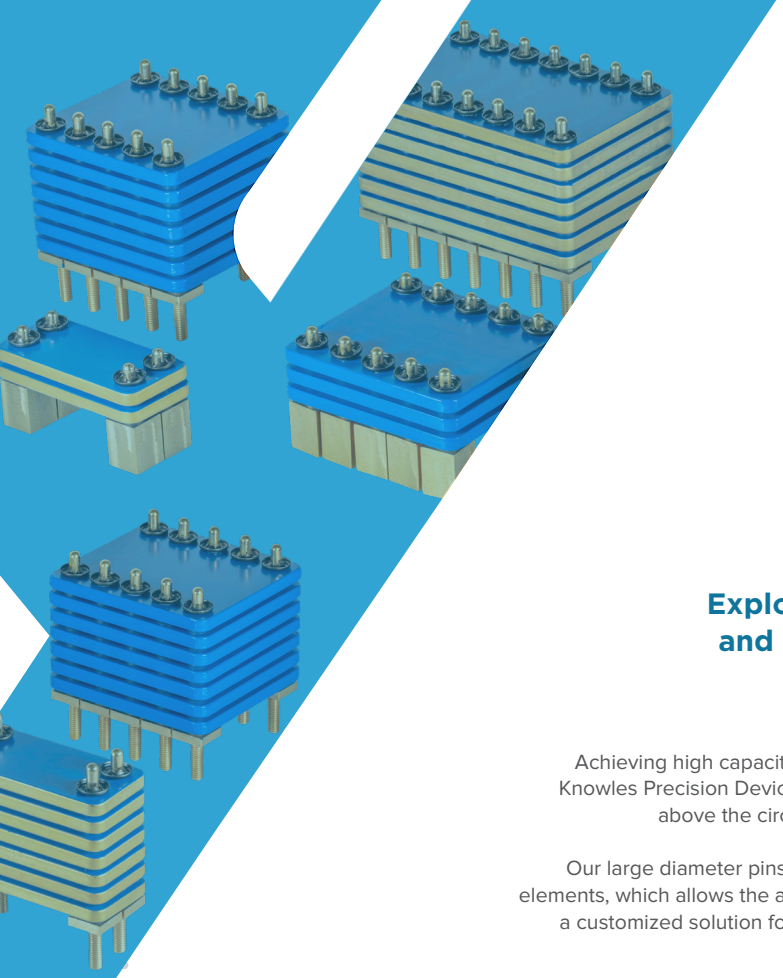


knowles
PRECISION DEVICES

High capacitance. High voltage. Highly customizable.

Explore a custom approach to large capacitor assembly and MLCC technology from Knowles Precision Devices.

PRODUCT OVERVIEW

Achieving high capacitance means going big. But how do you do that while still minimizing footprint? At Knowles Precision Devices, we can custom build large capacitor assemblies that utilize the vertical space above the circuit board, offering very high capacitance and very high voltage in a smaller area.

Our large diameter pins are low loss and ultra stable. They're also mechanically decoupled from ceramic elements, which allows the assembly to withstand severe shock and vibration. Talk to us today about creating a customized solution for your automotive, aerospace or military applications, or any project that requires high capacitance and proven durability in a tight space.

APPLICATIONS

- Automotive and EV
- Military
- Aerospace

BENEFITS

- Customizable to your specific needs
- Maximizes remaining board space by utilizing vertical space above board
- Allows very high capacitance (nF to µF) and very high voltage (approved 500V to 5kV)
- Ultra-stable, low-loss dielectric
- Extremely resilient against vibration and temperature variation
- High ripple current

TABLE OF QUALIFICATION TESTS

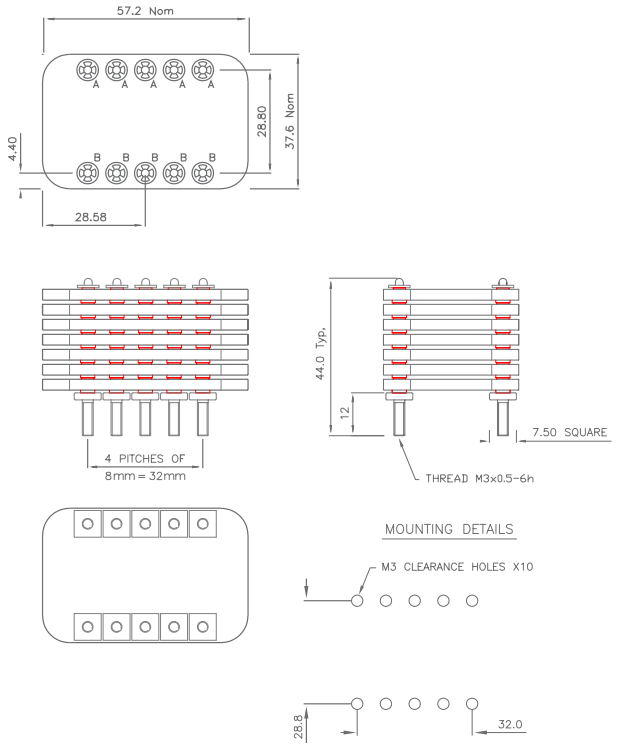
Stress	No.	Reference	Additional Requirements
Pre- and Post-Stress Electrical Test	1	User Specifications	Test is performed at 25±5°C except as specified in the applicable stress reference and the additional requirements in this table.
High Temperature Exposure (Storage)	3	MIL-STD-202 Method 108	Unpowered. 1,000 hours. Measurement at 24±4 hours after test conclusion. The maximum rated temperature should be employed for the dielectric used in the device.
Temperature Cycling	4	JESD22 Method JA-104	1,000 Cycles (-55°C to +125°C). Measurement at 24±4 hours after test conclusion. 30 min. maximum dwell time at each temperature extreme. 1 min. maximum transition time.
Destructive Physical Analysis	5	EIA-469	Only applies to SMD Ceramics. Electrical test not required.
Biased Humidity	7	MIL-STD-202 Method 103	1,000 hours +85°C/85% RH. 1.3 to 1.5 volts.
Operational Life	8	MIL-STD-202 Method 108	Condition D Steady State T_A= +125°C. Full rated for ceramic caps. Measurement at 24±4 hours after test conclusion. The maximum rated temperature and voltage rating for the dielectric employed in the device shall be used.
External Visual	9	MIL-STD-883 Method 2009	Inspect device construction, marking and workmanship. Electrical test not required.
Physical Dimension	10	JESD22 Method JB-100	Verify physical dimensions to the applicable device specification.
Mechanical Shock	13	MIL-STD-202 Method 213	Figure 1 of Method 213: Condition C (150g) for qualification. Tested at up to 500g with no failures.
Vibration	14	MIL-STD-202 Method 204	5g for 20 min., 12 cycles each of 3 orientations. Note: Parts mounted within 2" from any secure point. Test from 10-2000 Hz.
ESD	17	AEC-Q200-002	

TECHNICAL SUMMARY

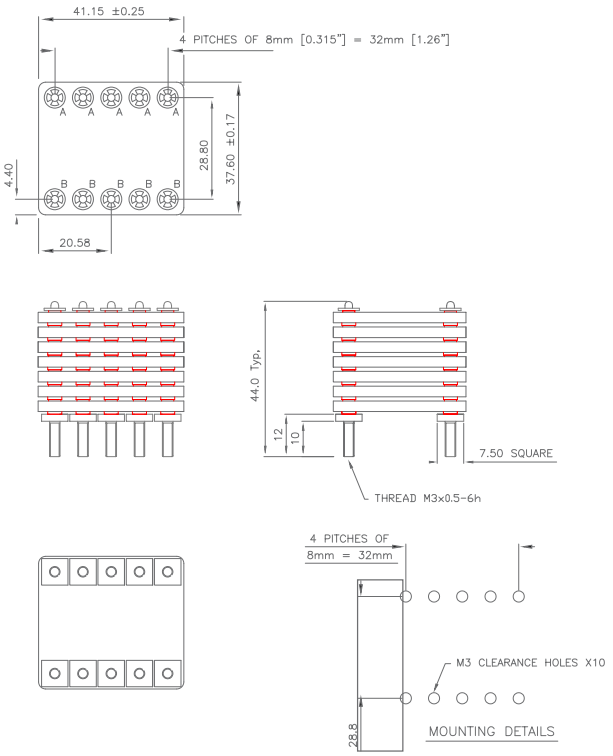
Typical layout shown — parts are designed to be totally customizable in shape and height, within limits. We encourage discussions. Examples below show some typical formats that we have made to date.

C0G/NP0 (1B), DIMENSIONS IN MM.

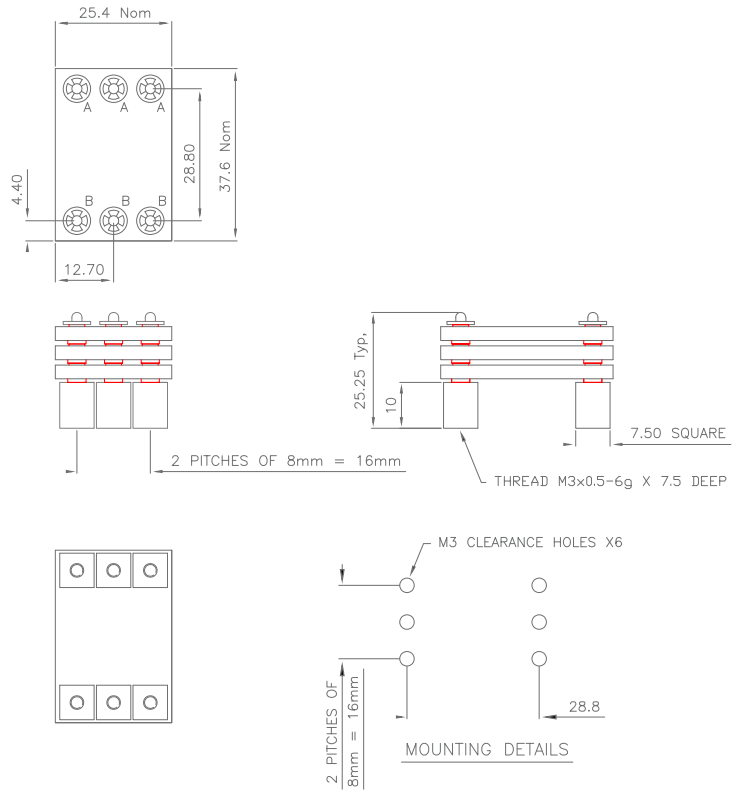
EXAMPLE 1: 500V, 3.9µF



EXAMPLE 2: 5kV, 70nF



EXAMPLE 3: 2kV, 100nF



- Ultra-stable and C0G dielectric — ideal for resonant circuits
- Available voltage ranges 500Vdc to 5000Vdc (working)
- Available capacitance ranges 10nF to 3.9µF, d.f. <0.0015 low inductance
- Tested to meet the requirements of AEC-Q200, including bump and vibration — see front page
- MLCC technology