AS-DEMO-001 / 2026-09-27 / SUMMARY EDITION

An MLCC shortlist, with the decisions left in.

Reading note: this excerpt preserves the full report's section numbers; gaps are intentional. The complete HTML includes every section at ampsheen.com/sample-report#intro-review.

This is a hypothetical brief using real manufacturer catalogue entries. It is not a customer case, supplier endorsement, quotation or test report. No suppliers were contacted and no samples were tested for this demonstration.

Keep 0805B106K250NT on the list for further data. Exclude the X5R option for temperature, and the 1206 option for footprint. None is approved for purchase: effective capacitance, lot traceability and commercial terms remain unresolved.

01 / Agreed brief - hypothetical

Application: Industrial control supply bypass; not an automotive or safety-certified design.

Operating envelope: 12 V nominal DC, 14.4 V maximum steady DC; -40 to +105°C at the component. Transient and ripple limits still need the circuit owner's input.

Non-negotiable requirements: 10 µF nominal, ±10%, rated at least 25 V; fixed 0805 inch / 2012 metric footprint; maximum body height 1.50 mm. No PCB change in this phase.

Functional target: At least 4.7 µF effective capacitance per device at the relevant DC bias and temperature, including agreed tolerance and ageing assumptions. This target is invented for the demonstration.

Purchasing context: A second source for 20,000 units/year; first evaluation lot 30 samples. Both quantities are assumptions, not a forecast or an actual order.

02 / Actual catalogue candidates

All three entries are from Fenghua. This deliberately narrow example demonstrates a screening decision within one manufacturer's range; it is not a market-wide supplier comparison or a claim of access to these parts.

Candidate / source	Published nominal data	Decision and reason
0805B106K250NT [S1]	10 µF · ±10% · 25 V · X7R 0805 inch; 2.00 ±0.20 × 1.25 ±0.20 mm Height 1.25 ±0.20 mm	Further data needed Matches the catalogue-level nominal, temperature-class and body-size screen. Maximum published height is 1.45 mm, within the assumed 1.50 mm limit. Effective capacitance at the specified operating envelope is not established by these fields.
0805X106K250NT [S2]	10 µF · ±10% · 25 V · X5R 0805 inch; 2.00 ±0.20 × 1.25 ±0.20 mm Height 1.25 ±0.20 mm	Exclude: temperature The nominal values look similar, but X5R's temperature class ends at +85°C. It does not cover the +105°C brief. Do not treat a lower price or a matching footprint as a remedy. [S4]
1206B106K250NT [S3]	10 µF · ±10% · 25 V · X7R 1206 inch; 3.20 ±0.30 × 1.60 ±0.30 mm Height 1.60 ±0.30 mm	Exclude: mechanical fit The 1206 footprint is outside this fixed-0805 brief; maximum published height is 1.90 mm. Reconsider only as a separate PCB-change study. A larger case alone does not prove better bias performance.

The candidates are intentionally used for an introductory screen. The X5R and 1206 exclusions do not establish advanced procurement execution.

04 / Open issues and the next action

G1 · Effective capacitance
Purchase blocker

Supplier: exact-part bias and temperature data, test frequency and AC level, reference temperature, ageing basis and tolerance treatment. Circuit owner: final ripple and transient envelope.

An agreed worst-case budget supports ⩾4.7 µF across the specified conditions; representative sample measurements then check the relevant corners. Do not multiply unrelated "typical" curves into a guarantee.

G2 · Traceability
Purchase blocker

Proposed seller: legal trading identity, route from manufacturer, sample/reel labels, lot/date codes and any claimed authorisation. Confirm the issuer and scope of supplied certificates.

A documented route acceptable to the buyer; sample and production lot linkage stated. An online listing is not that record.

G3 · Reliability coverage
Before release

Supplier: report revision, covered family/part construction, sample lot, stress conditions, sample count and failures. Buyer: relevant use stresses and acceptance criteria.

A coverage map identifies applicable results and remaining gaps. A family report is not automatically evidence for this exact part and lot.

G4 · Commercial comparison
Before order

Seller: dated quote with currency, MOQ, pack quantity, lead time, validity, delivery terms and defect/return procedure. No quotes have been requested in this example.

Compare landed cost on the same quantity, destination and delivery basis, including the service fee and evaluation cost.

05 / Proposed sample plan - not executed

1. Before ordering samples, agree the schematic-relevant limits, measurement method and acceptance criteria. The assumed 30 samples are a planning quantity, not a statistically justified qualification plan.

2. On receipt, photograph the reel/sample labels and record seller, lot/date code and part marking or packaging identifiers. Keep the unused samples linked to the same record.

3. Record instrument, fixture, frequency, AC stimulus, DC bias, temperature, preconditioning and time since the thermal history used as the reference. Measure the agreed operating corners with suitable equipment; do not infer the temperature result from a room-temperature measurement.

4. The circuit owner checks the actual board for start-up, ripple, transients and temperature rise. Investigate any mismatch before extending the study to a pilot lot; do not label a small sample exercise as production qualification.

06 / Is a second-source project worth doing?

For the assumed annual volume, recurring supply risk may justify an evaluation even without a price saving. For a one-off purchase of 100 parts, the review and test costs may exceed the buying benefit. First confirm whether the current approved source can already meet the need.

First-year net benefit = annual quantity × comparable landed unit-cost difference - service fee - validation and change costs - incremental inventory cost.

If a US$900 review is recovered only through first-year savings on 20,000 parts, the fee alone requires US$0.045 saving per part. Evaluation and other added costs remain separate.

Source register and maintenance

Document version 1.0; public sources checked 27 September 2026. Manufacturer facts are identified by S1-S5; purchasing judgements and the hypothetical plan are AmpSheen's analysis. Recheck the exact-part specification before an order and after a manufacturer revision. For a correction or a project-specific review: Jerry Leon, jerry@ampsheen.com.

S1 / Fenghua · 0805B106K250NT

Nominal specification and body dimensions for candidate 1.

https://www.fhcomp.com/zh-cn/product_info/?prod_code=0805B106K250NT

S2 / Fenghua · 0805X106K250NT

Nominal specification and body dimensions for candidate 2.

https://www.fhcomp.com/zh-cn/product_info/?prod_code=0805X106K250NT

S3 / Fenghua · 1206B106K250NT

Nominal specification and body dimensions for candidate 3.

https://www.fhcomp.com/zh-cn/product_info/?prod_code=1206B106K250NT

S4 / Murata · Basics of capacitors, lesson 2

X5R: -55 to +85°C; X7R: -55 to +125°C. Temperature class alone does not give DC-biased effective capacitance.

https://article.murata.com/zh-cn/article/basics-of-capacitors-2

S5 / Murata · Ceramic capacitor DC-bias FAQ

High-permittivity MLCC capacitance changes with applied DC voltage. This reference does not provide Fenghua part-specific curves.

https://www.murata.com/en-us/support/faqs/capacitor/ceramiccapacitor/char/0005

Layout revised 25 October 2026 from the existing demonstration; its source review date remains 27 September 2026. The complete HTML includes the evidence-level and handover sections omitted here. No fresh supplier contact or testing is implied.