

Product/Process Change Notification

PCN-071218-AXM

Date	July 12 th , 2018 ID Number: PCN-071218-AXM
Affected Products	<p> Product Grade: Automotive Product Series: SMD Auto X7R HV, SMD Auto X7R HV Flex, SMD Auto C0G HV, SMD Auto C0G HV Flex Form Factor: Surface Mount Case Size: 1812 (4532 metric) Voltage Ratings (Vdc): 500V-3,000V Termination Systems: Standard, Flexible Termination Termination Finishes: 100% Sn Dielectrics: X7R, C0G Packaging C-Specs: AUTO, AUTO7210, 3123 </p> <p> Impacted Catalogs: High Voltage X7R Dielectric, 500 – 3,000 VDC (Automotive Grade) High Voltage with Flexible Termination System X7R Dielectric, 500 – 3,000 VDC (Automotive Grade) High Voltage C0G Dielectric, 500 – 3,000 VDC (Automotive Grade) High Voltage with Flexible Termination System C0G Dielectric, 500 – 3,000 VDC (Automotive Grade) </p>
Changes Overview	<p>This PCN is implementing 2 possible changes, which are being explained under Changes Details section:</p> <ol style="list-style-type: none"> 1. Cover layer thickness change 2. Dielectric material + dielectric thickness change <p>To determine which change is being applied to a specific part number, please review the reference table from Affected part numbers section.</p> <p>Part types affected by these changes continue to meet or exceed Automotive Electronics Council AEC-Q200 qualification in addition to internal KEMET qualification standards (Qualification Packages upon request).</p>
Justification and Benefits	Manufacturing Productivity Improvement
Effective Date and Identification	<p>November 15, 2018 Date code: 1846XXXXXX</p> <p>For AUTO C-Spec:</p> <ul style="list-style-type: none"> ▪ KEMET's notification process is based on Product Change Notification system which allows customers 3 months prior to implementation to perform on-site qualifications since performance can vary for each application. ▪ If KEMET does not receive a formal approval or rejection of the PCN after the 3 months PCN period KEMET will move forward with the change on listed parts. <p>For KEMET assigned C-Spec (3123):</p> <ul style="list-style-type: none"> ▪ KEMET's notification process allows customers 6 months prior to implementation to perform on-site qualifications since performance can vary for each application. <p>Samples are available through your sales representative.</p>

**For General
Information
Contact**

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**Change
Details**

1. Cover layer thickness change

As part of KEMET continuous improvement efforts, MLCC cover layers have been reduced to decrease overall thickness. Internal design and materials have been maintained. Image 1 illustrates this change. Internal qualification testing has been performed in accordance to KEMET automotive grade catalog. Electrical and dimensional characteristics haven been maintained.

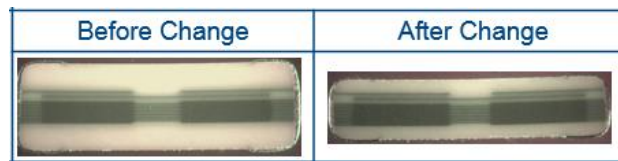


Image 1. Cross section of MLCC before and after cover layers thickness change

Table 1.1 MLCC Thickness change:

Current thickness	New Thickness
1.60 ± 0.20	1.25 ± 0.15
1.60 ± 0.20	1.40 ± 0.15
1.40 ± 0.15	1.00 ± 0.10
1.60 ± 0.20	1.00 ± 0.10
1.60 ± 0.20	1.40 ± 0.15

2. Dielectric material and dielectric thickness change (X7R only)

Using the most technically advanced dielectric materials and design techniques, KEMET has improved its materials formulation to ensure an uninterrupted supply of Ceramic Capacitors establishing equal or better performance in all electrical, mechanical and reliability aspects.

In addition, dielectric thickness has been changed to reduce overall chip thickness. Internal design has been maintained. Image 2 illustrates dielectric thickness change:



Image 2. Cross section of MLCC before and after dielectric thickness change

Internal qualification testing has been performed in accordance to KEMET automotive grade catalog. Electrical and dimensional characteristics haven been maintained (see table 2.1).

This combined change will not affect the standardized quantity for devices ordered with tape and reel packaging.

Table 2.1 All electrical parameters for EIA case size 1812 SMD Auto X7R HV Standard & Flex termination are being maintained after the change:

Item	Parameters/Characteristics
Operating Temperature Range	-55°C to +125°C
Capacitance Change with Reference to +25°C and 0 Vdc Applied (TCC)	±15%
Aging Rate (Maximum % Capacitance Loss/Decade Hour)	3.0%
Dielectric Withstanding Voltage (DWV)	150% of rated voltage for voltage rating of < 1000V 120% of rated voltage for voltage rating of ≥ 1000V (5±1 seconds and charge/discharge not exceeding 50mA)
Dissipation Factor (DF) Maximum Limit at 25°C	2.5%
Insulation Resistance (IR) Minimum Limit at 25°C	< 0.027 μF 1,000 Megohm Microfarads ≥ 0.027 μF 100 Megohm Microfarads

NOTICE:

For AUTO C-Spec part numbers listed in Affected Part Numbers section will begin to be supplied with the specified change beginning November 15th, 2018. Customer receipt of this product will be dependent on inventory depletion in the supply chain. Only the part numbers listed will be impacted.

Product Series Ordering Information

Ordering Information is not changing with this PCN.

Packaging Suffix / C-Spec Details

Packaging Type	Packaging/Grade Ordering Code (C-Spec)
7" Reel	AUTO
13" Reel/Unmarked	AUTO7210

Affected Part Types

KEMET part numbers being affected by this PCN with sales history in the past 24 months:

KEMET PN	Change	Current thickness	New Thickness
C1812C471KGRACAUTO	Cover layer thickness	1.60 ± 0.20	1.25 ± 0.15
C1812C222JDGACAUTO	Cover layer thickness	1.60 ± 0.20	1.40 ± 0.15
C1812X101JDGACAUTO	Cover layer thickness	1.60 ± 0.20	1.25 ± 0.15
C1812X681JDGACAUTO	Cover layer thickness	1.40 ± 0.15	1.00 ± 0.10
C1812C102JDGACAUTO	Cover layer thickness	1.40 ± 0.15	1.00 ± 0.10
C1812C102KDGACAUTO	Cover layer thickness	1.40 ± 0.15	1.00 ± 0.10
C1812X470JGGACAUTO	Cover layer thickness	1.60 ± 0.20	1.00 ± 0.10
C1812X102FBGACAUTO	Cover layer thickness	1.40 ± 0.15	1.00 ± 0.10
C1812C221JGGAC3123	Cover layer thickness	1.40 ± 0.15	1.00 ± 0.10
C1812C222JDRACAUTO	Cover layer thickness	1.60 ± 0.20	1.40 ± 0.15
C1812X102KDRACAUTO	Dielectric material + Thickness change	1.40 ± 0.15	1.00 ± 0.10