



AEM Auto Grade SMD Fuses

AEM Marketing

Apr. 2017



Content

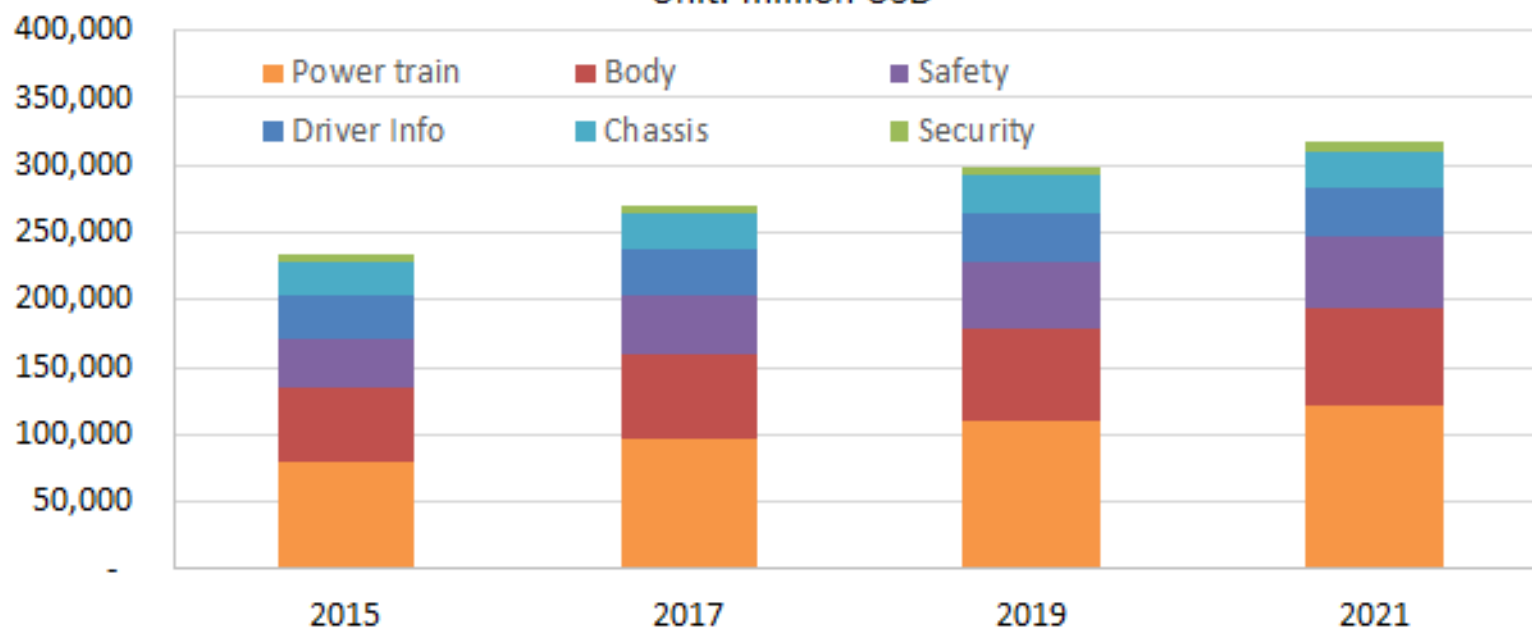
1. Safety demand of automotive
2. AEM SMD fuses' features
3. Typical applications

1.1 Auto electronics growth

>> One reason: automotive gets more electric modules, for information, internet, smart control.

2015~2021, Automotive Electronics Growth

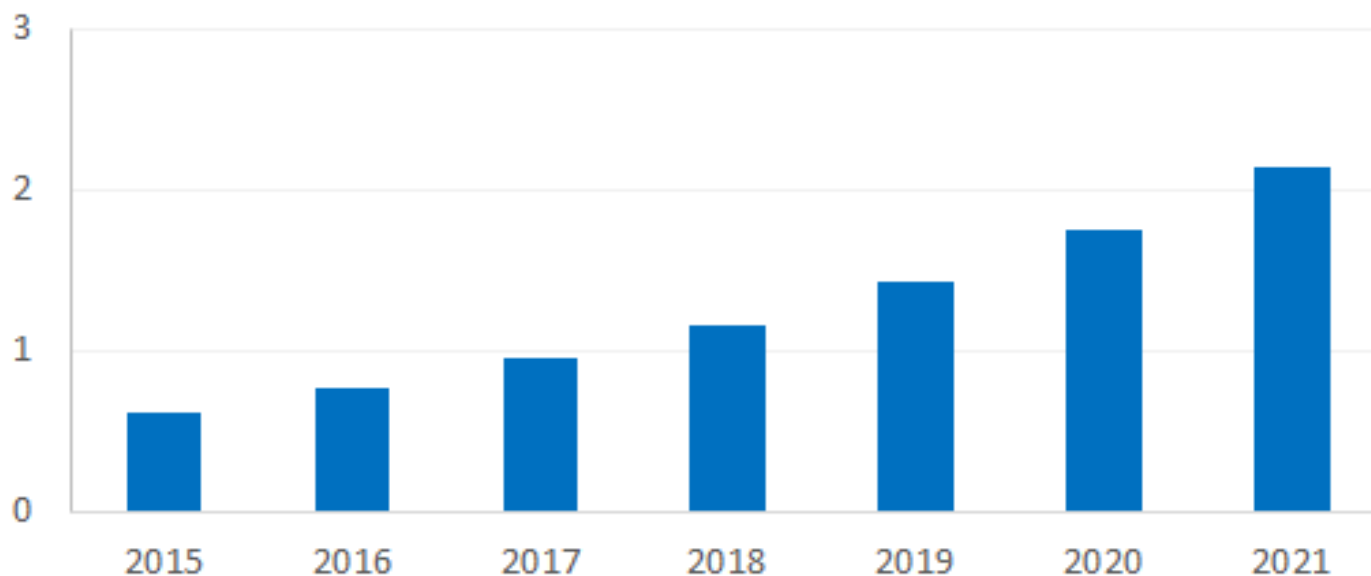
Unit: million USD



Source: IEK.

>> Another reason: E-vehicle's ratio gets high. And electronics ratio of E-vehicle is higher than fuel vehicle.

2015~2021, Global E-Vehicle Market
Unit: million

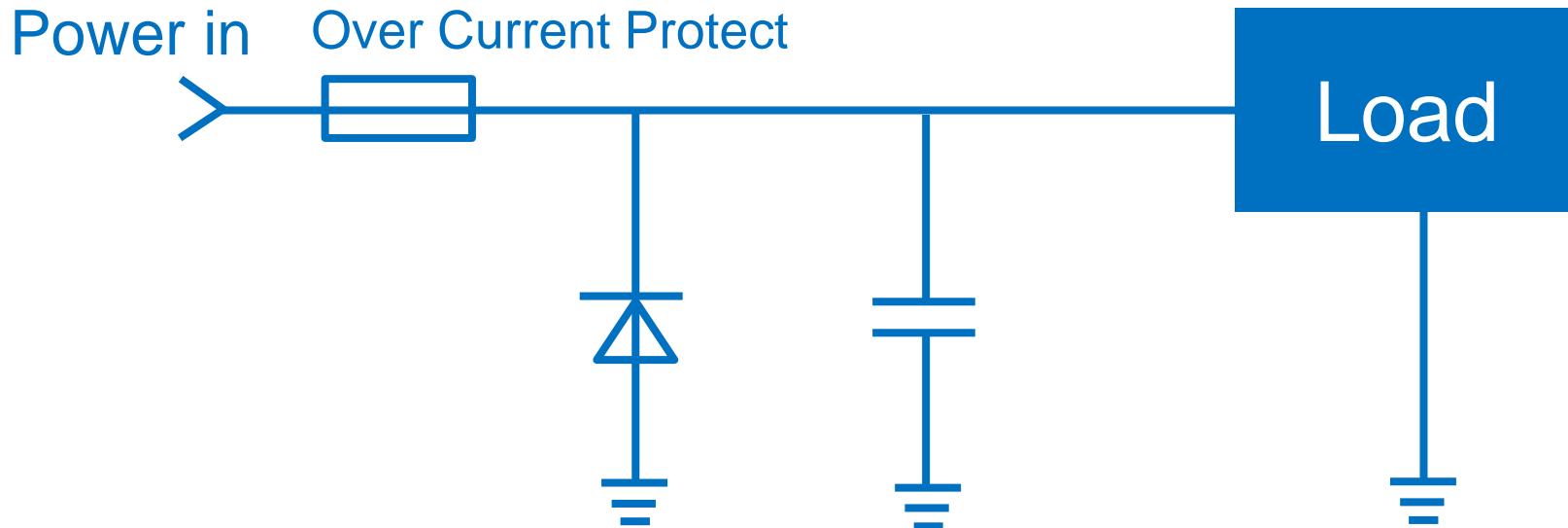


Source: Estimate according to Technavio's motor market forecast.

1.2 Over current protection----SMD fuses

>> Every module would possibly have short-circuit fault under certain condition.

>> For manufacture or contract space, SMD fuses are in demand.



1.3 Safety of protect components

>> The component should be safe before and after acting.

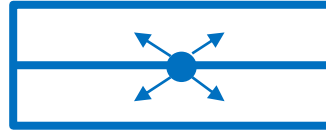
1



Before acting

* reliability

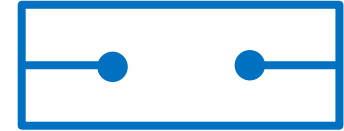
2



Acting

* safety

3



After acting

* Cut off circuit



Content

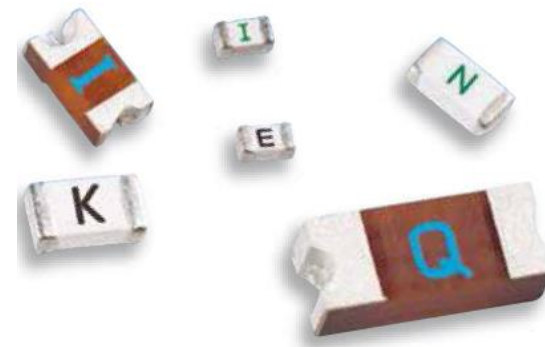
1. Safety demand of automotive
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2.1 AEM auto-grade SMD fuses

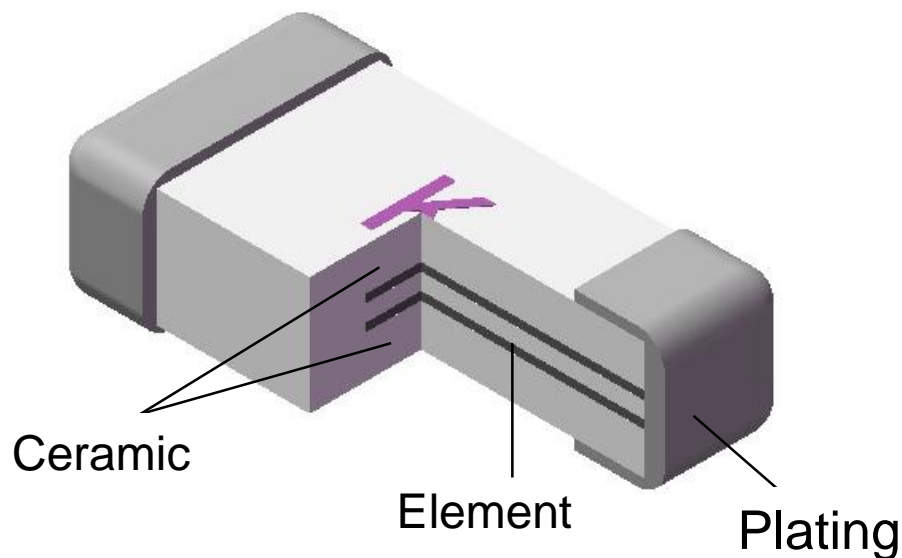
>> Factory: TS16949 recognized

>> Products: pass reliability test, refer to AEC Q200

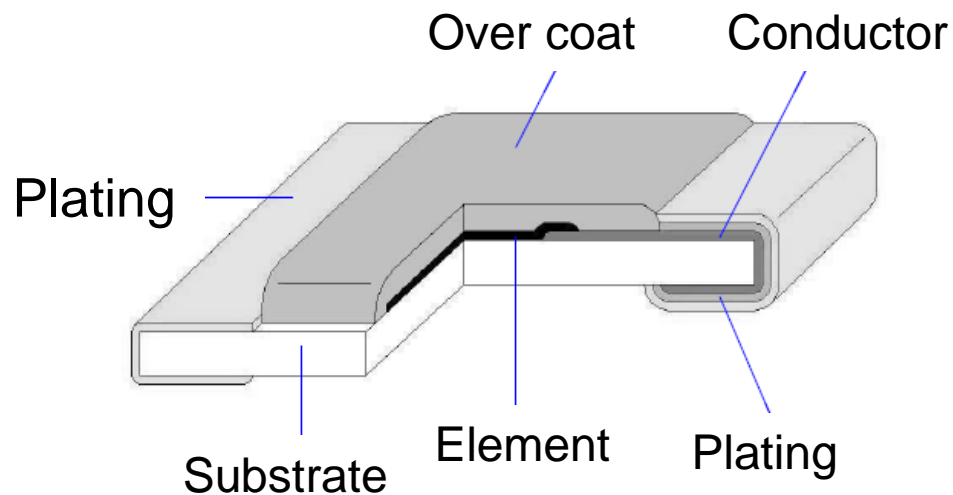


	Ceramic	Wire-in-air
0603 (1608)	QF0603F 0.5~6A QF0603H 1~8A	
1206 (3216)	QF1206F 0.5~8A QF1206H 1~8A Plan: higher current	QA1206F 1.5~15A
2410 (6125)		QA2410F 0.5~20A

AEM Ceramic



Element on surface



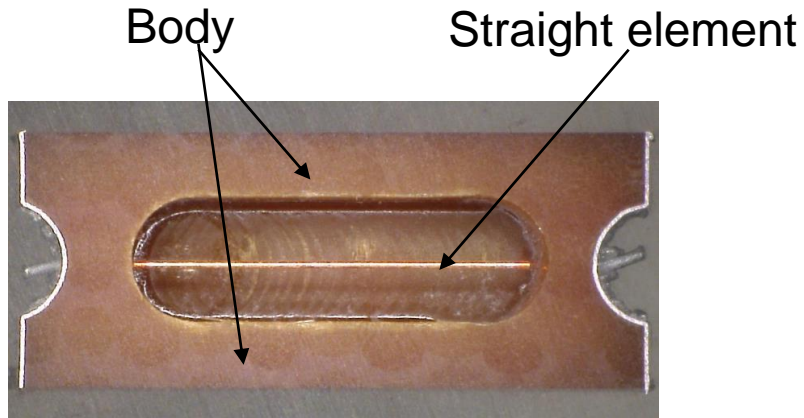
AEM Advantages:

Buried element---safer after open

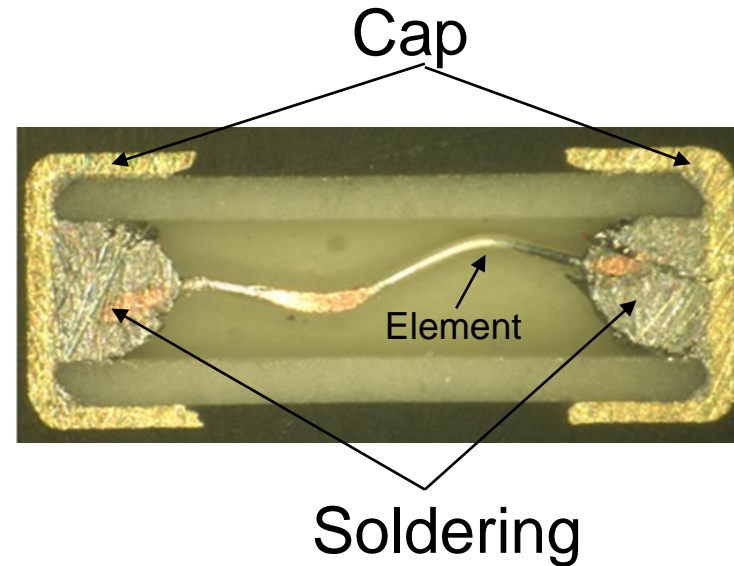
No overcoat---high reliability

Temperature---up to 150°C

AEM Structure



Soldering connection



AEM Advantages:

Straight fuse: low dispersion

No terminal-cap: no drop risk

No inner soldering: 100% Pb free

Environment related tests:

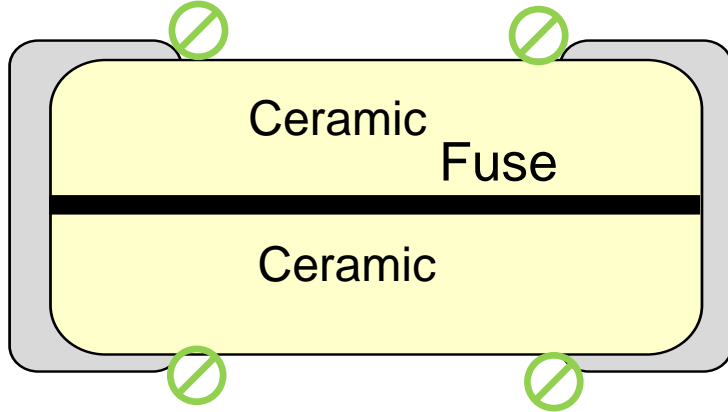
- High temperature operating life ✓
- High/low temperature storage ✓
- Biased humidity ✓
- Thermal shock ✓
- ✓

Mechanic related tests:

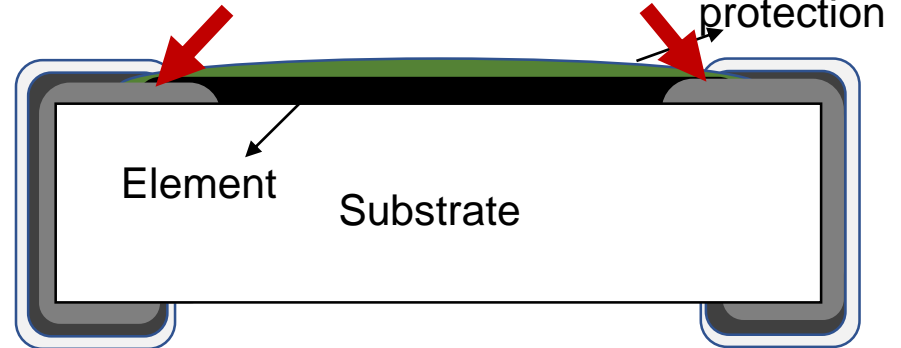
- Mechanical vibration ✓
- Mechanical shock ✓
- Board flex ✓
- ✓

AEM products are well sealed

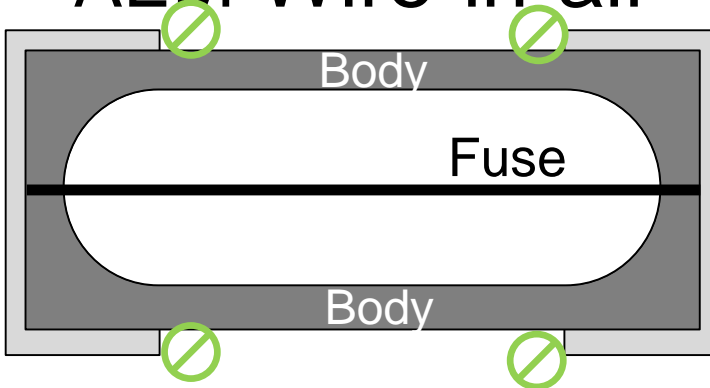
AEM Ceramic



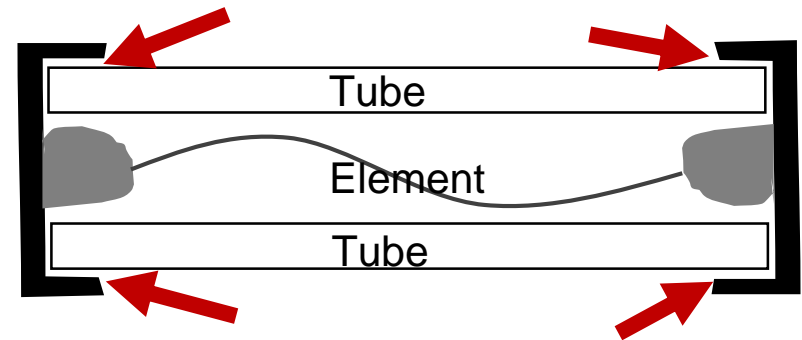
Element on Surface



AEM Wire-in-air



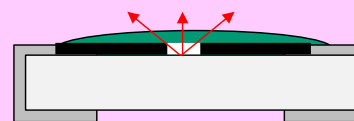
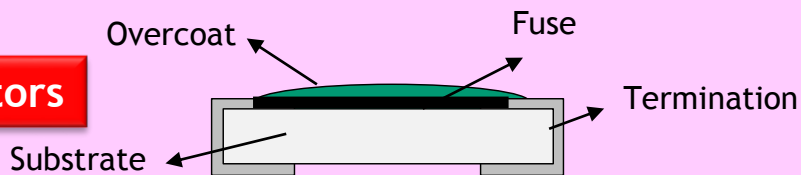
Another structure



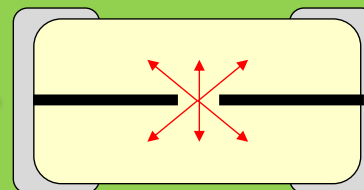
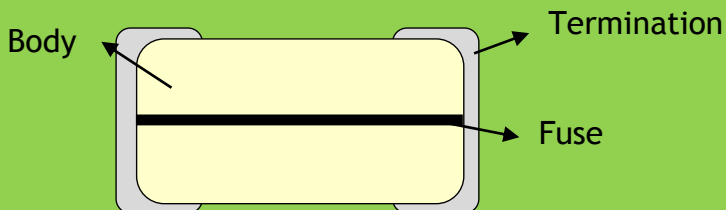
Fuse construction

Fusing moment

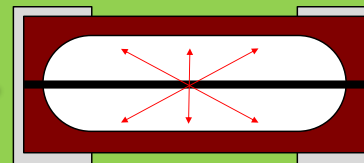
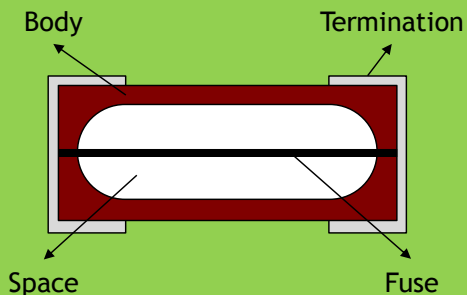
Competitors



AEM
Ceramic



AEM
Wire-in-air



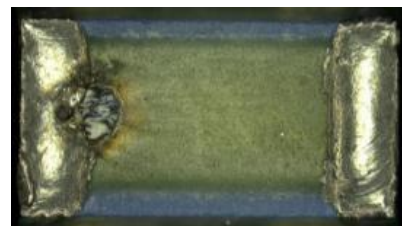
AEM fuses: Buried element



AEM Advantages:

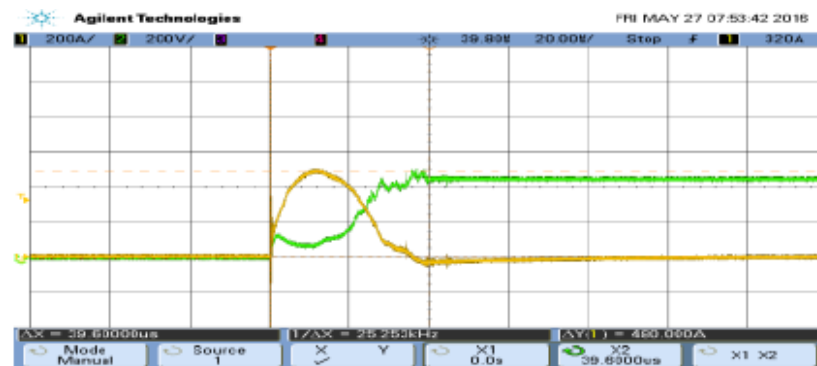
AEM remains the same after acting, comparing to other typical products.

Other structure: element on surface

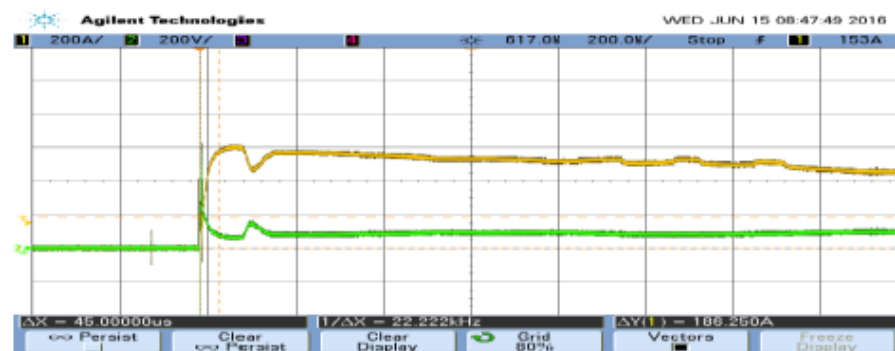


Under extreme condition test: 400A/ 450V

AEM



Another



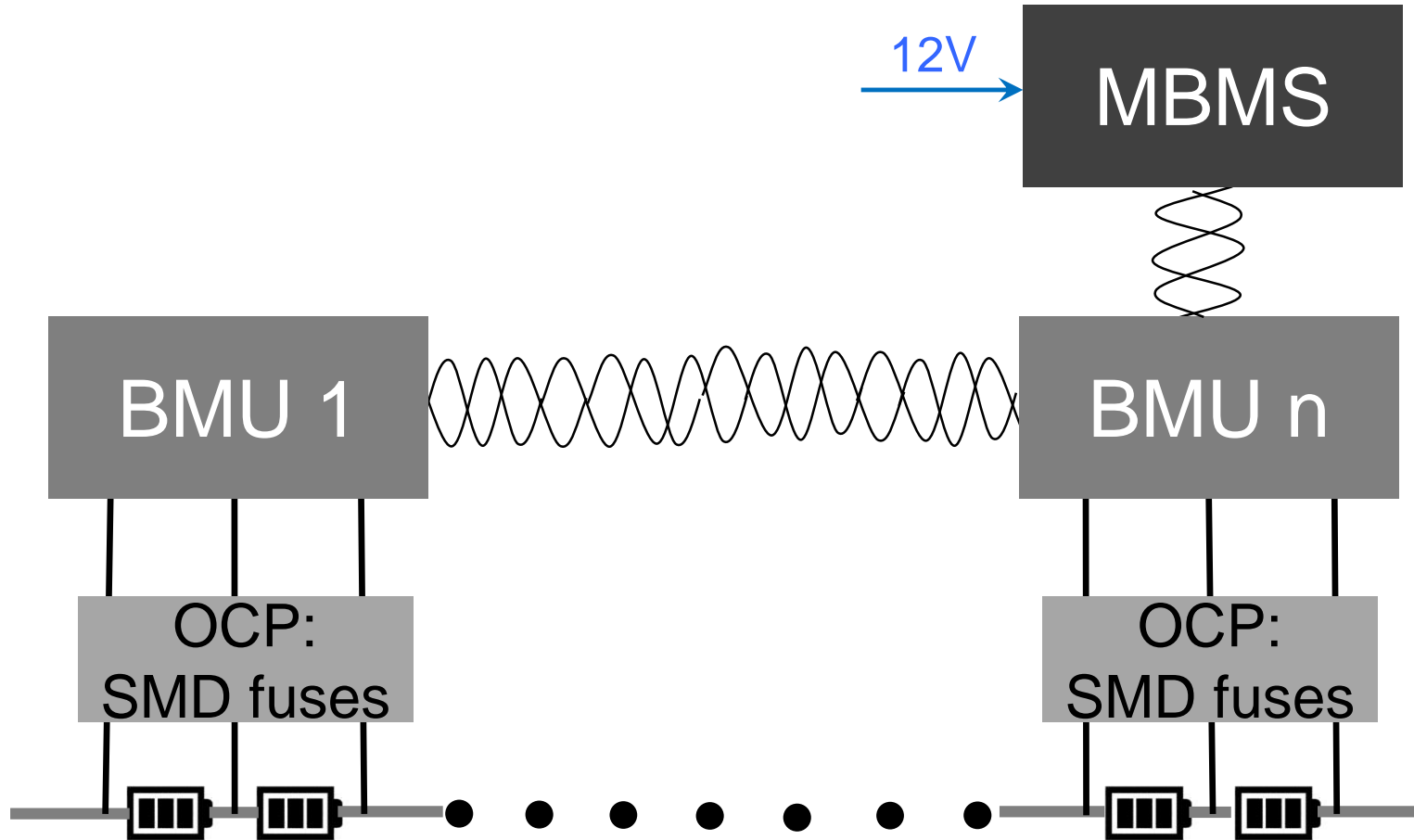


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>> 12V in: 1206/2410

>> Voltage line or balance line: 0603/1206



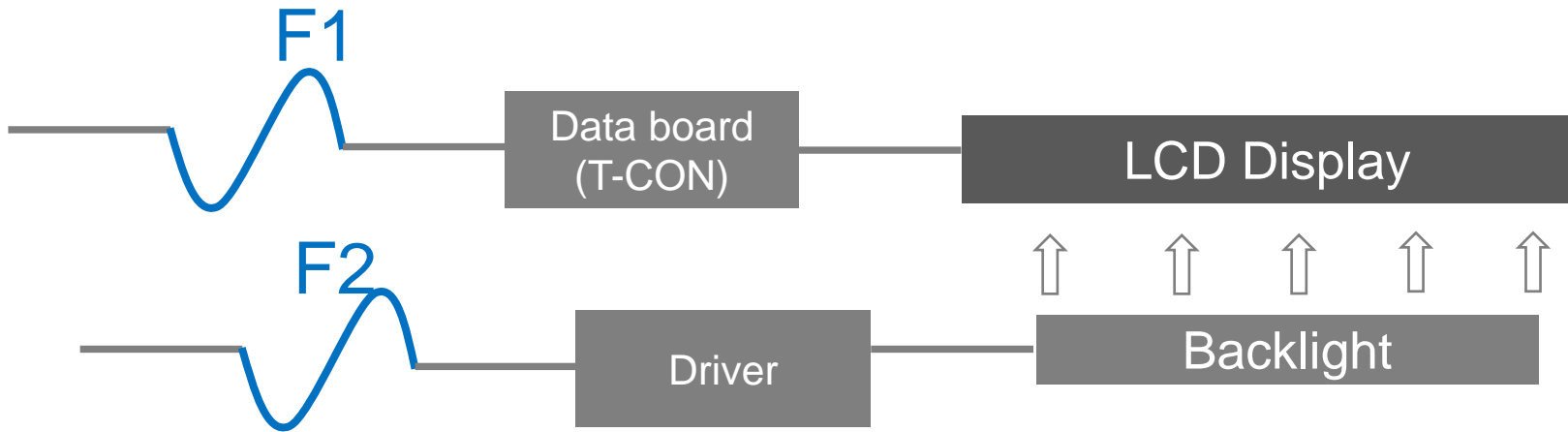
Typical USB application

There is one fuse in the 12V DC in and another fuse in the 5V out for short circuit protection.



Typical Panel application

The fuse is always used in the power input.



Thanks !