



ACES always provides client solution-Type C Rcpt. burn issue case study

Knowledge Vision Value Attitude Commitment Execution

ACES

Achieve Your Ideas. Type C Rcpt. Burn Issue Case Study





2



1. According to the USB-IF rules below, there are three ways for EMC ground.

- 6. The USB Type-C receptacle shall provide an EMC ground return path through one of the following options:
 - Fingers in the receptacle outer shell
 - Internal EMC pads
 - Both external fingers in the shell and internal EMC pads

2. Contradiction: Even if the plug has EMC spring, it still no conduction of loop when the Rcpt. no EMC pad.

ACES Suggestion for Type C Rcpt.

00000

00000000



Use inner shell contact shrapnel to make contact with the plug shell instead of EMC pad design



USB-IF design with EMC pad

Achieve Your Ideas.

USB-IF design without EMC pad

ICES

Contact terminal

(Power pin Vbus)

Background: The conventional type C rcpt has the hole slot design for mold position limit in the plastic body(semi-finished product). Because the type C rcpt has a metal plate in the middle position to make the isolation effect, this metal piece is under the power pins(positive). If the foreign body or liquid flows into the contact area, there is a risk that the power pins(positive) and the ground pins (negative) will be short-circuited with the middle metal plate to cause burnout risk.



ACE

Achieve Your Ideas.

ACES Patent: The new design is filling the left and right holes of power pins plastic for mold position limit ,but CC pins (detection pins) are bare empty state. When the foreign body or liquid into, the holes of power pins have been filled to avoid the fire of short circuit with the middle ground plate connection of positive and negative pins. The CC pins will also first short circuit with the other pins, and inform the system that does not set up an electric circuit to avoid burnout.

Achieve Your Ideas.



6



USB 3.1 Type C Rcpt. 55960



Features

Current: 5A (Total current)

- Power: 100W (PD type)
- Signal speed: 10 Gb/s
- Tail: Dual SMT
- Application: Smart phone/Power bank/Tablet/NB/
- AIO/Desktop/TV/Server



Receptacle (Mid-Mount Short Type)



55960 Modular Design

• USB TYPE C Rec Center Height (Mid-mount)

DIM A	DIM B
(Center Height Range)	(On Board Height Range)
0.35 ~1.00 mm	2.05 ~ 2.70mm





55960 Outer Dimension

• Outer Dimension











MATERIAL THICKNESS

ACES

55960 Structural Design Features







55960 Structural Design Features

One Shell Design



Double shell structure

55960 Single shell structure

55960 Structural Design Features

One Shell Design

ACES



Achieve Your Ideas.

The clip design of the central ground plate touches ground with shell. It makes SMD engineering more easily and has better EMC solution in stead of the grounding design by DIP terminal.



Clip design of the rcpt shell touches the outer shell of plug. Grounding the outer shell to makes better EMC solution.

SECTION B-B

Better EMC Solutions



55960 Structural Design Features

• Insert Molding Process

Insert Molding Process: Terminals are been covered by plastic to make terminals none been exposed.



55960 Design Features



Low burning risk structure design

- 1. Utilize CC PIN for detecting design.
- 2. VBUS PIN blocking design.
- 3. Cancel EMC PAD





(Burning)Top View

(Burning) Bottom View

CES

Aces offers extensive design, engineering and manufacturing to serve variant products in industries that include computer, computer peripherals, business equipment, home entertainment and telecommunications.

