3D-MID INNOVATION IN NORTH AMERICA Will Slade

www.3dmid.com



Agenda

Introduction & Review BASICS of 3D-MID Technology

FOCUS on BTA North American Projects ~5 years

Current SoA of 3D-MID + Recent Developments

Q&A





ultiple dimensions

cicor





Introduction

Will Slade, Founder BTA Objective is SME / Sales Fast Expert Support

Mechanical Engineer PCB / FLEX Circuit & Automation Designer

~1 Decade 3D-MID

Representing: Sunway Communications + other collaborations

Contact: 3DMID.com

3D-MID is a Three-Dimensional Mechatronic Integrated Device



Definition & 3D-MID Process

Create a "BASE BODY" in CAD

MOLD plastic Substrate

Selectively ACTIVATE then Metallize Conductive TRACES & PADS onto Surface





Some 3D-MID Examples

Thermoplastic molded components

NEW materials include THERMOSET Epoxy

Design Goals :

Miniaturize & Package Better than an alternative PCB or FLEX approach





Substrate Activation & Metallization

After the Base Body is molded.... We metallize

LDS (LPKF) technology 2-shot technology LAP Lasering Hot Stamp

North American 3D-MID (BTA)



Disclaimer : N = 1 Data is Specific to BTA 2014 - 2021

APPLICATIONS Antennas Antennas Antennas Antennas Antennas

Data Security (POS) Mesh Audio Products Remote Control Imaging Sensor systems Lighting

3D-MID & The Age of RF Antennas



 Y2000 – 2021 the #1 application is Mobile Device Antennas

• Billions installed

• 90+% of the Market

• Mobile Frequencies MHz – (low) GHz

• Multi-Band

• New Materials = mm wave





3D-MID & The Age of RF Antennas

Tape and Reel (MOLEX)

Laptop / Tablet / Phone

Earbuds / Audio / Microphone

Connecting with Solder, Spring & Adhesives

Positioning Antenna on or near outer surface

Cosmetic Challenges and victories

Bragi

Security covers for tight spaces....



Source: www.fastcompany.com



Source: Multiple Dimensions AG



Anti-Tamper protection

Old Traces : 300um

Line width down to 150um (6 mils)

Current SoA Sub-50 um (2 mils)





Medical Technology: Potential Micro-molding **Diagnostic & Surgical** Sensors & Emitters Interposers & Interconnects Measurement Imaging Assembly Advantages Lower Mass Features 80um Conductors (Next Gen: sub-20um)



Body-Wearable Technology **SWITCHES** ANTENNAS **INTERCONNECTS** PCB REPLACEMENT WIRING ELIMINATED Today 50um - 80um Conductors Next Gen: sub-20um



FEATURE SIZE Evolution and Revolution

Thru vias were 200um & now 40um (1.5 mil)

Traces were 300um now sub 25 um

LPKF AMP (LDS Epoxy)

SW Material Capabilities

3D-MID Supports the Electronics Trend



Party like it's 2099 – Now is the Future !

- $\,\circ\,$ AMP from LPKF & LAP from SW
- New Materials Galore
- Antennas mega-GHz millimeter wave
- Smaller & Better Sensor Packaging
- $\,\circ\,$ MID puts more "M" in MEMS
- Wearables / Cyborg Gear
- Secure IT and POS hardware
- Low Mass, Easy Assembly
- Become a Packaging Virtuoso



THANKS !

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