RoHS Compliant & Pb Free Product

MC1-AN001

- Documents: Microwave Cell Application Note: Dynamic Cell Applications

Unlimited Possibilities!

MicroWaveCells' cells are designed and can be extended to any dimension and any shape the customer wants by using the single cell base (M-BS01A), single base joint (M-BJ01A) with standard PCB cells (MC1-xxxxx). Each cell has a standard cell dimension with 20x20mm^2.

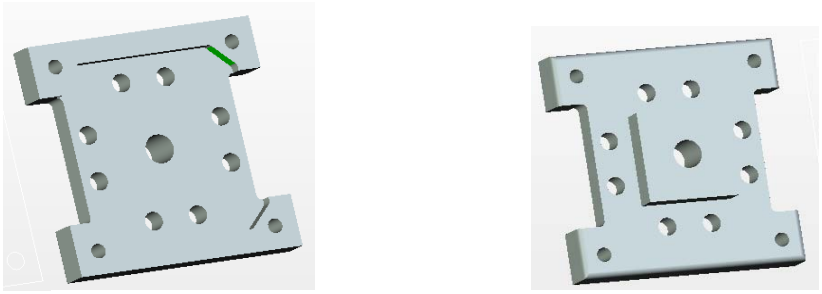


Fig.1: Single mechanical cell (M-BS01A) (front and back)

Fig.2: Single cell joint (M-BJ01A)

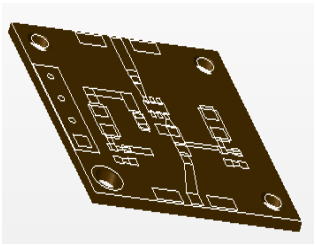


Fig.3: Standard PCB cell

Application I: Single Cell Applications

MicroWaveCells initially offers a total of 132 single PCB cells, which support more than 100 different device footprints. PCB cells cover more than thousands of the most commonly used off-the-shelf RF/Microwave devices from most of the key RF/Microwave device vendors. Customers can use these cells to build and test each cell function with corresponding single cell mechanics. Each cell has a standard cell dimension with 20x20mm^2. The single cell supports most of the key RF functions with common footprints. The cell frequency range covers from DC to 40GHz. The initial PCB cell covers the following basic RF/Microwave functions:

- Amplifier cells (21)
- Mixer cells (16)
- Attenuator cells (11)

- VCO cells (8)
- Phase shifter cells (2)
- Phase detector cells (1)
- Multiplier cells (12)
- Prescaler cells (5)
- Switch cells (8)
- Splitter and coupler cells (5)
- Synthesizer cells (5)
- PLL cells (1)
- Detector cells (7)
- Filter cells (10)
- DC blocks and bias tee cells (2)
- Regulator cells (4)
- Transition and Launch cells (5)
- Op-amp application cells (6)
- Miscellanies cells (2)

In combination of the single mechanical cell (M-BA01A), single cell test fixtures can be easily made as shown in Fig.4. A half cell mechanics (M-BA02A) and a half PCB launch cell (MC1-TS03A) can be used for proper grounding (Fig.5).

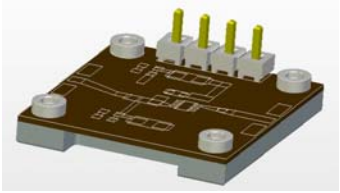


Fig.4: Single cell fixture

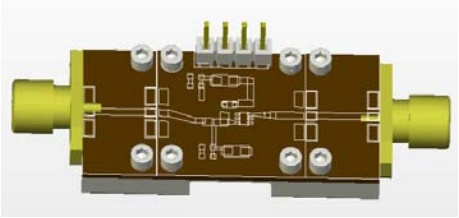


Fig.5: Single cell with side launch fixture

Application II: Dynamic Applications

Some cells/functions have more than one single cell dimension, such as the synthesizer cell with a 2x3 cell size, the VCO with a 1x2 cell size, etc. The single mechanical cell is designed to be extended to any dimension and any shape the customer wants by using the single cell base (M-BA01A) and single base joint (M-BJ01A). Fig.6 shows an example of a 2x3 synthesizer cell. Fig.7 shows the dynamic concept of how to build a large dynamic module. A transition vertical output cell (MC1-TS04A) may be used for any test point or output purpose as shown in Fig.8. A detailed example can be found in a separate application note of AN002. For the purpose of the easy DC and control line management, a single (MC1-MS01A) and an

array (1x5) (MC1-MS02A) cells are introduced as shown in Fig.9. The mechanical cell base also supports a standoff (M-SD305).

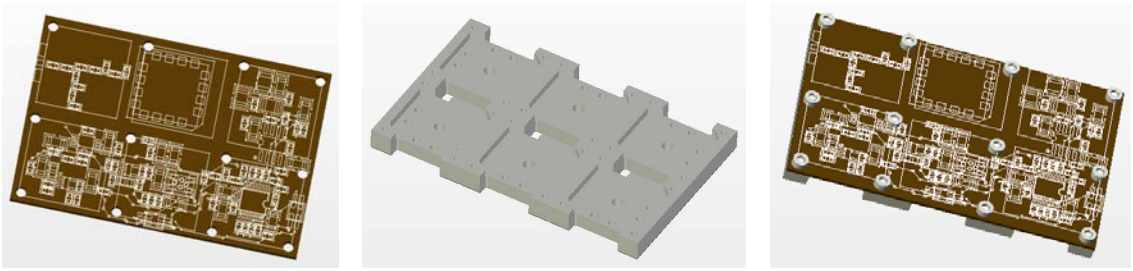


Fig.6: An example of a 2x3 synthesizer cell fixture

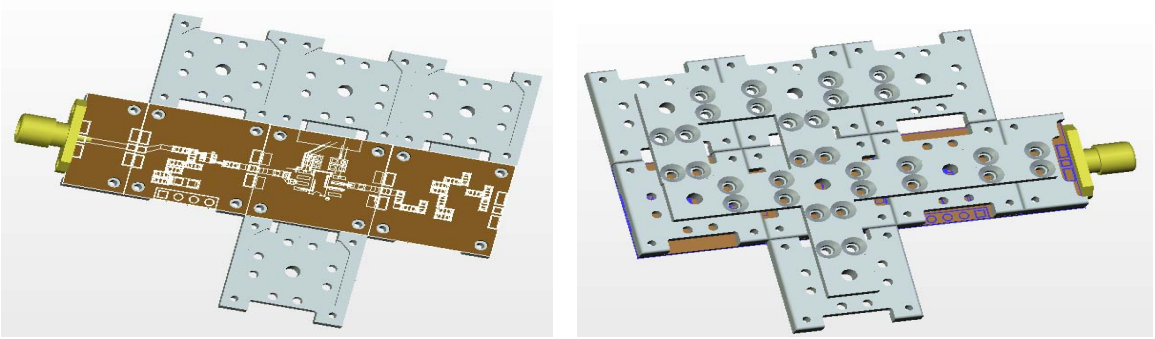


Fig.7: Dynamic cell example (front and back side of the module)

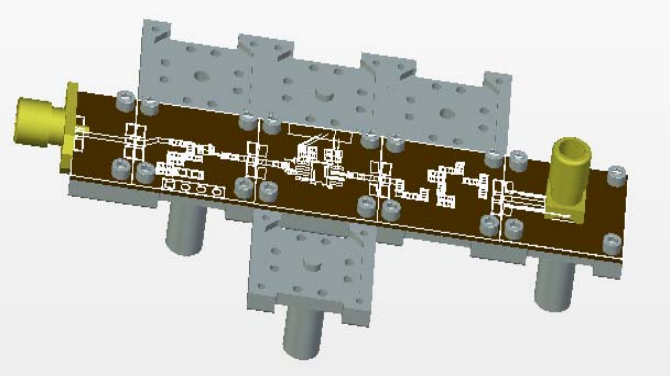


Fig.8: Dynamic cell with vertical SMA output

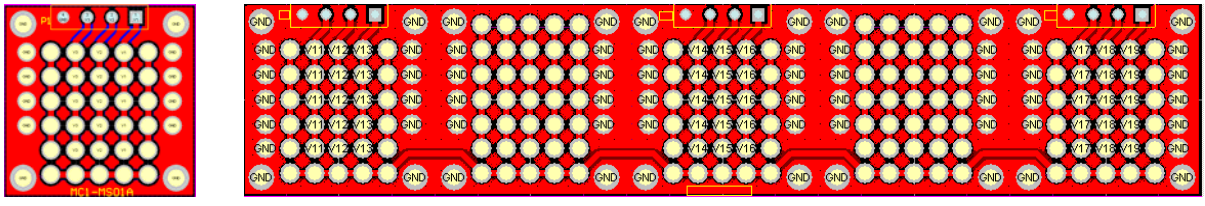


Fig.9: MC1-MS01A and MC1-MS02A DC control cells

Application III: Single Module Applications

MicroWaveCells further introduces this dynamic single module concept based on the standard single product family line. The single mechanical cell is designed to be connected by sidewalls with covers of the customer's choice. By selecting required sidewalls and covers on line, customers can easily make their own modules in minutes and hours. The initial mechanical cell offering for this single dynamic module family includes:

- Single cell base
- Sidewall with SMA
- Sidewall with K connector
- Sidewall with feed-through, GND pole and mounting hold
- Sidewall with mounting hole
- Cover
- Cover with one DC cut
- Cover with two DC cuts
- Mounting bracket

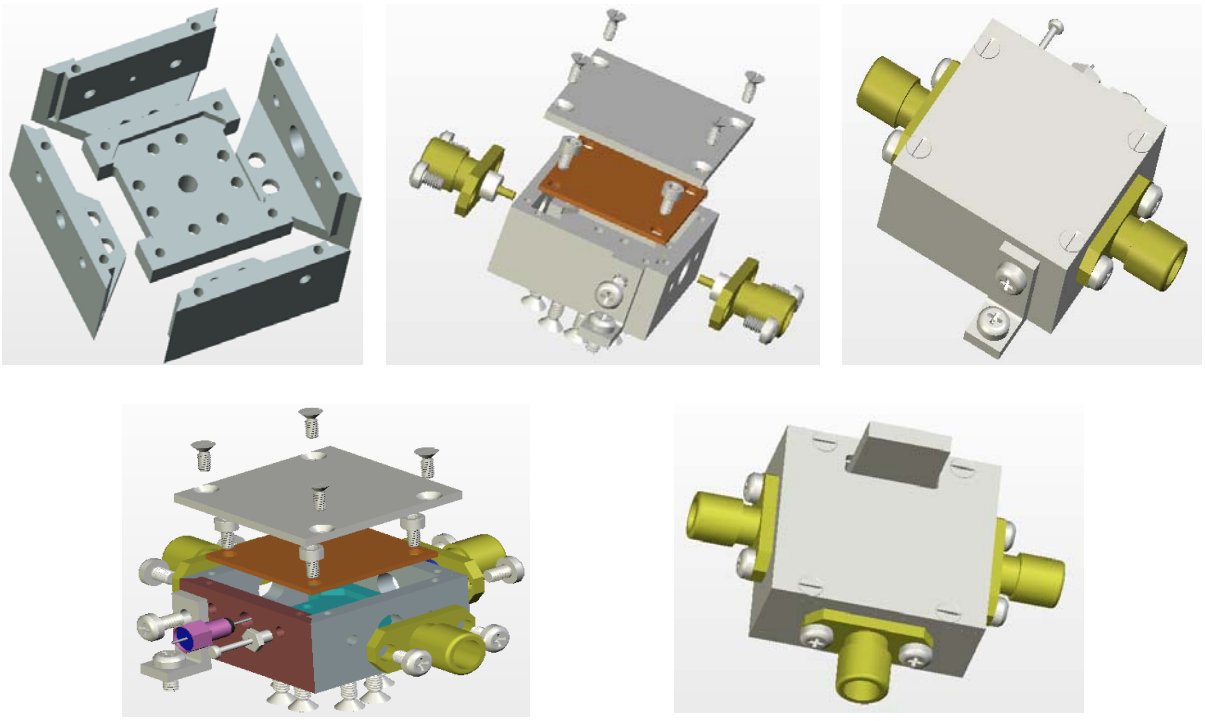


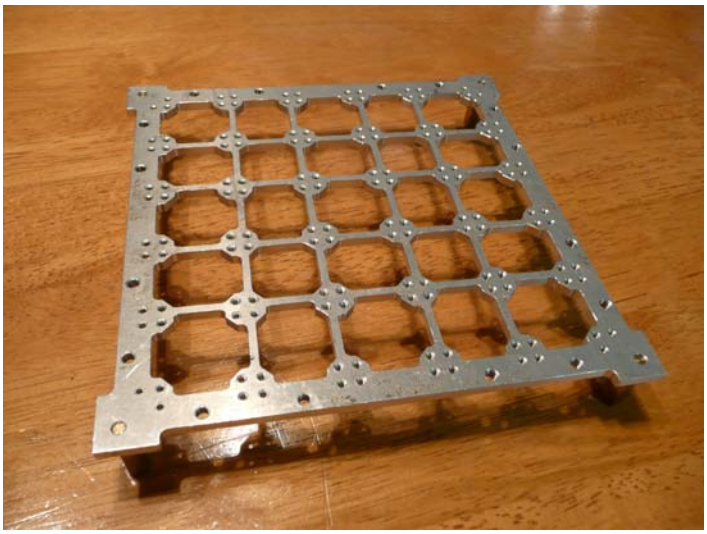
Fig.10: Dynamic module examples

Application IV: Single Array Applications

Besides the single cells, single dynamic cells and single module cells, MicroWaveCells introduce single array cells, array module cells to further offer single array modules.

Single array elements include:

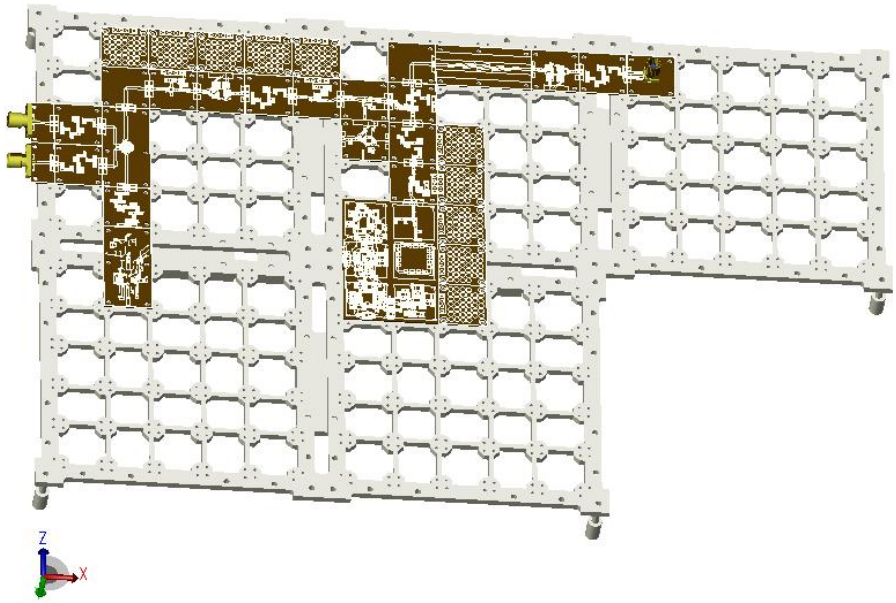
- Single array cell
- Standoff



Application V: Dynamic Array Applications

Dynamic array elements include:

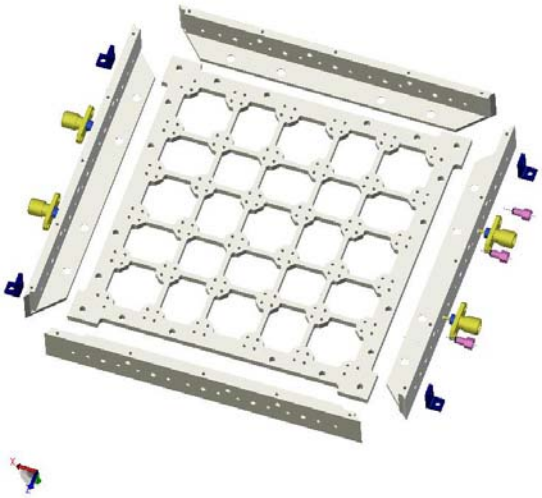
- Single array cell
- Array joint cell
- Standoff

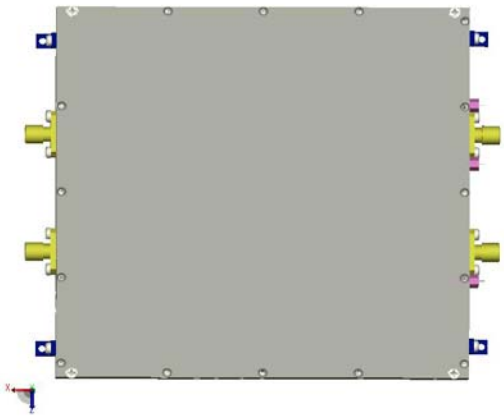


Application VI: Single Array Module Applications

Single array module elements include:

- Single array cell
- Single array side wall
- Array cover

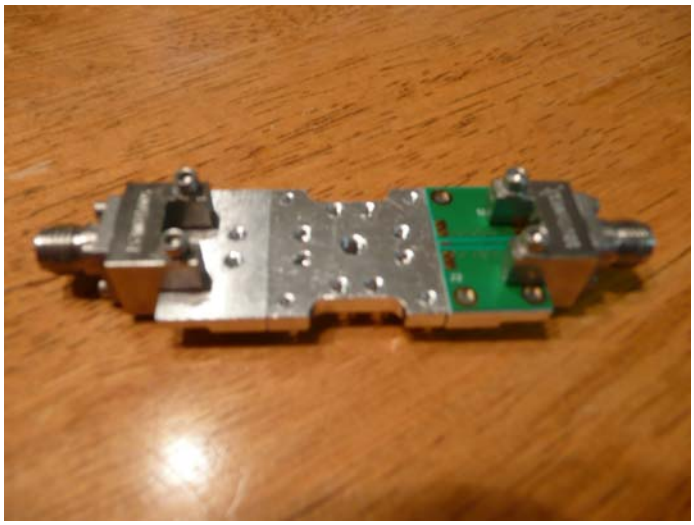




Application VII: 50GHz Applications

For extending MicroWaveCells' rapid concepts to work in millimeter wave bands, MWC introduces the adapter to work with industry common recognized SouthWest Microwave's 2.92/2.40mm End Launch Connector (www.southwestmicrowave.com). With this 2.92/2.40mm end launch connector adapter, the MWC's prototype line will work up to 50GHz.

- Single cell base
- 2.92/2.40mm end launch connector adapter (M-BS04A)
- PCB for the adapter (MC1-TS06A)



Application VIII: Power Amplifier Applications

MicroWaveCells also introduce the thermal cell to help dissipation for power amplifier applications, the thermal cell can apply to any standard single cell mechanics.

- Thermal cell (M-TM01A)