PMI Hybrid Assembly Expertise Leads to Superior Subsystem Performance

NEW RESEARCH AND DEVELOPMENT

February 15, 2018
PMI Hybrid Assembly Expertise Leads to Superior Subsystem Performance

**PIA-10G-CD-1:** [http://www.pmi-rf.com/Products/DRO/PIA-10G-CD-1.htm](http://www.pmi-rf.com/Products/DRO/PIA-10G-CD-1.htm)

**Integrated Assembly:**

- PMI combines die attach and surface mount assembly
- PMI has expertise using ceramic and soft substrate
- This module allows 3 channels to have 360° phase control and 20 dB gain control simultaneously
- Integrated assemblies can be designed to any block diagram

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**WEST COAST FACILITY:**
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El Dorado Hills, CA 95762 • USA

**EAST COAST FACILITY:**
7311-F Grove Road
Frederick, MD 21704 • USA

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**Amplifiers – Solid State**
**Attenuators – Variable/Programmable**
**Couplers (Quadrature, 180° & Directional)**
**Detectors – RF/Microwave**
**DLVs, ERDLVs & SDLVs**
**DTOs, VCOs, PLO, DROs, & Frequency Synthesizers**
**Filters & Switched Filter Banks**
**Form, Fit, Functional Products & Services**
**Frequency Discriminators & IFMs**
**Integrated MIC/MMIC Assemblies (IMAs)**
**IQ Vector Modulators**
**Limiters – RF/Microwave**
**Log Amplifiers**
**Millimeter Wave Components**
**Up to 50 GHz**
**Miscellaneous Products**
**Multifunction Integrated Assemblies (MIAs)**
**Phase Shifters & Bi-Phase Modulators**
**Power Dividers/Combiners (Passive & Active)**
**Pulse Modulators (SPST)**
**Rack & Chassis Mount Products**
**Receiver Front Ends & Transceivers**
**SDLVs, ERDLVs & DLVs**
**Single Side Band Modulators**
**SMT & QFN Products**
**Switch Matrices**
**Switched Filter Banks**
**Systems – Radar Sense & Avoid**
**Systems – Fly Eye Radars**
**Threshold Detectors**
**USB Products**
PMI Integrated Module PIA-10G-CD-1
Product Feature

Specifications:
- Frequency Output: 100Hz
- Phase Shift: 0° to 360° typ.
- Phase Shift Control
  - Analog Voltage: 0 to +12 V
  - Absolute Max: 0 to +14 V
- Output Power:
  - Absolute Max: 18dBm typ.
- Output Power Adjust:
  - Adjust: 0 to 10 dB typ.
- Output Power Control
  - Analog Voltage: -4.5 V to +4.5 V
  - Absolute Max: 0 to -5.0 V
- Harmonics:
  - 100MHz typ.
  - 3.3 PPM
  - -50dBc typ.
- Sync Input:
  - SMA connector
  - 50ohm, 3.0 A
- Sync Input Phase Noise:
  - 0.125mV typ.
  - 10kHz offset
- Sync Input Frequency Stability:
  - ±3 PPM
- Power Control:
  - 15 pin
- Size:
  - 6.25" x 2.5" x 1.1"
- Finish:
  - Painted Gray

POWER/CONTROL CONNECTOR J1

- Pin No: 1
  - Function: 145 VCC
- Pin No: 2
  - Function: GND
- Pin No: 3
  - Function: 18 VCC
- Pin No: 4
  - Function: GND
- Pin No: 5
  - Function: PHASE SHIFT1-CTRL
- Pin No: 6
  - Function: PHASE SHIFT2-CTRL
- Pin No: 7
  - Function: PHASE SHIFT3-CTRL
- Pin No: 8
  - Function: GND
- Pin No: 9
  - Function: ALARM
- Pin No: 10
  - Function: POWER1-CTRL
- Pin No: 11
  - Function: POWER2-CTRL
- Pin No: 12
  - Function: POWER3-CTRL
- Pin No: 13
  - Function: GND
- Pin No: 14
  - Function: NC
- Pin No: 15
  - Function: NC

* Alarm is TTL HIGH when unit is locked.

Note: The above specifications are subject to change or revision.

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E-MAIL: sales@pmi-rf.com
ISO 9001:2008 CERTIFIED

PRODUCT FEATURE
PIA-10G-CD-1
10 GHz INTEGRATED DRO MODULE
Model No.
PIA-10G-CD-1
Serial No.
FLXXX/XXXX

MFG IN USA

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PMI Integrated Module PIA-10G-CD-1
Block Diagram

Frequency: 10 GHz
Frequency Stability: Coherent to external reference
Frequency Accuracy (+/- ppm @ 25°C): 0
Output Power in dBm (over temp): > +15, (+20)
Power Variation in dB (over temp): < 3
Pulling (15:1 VSWR) will not break lock
Harmonics in dBc (typ): < -20
Discrete Spurious in dBc (typ): < -80
External Reference Input Power: 0 to 3 dBm
Phase Lock Alarm Open Collector (locked = open, unlocked = ground)
Power Supply (Vdc): +12V
DC Current Draw: 270 mA

Amplifiers – Solid State
Attenuators – Variable/Programmable
Couplers (Quadrate, 180° & Directional)
Detectors – RF/Microwave
DLVAs, ERDLVAs & SDLVAs
DToEs, VCOs, PLO, DROs, & Frequency Synthesizers
Filters & Switched Filter Banks
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USB Products

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PMI Combines Electrical and Mechanical Ingenuity in State-of-the-Art Products

6SFB-CC-100M18G-MAH-RX-TX:
http://www.pmi-rf.com/Products/filters/6SFB-HF-CC-100M18G-MAH-RX-TX.htm

Switch Filter Banks:

- 100 MHz – 18 GHz Frequency Range
- Integrated LNA and switch on RX
- Integrated TX amplifier
- 100 dB Isolation allowing both filter banks to operate in different bands simultaneously
PMI Switch Filter Bank
6SFB-CC-100M18G-MAH-RX-TX

**DESCRIPTION**

PMI MODEL NUMBER 6SFB-CC-100M18G-MAH-RX-TX IS AN INTEGRATED MODULE CONTAINING TWO CHANNEL SWITCHED FILTER BANKS COVERING 100 MHZ TO 18 GHZ.

A RECEIVED SWITCHED FILTER BANK HAS 2 INPUTS, ONE WITH 18 GHZ BAND AND ONE WITH 1 GHZ BAND. EACH FILTER BANK HAS 100 DB ISOLATION BETWEEN THE INPUTS. A TRANSMIT SWITCHED FILTER BANK HAS 50 DB TYPICAL, OR 60 DB TYPICAL IN THE FILTER BANK TO BE CHOSEN. BOTH FILTER BANKS CAN BE USED SIMULTANEOUSLY IN DIFFERENT BANDS. THE UNIT MEASURES ONLY 4.60 X 3.00 X 0.75".

**SPECIFICATIONS:**

- **INPUTS:**
  - JT INPUT: RF RECEIVE INPUT
  - JT OUTPUT: RF RECEIVE OUTPUT
  - JT FREQUENCY: 100 MHZ TO 18 GHZ TYPICAL
  - JT POWER LEVEL: -10 TO +16 dBm

- **OUTPUTS:**
  - JT OUTPUT: RF RECEIVE OUTPUT
  - JT FREQUENCY: 100 MHZ TO 18 GHZ TYPICAL
  - JT POWER LEVEL: -10 TO +16 dBm

**RECEIVE SWITCHED FILTER BANK:**

- **JT PATH:** 100 MHZ TO 18 GHZ TYPICAL
- **JT PATH INSERTION LOSS:** 10.60 TYPICAL
- **ISOLATION:** 21 J, 16 dB

**TRANSMIT SWITCHED FILTER BANK:**

- **GAIN:** 3.60 TYPICAL

**RECEIVE AND TRANSMIT SWITCHED FILTER BANKS:**

<table>
<thead>
<tr>
<th>PIN</th>
<th>FUNCTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>TTL1</td>
</tr>
<tr>
<td>2</td>
<td>TTL2 (L,SB)</td>
</tr>
<tr>
<td>3</td>
<td>TTL2B</td>
</tr>
<tr>
<td>4</td>
<td>TTL2C</td>
</tr>
<tr>
<td>5</td>
<td>TTL3A (L,SB)</td>
</tr>
<tr>
<td>6</td>
<td>TTL3B</td>
</tr>
<tr>
<td>7</td>
<td>TTL3C</td>
</tr>
<tr>
<td>8</td>
<td>GND</td>
</tr>
<tr>
<td>9</td>
<td>+12V</td>
</tr>
<tr>
<td>10</td>
<td>GND</td>
</tr>
<tr>
<td>11</td>
<td>+5V</td>
</tr>
<tr>
<td>12</td>
<td>GND</td>
</tr>
<tr>
<td>13</td>
<td>+3.3V</td>
</tr>
<tr>
<td>14</td>
<td>GND</td>
</tr>
<tr>
<td>15</td>
<td>-12V</td>
</tr>
</tbody>
</table>

**CONTROL LOGIC:**

| TLL 0.6 TO 5.0 VOLT, (2.1 ± 5 VOLT) |
| TLL 1 RECEIVE FILTER BANK INPUT SELECT |
| 0: RX INPUT (T) |
| 1: RX MULTI-INPUT INPUT (T) |

**TLL 2:**

| TLL 1 RECEIVE FILTER BANK SELECT |
| 0: RX INPUT |
| 1: RX MULTI-INPUT INPUT |

**POWER SUPPLY:**

| 2 TO 5 VOLT |
| 5 TO 7 VOLT |
| 9 VOLT |

**SIZES:**

| 4.60 x 3.00 x 0.75 |

**RF CONNECTORS:**

| 50 PIN (F) |

**FINISH:**

| GOLD PLATED |

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PMI Innovates Subsystems with Novel Approaches in Technology

PTRAN-100M18G-SFB-3UVPX-10HP-MAH:
http://www.pmi-rf.com/Products/multifunctionmodules/PTRAN-100M18G-SFB-3UVPX-10HP-MAH.htm

ELIMINATE CABLES WITH 40 GHz BLIND MATE BACKPLANE CONNECTIONS – VITA67

- 100 MHz to 18.0 GHz Transceiver
- Less Than 30 Watt Total Power Consumption
- Time Gated SDLVA for Pulse Blanking
- Up to 4 GHz Instantaneous Bandwidth
- -80 to -10 dBm Input Dynamic Range
- Customizable Switched Filter Banks
- 0 to +10 dBm Transmit Power
- 100 ns Switching Speed
- VITA 67 RF Interface
- CW Immunity

Over 300% Smaller than Individual Components while Maintaining 100 dB Isolation

3U Open VPX Card
160 mm x 100 mm x 10 HP
(6.30” x 3.94” x 1.92”)

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PMI Transceiver
PTRAN-100M18G-SFB-3UVPX-10HP-MAH
Simplified Block Diagram