Planar Monolithics Industries, Inc. (PMI), an “S” Corporation, was founded by Dr. Ash (Ashok) Gorwara on November 11th, 1989 to take advantage of the growing demand in monolithic based products using Hybrid MIC/MMIC technology. PMI offers its unique DC to 50 GHz products for applications in space, military, telecommunications, communications and consumer electronics.

Today, PMI is being directed into the 21st Century by expanding the applications of RF/Microwave components and subsystems into new, low cost, RF/Microwave receiving and transmitting systems for both civilian and military customers.

Effective April 30 2013, PMI, 7311-F Grove Road, Frederick, Maryland, USA 21704, USA, http://www.pmi-rf.com acquired 100% of all the assets & property of HARI, LLC, www.harillc.com (Formerly operating as Genesis Microwave Inc., www.genesismicrowave.com) located at 4980 Hillsdale Circle, Suite B, El Dorado Hills, CA 95762, USA.

These assets include all the test and manufacturing equipment and machinery, designs, Documentation, drawings and Intellectual property in the form of hard copies and in computer format in servers, CD's, storage areas, etc. Also included in these assets are the Office Equipment & Machinery, etc. and Computers, Office furniture, Finished goods, In-process and Raw Materials & Inventories and other Miscellaneous items. In addition to these assets, included are, all the stock in trade, merchandise, fixtures, equipment, goodwill and trade of the known business as "HARI LLC".

All the RF/MICROWAVE products, components, subsystems, etc. being designed, manufactured, serviced and produced by HARI, LLC www.harillc.com (Formerly operating as Genesis Microwave Inc., www.genesismicrowave.com) until 30th April 30 2013, will now be offered, provided, produced, manufactured and serviced by PMI, at its West Coast Facilities Operations located at 4921 Robert J. Mathews Parkway, Suite 1, El Dorado Hills, CA 95762, USA.
PMI was founded to take advantage of the growing demand in monolithic-based products using the Hybrid MIC/MMIC technology innovations that are mushrooming in a big way all over the world. High performance and reliable products can be obtained by using this technology.

A vacuum existed in the demand for state-of-the-art Hybrid MIC/MMIC Components and Subsystems. PMI has been setup to Design, Develop, Manufacture, Test, and Market complex state-of-the-art:

- Hybrid RF/Microwave and Monolithics Integrated Circuits (MIC/MMIC) and Components
- Hybrid MIC/MMIC Supercomponents and Subsystems

PMI provides its unique products for applications in space, military, communications, telecommunications and industrial electronics systems.

PMI has been set up to perform research, design, develop, manufacture and market various MIC/MMIC (Microwave Integrated Circuits and Monolithics Microwave Integrated Circuits) Components, Supercomponents, and Subsystems for applications in Telecommunications, Terrestrial, Satellite, and Mobile-Radio Communications, UAVs (Unmanned Aerial Vehicles) & Drones, Defense (ECM, ECCM, ESM, Radars, SIGINT, and Electronic Warfare), Navigation and Marine Electronics, FAA/DOT-Avionics, Ground Based Systems, and Microwave Landing Systems.

Worldwide demand exists for High Reliability, Low Cost systems. Such needs can be satisfied by PMI by using its unique Hybrid MIC/MMIC Technologies and products that the team has developed called Application Specific Hybrid Microwave/Monolithics Integrated Circuits (ASHMIC/ASHMMIC*). *Trademark of PMI.
As a manufacturer PMI utilizes our own designs for all components, integrated modules and subsystems:

DC to 50GHz

PMI Evolution and Purpose

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Phone: 916-542-1401

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http://www.pmi-rf.com/about

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7311-F Grove Road
Frederick, MD 21704 • USA
Phone: 301-662-5019
Application of PMI DC to 50 GHz Components & Sub-Systems

Planar Monolithics Industries, Inc. has been in business for over 25 years as a manufacturer of electronic components for defense applications. Applications such as Receiver Front-Ends, Synthesizers and Transceivers. As well as a large variety of RF components that compliment this target market. Our technical goal is to produce the finest products available that resolve this mathematical statement:

\[ V_{\text{Input}} = A \cos(\omega_c t + \phi_t) \]

**amplitude**

**frequency**

**phase & modulation**

---

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Application of PMI DC to 50 GHz Components & Sub-Systems

TYPICAL EW, ECM, ESM RECEIVER FRONT-END

\[ V_{\text{input}} = A \cos(\omega_c t + \phi_t) \]

AMPLITUDE

FREQUENCY

PHASE & MODULATION

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7 of 84
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TUNER / SUPERHETEROODYNE FRONT-END

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Application of PMI DC to 50 GHz
Components & Sub-Systems

TYPICAL TRANSCEIVER / TRANSPONDER BLOCK DIAGRAM
Application of PMI DC to 50 GHz Components & Sub-Systems

TYPICAL RADAR WARNING RECEIVER FRONT-END OR DIRECTION FINDING RECIEVER FRONT-END SUB-SYSTEM

AMPLIFIERS – SOLID STATE
ATTENUATORS – VARIABLE/PROGRAMMABLE
COUPLERS (QUADRATURE, 180° & DIRECTIONAL)
DETECTORs – RF/MICROWAVE
DLVAs, ERDLVAs & SDLVAs
DTOs, VCOs, PLO, DROs, & FREQUENCY SYNTHESIZERS
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 (SPM)
RACK & CHASSIS MOUNT PRODUCTS
RECEIVER FRONT ENDS & TRANSCIEVERS
SDLVAs, ERDLVAs & DLVAs
SINGLE SIDE BAND MODULATORS
SMT & QFN PRODUCTS
SWITCH MATRICES
SWITCHED FILTER BANKS
SWITCHES – SOLID STATE
SYSTEMS - RADAR SENSE & AVOID
SYSTEMS – FLiEYE RADARS
THRESHOLD DETECTORS
USB PRODUCTS

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10 of 84
PMI specializes in replacing obsolete parts on old systems. We offer Form-Fit-Functional replacement Parts for any system. If a Source Control Drawing (SCD) is available we can offer a complete solution to meet all of the given electrical, mechanical and environmental specifications. PMI has designed, manufactured and delivered many of these replacement components such as:

- IF & RF LOG AMPLIFIERS, SDLVAs & DLVAs
- LOW NOISE AMPLIFIERS, VARIABLE GAIN AMPLIFIERS & LIMITING AMPLIFIERS
- LIMITERS, DETECTORS, HYBRID COUPLERS & POWER DIVIDERS
- PHASE SHIFTERS & BI-PHASE MODULATORS
- I & Q VECTOR & SINGLE SIDE-BAND MODULATORS
- FILTERS AND SWITCH FILTER BANKS
- SWITCHES AND ATTENUATORS

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PMI PRODUCTS

1.0 to 1.1 GHz
100 W Average, SP2T Reflective Switch

6.0 to 18.0 GHz
1.6 W Peak, SP2T Reflective Switch

1.0 to 1.1 GHz
2.5 kW Peak, Integrated T/R Switch Module

6.0 to 18.0 GHz
1.0 to 18.0 GHz
1 W CW, SP3T Absorptive Switch

0.3 to 10.0 GHz, 10 W CW, SP2T Reflective Switch

2.0 to 4.0 GHz, 300 W Peak, SP2T Reflective Switch

4.0 to 8.0 GHz, 300 W Peak, SP2T Reflective Switch

8.0 to 18.0 GHz, 300 W Peak, SP2T Reflective Switch

0.3 to 10.0 GHz, 10 W CW, SP2T Reflective Switch

6.0 to 18.0 GHz, 1 W Average SP4T Absorptive Switch

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PMI PRODUCTS

0.5 to 18.0 GHz, 20 dB Switched Bit Attenuator

1.0 to 18.0 GHz, 60 dB Digital Attenuator

DC to 2.0 GHz, Switched Bit Attenuator

Digitally Tuned Attenuators

1.0 to 4.0 GHz, Voltage Variable Attenuator

8.0 to 18.0 GHz, 8-BIT Digital Attenuator

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PMI PRODUCTS

Amplifiers – Solid State
Attenuators – Variable/Programmable
Couplers (Quadrature, 180° & Directional)
Detectors – RF/Microwave
DLVAs, ERDLVAs & SDLVAs
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
SDLVAs, ERDLVAs & DLVAs
Single Side Band Modulators
SMT & QFN Products
Switch Matrices
Switched Filter Banks
Switches – Solid State
Systems - Radar Sense & Avoid
Systems – Fly Eye Radars
Threshold Detectors
USB Products

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16 of 84
PMI PRODUCTS

1.0 to 2.0 GHz, LNA w/35 dB Gain &
1.4 dB Noise Figure

2.0 to 18.0 GHz, Limiting Amplifier with
+21 dBm Limited Output

1.6 to 2.7 GHz, Limiting
Amplifier w/40 dB Gain & Limited
RF Output of +15 dBm

10 MHz to 6.0 GHz
Portable Amplifier
with 30 dB Gain

9.0 to 10.0 GHz, LNA w/37dB
Gain & 3dB Noise Figure

2.0 to 18.0 GHz, LNA w/30 dB
Gain & 4 dB Noise Figure

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PMI PRODUCTS

4-Way Power Divider with Quad Phase
Output of J2=0°, J3=90°, J4=180° & J5=270°

Quadrature Couplers

30 MHz to 6.0 GHz, Amplified
8-Way Power Divider

6.0 to 19.0 GHz, 2-Way Power Divider

20 MHz to 6.0 GHz, Amplified
4-Way Power Divider

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18 of 84
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1.0 to 20.0 GHz
6-Channel Switch Filter Bank

18.0 to 40.0 GHz
Bi-Phase Modulator

2.0 to 6.0 GHz
Integrated Microwave Assembly

2.0 to 18.0 GHz
Bi-Phase Modulator

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1.0 to 20.0 GHz
6-Channel Switch Filter Bank

20 of 84
PMI PRODUCTS

1.0 to 18.0 GHz
4 W CW RF Limiter

0.1 to 20.0 GHz
10 W Pulsed RF Limiter

10 MHz to 14.0 GHz, 100 W CW RF Limiter
10 MHz to 18.0 GHz, 20 W CW RF Limiter
20 MHz to 15.0 GHz, 100 W CW RF Limiter
20 MHz to 18.0 GHz, 80 W CW RF Limiter
20 MHz to 18.0 GHz, 100 W CW RF Limiter

10 MHz to 9.0 GHz, 100 W CW RF Limiter

1.0 to 18.0 GHz
3 W CW Limiter

2.0 to 18.0 GHz, +50 dBm Peak RF Limiter

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PMI PRODUCTS

2.0 to 18.0 GHz, Threshold Detector
2.0 to 18.0 GHz, High Speed, LVPECL Logic Output Threshold Detector
6.0 to 40.0 GHz, Low Noise, Tunnel Diode Detector
0.5 to 18.0 GHz, High Speed, High Sensitivity Diode Detector
4.0 to 26.5 GHz, Zero Bias Schottky Detector
2.5 to 3.5 GHz, High Speed, DC-Coupled, Directional Detector
16.0 to 40.0 GHz, High Speed Threshold Detector
3.8 to 4.6 GHz, High Speed Threshold Detector
4.0 to 4.5 GHz, Ultra-High Speed, High Sensitivity Threshold Detector

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PMI PRODUCTS

2.0 to 8.0 GHz
CW Immune EW Detector Module

8.0 to 10.0 GHz
Detector Log Video Amplifier

8.0 to 18.0 GHz
CW Immune EW Detector Module

1.0 to 20.0 GHz
Miniature Successive Detection Log Video Amplifier

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PMI PRODUCTS

Amplifiers – Solid State
Attenuators – Variable/Programmable
Couplers (Quadrature, 180° & Directional)
Detectors – RF/Microwave
DLVAs, ERDLVAs & SDLVAs
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
SDLVAs, ERDLVAs
& DLVAs
Single Side Band
Modulators
SMT & QFN Products
Switch Matrices
Switched Filter Banks
Switches – Solid State
Systems - Radar Sense & Avoid
Systems – Fly Eye Radars
Threshold Detectors
USB Products

2.0 to 18.0 GHz, I/Q Vector Modulator
1030 MHz ±0.01 MHz, Power Detector Module
14.65 to 15.35 GHz
Integrated Limiter and Attenuator
7.7 to 8.2 GHz
Laser Control Module

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0.5 to 18.0 GHz, Custom Phase (±10°) & Amplitude (±1.5 dB) Matched Integrated Modules/Assemblies
1.0 to 18.0 GHz, Triplexer
10 MHz to 18.0 GHz, Amplified Detector Module
9410 MHz, Multi-Function Module
14.65 to 15.35 GHz
Integrated Limiter and Attenuator
7.7 to 8.2 GHz
Laser Control Module

29 of 84
PMI PRODUCTS

100 MHz to 18.0 GHz Transceiver (Phase II)

85 MHz to 2.0 GHz, 8 bit 360° Phase Shifter

500 MHz to 40.0 GHz USB Powered SP2T Switch

2.0 to 6.0 GHz, 8 Bit 360° Phase Shifter

4.0 to 18.0 GHz, Up/Down Converter

100 MHz to 18.0 GHz Transceiver (Phase III)

85 MHz to 2.0 GHz, 8 bit 360° Phase Shifter

500 MHz to 40.0 GHz USB Powered SP2T Switch

2.0 to 6.0 GHz, 8 Bit 360° Phase Shifter

4.0 to 18.0 GHz, Up/Down Converter

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PMI PRODUCTS

850 MHz Instantaneous Bandwidth Baseband Module

11.2 to 18.0 GHz Dual Band Bandpass Filter Module

10 MHz Reference Source

4.4 to 7.8 GHz Down Converter Module

7.8 to 11.2 GHz Down Converter Module

4.4 to 18.0 GHz 4-Way Power Divider

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32 of 84
PMI PRODUCTS

3.0 to 3.5 GHz
Monopulse Comparator

20.2 to 21.2 GHz
Monopulse Circuit

9.5 to 10.1 GHz
Monopulse Comparator

2.0 to 4.0 GHz
Monopulse Comparator

9.0 to 10.0 GHz
Monopulse Comparator

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AMPLIFIERS – SOLID STATE
ATTENUATORS – VARIABLE/PROGRAMMABLE
COUPLERS (QUADRATURE, 180° & DIRECTIONAL)
DETECTORS – RF/MICROWAVE
DLVAs, ERDLVAs & SDLVAs
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)
RECEIVER FRONT ENDS & TRANSCIEVERS
SDLVAs, ERDLVAs & DLVAs
SINGLE SIDE BAND MODULATORS
SMT & QFN PRODUCTS
SWITCH MATRICES
SWITCHED FILTER BANKS
SWITCHES – SOLID STATE
SYSTEMS – RADAR SENSE & AVOID
SYSTEMS – FLY EYE RADARS
THRESHOLD DETECTORS
USB PRODUCTS
PMI PRODUCTS

11.825 GHz Band Pass Filter

DC to 26.0 GHz 5-Channel Switch Filter Bank

0.5 to 18.0 GHz 16-Way Power Divider

1.0 to 18.0 GHz Band Pass Filter

70 to 330 MHz Threshold Detector

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Modulators
Power Dividers/Combiners
(Passive & Active)
Pulse Modulators (SPST)
Rack & Chassis Mount
Products
Receiver Front Ends
& Transceivers
SDLVAs, ERDLVAs
& DLVAs
Single Side Band
Modulators
SMT & QFN Products
Switch Matrices
Switched Filter Banks
Switches – Solid State
Systems - Radar Sense & Avoid
Systems – Fly Eye Radars
Threshold Detectors
USB Products
PMI PRODUCTS

1.0 to 25.0 GHz
Low Noise Amplifier

3.5 to 5.5 GHz
Frequency Discriminator

0.1 to 18.0 GHz
SP3T Absorptive Switch

0.5 to 18.0 GHz
16-Way Power Divider

5.0 to 10.0 GHz
Hybrid Coupler

1.0 to 18.0 GHz
7-Bit Programmable Attenuator

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PMI PRODUCTS

0.1 to 18.0 GHz Transceiver

0.1 to 18.0 GHz CW-Immune SDLVA

0.1 to 18.0 GHz Transceiver Module

2.6 to 5.2 GHz High Speed Integrated Module

840 MHz Phase-Locked Oscillator

10 MHz, 8-Way Amplified Power Divider

0.1 to 18.0 GHz Integrated Module

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40 of 84
PMI PRODUCTS

50 MHz to 18.5 GHz DLVA

2.0 to 18.0 GHz SDLVA

18.0 to 40.0 GHz SDLVA

18.0 to 40.0 GHz DLVA

7 MHz DLVA

315 to 362 MHz SDLVA

0.5 to 18.0 GHz DC-Coupled DLVA

0.5 to 2.0 GHz ERDLVA

0.7 to 1.3 GHz SDLVA

0.5 to 2.0 GHz DLVA

0.1 to 3.0 GHz SDLVA

0.2 to 2.5 GHz SDLVA

50 MHz to 90 MHz SDLVA

0.1 to 3.0 GHz SDLVA

2.5 to 4.9 GHz SDLVA

50 to 90 MHz SDLVA

2.0 to 18.0 GHz SDLVA

18.0 to 40.0 GHz SDLVA

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Log Amplifiers
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Pulse Modulators (SPST)
Rack & Chassis Mount Products
Receiver Front Ends & Transceivers
SDLVAs, ERDLVAs & DLVAs
Single Side Band Modulators
SMT & QFN Products
Switch Matrices
Switched Filter Banks
Switches – Solid State
Systems - Radar Sense & Avoid
Systems – Fly Eye Radars
Threshold Detectors
USB Products
PMI PRODUCTS

2.0 to 18.0 GHz
High Band Direction Finding Module

0.25 to 20.0 GHz
Low Noise Amplifier

0.1 to 18.0 GHz
Integrated Microwave Assembly

30 MHz to 18.0 GHz
Low Noise Amplifier

2.0 to 18.0 GHz
Receiver Front-End IFM Subsystem

1.0 to 40.0 GHz
Portable Amplifier

0.5 to 40.0 GHz
Low Noise Amplifier

18.0 to 40.0 GHz
Quad Phase & Amplitude Matched
Millimeter Wave Diplexer-Gain Module

30 MHz to 26.5 GHz
Low Noise Amplifier

0.5 to 2.0 GHz
Low Band Direction Finding Module

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42 of 84
PMI PRODUCTS

2 MHz to 18.0 GHz
Threshold Detector

50 MHz to 4.0 GHz
Threshold Detector

0.2 to 18.0 GHz
Threshold Detector

1.0 to 12.0 GHz
Threshold Detector

0.5 to 18.0 GHz
Threshold Detector

8.0 to 18.0 GHz
Threshold Detector

0.4 to 18.0 GHz
Threshold Detector

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45 of 84
PMI PRODUCTS

10 MHz to 6.0 GHz, 2.5 W CW Limiter

0.25 to 35.0 GHz Low Noise Amplifier

10 MHz to 12.0 GHz, +40 dBm CW Limiter

10 MHz to 6.0 GHz Integrated Microwave Assembly

1.0 to 2.0 GHz, 200 W CW Limiter

0.1 to 0.3 GHz Voltage Controlled Attenuator

10 MHz to 17.0 GHz, +40 dBm CW Limiter

50 MHz to 4.0 GHz, 1 W CW Limiter

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Phone: 301-662-5019

47 of 84
PMI PRODUCTS

Attenuators – Solid State
Couplers (Quadrature, 180° & Directional)
Detectors – RF/Microwave
DLVAs, ERDLVAs & SDLVAs
DTo, 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
SDLVAs, ERDLVAs & DLVAs
Single Side Band Modulators
SMT & QFN Products
Switch Matrices
Switched Filter Banks
Switches – Solid State
Systems - Radar Sense & Avoid
Systems – Fly Eye Radars
Threshold Detectors
USB Products

 Amplifiers – Solid State
 Attenuators – Variable/Programmable
 Couplers (Quadrature, 180° & Directional)
 Detectors – RF/Microwave
 DLVAs, ERDLVAs & SDLVAs
 DTo, VCOs, PLO, DROs, & Frequency Synthesizers
 Filters & Switched Filter Banks
 Form, Fit, Functional Products & Services
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 SDLVAs, ERDLVAs & DLVAs
 Single Side Band Modulators
 SMT & QFN Products
 Switch Matrices
 Switched Filter Banks
 Switches – Solid State
 Systems - Radar Sense & Avoid
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8.0 to 18.0 GHz
Microwave Pulse and CW Monitoring Receiver

2.0 to 18.0 GHz
Suspended High Pass Filter

6.0 to 18.0 GHz
8-Bit Digitally Controlled Phase Shifter

10 MHz to 6.0 GHz
Integrated Microwave Assembly

9.0 to 11.0 GHz
8-Bit Digitally Controlled Phase Shifter

6.0 to 18.0 GHz
Receiver Front End IFM Subsystem

2.0 to 18.0 GHz
Direction Finding Receiver Front End

0.1 to 0.3 GHz
Low Noise Amplifier

8.0 to 18.0 GHz
8-Bit Digitally Controlled Phase Shifter

50 of 84
PMI PRODUCTS

2.0 to 18.0 GHz Diode Detector

29.8 to 30.2 MHz 7-Bit Attenuator

4.0 to 8.0 GHz SDLVA

3.0 GHz 6-Bit Phase Shifter

9.0 kHz to 30.0 GHz SP2T Absorptive Switch

29.8 to 30.2 MHz 7-Bit Attenuator

51 of 84
PMI PRODUCTS

0.5 to 1.0 GHz
Bi-Phase Modulator/Shifter

30 MHz to 40.0 GHz
Low Noise Amplifier

DC to 18.0 GHz
Directional Coupler

160 MHz
Linear IF Gain Control Amplifier

2.0 to 18.0 GHz
2-Way Power Divider

0.5 to 18.0 GHz
SP2T Absorptive Switch

60 MHz
Bandpass Filter

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52 of 84
PMI PRODUCTS

0.5 to 8.0 GHz
SP2T Reflective, 50 W Switch

0.7 to 1.3 GHz
SP4T Absorptive Switch Module

0.1 to 4.0 GHz SDLVA

0.5 to 20.0 GHz
Linear Amplifier Detector Module

140 MHz ± 25 MHz
Detector Preamp Module

8.0 to 11.0 GHz
Directional Coupler

Amplifiers – Solid State
Attenuators – Variable/Programmable
Couplers (Quadrature, 180° & Directional)
Detectors – RF/Microwave
DLVAs, ERDLVAs & SDLVAs
DTOs, VCOs, PLO, DROs, & Frequency Synthesizers
Filters & Switched
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Form, Fit, Functional
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USB Products

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CUSTOMER AWARDS

Gold Medal for Quality Performance from BAE Systems

BAE Systems has awarded Planar Monolithics Industries, Inc. GOLD Medal for Quality Performance

6 Month Commodity Best

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QUALITY: 100%  
DELIVERY: 100%

Your Rating

Gold Medal

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Phone: 301-662-5019
7311-F GROVE ROAD, FREDERICK, MD:
• 5,000 sq. ft. Facility
• Components Manufacturing
• Sub-Assembly Manufacturing
• Hybrid Assembly
• 1,000 sq. ft. Class 100,000 ppm Clean Room
• Engineering Department
• Test Department
• Production Officer
• QA/QC Office

5714-C INDUSTRY LANE, FREDERICK, MD:
• 2,222 sq. ft. Facility
• Machine Shop

6590 WATERS EDGE CT, NEW MARKET, MD:
• 4,000 sq. ft. Facility
• CORPORATE HQ
• Conference Rooms & Executive Offices

4921 Robert J. Mathews Pkwy, El Dorado Hills, CA:
• 5,100 sq. ft. Facility
• Components Manufacturing
• Hybrid Assembly
• Test and Engineering Departments
• Production and Quality Departments
• Continued Manufacturing Previous HARI, LLC
• (formally Genesis Microwave)
• Products as listed at www.harillc.com
• and www.genesismicrowave.com

7310 GROVE ROAD, FREDERICK, MD:
• 1,000 sq. ft. Facility
• Accounting & Human Resources Offices
• Executive Vice President's Office

5715 INDUSTRY LANE, FREDERICK, MD:
• 2,500 sq. ft. Facility
• High Power Equipment Test Laboratory
• Conference Room
• 600 sq. ft. 10,000 ppm Clean Room
• Machine Shop
• Assembly & Test
• ESS Test Room

ACCOUNTING & CORPORATE INFO:
• Type “S” Corporation, Pennsylvania
• Peachtree Sage 50, 2013
• EXACT MAX MRP
• Accrual Basis Accounting Practice
• Fiscal Year is December 31st
• GAAP Guidelines Followed
• Monthly Internal Financial Reports
• Weekly Cash Flow Analysis Reports

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<td>LOCKHEED MARTIN CO, AL</td>
<td>MK92 FIRE CONTROL SYSTEM (FORM, FIT &amp; FUNCTION SPARES)</td>
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<td>MIKES, TURKEY</td>
<td>SPEWS-II (F-16)</td>
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<td>RF DISTRIBUTION UNIT&lt;br&gt; GUNN DIODE OSCILLATORS (F-16)</td>
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<th>CUSTOMER</th>
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<td>L-3 COMMUNICATIONS, UT</td>
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<td>RAYTHEON, CA</td>
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<td>DF SYSTEM COMPONENTS</td>
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<td>HARRIS CORPORATION, CA</td>
<td>CUSTOM AMPLIFIERS</td>
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</table>

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PMI

58 of 84
<table>
<thead>
<tr>
<th>CUSTOMER</th>
<th>PROGRAM</th>
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<tr>
<td>HARRIS CORPORATION, NJ</td>
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</table>

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60 of 84
## Orders Booked Statistics by Country
### 2017 through 2019

<table>
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<th>2017</th>
<th>% of Orders Booked</th>
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2017 TOTAL: 100.00%  
2018 TOTAL: 100.00%  
2019 TOTAL: 100.00%

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61 of 84
PMI EAST COAST OPERATIONS

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Attenuators – Variable/Programmable
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Detectors – RF/Microwave
DLVAs, ERDLVAs & SDLVAs
DTos, VCOs, PLO, DROs, & Frequency Synthesizers
Filters & Switched Filter Banks
Form, Fit, Functional Products & Services
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IQ Vector Modulators
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Millimeter Wave Components (Up to 50 GHz)
Miscellaneous Products
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Power Dividers/Combiners (Passive & Active)
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Systems – Fly Eye Radars
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Random Vibration

Thermal Shock

Shock Testing

Hermetic Package Testing

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66 of 84
HAAS DT1 CNC Milling Machine

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69 of 84
Network Analyzers:
- (3) Agilent N5230A PNA (10 MHz to 40 GHz)
- (2) Agilent N5230A PNA (10 MHz to 20 GHz)
- (2) Agilent N5230C-420 PNA-L (10 MHz to 40 GHz)
- (2) Agilent N4691 E-CAL (10 MHz to 20 GHz)
- (2) Agilent N4692 E-CAL (10 MHz to 40 GHz)
- (1) Agilent E8363C PNA (10 MHz to 40 GHz)
- (1) HP Network Analyzer (10 kHz to 300 MHz)
- (1) Agilent N5230C PNA Network Analyzer (10 MHz to 20 GHz)
- (1) Keysight E8364B PNA Network Analyzer (10 MHz to 40 GHz)
- (1) Keysight N5234A PNA-L Network Analyzer (10 MHz to 50 GHz)
- (1) Keysight N4692A E-CAL (10 MHz to 50 GHz)
- (1) Keysight 8362B Network Analyzer (10 MHz to 20 GHz)

Noise Figure Meter:
- (2) Agilent N8975A (10 MHz to 26.5 GHz)
- (1) Keysight E8364B PNA Network Analyzer & Downconverter (40 GHz)
- (1) HP 8970B

Spectrum Analyzer:
- (1) HP 8593E
- (1) HP E4448A PSA Spectrometer (3 Hz to 50 GHz)
- (1) Keysight N9030A Spectrum Analyzer (3 Hz to 50 GHz)
- (1) Keysight 8563E Spectrum Analyzer (9 kHz to 26.5 GHz)

Power Meter:
- (3) Gigatronics 8541B/C, 8542C
- (4) Agilent E4418B
- (1) Agilent N1913A

Pulse/Signal Generators:
- (1) Agilent E8257D
- (1) Anritsu MG3692B
- (1) HP 8015A
- (1) HP 8013B
- (1) HP 8012B
- (1) HP 8350B Sweep Oscillator
- (1) HP Arbitrary Waveform Generator 33120A
- (1) HP 8664A
- (1) Wavetek Model 801
- (2) HP 8673D
- (2) Agilent 33522A Arbitrary Waveform Generator
- (2) Keysight E8257A PSG Analog Signal Generator
- (5) Keysight E8257D PSG Analog Signal Generator

Oscilloscopes:
- (1) Tektronix TDS210
- (1) Tektronix TDS2024C
- (1) Agilent DS06034A
- (1) Keysight DSO80204B
- (1) Keysight DSOS204A
- (4) Agilent DSOX3034A
- (1) Keysight (2 GHz BW)

Power Amplifiers:
- (1) Varian TWTA 7 – 18 GHz, 20W
- (1) CPI TWT Amplifier (2-8 & 8-18 GHz) 300 W CW
- (1) MC (3-3.5 GHz) 100 W
- (1) MC (800 – 1000 MHz) 100 W
- (1) MC (20 -512 MHz) 25-50 W
- (1) MC (20-500 MHz) 100 W

PMI East Coast Operations
Manufacturing and Standards

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PMI East Coast Operations
Manufacturing and Standards

Manufacturing Equipment:

- (1) TSE-11-A ESPEC Thermal Shock Chamber
- (1) T Shock Jr. Thermal Shock Chamber
- (1) JEN410 IR Reflow Oven
- (1) Thermo Electron Oven
- (2) Anatech Plasma Cleaner
- (1) Metallurgical Microscope MT1000
- (5) Westbond 74767E-79 Convertible Wire Bonder
- (1) Westbond 7476E-79 Wedge Wire Bonder
- (1) Westbond 74630E-79 Wedge Wire Bonder
- (1) Westbond 7400A Wedge Wire Bonder
- (2) Westbond Bond Pull Center
- (1) Dage Bond Puller / Die Shear
- (1) Unitek Unibond-II Parallel Gap Welder
- (2) HAAS DT1 CNC Milling Machine
- (1) Mazak Nexus 430A-II CNC Milling Machine
- (1) Hardinge Turret Lathe
- (1) Di-Acro Power Shear
- (1) Brady Label Machine BP-THT-600-11
- (7) ESS Thermal Hot/Cold Plates
- (1) Ling Dynamic V650 Random Vibration Setup
- (1) Shock Tester
- (1) Varian Helium Leak Tester
- (1) 2.0 to 18.0 GHz 200 W CW TWT Amplifiers
- (1) Keysight 50 GHz PNA
- (1) SSPA 10 MHz to 2.0 GHz, 100 W CW
- (1) 20 W Fiber Laser
- (1) Hermetic Package Tester
- (1) UV Curing Light Printer
- (1) Hermetic Laser Welder
- (1) Cycling Chamber
- (1) CO2 Laser

Software:

- Keysight - Genesys S/Filter Synthesis and Simulation
- Ansys – HFSS, High Frequency Structural Simulator
- Exact MAX – MRP/ERP Software
- AutoCAD 2005
- AutoCAD 2013
- Altium Designer
- Microwave Office
- SolidWorks 2014
- Gibbs Cam

Standards:

- ISO9001
- MIL-STD-454
- MIL-STD-202
- MIL-STD-883
- MIL-E-5400
- MIL-I-45208
- IPC-A-610 Workmanship Standard
- IPC-J-STD-001 Soldering Standard
- MIL-STD-45662 Calibration Standard
PMI West Coast Operations

Amplifiers – Solid State
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Switches – Solid State
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Systems – Fly Eye Radars
Threshold Detectors
USB Products
Network & Spectrum Analyzers:
- (5) HP 8757D Scalar Analyzers
- (1) HP 8720D Network Analyzer
- (1) HP 8565E Spectrum Analyzer (50 GHz)
- (1) HP 8592L Spectrum Analyzer
- (1) Keysight E8364B PNA Network Analyzer (10 MHz to 50 GHz)

Noise Figure Meters:
- (1) HP 8970A Noise Meter
- (1) Keysight N4002A Noise Source

Power Meters:
- (1) HP EPM-442 Power Meter
- (1) HP E4412A Power Meter
- (1) HP 437B Power Meter
- (1) HP 437A Power Meter

Pulse/Signal Generators:
- (1) HP 83731B Signal Generator
- (1) HP 83620A Signal Generator
- (1) HP 8013B Pulse Generator
- (4) HP 83620A Sweep Generators

Oscilloscopes:
- (1) Infinium Digital Scope & Probe
- (1) Keysight MSO-X-3054A 500 MHz BW
- (1) Tektronix 2246 100 MHz BW
- (1) Tektronix 2465A 350 MHz BW

Manufacturing Equipment:
- (1) Quincy Model 40 Oven
- (1) Sym-Tek P162P5J Oven
- (1) Cole/Parm 05015-50 Oven
- (1) Blue M Stable Therm Oven
- (1) Branson 821D Ultrasonic Cleaner
- (2) UNITEK Gap Welders
- (1) Anatech Plasma Cleaner/Etcher
- (3) Westbond 7400A Wedge Bonder
- (1) Westbond 8850 Bond Pull Center
- (3) Westbond 1200A Die Attach Stations
- (1) HAAS DT1 CNC Milling Machine
- (2) Westbond 8849 Convertible Wire Bonder
- (1) Westbond 8850 Ball Bonder
- (1) Westbond 7600B Ribbon Bonder
- (4) Thermal Hot/Cold Plates
- (4) Hot Plates

Software:
- Keysight - Genesys S/Filter Synthesis and Simulation
- Ansys – HFSS, High Frequency Structural Simulator
- Exact MAX – MRP/ERP Software
- AutoCAD 2005
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- Gibbs Cam

Standards:
- ISO9001
- MIL-STD-454
- MIL-STD-202
- MIL-STD-883
- MIL-E-5400
- MIL-I-45208
- IPC-A-610 Workmanship Standard
- IPC-J-STD-001 Soldering Standard
- MIL-STD-45662 Calibration Standard
Trained and Experienced ITAR/Export Administrator

Export Compliance Manual

AES (Automated Export System) certified export staff

Long Term Relationships with both DDTC and SNAP-R Personnel

U.S. Government Registration Numbers:
- Cage Code: 05XQ0 (East Coast)
- Cage Code: 71A34 (West Coast)
- DUNS Number: 829998517
- SAM (CCR) Registration: 1998E211401
- Federal Tax ID (TIN): 52-1756966
- DDTC Registrant Code: M16913
- DSS Cleared Facility
International Traffic in Arms Regulations

ITAR

United States Department of State
Bureau of Political-Military Affairs
Directorate of Defense Trade Controls
Washington, D.C. 20522-0112

August 8, 2019

Sebastian Palacio, Vice President
Planar Monolithics Industries, Inc.
7311 F Grove Road
Frederick, MD 21704
SPALACIO@PMI-RF.COM

REGISTRANT CODE: M16913
EXPIRATION DATE: 08/31/2020

Reference: Manufacturer and Exporter Registration Statement and Fee Submission

Dear Mr. Palacio:

The Office of Defense Trade Controls Compliance received your registration statement and fee to register as a manufacturer and exporter. We have reviewed your registration statement and your registration code is M16913, which expires on 08/31/2020.

Any person who engages in the United States in the business of either manufacturing or exporting defense articles or furnishing defense services is required to register and keep that registration current with this office pursuant to the Arms Export Control Act (AEDCA) and the International Traffic in Arms Regulations (ITAR Part 129). Registration serves as a precondition to submitting an application for an export license or other application from the Directorate of Defense Trade Controls (DDTC), or to use export exemptions. This registration does not satisfy the requirements for registering as a broker pursuant to ITAR Part 129.

As you are the senior officer empowered to sign the registration statement, we ask you to maintain records consistent with ITAR Section 122.5 regarding: 1) The key senior officer listed on the registration who will oversee the compliance program and be responsible for designating the direct employees who will serve as “empowered officials” at their place of employment, and 2) a list of qualified, direct employees who will serve as “empowered officials” by name, position, business unit, phone and fax numbers and email addresses. Please note that third parties (individuals who are not direct employees, such as consultants, subcontractors or outside counsel, for example) cannot serve as “empowered officials.”

ITAR Section 122.5 requires you to maintain records concerning your registration and the manufacture, acquisition and disposition of defense articles; the provision of defense services; and information on political contributions, fees, or commissions furnished or obtained, as required by ITAR Part 130. Records maintained shall be available at all times for inspection and copying by this office or by Customs officials. To maintain such records, managers, supervisors and employees need appropriate training on AECA and ITAR requirements and must understand the individual and organizational ramifications of failure to comply. Ramifications may include shipment delay or shipment seizure by Customs and Border Protection, loss of export privileges, or criminal charges.

You may refer to the DDTC website for a Compliance Guide at http://www.pmddtc.state.gov/ and then click on the Compliance tab. The DDTC website also includes a copy of the ITAR, explanations of export licensing procedures, how to submit a license application, country sanctions, individuals/companies deemed by the Department of State, and other export matters. The website also includes procedures for requesting a commodity jurisdiction determination (ITAR Section 120.4) should you have questions on whether an article, services, or technical data is covered by the ITAR Part 121 (U.S. Munitions List).

Please include your registration code and the following statement on all registration correspondence to this office: “Under penalty according to federal law (22 CFR 127.2; 22 USC 2778; 18 USC 1001) I [insert your name], as authorized by [name of company, if applicable] warrant the truth of the statements made herein.” We recommend submitting for registration renewal well in advance to ensure this office receives the request up to 45 days before registration expiration date. However, your registration must be received at least 30 days prior to this new expiration date. Registration must be current to apply for export license or other approvals, or to use export exemptions. Your registration is not current, for example, if you have not notified this office of any material change in the information contained in your Registration Statement (ITAR Section 122.4).

If you have any questions regarding registration, please contact us at (202) 660-1282 or DDTResponseTeam@state.gov.

Sincerely,

[Signature]
Chief Registration Compliance & Analysis (RCA)

WEST COAST FACILITY:
4921 Robert J. Mathews Pkwy, Suite 1
El Dorado Hills, CA 95762 • USA•
Phone: 916-542-1401
sales@pmi-rf.com
http://www.pmi-rf.com/about

EAST COAST FACILITY:
7311-F Grove Road
Frederick, MD 21704 • USA•
Phone: 301-662-5019
International Quality Registrars (IQR) Corporation hereby certifies that

Planar Monolithics Industries, Inc.
Headquarters: 231F-5 Grove Road, Frederick, MD 21704 USA
Site 2: Market Street, 5513 Unit 11 Industry Lane, Frederick, MD 21704 USA
Site 3: Design & Mfg. 4921 Robert J. Matthews Parkway, Suite #1, El Dorado Hills, CA 95762 USA

Additional Site Location(s): X, No, __, Yes. See Appendix A for additional information

has demonstrated a Quality Management System (QMS) which conforms with the requirements of the standard:

ISO 9001:2015
Quality Management System - Requirements

The organization’s QMS has been evaluated according to the International Quality Registrars (IQR) Corporation QMS certification scheme for the following scope:

“Design, Development and Manufacture of Microwave Frequency Components, Sub-Systems and Systems, and Contract Manufacturing Services”

Exclusions: None

This QMS certification is subject to periodic audits by International Quality Registrars (IQR) Corporation

Registration No.: 18-120804-1Q
Client ID: PMI09
Cert. Expiration Date: 09/17/21
Cert. Issued Date: 09/17/18

Last Cert. Revision Date: 09/17/18
Initial Cert. Issue Date: 02/24/09
Sheet No.: 1 of 1

International Quality Registrars Corporation

International Amplifiers - Solid State
Attenuators - Variable/Programmable
Couplers (Quadrature, 180° & Directional)
Detectors – RF/Microwave
DLVAs, ERDLVAs & SDLVAs
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
SDLVAs, ERDLVAs & DLVAs
Single Side Band Modulators
SMT & QFN Products
Switch Matrices
Switched Filter Banks
Switches – Solid State Systems - Radar Sense & Avoid
Systems – Fly Eye Radars
Threshold Detectors
USB Products
PMI WEST COAST ORGANIZATION CHART

WEST COAST FACILITY:
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