Planar Monolithics Industries, Inc.

18.0 to 40.0 GHz, Quad-Phase & Amplitude Matched Millimeterwave Diplexer-Gain Module

TECHNICAL Datasheet DGM-18G40G-292FF-DS

PMI Model No. DGM-18G40G-292FF-DS is a Quad Phase & Amplitude Matched mmW (Millimeter Wave) Diplexer-Gain module designed to operate over the 18.0 to 40GHz frequency range with a switched output and an integrated power divider feeding the four antenna inputs via a 20dB coupler for ease of system set up. The band select function not only switches bands, but also allows the amplified bands not in use to be turned off to reduce power consumption. This model is also designed to have better than 60dB harmonic suppression.

Features
- 18.0 to 40.0 GHz
- -20 dBm P1dB
- 50 dB Channel to Channel Isolation
- 3 dB Min. Gain
- VSWR 2.5:1 Typ. in Passbands
- -73 dBm Spurious Suppression

Applications
- EW Systems
- Radars
- UAVs & UGVs
- Communications
- Test Equipment
- Laboratories

Electrical Specifications
- Frequency Range: 18.0 to 40.0GHz
- Gain: 3dB min, 7dB max
- Amplitude Ripple: ±1.0dB over every 500MHz Band starting @ 18.0GHz, excluding the crossover
- Input P1dB: -20dBm min
- Input IP3: -10dBm, +5dBm Desired
- Channel to Channel Isolation: 50dB typ
- Noise Figure: 12dB typ
- Phase Matching: 40 deg. RMS, Channels 2,3,4 to REF. Channel 1, Over Operating Temp
- Phase Tracking: 0.25 deg/°C Port to Port typ
- mmW/uW Limiter: 30dBm, CW or Pulsed, 2.0 to 40.0GHz Without Damage, All Inputs
- Limiter 1dB Recovery Time: 250ns
- Spurious Products: -73dBm
- Diplexer K Band 1dB Passband: 18.0GHz min, 25.0GHz max
- Diplexer Ka Band 1dB Passband: 28.0GHz min, 40.0GHz max
- Crossover Band: 25.0GHz min, 28.0GHz max
- Crossover Excess Attenuation: 5dB typ
- Stopband Attenuation: 60dB
- K Band Stopbands: 900MHz to 15.0GHz, 32.0GHz to 46.0GHz
- Ka Band Stopband: 900MHz to 22.0GHz

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ISO9001 REGISTERED
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TECHNICAL DATASHEET

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Electrical Specifications

- Comm Band Attenuation: 60 dB
- Comm Band: 900 MHz to 2.5 GHz
- Comm Interference Immunity: 36 dBm CW, 900 MHz to 2.5 GHz without Limiter or Amplifier Saturation
- Comm Interference Immunity: 53 dBm Pulsed RF, 900 MHz to 2.5 GHz, Without Limiter or Amplifier Saturation
- VSWR in Passbands: 2.5:1 typ
- Harmonics for -20 dBm: -80 dBm, 15.0 to 40.0 GHz
- Band Switching Time, Required: 1 us max, 0.5 us typ
- Power Divider Input Power: 20 dBm max
- Power Divider Insertion Loss: 15 dB, ±3 dB
- Power Divider Phase Ripple: ±5° RMS
- Band Select Protection Circuitry: ±15 V
- Power Supply Protection Circuitry on both ±6.0VDC Supplies:
- Connectors: 2.92mm (F)
- Control Connector: (MDM-9PSP) 9 Pin Micro-D Shipped with Mating Connector
- Size: 3.0" x 8.0" x 0.75"

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Environmental

- Temperature:
  -25°C to +65 °C (Req. Operating)
  -40°C to +80 °C (Goal)
  -40°C to +100 °C Non-Operating

- Thermal Shock:
  5°C/Min Over Operating Temp, 5 Cycles

- Humidity:
  MIL-STD-202G, Method 103B Cond B

- Moisture:
  MIL-STD-202G, Method 106G

- Acceleration:
  30g. MIL-STD-202G, Method 212A, Modified Cond A

- Vibration:
  (Sinusodial)
  3g, 5 to 500Hz, 20 Min Per Axis As Defined in
  MIL-STD-202G, Method 204D, Modified Cond B

- Vibration:
  (Random)
  5.35g, RMS, 0.02 g^2/Hz, 15 Min Per Axis as Defined in
  MIL-STD-202G, Method 214A, Cond A

- Low Frequency:
  1nT, 0-1kHz, Measured 10cm From Board

- Magnetic Field

  - Magnetic Radiation:
    MIL-STD-461F, RE101

  - Conducted Emissions:

  - Conducted Radiations:

  - Radiated Emissions
    MIL-STD-461F, RE102, Fixed Wing Internal,
    <25 m, 100kHz to 10.0GHz

- ESD:
  MIL-STD-1686C, Pins Only, HMB Class 1,
  Direct Contact, Non-Operating
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Functional Block Diagram

Input 18.0 to 40.0 GHz

Output 18.0 to 40.0 GHz
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MECHANICAL OUTLINE

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