

## 8 GHz to 12 GHz Absorptive Digital Step Attenuator, 63 dB, 6 Bits, 1 dB Step Size, Field Replaceable SMA

The FMAT5014 is an Absorptive 6 Bit Digitally Controlled Programmable Attenuator that operates across a frequency band from 8 GHz to 12 GHz. The 50 Ohm design supports TTL control logic and has an attenuation range that covers 0 to 63 dB in 1 dB steps. Attenuation steps are 1, 2, 4, 8, 16, and 32 dB. Insertion loss is 5.3 dB typical with a maximum RF input power of +30 dBm. Additional typical performance includes attenuation flatness of +/- 2.5 dB, Input P0.1dB compression power of +30 dBm, input IP3 of 45 dBm, and switching speed of 150 nsec. The unit requires a dual bias supply of +5V/-5V with DC current of 130mA/130 mA. The low profile pin package is aluminum with Gold plating and supports field replaceable SMA RF connectors and a Micro-D9 female connector for DC Bias and Command Control functions. The module has an operational temperature range from -40°C to +85°C and is guaranteed to meet a series of environmental test conditions for Altitude, Vibration, Humidity, and Shock.



### Electrical Specifications (Values at +25°C, sea level)

Description	Min	Typ	Max	Unit
Frequency Range	8		12	GHz
Impedance		50		Ohms
Attenuation Range		63		dB
Insertion Loss		5.3	6.5	dB
VSWR		1.4:1	1.8:1	
Input at 0.1 dB Compression Point		+30		dB
Input IP3		+45		dBm
DC Voltage		+5		Vdc
Attenuation Flatness*		2.5		dB
TTL Low for Thru Path		0 to 0.8V		Vdc
TTL High for Attenuation		2-5V		Vdc
Step Size		1		dB
Switching Speed		150		ns
RF Input Power			30	dBm
Control Bits		6		Bits
Bias Current		130		mA
IL Temperature Coefficient		0.005		dB/deg C

\*Referenced to Insertion Loss

### Absolute Maximum Rating

Parameter	Rating
Biasing	5V±10%/-5V±10%
RF Input power	+30dBm



ESD Sensitive Material, Transport material in Approved ESD bags. Handle only in approved ESD Workstation.

### Features:

- Absorptive Programmable Voltage Controlled Attenuator
- 8 GHz to 12 GHz
- Attenuation Range 0 to 63 dB
- 1 dB Step Size
- 6 Bits
- Digital TTL Logic Control
- Insertion Loss 5.3 dB
- Attenuation Flatness +/- 2.5 dB typ
- Input P0.1 dB Compression Power +30 dBm typ
- Input IP3 45 dBm typ
- Max RF input Power (CW) +30 dBm
- Switching Speed 150 nsec typ
- Dual DC Supply +5V/-5V @ 130mA/130mA
- 50 Ohm Design
- Field Replaceable Female SMA RF Connectors
- Micro-D9 Female connector for DC Bias and Command Control
- Operational Temperature Range -40°C to +85°C
- Rugged and Compact Aluminum Gold Plated Package Design
- Guaranteed Environmental Test Conditions Altitude, Vibration, Humidity, Shock
- Single Positive Control Line Per Bit

### Applications:

- Test & Measurement
- Military & Commercial Communications
- Military Electronic Systems
- Research & Development

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[sales@fairviewmicrowave.com](mailto:sales@fairviewmicrowave.com)

**Mechanical Specifications**

<b>Size</b>	
Length	1.5 in [38.1 mm]
Width	0.37 in [9.4 mm]
Height	0.79 in [20.07 mm]
Weight	0.002 lbs [0.91 g]
Connector 1	Field Replaceable SMA Female
Connector 2	Field Replaceable SMA Female

**Environmental Specifications**

<b>Temperature</b>	
Operating Range	-40 to +85 deg C
Storage Range	-50 to +105 deg C
Humidity	100% RH at 35°C, 95% RH at 40°C
Shock	20G for 11 msec half sine wave, 3 axis both directions
Vibration	25g RMS (15 degrees 2KHz) endurance, 1 hour per axis
Altitude	30,000 Feet

**Compliance Certifications** (see [product page](#) for current document)

**Plotted and Other Data**

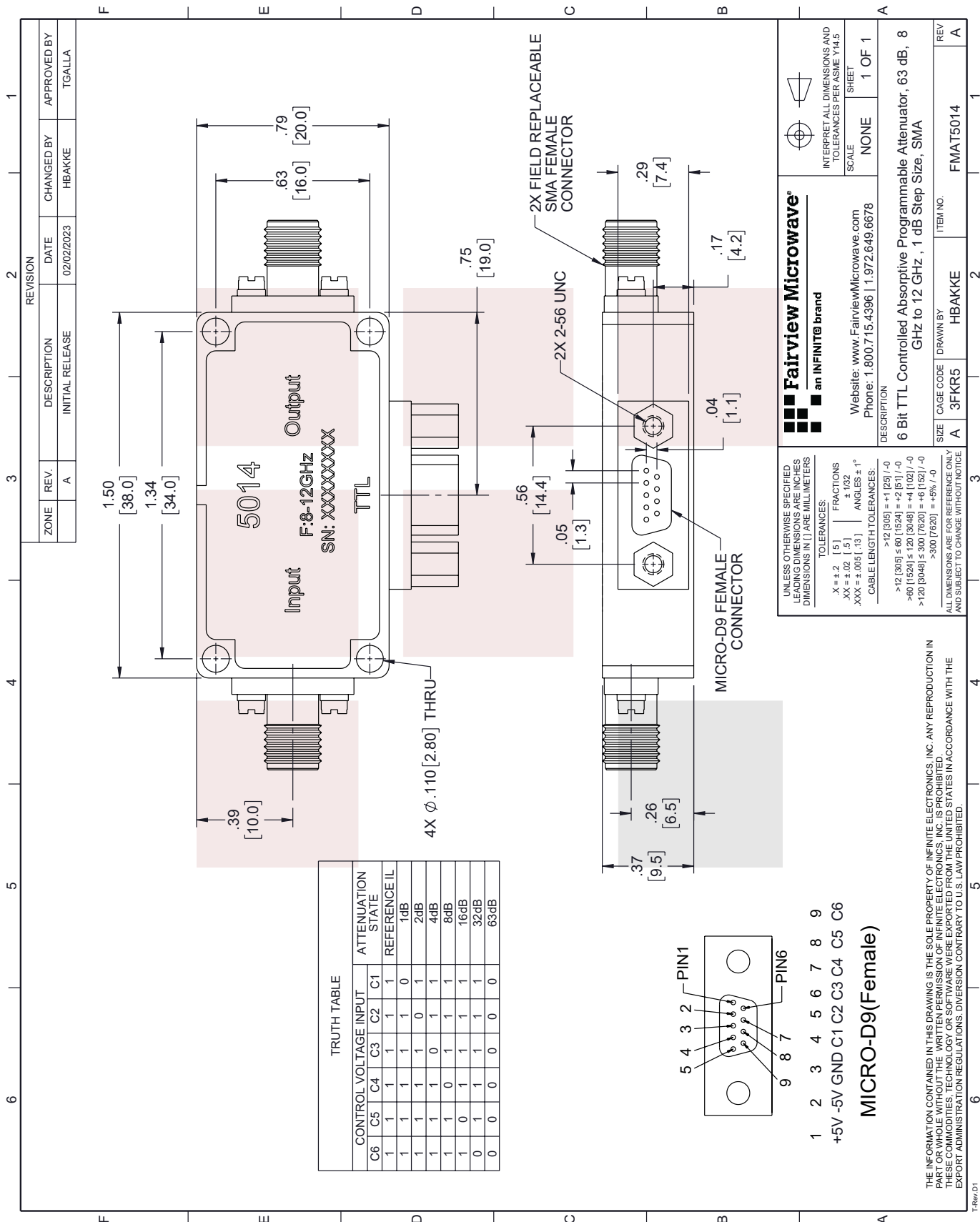
Notes:

8 GHz to 12 GHz Absorptive Digital Step Attenuator, 63 dB, 6 Bits, 1 dB Step Size, Field Replaceable SMA from Fairview Microwave is in-stock and available to ship same-day. All of our RF/microwave products are available off-the-shelf from our ISO 9001:2008 certified facilities in Lewisville, Texas. Fairview Microwave is RF on-demand.

For additional information on this product, please click the following link: [8 GHz to 12 GHz Absorptive Digital Step Attenuator, 63 dB, 6 Bits, 1 dB Step Size, Field Replaceable SMA FMAT5014](#)

URL: <https://www.fairviewmicrowave.com/63-db-ttl-controlled-step-attenuator-sma-female-fmat5014-p.aspx>

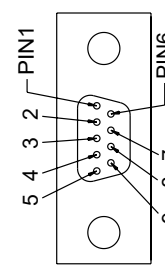
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ZONE	REV.	DESCRIPTION	DATE	CHANGED BY	APPROVED BY
	A	INITIAL RELEASE	02/02/2023	HBAKKE	TGALLA

REVISION	DATE	CHANGED BY	APPROVED BY
2	02/02/2023	HBAKKE	TGALLA

CONTROL VOLTAGE INPUT		ATTENUATION STATE	
C6	C5	C4	C3
1	1	1	1
1	1	1	0
1	1	0	1
1	1	0	0
1	0	1	1
1	0	1	0
0	1	1	1
0	1	1	0
0	0	0	0
0	0	0	1



- 1 +5V
  - 2 -5V
  - 3 GND
  - 4 C1
  - 5 C2
  - 6 C3
  - 7 C4
  - 8 C5
  - 9 C6
- MICRO-D9(Female)**

**Fairview Microwave**  
an INFINIT<sup>®</sup> brand

Website: [www.FairviewMicrowave.com](http://www.FairviewMicrowave.com)  
Phone: 1.800.715.4396 | 1.972.649.6678

INTERPRET ALL DIMENSIONS AND TOLERANCES PER ASME Y14.5  
SCALE NONE SHEET 1 OF 1

DESCRIPTION  
**6 Bit TTL Controlled Absorptive Programmable Attenuator, .63 dB, 8 GHz to 12 GHz, 1 dB Step Size, SMA**

UNLESS OTHERWISE SPECIFIED LEADING DIMENSIONS ARE INCHES DIMENSIONS IN [ ] ARE MILLIMETERS

TOLERANCES:  
 .X = ±.2 [5]  
 .XX = ±.02 [.5]  
 .XXX = ±.005 [.13]  
 FRACTIONS ± 1/32  
 ANGLES ± 1°  
 CABLE LENGTH TOLERANCES:  
 >12 [305] = +1 [25] / -0  
 >60 [1524] = +2 [51] / -0  
 >60 [1524] ≤ 120 [3048] = +4 [102] / -0  
 >120 [3048] ≤ 300 [7620] = +6 [152] / -0  
 >300 [7620] = +5% / -0

ALL DIMENSIONS ARE FOR REFERENCE ONLY AND SUBJECT TO CHANGE WITHOUT NOTICE

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SIZE A CAGE CODE 3FKR5 DRAWN BY HBAKKE ITEM NO. FMAT5014 REV A