

## 1 GHz to 20 GHz Digital Control Attenuator, 63.5 dB, 7 Bits, 0.5 dB Step Size, Field Replaceable SMA

The FMAT5017 is an Absorptive 7 Bit Digitally Controlled Programmable Attenuator that operates across a broadband frequency from 1 GHz to 20 GHz. The 50 Ohm design supports TTL control logic and has an attenuation range that covers 0 to 63.5 dB in 0.5 dB steps. Attenuation steps are 0.5, 1, 2, 4, 8, 16, and 32 dB. Insertion loss is 5.5 dB typical with a maximum RF input power of +27 dBm. Additional typical performance includes attenuation flatness of +/- 1.3 dB, Input P0.1dB compression power of +27 dBm, input IP3 of 43 dBm, and switching speed of 150 nsec. The unit requires a dual bias supply of +5V/-5V with DC current of 120mA/70 mA max. The low profile pin package is aluminum with Gold plating and supports field replaceable SMA RF connectors and a Micro-D15 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.



### Features:

- Absorptive Programmable Voltage Controlled Attenuator
- 1 GHz to 20 GHz
- Attenuation Range 0 to 63.5 dB typ
- 0.5 dB Step Size
- 7 Bits
- Digital TTL Logic Control
- Insertion Loss 6 dB typ
- Attenuation Flatness +/- 1.25 dB typ
- Input P0.1 dB Compression Power +27 dBm
- Input IP3 43 dBm
- Max RF input Power (CW) +27 dBm
- Switching Speed 150 nsec
- Dual DC Supply +5V/-5V @ 120mA/70mA
- 50 Ohm Design
- Field Replaceable SMA Female RF Connectors
- Micro-D15 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

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

Description	Min	Typ	Max	Unit
Frequency Range	1		20	GHz
Impedance		50		Ohms
Attenuation Range		63.5		dB
Insertion Loss		6	9	dB
VSWR		1.8:1	2:1	
Input at 0.1 dB Compression Point		+27		dB
Input IP3		+40		dBm
DC Voltage		+5		Vdc
Attenuation Flatness*		1.25		dB
TTL Low for Thru Path		0 to 0.8V		Vdc
TTL High for Attenuation		2-5V		Vdc
Step Size		0.5		dB
Switching Speed		150		ns
RF Input Power			27	dBm
Control Bits		5		Bits
Bias Current			120/70	mA
IL Temperature Coefficient		0.03		dB/deg C

\*Referenced to Insertion Loss

### Absolute Maximum Rating

Parameter	Rating
Biasing	+5V±10%/-5V±10%
RF Input power	+27dBm



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

### Applications:

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

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## Mechanical Specifications

### Size

Length	1.89 in [48.01 mm]
Width	0.39 in [9.91 mm]
Height	1.18 in [29.97 mm]
Weight	0.002 lbs [0.91 g]
Connector 1	Field Replaceable SMA Female
Connector 2	Field Replaceable SMA Female

## Environmental Specifications

### Temperature

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

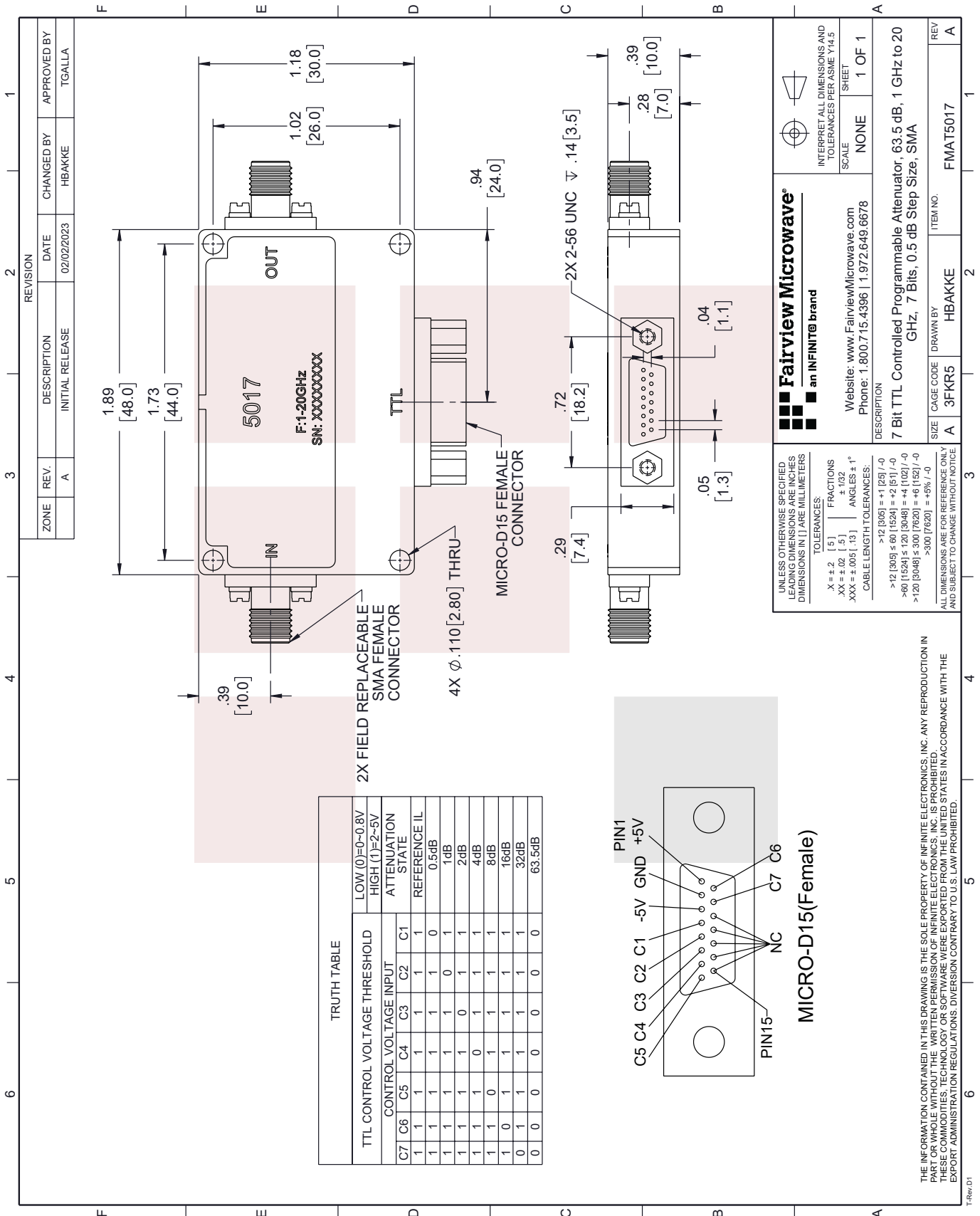
Notes:

1 GHz to 20 GHz Digital Control Attenuator, 63.5 dB, 7 Bits, 0.5 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: [1 GHz to 20 GHz Digital Control Attenuator, 63.5 dB, 7 Bits, 0.5 dB Step Size, Field Replaceable SMA FMAT5017](#)

URL: <https://www.fairviewmicrowave.com/70-db-ttl-controlled-step-attenuator-sma-female-fmat5017-p.aspx>

The information contained in this document is accurate to the best of our knowledge and representative of the part described herein. It may be necessary to make modifications to the part and/or the documentation of the part, in order to implement improvements. Fairview Microwave reserves the right to make such changes as required. Unless otherwise stated, all specifications are nominal. Fairview Microwave does not make any representation or warranty regarding the suitability of the part described herein for any particular purpose, and Fairview Microwave does not assume any liability arising out of the use of any part or documentation.

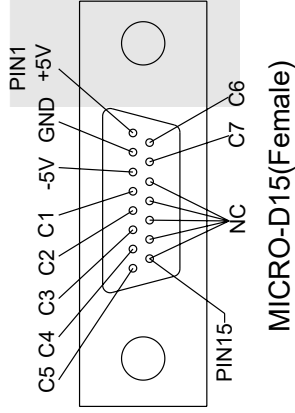


ZONE	REV.	DESCRIPTION	DATE	CHANGED BY	APPROVED BY
A	A	INITIAL RELEASE	02/02/2023	HBAKKE	TGALLA

REVISION	DATE	CHANGED BY	APPROVED BY
1	02/02/2023	HBAKKE	TGALLA

**TRUTH TABLE**

TTL CONTROL VOLTAGE THRESHOLD	LOW (0)=0-0.8V	HIGH (1)=2-5V	ATTENUATION STATE	REFERENCE IL			
C7	C6	C5	C4	C3	C2	C1	
1	1	1	1	1	1	1	0.5dB
1	1	1	1	1	1	0	1dB
1	1	1	1	0	1	1	2dB
1	1	1	0	1	1	1	4dB
1	1	0	1	1	1	1	8dB
1	0	1	1	1	1	1	16dB
0	1	1	1	1	1	1	32dB
0	0	0	0	0	0	0	63.5dB



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

Website: [www.FairviewMicrowave.com](http://www.FairviewMicrowave.com)  
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DESCRIPTION  
7 Bit TTL Controlled Programmable Attenuator, 63.5 dB, 1 GHz to 20 GHz, 7 Bits, 0.5 dB Step Size, SMA

SCALE: NONE  
SHEET: 1 OF 1

INTERPRET ALL DIMENSIONS AND TOLERANCES PER ASME Y14.5

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

TOLERANCES:  
 .X ± .2 [ .5 ] FRACTIONS  
 .XX ± .02 [ .5 ] ± .132 ANGLES ± 1°  
 .XXX ± .005 [ .13 ]  
 CABLE LENGTH TOLERANCES:  
 >12 [305] = +1 [25] / -0  
 >60 [1524] ≤ 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

SIZE: A 3FKR5  
CAGE CODE: HBAKKE  
ITEM NO.: FMAT5017

DRAWN BY: HBAKKE  
REV: A

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