

R0601-825M-02G-N21-SMAFF Datasheet

Key Features

- Passive Device
- Frequency: 825 to 1850 MHz
- Insertion Loss 825 to 1850 MHz: < 13 dB
- Recovery Time: < 1.25 μ s
- Response Time: < 2.5 μ s
- Max CW Power Input: +15 dBm
- Max Peak Power Input: 43 dBm
 - 1 μ s Pulse Width
 - 0.1% Duty Cycle
- Dimensions: 1.2in (W) x 0.683in (H) x 1.0in (L)



Applications

- Wideband Receiver Protection
- Cosite Interference Mitigation
- Simultaneous Transmit and Receive
- Enhancing Dynamic Range of Wideband ADC's

Product Overview

The Metamagnetics' R0601-825M-02G-N21-SMAFF reflective Auto-Tune Filter® (AtF) is a coaxially packaged adaptive wideband filter well suited for interference mitigation applications that require low power thresholds.

The AtF is a passive device that can be used to protect front end receivers and amplifiers from high power interfering signals. It is designed to selectively limit incident high power signals above the device's threshold (P_{th}), without degrading the noise figure at desired receive frequencies.

The AtF automatically creates notches in its passband in response to above threshold signals without any prior knowledge about said high-power signals and reflects above threshold power from its input. The width and depth of these notches are proportional to how much above threshold the high-power signals are. The **selectivity** of the device corresponds to this notch width.

RF Specifications

Linear Mode ($P_{\text{input}} < P_{\text{threshold}}$) – 0.825 – 1.85 GHz					
Parameter	Conditions	Min.	Typ.	Max.	Unit
Return Loss (S_{11})	$T_{\text{ambient}} = +20^{\circ}\text{C}$ 50 Ω system $P_{\text{input}} = -30\text{dBm CW}$	5	11	—	dB
Insertion Loss (S_{21})		3.5	7	13	dB
Group Delay		3	9	20	ns

Limiting Mode ($P_{\text{input}} > P_{\text{threshold}}$) – 0.825 – 1.85 GHz					
Parameter	Conditions ¹	Min.	Typ.	Max.	Unit
P1dB		-25	-22	-20	dBm
Leakage Level	$P_{\text{input}} = +10\text{ dBm}$	-29	-27	-26	dBm
	$P_{\text{input}} = +20\text{ dBm}$	-22	-18	-14	dBm
Selectivity ² (-3 dB Notch Width)	$P_{\text{input}} = +5\text{ dBm CW}$	45	50	55	MHz
	$P_{\text{input}} = +10\text{ dBm CW}$	75	80	90	MHz
	$P_{\text{input}} = +15\text{ dBm CW}$	120	140	160	MHz
Selectivity ³ (Notch Depth)	$P_{\text{input}} = +5\text{ dBm CW}$	35	38	41	dB
	$P_{\text{input}} = +10\text{ dBm CW}$	36	39	42	dB
	$P_{\text{input}} = +15\text{ dBm CW}$	37	40	43	dB
OIP3 ⁴	Two Equal Power Tones 10 MHz Apart	-5	0	4	dBm
Response Time ⁵	8 μs Pulse Width 0.1% Duty Cycle	50	750	2500	ns
Recovery Time ⁵	8 μs Pulse Width 0.1% Duty Cycle	1000	1100	1250	ns

¹ Unless otherwise noted test conditions are as follows: $T_{\text{ambient}} = +20^{\circ}\text{C}$, 50 Ω system

² See graphs on Page 8 for selectivity magnitude and phase curves for several input power levels.

³ See graphs on Page 9 for average notch depth across frequency for several input power levels.

⁴ See graph on Page 10 for IMD3 across input power level and tone spacing.

⁵ See graph on Page 10 for response and recovery time across input power levels.

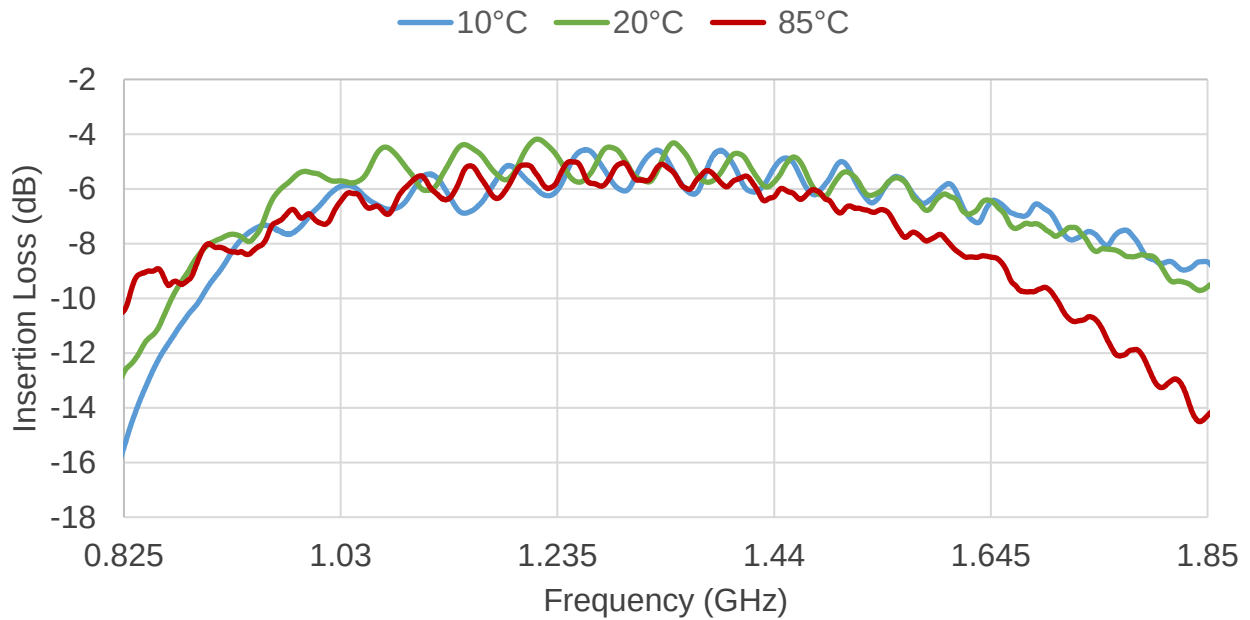
Maximum Ratings and Handling Procedures

Absolute Maximum Ratings		
Parameter	Rating	Unit
Peak Power (1μs width, 0.1% duty cycle)	43	dBm
RF Incident Power (Continuous Wave)	15	dBm
Operating Temperature	10 to +85	°C
Storage Temperature	-40 to +85	°C

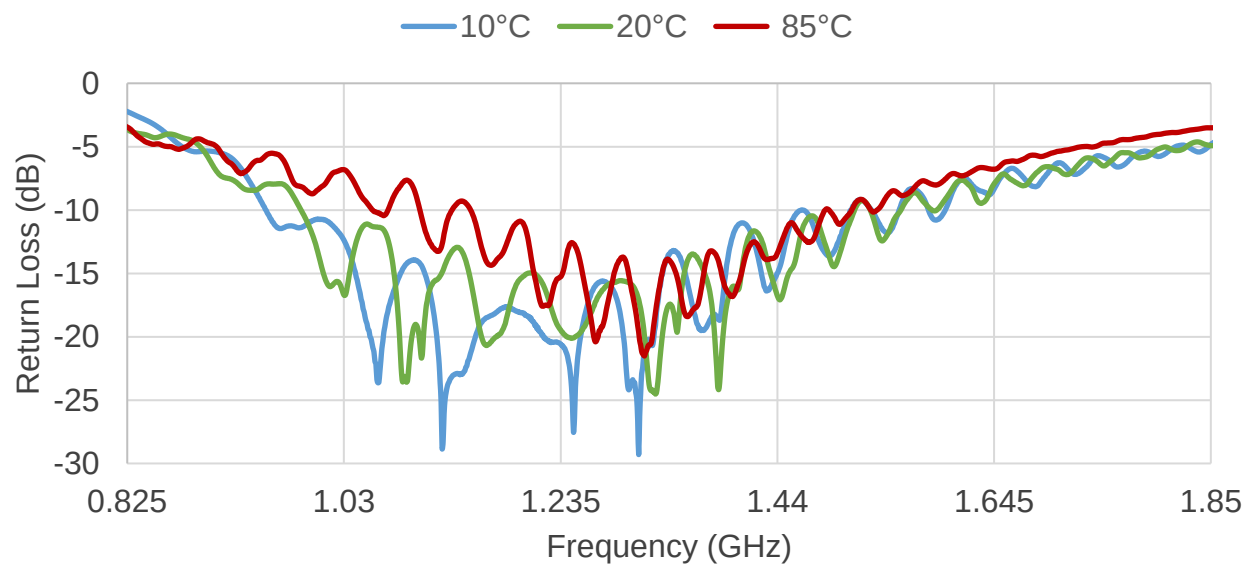
Handling Procedures	
Magnetic Field Sensitivity	These devices ARE sensitive to magnetic fields
	Keep away from permanent magnets or ferrous tools during operation and testing
Electrostatic Discharge Sensitivity	These devices are NOT sensitive to ESD

Performance Data – Linear Mode

Insertion Loss (S_{21})

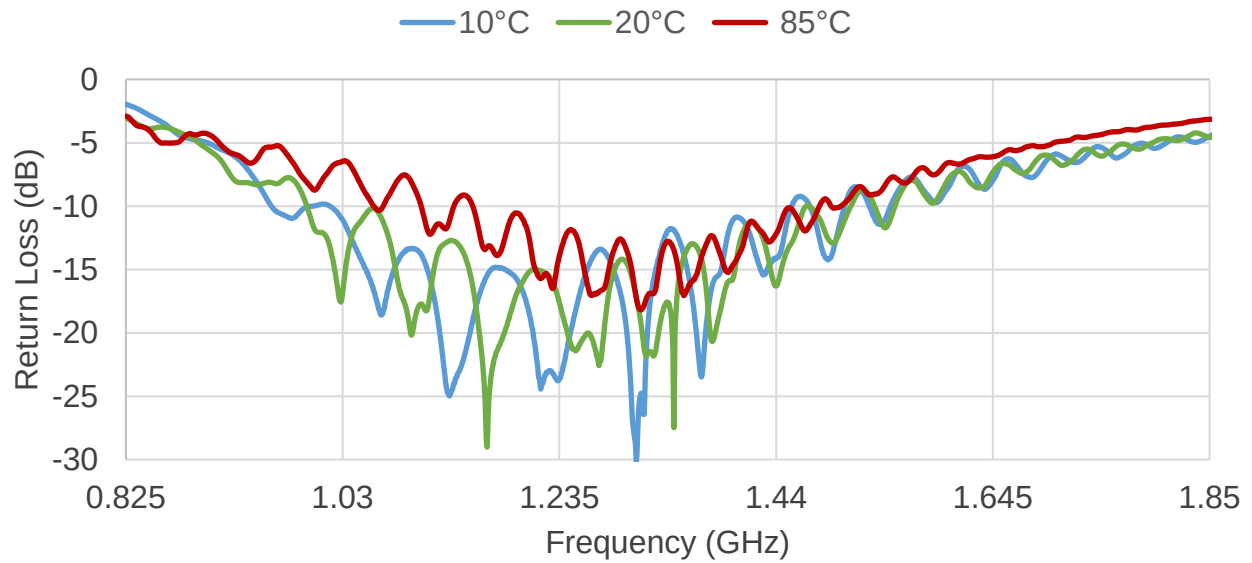


Input Return Loss (S_{11})

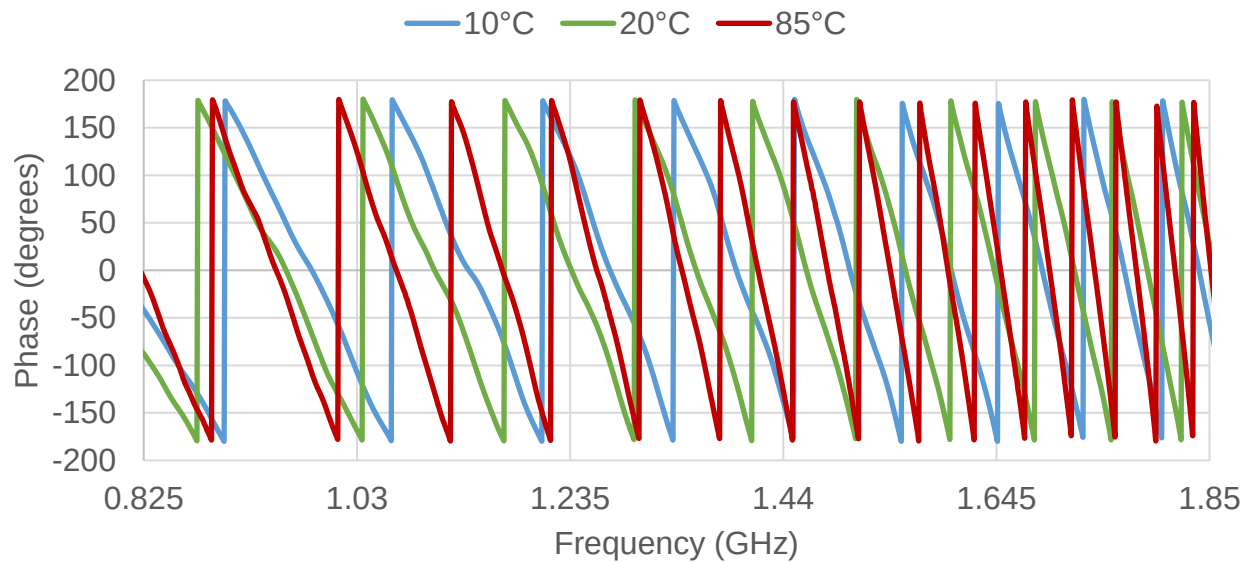


Performance Data – Linear Mode

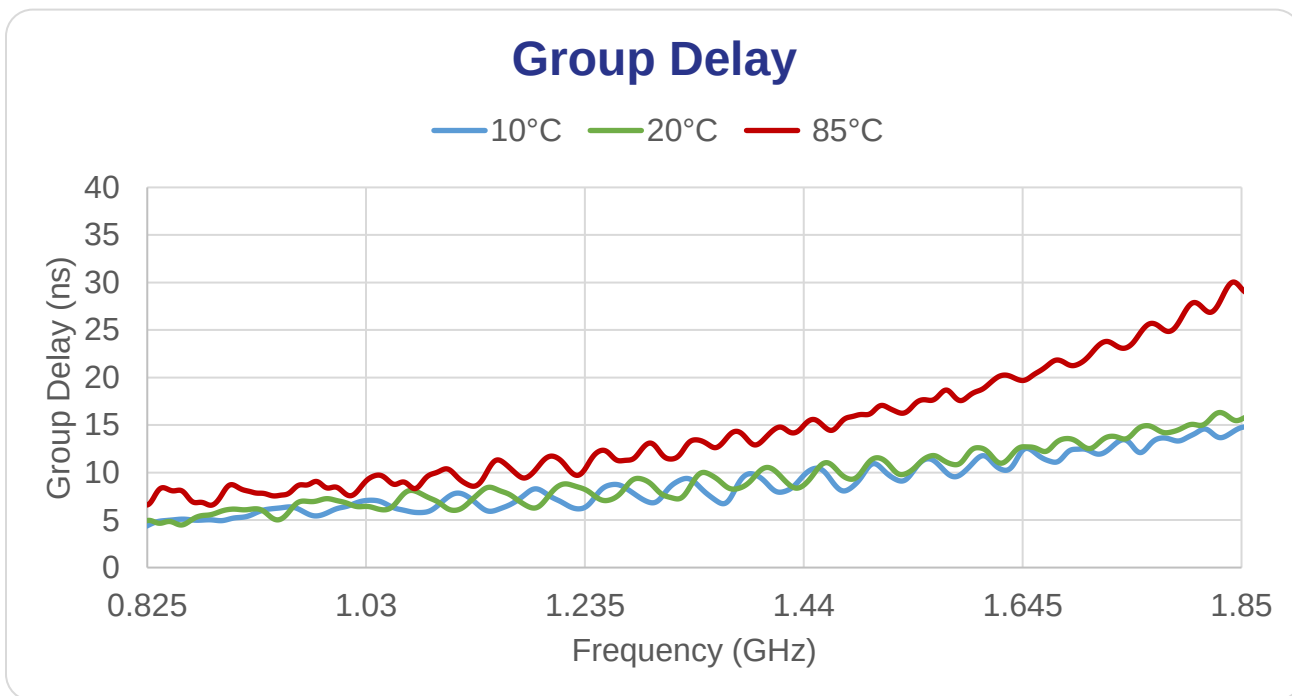
Output Return Loss (S_{22})



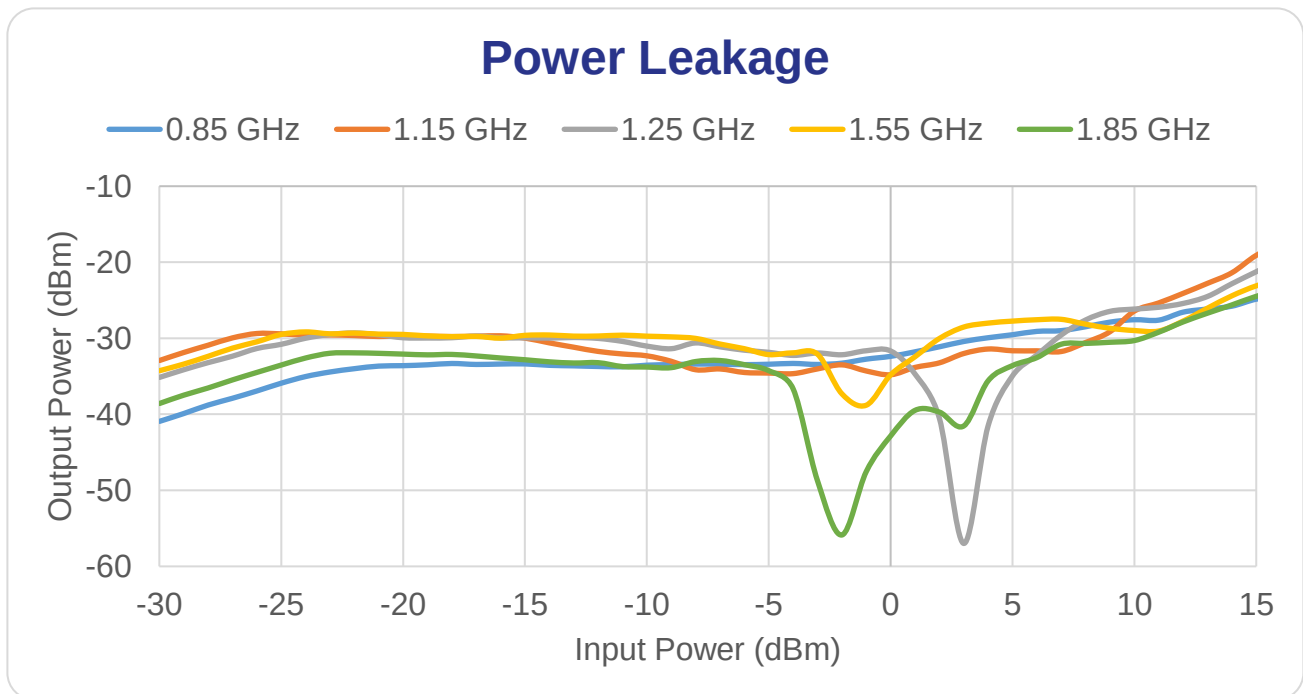
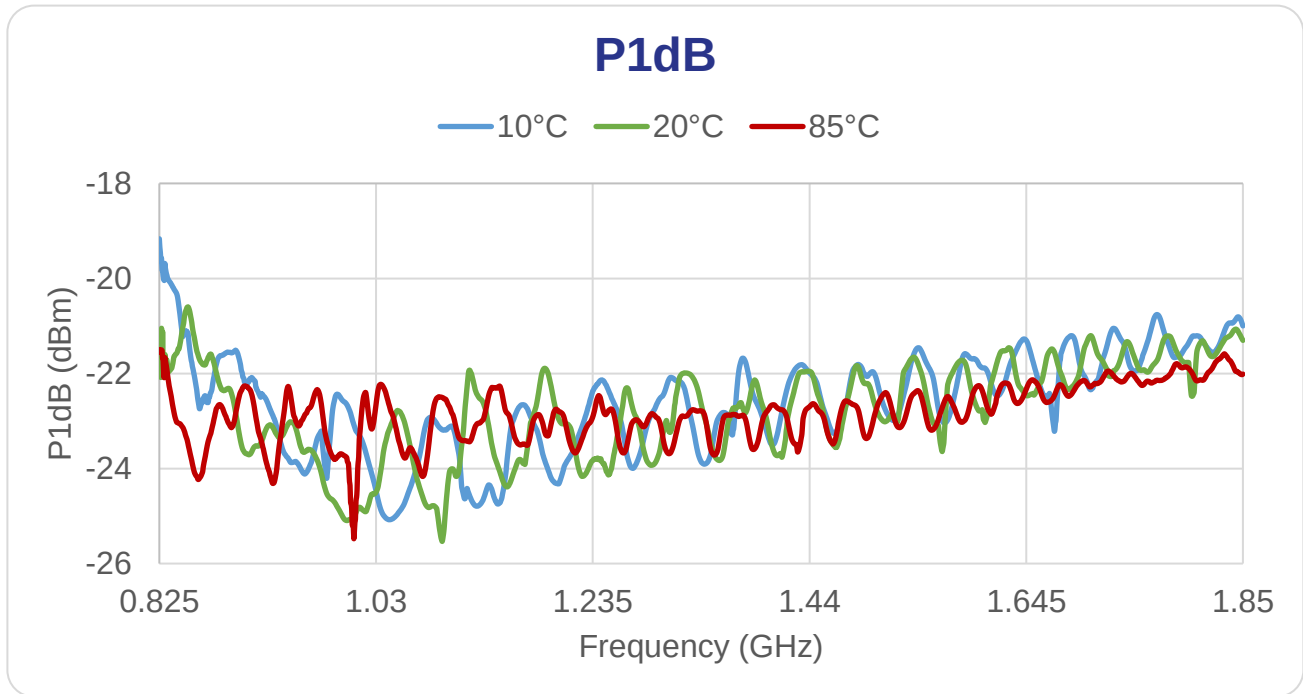
Phase (S_{21})



Performance Data – Linear Mode

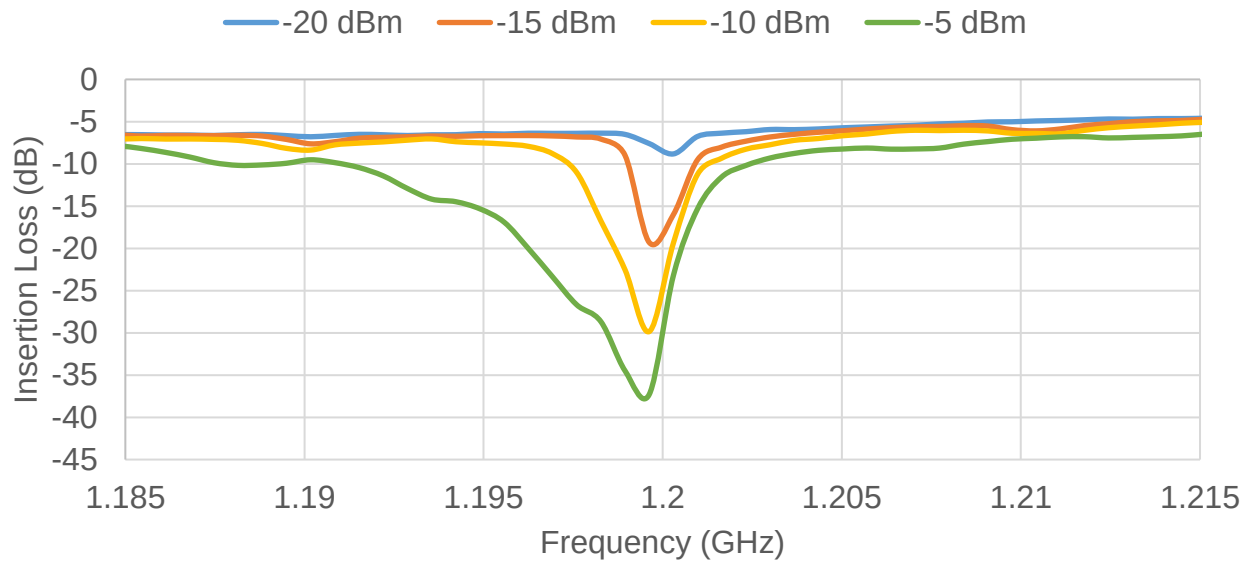


Performance Data – Limiting Mode

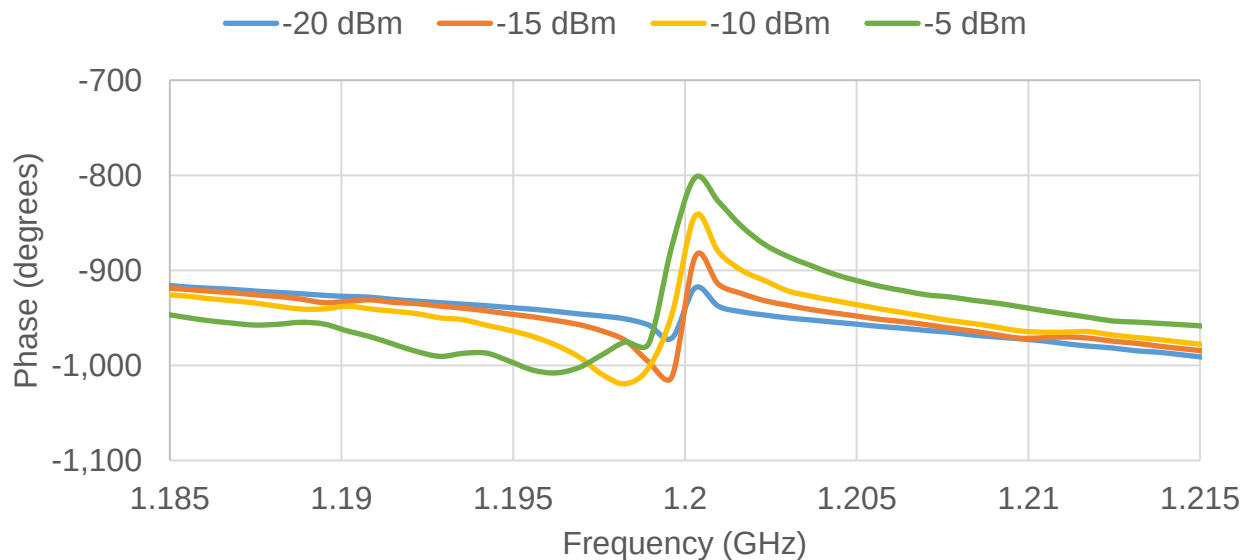


Performance Data – Limiting Mode

Selectivity Magnitude

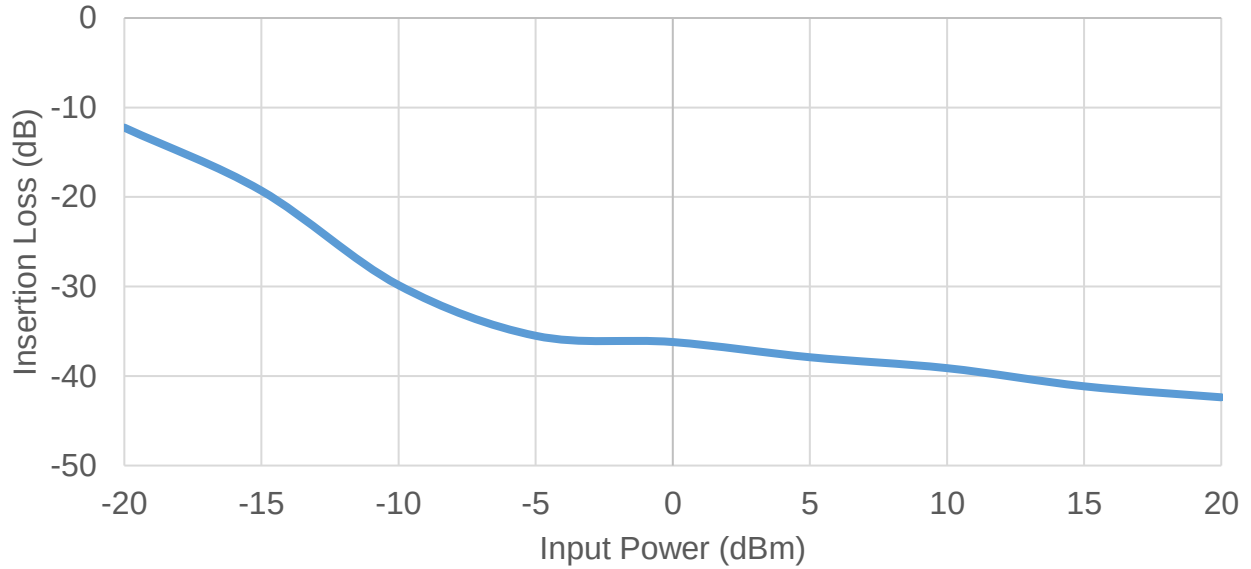


Selectivity Phase

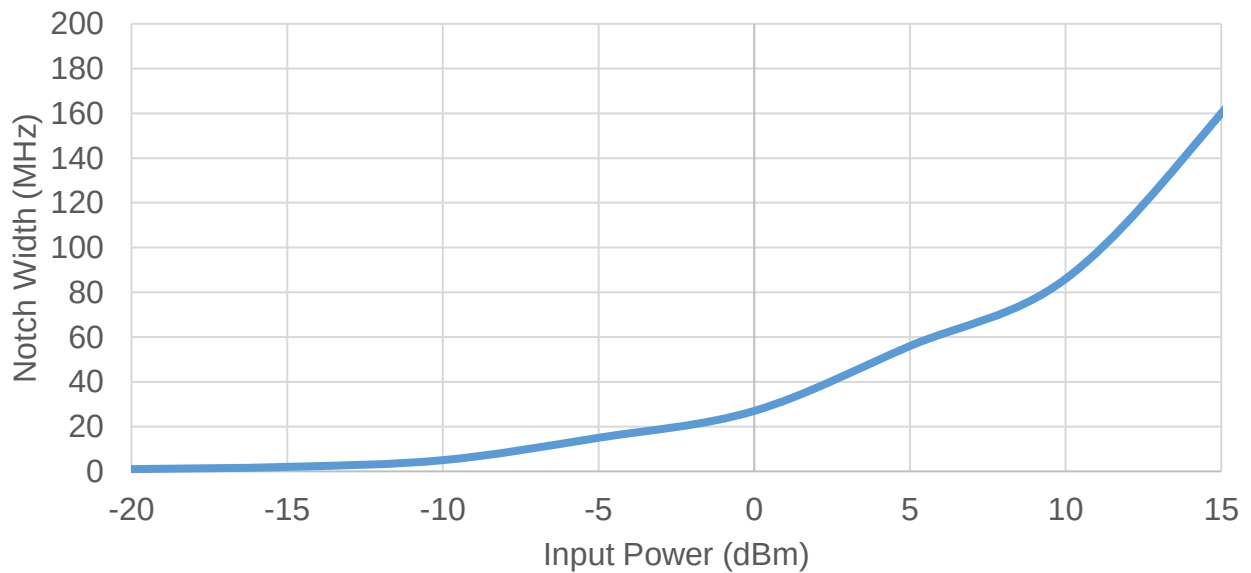


Performance Data – Limiting Mode

Notch Depth

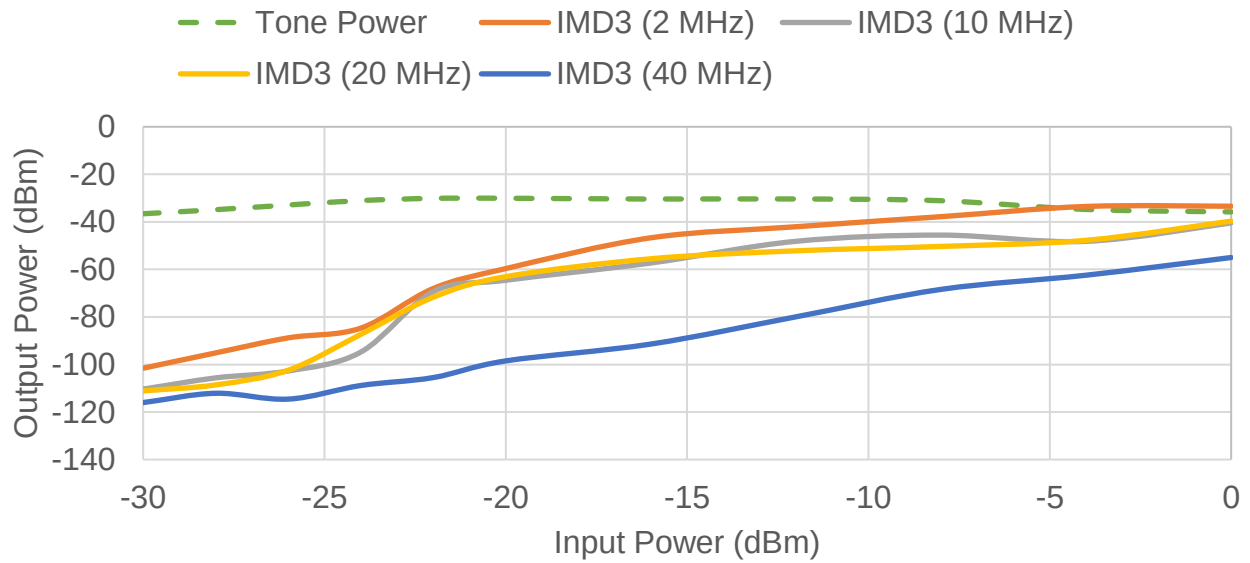


Notch Width

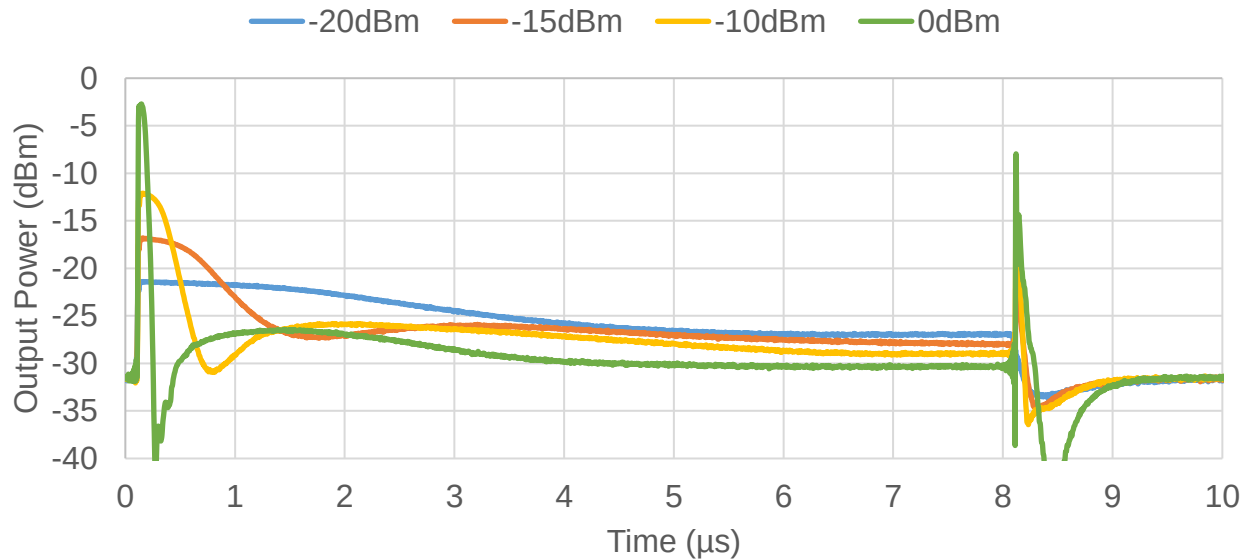


Performance Data – Limiting Mode

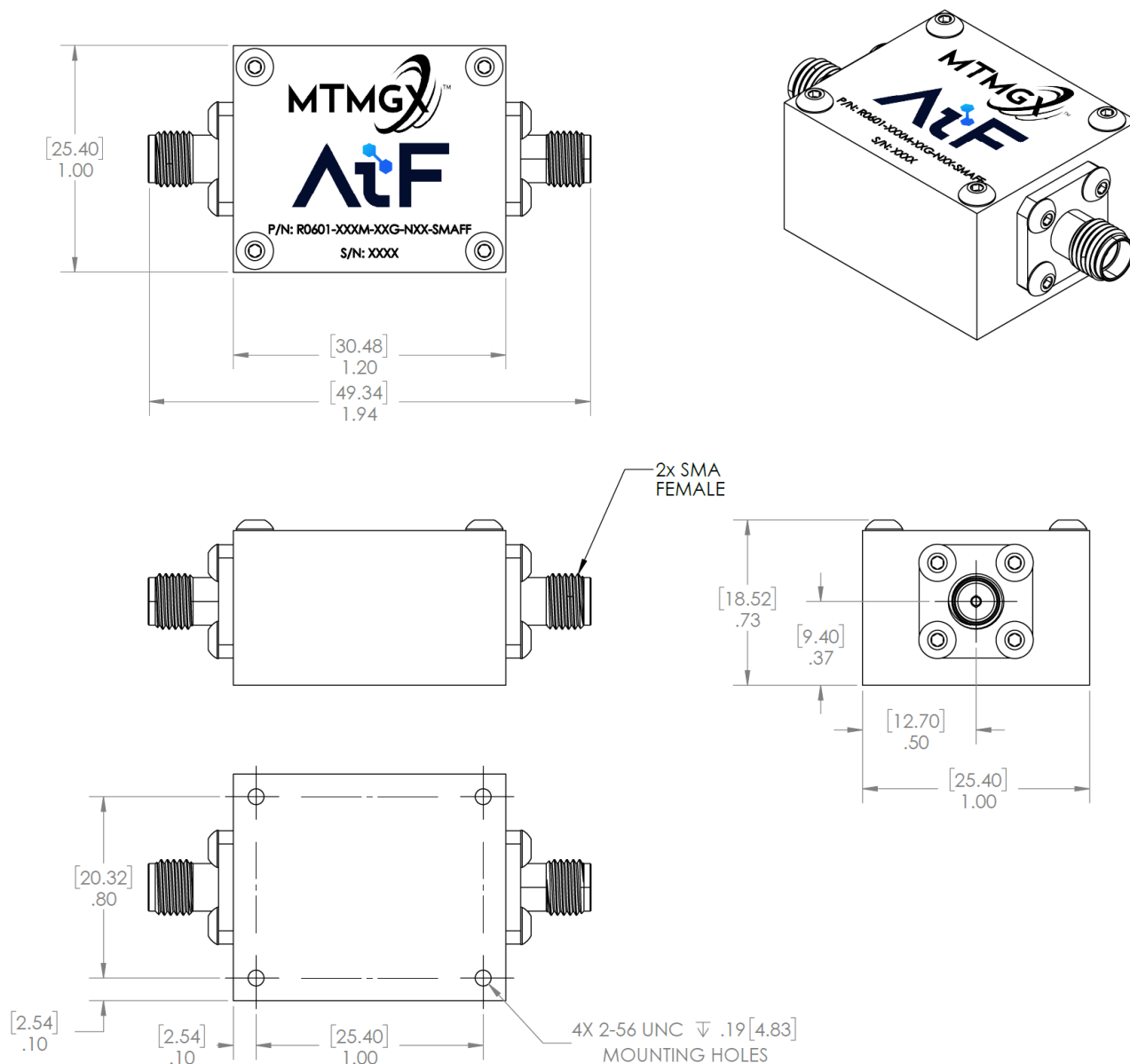
IMD3



Response and Recovery Time



Package Outline Dimensions



Part Number to Quote:
R0601-825M-02G-N21-SMAFF

Contact Information

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