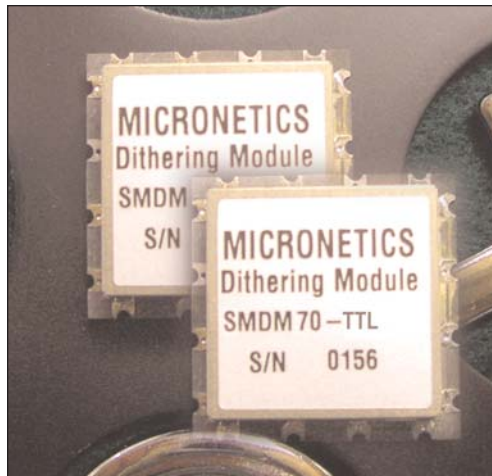


SMDM-70-TTL DITHERING MODULES



SMDM-70-TTL OUTPUT CHARACTERISTICS

Micronetics' dithering module is designed as an easy way to eliminate spurs caused by quantization errors in high speed A/D converters. This module feature a patent pending technology to efficiently combine low pass filtered noise with the analog signal, resulting in low signal insertion loss and low power consumption. The module is designed for 70 MHz analog signals (*other frequencies upon request*) and eliminates the need to design special circuitry for the noise biasing, amplification and filtering as well as combining the signal to the out of band noise.

DESCRIPTION

The dithering module is a two port device with an analog signal input and a signal + noise output. The complete noise generating circuitry is contained within this module. The dithering module is specified by two paths, one being the analog signal path and the other being the noise output of the combined signal + noise path. The module also features built in LO rejection filtering.

COMMON NOISE CONVERSIONS

- $N = N_0 + 10 \cdot \text{LOG} (BW)$
- $N_0 = 20 \cdot \text{LOG} (\mu V_{\text{RMS}} / \text{Hz})$
- $N = 20 \cdot \text{LOG} (V_{\text{RMS}}) - 10 \cdot \text{LOG} (R) + 30 \text{ dB}$

where:

BW = bandwidth in hertz

R = impedance in ohms

N = power in dBm

N_0 = power spectral density in dBm/Hz

SPECIFICATIONS

Analog Signal Path:

Pass Band Frequency: 60-80 MHz
Insertion Loss: 1.0dB max
Impedance: 50 ohm
VSWR: 1.4:1 max
LO Rejection: 55dB min @ $f > 450\text{MHz}$

Noise Output:

Frequency: 200 kHz - 2.0 MHz
Noise Flatness: 2 dB P-P max
Noise power: -40 dBm min,
-34 dBm max
Low pass noise rejection:
-150 dBm/Hz @ 5.0 MHz
-Total noise rejection @ $f > 15\text{MHz}$

General Specs:

Operating Temp: -40 to +85 degC
Storage Temp: -55 to +100 degC
Supply: $15V \pm 0.5V$ @ 75 mA max
Control Logic TTL:
Logic 1: Noise On (internal pull up)
2.8 - 5.5 V
Logic 0: Noise Off
0 - 0.75 V

How to order:

SMDM-70-TTL

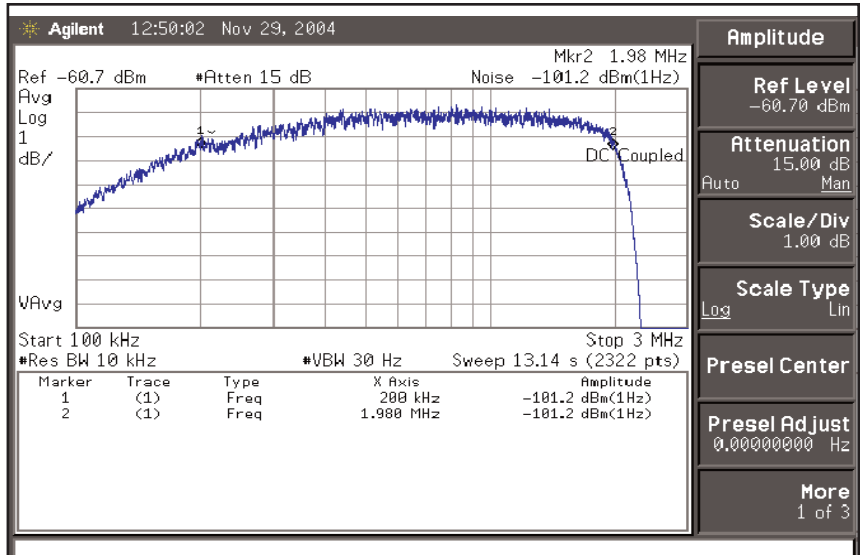
Dithering module, surface mount

SMDM-70-TTL-EVAL

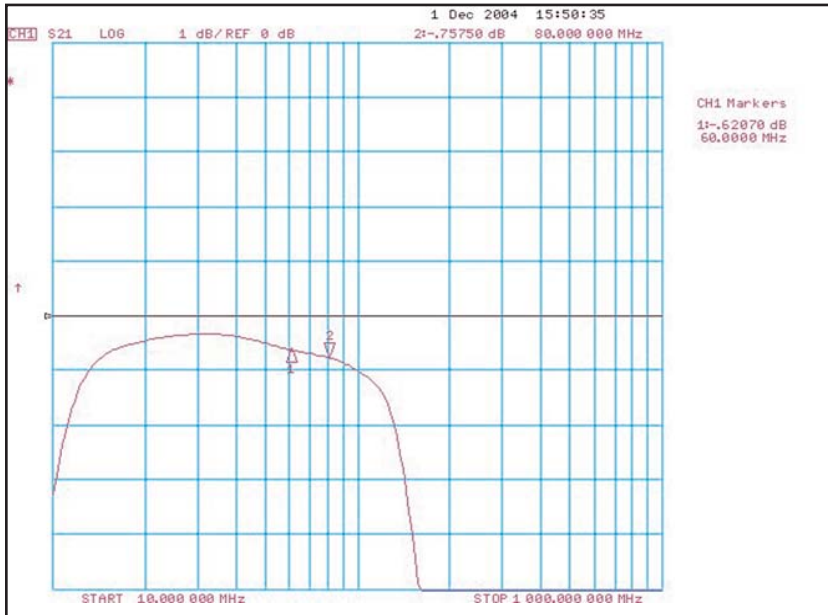
coaxial connectorized, populated
evaluation board

MICRONETICS
NOISE PRODUCTS

NOISE SPECTRUM



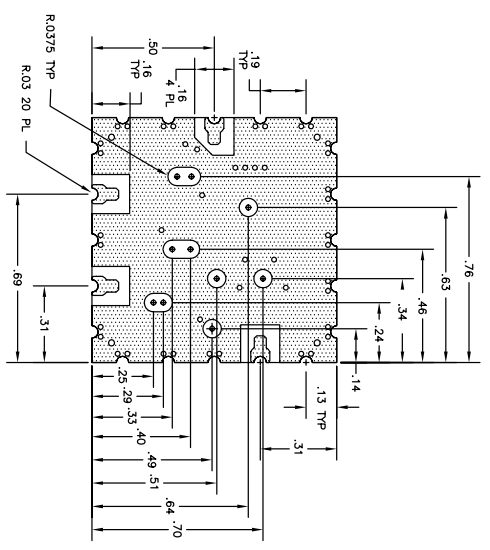
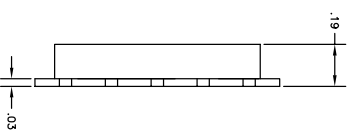
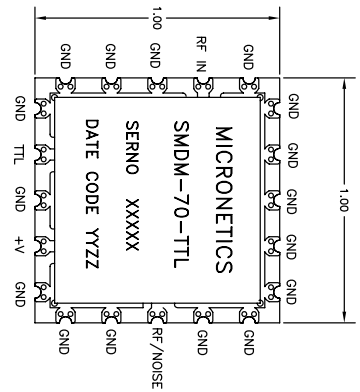
INSERTION LOSS



LO REJECTION



REVISIONS			
REV.	DESCRIPTION	DATE	APPROVED
			ENG QC MFG
-	INITIAL RELEASE		
1	ECO 04-120		BA JD BD
A	ECO 04-520	12/8/04	BA JD BD
B	ECO 04-542		



- NOTES:
1. ALL SOLDERING PERFORMED WITH SN96
 2. FOR SUGGESTED MOUNTING DETAIL SEE MICRONETICS DRAWING 9205104

QTY	FSQM	PART OR IDENTIFYING NO.	NONCIRCULAR OR DESCRIPTION	MATERIAL SPECIFICATION
RECD	NO.			
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE DECIMALS ANGLES				
DRAWN		DATE	CONTRACT NO.	
B ALEXANDER		9/3/03	APPROVALS	
CHECKED			ISSUED	
B			DO NOT SCALE DRAWING	
MATERIAL			NEXT ASSY	
FINISH			USED ON	
APPLICATION				

MICRONETICS
 26 HAMPSHIRE DRIVE/HUDSON, N.H. 03051
 TEL: (603) 883-2900/FAX: (603) 882-8987

OUTLINE DRAWING

SIZE FSQM NO. DWG. NO. SHEET 1 OF 1

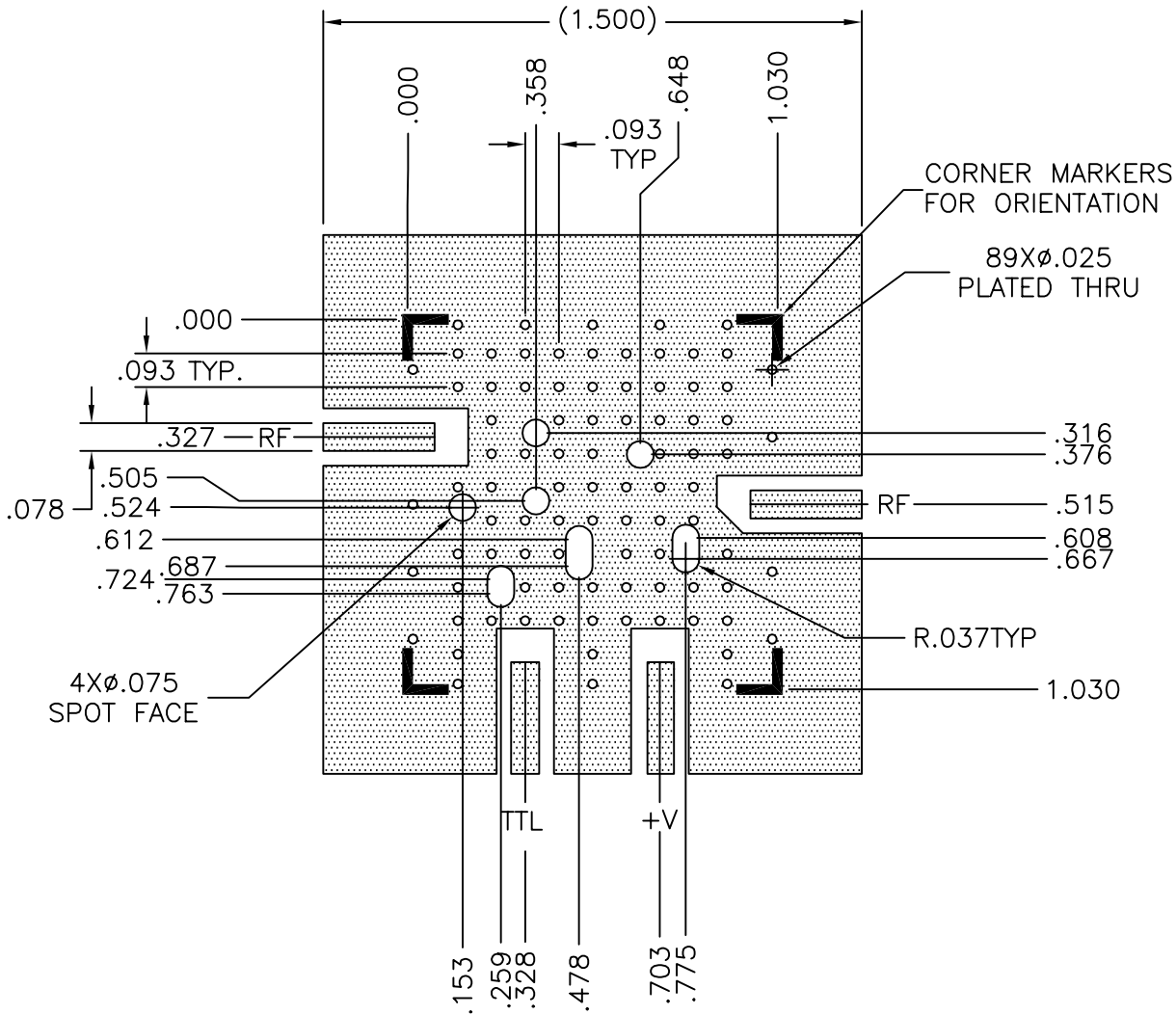
B 54487 9205081 B

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REVISIONS

ZONE	REV.	ECO NO.	DESCRIPTION	DATE	APPROVED		
					ENG.	OC.	MFG.
	1		ENGINEERING RELEASE				



NOTES:

1. MATERIAL: NEMA GRADE FR-4 OR EQUIVALENT
2. FINISH: SnPb PLATE
3. BOTTOM SIDE TO BE GROUND PLANE

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON FINISH: ✓ ANGLES: ±1/2° FRACTIONS: ±1/64 4 PLACE DECIMALS: ±.0005 3 PLACE DECIMALS: ±.005 2 PLACE DECIMALS: ±.01 COMMERCIAL PUBLISHED TOLERANCES SHALL APPLY TO TUBING, BAR, PLATE ETC. ALL THREADS TO BE CLASS 2A OR 2B. PLATED PARTS MUST FIT GAUGES AND MEET SPECIFIED TOLERANCES AFTER PLATING. CAUTION UNLESS THIS DRAWING BEARS AUTHORIZED SIGNED APPROVAL(S) IT IS PRELIMINARY AND IS NOT TO BE USED FOR MANUFACTURING PURPOSES.	DRAWN BY C.W.Fitton	DATE 7/04	MICRONETICS, INC. 26 HAMPSHIRE DRIVE * HUDSON, N.H. 03051 TEL.: (603) 883-2900 * FAX: (603) 882-8987		
	CHECKED BY	DATE			
	ENGINEER	DATE	SIZE A	FSCM NO. 54487	DWG NO. 9205104
	THIS DRAWING CONTAINS MATERIAL PROPRIETARY TO MICRONETICS THIRD ANGLE PROJECTION	DO NOT SCALE DRAWING		SCALE 2 TO 1	SHEET 1 OF 1

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