Absorptive Digital Control Attenuator
0.1 - 40GHz

Features

- Ultra Wide Band Operation 0.1-31GHz
- Functional Bandwidth : 0.1GHz to 40GHz
- 0.5dB LSB Steps to 15.5dB
- Single Positive Control Line Per Bit
- Customization available upon request

Typical Applications

- Wireless Infrastructure
- Test and Measurement
- Military and Aerospace

RoHS Compliant

Electrical Specifications, TA = +25° C, Vdd = +5V ,Vss = -5V, VCTL = 0/ +5V

Description	PN:RFDAT0030G5A									
	Absorptive Digital Attenuator									
Parameter	Min	Typ.	Max	Min	Typ.	Max	Min	Typ.	Max	Units
Frequency Range	0.1-18			15-31			31-40			GHz
Attenuation Range		15.5	16.5		15.5	16		15.5		dB
Attenuation Flatness: (Referenced to Insertion Loss)		±0.6			±0.6			±1.0		dB
Control Bits			5			5			5	Bit
Control Step size	0.5			0.5				0.5		dB
Insertion Loss		3.5	4.0		5.0	6.0		6.5	7.5	dB
Insertion Loss Temperature Coefficient		0.03			0.03			0.03		dB/ °C
Input VSWR (All Atten. States)		1.4	2		1.7	2		2	2.3	: 1
Output VSWR (All Atten. States)		1.4	2		1.7	2		2	2.3	: 1
Input 0.1 dB Compression Point (P0.1dB)			27			27		27		dBm
IP3 Input		45			45			45		dBm
Switching Speed	200									ns
Weight	1.06									ounces
Impedance	50									Ω
Bias Current (+5V /- 5V)	10/10									mA
Input / Output Connectors	2.92mm-Female									
Interface and Control Connector	MICRO-D9(Female)									
Finish	Gold Plated									
Material	Aluminum									
Sealing	Hermetically Sealed (Optional)									

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Absolute Maximum Ratings

Biasing	+5v / -5v ± 10%
TTL Control Voltage	0~0.8V/2.8~5V
RF Input Power	+27dBm

Ordering Information

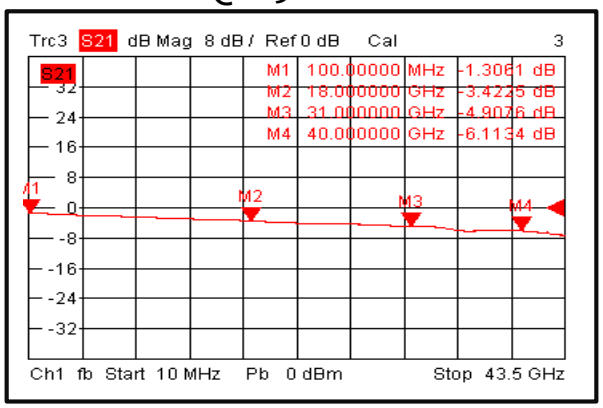
Part No.	ECCN	Description
RFDAT0030G5A	EAR99	0.1-40GHz Digital Control Attenuator

Environmental Specifications and Test Standards

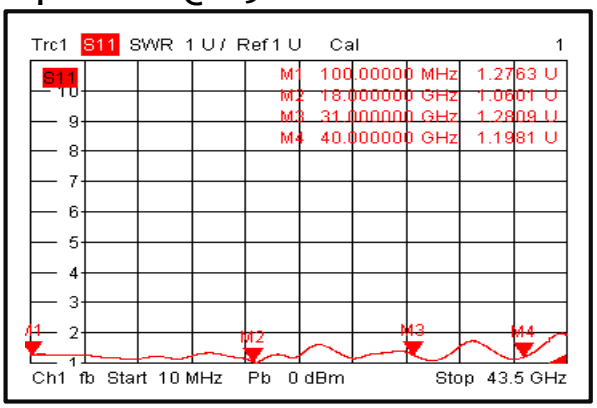
Parameter	Standard	Description
Operational Temperature	MIL-STD-39016	-45℃~+85℃
Storage Temperature		-55℃~+125℃
Thermal Shock		1 Hour@ -45℃ → 1 Hour @ +85℃ (5 Cycles)
Random Vibration		Acceleration Spectral Density 6 (m/s) Total 92.6 RMS
Electrical & Temperature Burn In		Temperature +85℃ for 72 Hours
Shock		1. Weight >20g, 50g half sine wave for 11ms, Speed variation 3.44m/s 2. Weight <=20g, 100g Half sine wave for 6ms, Speed variation 3.75m/s 3. Total 18 times (6 directions, 3 repetitions per direction).
Altitude		Standard: 30,000 Ft (Epoxy Sealed Controlled Environment) Optional: Hermetically Sealed (60,000 ft. 1.0 PSI min)
Hermetically Sealed (Optional)	MIL-STD-883	MIL-STD-883 (For Hermetically Sealed Units)

Typical Performance Plots

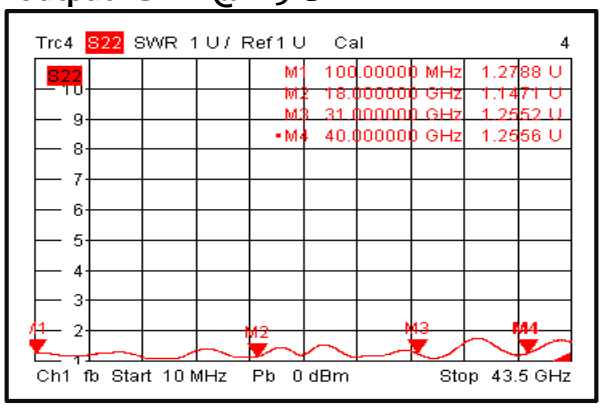
Insertion Loss @+25℃



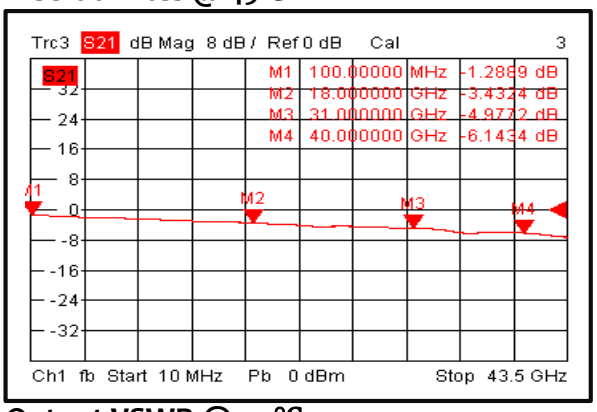
Input VSWR @+25℃



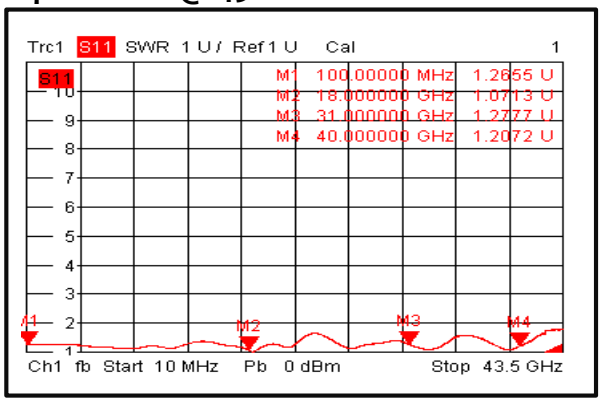
Output VSWR @+25℃



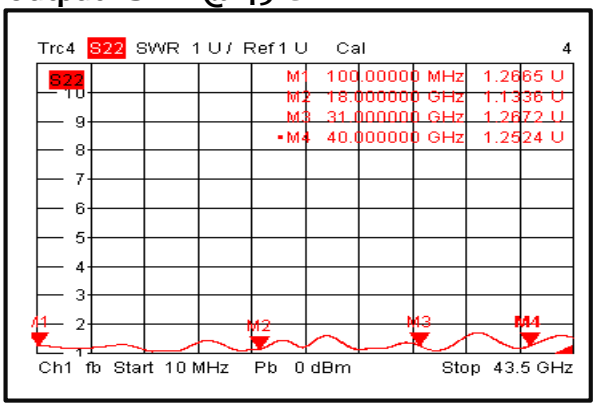
Insertion Loss @-45℃



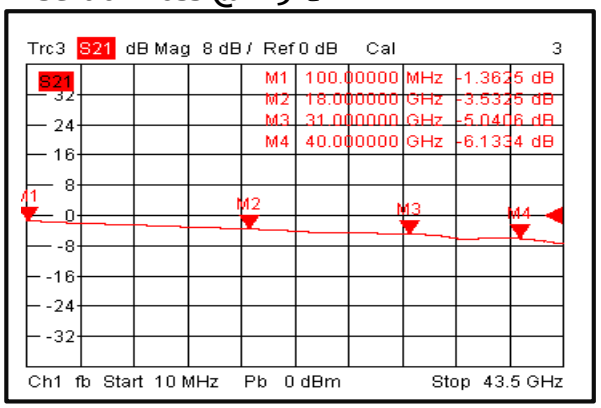
Input VSWR @-45℃



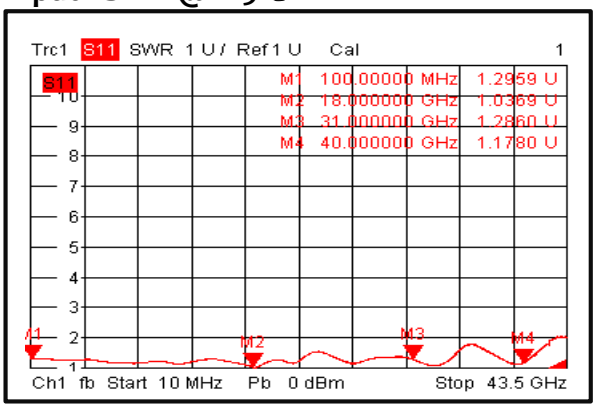
Output VSWR @-45℃



Insertion Loss @+85℃



Input VSWR @+85℃



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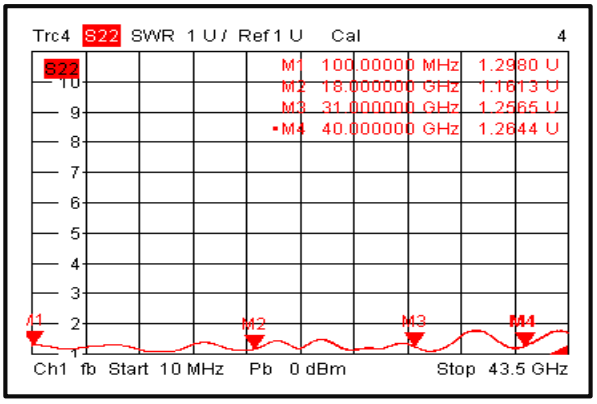
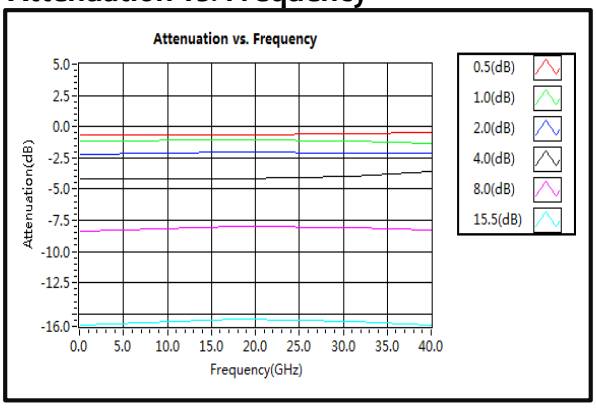
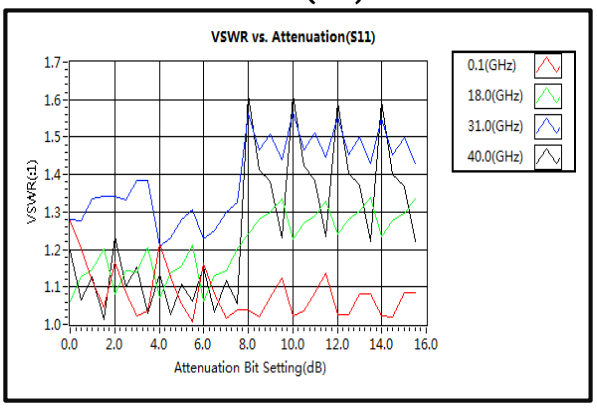
Output VSWR @+85℃



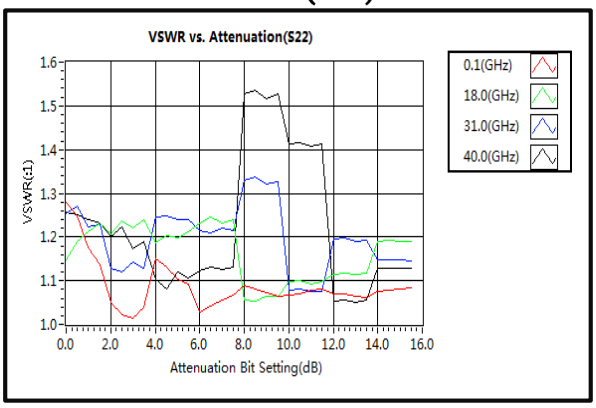
Attenuation vs. Frequency



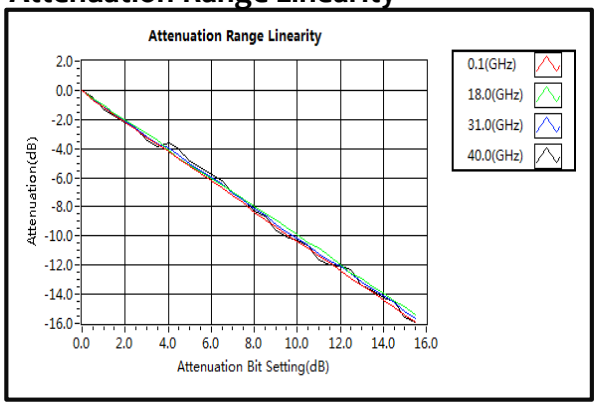
VSWR vs. Attenuation(S11)



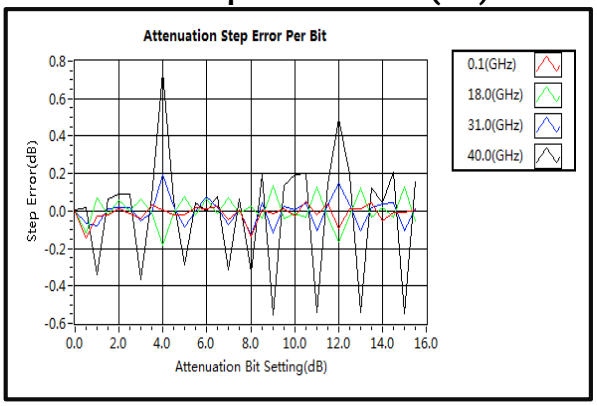
VSWR vs. Attenuation(S22)



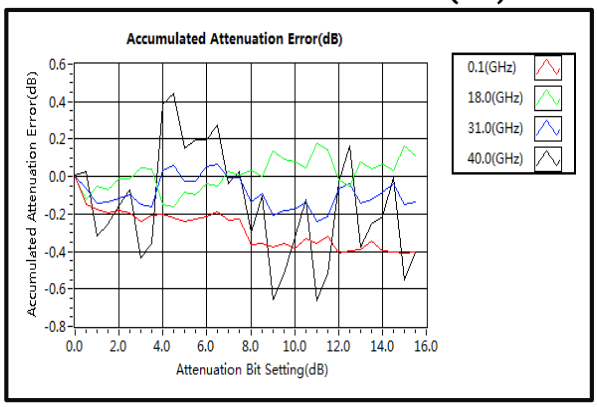
Attenuation Range Linearity



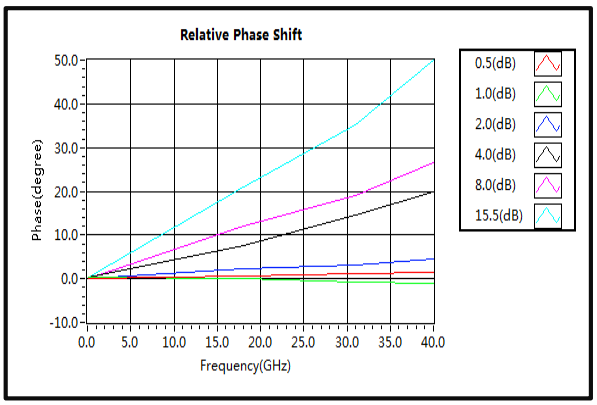
Attenuation Step Error Per Bit (dB)



Accumulated Attenuation Error (dB)



Relative Phase Shift



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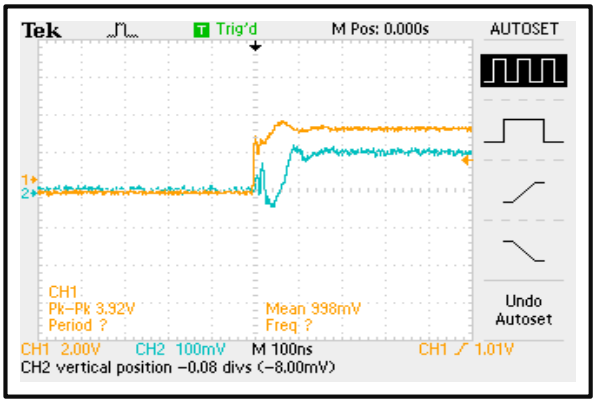
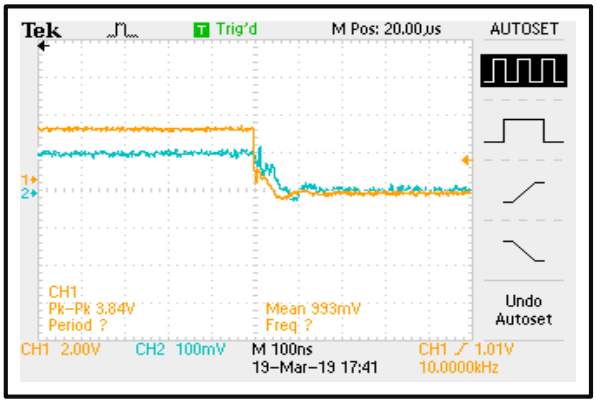
Speed

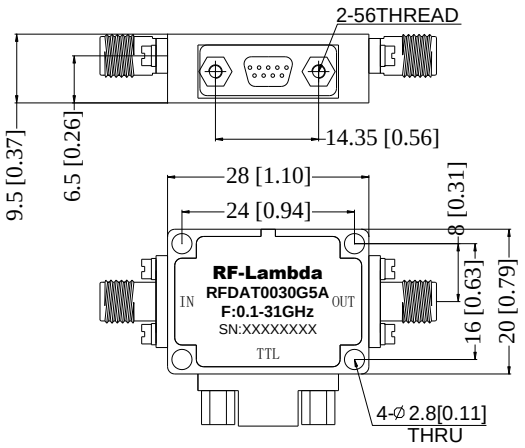


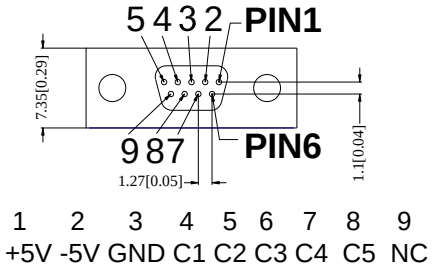
Speed



Outline Drawing:

All Dimensions in mm [inches]





MICRO-D9(Female)

Truth Table

TTL Control Input					Attenuation State
C5	C4	C3	C2	C1	
1	1	1	1	1	Reference IL
1	1	1	1	0	0.5dB
1	1	1	0	1	1dB
1	1	0	1	1	2dB
1	0	1	1	1	4dB
0	1	1	1	1	8dB
0	0	0	0	0	15.5dB